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# Classes

## AirInterfaceCapability

Describes the 'analog' capabilities of modem and transmitter of the microwave device. Value ranges of attributes are not independently (e.g. min. and max. transmit power depends on modulation). Legal combinations of values are expressed in transmissionModeTypes.

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AirInterfaceCapability

Table 1: Attributes for AirInterfaceCapability

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| typeOfEquipment | String  Type of equipment not yet defined. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | This parameter indicates the equipment type. Instead of uploading the complete set of capabilities, capabilities of the same equipment type could be reused. Should be unique for a combination of modem, radio and their respective firmware. |
| txFrequencyMin | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_32\_BIT | Value of the minimum transmit frequency tunable at the air interface. |
| txFrequencyMax | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_32\_BIT | Value of the maximum transmit frequency tunable at the air interface. |
| rxFrequencyMin | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_32\_BIT | Value of the minimum receive frequency tunable at the air interface. |
| rxFrequencyMax | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_32\_BIT | Value of the maximum receive frequency tunable at the air interface. |
| duplexDistanceIsFreelyConfigurable | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | true = Transmitted and received frequency can be freely chosen between the given minimum and maximum values. |
| duplexDistanceList | Integer  -1 | 0..\* | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_32\_BIT | Only relevant if (duplexDistanceIsFreelyConfigurable==false). Lists all supported distances between transmitted and received frequency. |
| \_transmissionModeList | TransmissionMode  ./. | 1..\* | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | List of supported Transmission Modes. |
| autoFreqSelectIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | In case the microwave radio is capable of automatically selecting the transmit frequency in unlicensed bands, this field shall contain a 'true'. |
| receiverOnOffIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | In case switching on/off the receiver is available at the device, this field shall contain a 'true'. |
| adaptiveModulationIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | In case the device is capable of adaptive modulation, this field shall contain a 'true'. |
| atpcIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | In case the microwave radio is capable of ATPC, this field shall contain a 'true'. |
| atpcRange | Integer  0 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: dB  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Extent of the ATPC range. This value represents a device specific maximum value. The actual range of the ATPC at a specific link might be limited by the difference between configured transmit power (AirInterface::AirInterfaceConfiguration::txPower) and minimum transmit power of the device (TypeDefinitions::TransmissionModeType::txPowerMin). |
| supportedRadioSignalIdDatatype | RadioSignalIdDatatypeType  NOT\_YET\_DEFINED | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | This attribute is for expressing the datatype, which is supported as a Radio Signal ID by the device. |
| supportedRadioSignalIdLength | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_16\_BIT | If (supportedRadioSignalIdDatatype==INTEGER): Maximum value of the Radio Signal ID supported by the device; If (supportedRadioSignalIdDatatype==STRING): Maximum number of letters supported by the device. |
| expectedEqualsTransmittedRadioSignalID | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | true = It is not possible to configure an expectedRadioSignalID different from the transmittedRadioSignalID. |
| encryptionIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | Shall be marked 'true', if payload encryption is available. |
| supportedLoopBackKindList | LoopBackType  ./. | 1..4 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | List of supported kinds of looping back of header information to the remote site. |
| maintenanceTimerRange | String  Range of the maintenance timer not yet defined. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | Available time periods for maintenance configurations (e.g. the loop back of microwave header information) to be described. Concrete values shall be separated by commas (e.g. '10, 60, 360'). Ranges shall be expressed as two values separated by a minus (e.g. '10-360'). |
| acmThresholdCrossAlarmsIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | true = Threshold cross alarms on performance of adaptive code modulation are available. |
| clearingThresholdCrossAlarmsIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | true = Clearing threshold cross alarms by calling clearThresholdCrossAlarms() operation is available at the device. |
| performanceMonitoringIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | true = Collection and aggregation of performance values is available. |
| directionOfAcmPerformanceValues | DirectionType  NONE | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | Expresses, whether the ACM performance values (timeXStatesList) are measured at the transmitter (TX) or at the receiver (RX). |

## AirInterfaceConfiguration

Configuration of the radio link.

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AirInterfaceConfiguration

Table 1: Attributes for AirInterfaceConfiguration

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| airInterfaceName | String  Air interface ID not yet defined. | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Operator specific microwave link ID (often used for coding area, type of element and sequential number). |
| remoteAirInterfaceName | String  Air interface ID at the remote site not yet defined. | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Name of the air interface, which belongs to the same link, at the remote site. |
| transmittedRadioSignalID | RadioSignalIdType  ./. | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Transmitted radio signal ID for synchronizing the remote receiver. |
| expectedRadioSignalID | RadioSignalIdType  ./. | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Only relevant, if expectedEqualsTransmittedRadioSignalID==false. Received radio signal ID for identifying the correct transmitter to synchronize on. |
| txFrequency | Integer  -1 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_32\_BIT | Center frequency of the transmit channel. The values to be configured have to exactly match the values listed in the international agreement referenced in channelPlanID. In case of automated selection of the transmit frequency this field shall describe the lowest center frequency selectable. |
| rxFrequency | Integer  -1 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_32\_BIT | Only configurable, if (duplexDistanceIsFreelyConfigurable==true). Allows configuring of the center frequency of the receive channel. |
| duplexDistance | Integer  -1 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_32\_BIT | Only configurable, if (duplexDistanceIsFreelyConfigurable==false) AND (duplexDistanceList contains more than one value). Allows configuring one of the values represented in AirInterfaceCapability::duplexDistanceList. |
| \_transmissionModeMin | TransmissionMode  ./. | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  PassedByReference  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Minimum transmission mode to be configured (in case adaptive modulation is not used, this value represents also the fixed transmission mode). |
| \_transmissionModeMax | TransmissionMode  ./. | 0..1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  PassedByReference  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Maximum transmission mode to be configured. |
| powerIsOn | Boolean  true | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | true = The power to all physical components required for this AirInterface instance is turned on. |
| transmitterIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Activation of the transmitter inside the radio shall be expressed as a 'true'. |
| receiverIsOn | Boolean  true | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Maintenance Feature. Activation of the receiver inside the radio shall be expressed as a 'true'. Attribute shall also be used for RX main and RX diversity squelches in case of diversity configurations. |
| txPower | Integer  99 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_8\_BIT | Transmit power to be configured on the microwave link. Signed Byte is required. The actually operated transmit power might be lower depending on adaptive modulation and ATPC. |
| adaptiveModulationIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Adaptive Modulation. Activation of adaptive modulation shall be expressed as a 'true'. |
| xpicIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Activation of Cross Polarization Interference Cancelation shall be expressed as a 'true'. In case XPIC is not available for the current combination of channel bandwidth and modulation or the hardware in general, this parameter shall always be set to 'false'. |
| mimoIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Activation of Multiple Input Multiple Output (MIMO) shall be expressed as a 'true'. |
| alicIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Activation of Adjacent Link Interference Cancelation (ALIC) shall be expressed as a 'true'. |
| atpcIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | ATPC. Activation of Automated Transmit Power Control shall be expressed as a 'true'. |
| atpcThreshUpper | Integer  99 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_16\_BIT | If the receive level at the local/remote site is higher than the upper threshold value, the transmitter at the remote/local site is notified to decrease transmit power. In case the device does not know upper and lower threshold values, but only a single reference value, the atpcThreshUpper shall not be available for configuration and constantly represent the default value. |
| atpcThreshLower | Integer  99 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_16\_BIT | If the receive level at the local/remote site is lower than the lower threshold value, the transmitter at the remote/local site is notified to increase transmit power. In case the device does not know upper and lower threshold values, but only a single reference value, the atpcThreshLower shall represent this reference value. |
| atpcTxPowerMin | Integer  -99 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_8\_BIT | Transmit power, which is not to be undercut, while operating ATPC. |
| autoFreqSelectIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Activation of automatically selecting the transmit frequency in unlicensed bands shall be expressed as a 'true'. |
| autoFreqSelectRange | Integer  -1 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: channels  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_8\_BIT | Number of transmit channels (starting at the center frequency defined in txFrequency and with channel bandwidth according to txChannelBandwidth) that define the range within the transmit frequency can automatically been chosen. |
| modulationIsOn | Boolean  true | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Maintenance Feature. De-activation of the modulation of the carrier signal for fault management shall be expressed as a 'false'. |
| encryptionIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Activates encryption of the payload. |
| cryptographicKey | String  Cryptographic key not yet defined. | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Key for transforming plaintext into ciphertext data. |
| loopBackKindOn | LoopBackType  NONE | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Maintenance Feature. The currently configured type of looping back of the air interface header shall be expressed here. The received header is returned to the remote site. |
| maintenanceTimer | Integer  -1 | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: s  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_32\_BIT | Time of existence of any maintenance configuration (e.g. the loop back of microwave header information). 0 = maintenance timer is switched off. Valid values are defined in AirInterface::AirInterfaceCapability::maintenanceTimerRange. |
| g826ThresholdCrossAlarmList | G826ThresholdCrossAlarmType  ./. | 0..\* | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | List of G826 related threshold cross alarms to be configured. |
| xltsThresholdCrossAlarmList | XltsThresholdCrossAlarmType  ./. | 0..\* | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | List of RLTS or TLTS (ETSI EN 301 129) related threshold cross alarms to be configured. |
| acmThresholdCrossAlarmList | AcmThresholdCrossAlarmType  ./. | 0..\* | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | List threshold cross alarms, which relate to the time period of operation of a specific transmission mode. |
| performanceMonitoringIsOn | Boolean  false | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Enables measurement, collection, storage and access to performance data. |

## AirInterfaceCurrentPerformance

Aggregated performance information of the air interface at a particular moment.

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AirInterfaceCurrentPerformance

Table 1: Attributes for AirInterfaceCurrentPerformance

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| currentPerformanceDataList | AirInterfaceCurrentPerformanceType  ./. | 1..2 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | At least values of the counters, which are reset every 15 minutes, are to be provided. If available, the current values of the counters, which are reset every 24 hour, can be provided, too. |
| numberOfCurrentPerformanceSets | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Number of sets of current performance values, which are provided in the list. |

## AirInterfaceHistoricalPerformances

Aggregated performance information of the air interface for a pre-defined measurement interval.

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AirInterfaceHistoricalPerformances

Table 1: Attributes for AirInterfaceHistoricalPerformances

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| historicalPerformanceDataList | AirInterfaceHistoricalPerformanceType  ./. | 0..\* | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA |  |
| numberOfHistoricalPerformanceSets | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_16\_BIT | Number of sets of historical performance values, which are provided in the list. |
| timeOfLatestChange | DateTime  2010-11-20T14:00:00+01:00 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_16\_BIT | Date and time when the list of sets of historical performance values has been changed for the last time (e.g. new one added or existing one deleted). |

## AirInterfaceLpSpec

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: YES
* objectDeletionNotification: YES

Attributes for AirInterfaceLpSpec

Table 1: Attributes for AirInterfaceLpSpec

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| \_airInterface\_Pac | AirInterface\_Pac  ./. | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | See referenced class |

## AirInterfaceStatus

Measurements of current values on the air interface and operational status of the device.

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AirInterfaceStatus

Table 1: Attributes for AirInterfaceStatus

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| interfaceStatus | InterfaceStatusType  NOT\_YET\_DEFINED | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Operational status of the interface. |
| txFrequencyCur | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_32\_BIT | Center frequency of the currently operated transmit channel. |
| rxFrequencyCur | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: LENGTH\_32\_BIT | Center frequency of the currently operated receive channel. |
| \_transmissionModeCur | TransmissionMode  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  PassedByReference  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Currently operated transmission mode according to definitions in Capabilities. |
| receivedRadioSignalID | RadioSignalIdType  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | Radio signal ID of the signal, which the receiver is currently synchronized on. |
| linkIsUp | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | If connection is established to the remote site with the same linkID, this shall be expressed as a 'true'. |
| xpicIsUp | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | If XPIC is currently actually working (not just configured), this shall be expressed as a 'true'. |
| mimoIsUp | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | If MIMO is currently actually working (not just configured), this shall be expressed as a 'true'. |
| alicIsUp | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | If Adjacent Link Interference Cancelation (ALIC) is currently actually working (not just configured), this shall be expressed as a 'true'. |
| atpcIsUp | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | If ATPC is currently actually working (not just configured), this shall be expressed as a 'true'. |
| autoFreqSelectIsUp | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | If automated frequency selection is currently actually working (not just configured), this shall be expressed as a 'true'. |
| localEndPointId | String  not-supported | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | The value of the localEndPointId is a vendor specific identifier of the air interface, used by the node to discover a microwave radio link. |
| remoteEndPointId | String  not-supported | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | The value of the remoteEndPointId is a vendor specific identifier of the airinterface at the remote side, used to by the node to discover a microwave radio link. |
| loopBackKindUp | LoopBackType  NONE | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | The currently active (not just configured) type of looping back of the air interface header shall be expressed here. The received header is returned to the remote site. |
| performanceMonitoringIsUp | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: YES  • bitLength: NA | true = Performance values are currently collected and aggregated. |
| rxLevelCur | Integer  99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Current receive level. |
| txLevelCur | Integer  99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Current transmit level. |
| snirCur | Integer  -99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: dB  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Currently measured signal to (noise+interference) ratio. |
| xpdCur | Integer  -99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: dB  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Currently measured cross polarization discrimination. |
| rfTempCur | Integer  -99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: false  • valueRange: no range constraint  • unit: Celsius  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Current temperature (in degree Celsius) of the radio module inside the outdoor unit. |

## AirInterface\_Pac

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for AirInterface\_Pac

Table 1: Attributes for AirInterface\_Pac

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| \_airInterfaceCapability | AirInterfaceCapability  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | See referenced class |
| \_airInterfaceConfiguration | AirInterfaceConfiguration  ./. | 1 | RW | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | See referenced class |
| \_airInterfaceStatus | AirInterfaceStatus  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | See referenced class |
| \_airInterfaceCurrentPerformance | AirInterfaceCurrentPerformance  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | See referenced class |
| \_airInterfaceHistoricalPerformances | AirInterfaceHistoricalPerformances  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | See referenced class |

## CurrentPerformance

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for CurrentPerformance

Table 1: Attributes for CurrentPerformance

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| timestamp | DateTime  2010-11-20T14:00:00+01:00 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | The timestamp associated with when the current data was collected. |
| suspectIntervalFlag | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | This attribute is used to indicate that the performance data for the current period may not be reliable. Some reasons for this to occur are: – Suspect data were detected by the actual resource doing data collection. – Transition of the administrativeState attribute to/from the 'lock' state. – Transition of the operationalState to/from the 'disabled' state. – Scheduler setting that inhibits the collection function. – The performance counters were reset during the interval. – The currentData (or subclass) object instance was created during the monitoring period.  This attribute is used to indicate that the performance data for the current period may not be reliable. Some reasons for this to occur are: – Suspect data were detected by the actual resource doing data collection. – Transition of the administrativeState attribute to/from the 'lock' state. – Transition of the operationalState to/from the 'disabled' state. – Scheduler setting that inhibits the collection function. – The performance counters were reset during the interval. – The currentData (or subclass) object instance was created during the monitoring period. |
| elapsedTime | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: s  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_64\_BIT | Number of seconds that elapsed since the last reset of the counter. |
| scannerId | String  Scanner ID not defined. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA |  |
| granularityPeriod | GranularityPeriodType  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 1  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | Time period between reset of the underlying counter. |

## HistoricalPerformance

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for HistoricalPerformance

Table 1: Attributes for HistoricalPerformance

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| suspectIntervalFlag | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | This attribute indicates that the data collected during the interval is suspect. |
| historyDataId | String  History Data ID not defined. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA |  |
| granularityPeriod | GranularityPeriodType  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 1  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | Time period between reset of the underlying counter. |
| periodEndTime | DateTime  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 2  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | Time when the counter values have been recorded and the counter reset. |

## TransmissionMode

Applied stereotypes:

* OpenModelClass
* support: MANDATORY
* OpenInterfaceModelClass
* objectCreationNotification: NO
* objectDeletionNotification: NO

Attributes for TransmissionMode

Table 1: Attributes for TransmissionMode

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| transmissionModeName | String  ./. | 1 | R | OpenModelAttribute  • partOfObjectKey: 1  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | Name of the transmission mode. BBBB-m\*-i\*/t\*-r\*. B=four digits of channel bandwidth in MHz. m\*=required number of digits for modulation name. (i\*/t\*=code rate.) i\*=required number of digits for number of information bits. t\*=required number of digits for total bits. r\*=required number of digits for rate reduction factor. Example: 0028-4QAM-188/204-1 |
| transmissionModeRank | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_32\_BIT | Configuring adaptive modulation by selecting \_transmissionModeMin and \_transmissionModeMin requires the transmission modes to be ordered. The vendor shall rank all available transmission modes according to the respective payload data rate. The application providers shall order the transmission modes according to the rank. |
| channelBandwidth | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: kHz  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_32\_BIT | Bandwidth of the transmit channel. The value shall be expressed explicitly (means in kHz) not as a reference to an international agreement. The values shall be chosen from the following \_list: 3.500, 7.000, 14.000, 27.500, 28.000, 29.000, 29.650, 30.000, 40.000, 50.000, 55.000, 56.000, 59.300, 60.000, 80.000, 100.000, 112.000, 120.000, 150.000, 200.000, 250.000, 500.000, 750.000, 1.000.000, 1.250.000, 1.500.000, 1.750.000, 2.000.000; |
| modulationScheme | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: symbols  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_16\_BIT | Modulation scheme, which is base to the other characteristics described in the same transmissionModeType data type. The modulation scheme shall be described by the number of states in the phase diagram (e.g. BPSK->'2' or 256QAM->'256'). |
| codeRate | Integer  -1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: %  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Code rate of the coding scheme in % (Net bit rate ≤ Gross bit rate · code rate). |
| symbolRateReductionFactor | Integer  1 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Reduction factor for the symbol rate. Example: value would be 4 for 1/4BPSK. |
| txPowerMin | Integer  99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Value of the minimum transmit power the modem can operate in dBm. |
| txPowerMax | Integer  99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Value of the maximum transmit power the modem can operate in dBm. |
| rxThreshold | Integer  99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_16\_BIT | Value of the receive level required to decode the received signal with a Bit Error Rate of 1e-6 or less. |
| amUpshiftLevel | Integer  99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Value of the receive level that has to be exceeded to shift into a higher modulation scheme. |
| amDownshiftLevel | Integer  99 | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: dBm  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: LENGTH\_8\_BIT | Value of the receive level that has to be exceeded for not shifting into a lower modulation scheme. |
| xpicIsAvail | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | In case this transmission mode is capable of XPIC, this attribute shall contain a 'true' value. This information shall strictly relate to the capability of setting an administrative state (xpic-is-on attribute could be configured to have a 'true' value) and is independent of a potential instantaneous operational status change. For example, this attribute might contain a 'true' value, even if an additional cable would have been required to actually operate XPIC at a specific microwave link. |
| supportedAsFixedConfiguration | Boolean  false | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | true = This transmission mode is available for manual configuration when Adaptive Modulation is switched off. |
| modulationSchemeNameAtLct | String  Modulation scheme name not yet defined. | 1 | R | OpenModelAttribute  • partOfObjectKey: 0  • isInvariant: true  • valueRange: no range constraint  • unit: no unit defined  • support: MANDATORY  OpenInterfaceModelAttribute  • AVC: NO  • bitLength: NA | Modulation scheme name, which is together with the applied channel bandwidth identifying this transmission mode at the graphical user interface of the local craft terminal. |

# Data Types

## AcmThresholdCrossAlarmType

Applied Stereotypes:

Attributes for AcmThresholdCrossAlarmType

Table 1: Attributes for AcmThresholdCrossAlarmType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| acmThresholdCrossAlarmDefinitionNumber | Integer  ./. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Sequence number of the definitions. |
| \_transmissionMode | TransmissionMode  ./. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   PassedByReference  OpenInterfaceModelAttribute   * AVC: YES * bitLength: NA |  |
| secondsForRaisingAlarm | Integer  -1 | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: YES * bitLength: LENGTH\_32\_BIT | Number of seconds, in which the referenced transmission mode has to be operated until the threshold cross alarm is raised for this 15min or 24hour period. |
| secondsForClearingAlarm | Integer  -1 | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: YES * bitLength: LENGTH\_32\_BIT | Number of seconds, in which the referenced transmission mode has to be operated until the threshold cross alarm is cleared for this 15min or 24hour period. |
| granularityPeriod | GranularityPeriodType  ./. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 2 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA | Period of the performance data collection. |

## AirInterfaceCurrentPerformanceType

Turns performance information into current performance information by inheriting from OTN\_CurrentData.

Applied Stereotypes:

Attributes for AirInterfaceCurrentPerformanceType

Table 1: Attributes for AirInterfaceCurrentPerformanceType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| performanceData | AirInterfacePerformanceType  ./. | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA |  |

## AirInterfaceHistoricalPerformanceType

Turns performance information into historical performance information by inheriting from OTN\_HistoryData.

Applied Stereotypes:

Attributes for AirInterfaceHistoricalPerformanceType

Table 1: Attributes for AirInterfaceHistoricalPerformanceType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| performanceData | AirInterfacePerformanceType  ./. | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA |  |

## AirInterfacePerformanceType

Consolidated performance information of the air interface.

Applied Stereotypes:

Attributes for AirInterfacePerformanceType

Table 1: Attributes for AirInterfacePerformanceType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| es | Integer  -1 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_32\_BIT | Number of errored seconds. |
| ses | Integer  -1 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_32\_BIT | Number of severely errored seconds. |
| cses | Integer  -1 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_32\_BIT | Number of consecutive severely errored seconds. |
| unavailability | Integer  -1 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_32\_BIT | Total time of unavailability in seconds. |
| txLevelMin | Integer  99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dBm * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Minimum transmit power. Signed integers are required. |
| txLevelMax | Integer  99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dBm * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Maximum transmit power. Signed integers are required. |
| txLevelAvg | Integer  99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dBm * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Averaged transmit power. Signed integers are required. |
| rxLevelMin | Integer  99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dBm * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Minimum receive level. Signed integers are required. |
| rxLevelMax | Integer  99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dBm * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Maximum receive level. Signed integers are required. |
| rxLevelAvg | Integer  99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dBm * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Averaged receive level. Signed integers are required. |
| timeXStatesList | TimeXStatesType  ./. | 1..\* | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA | Time period the transmitter operated in the respective transmission mode. |
| snirMin | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dB * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Minimum signal to (noise+interference) ratio. |
| snirMax | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dB * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Maximum signal to (noise+interference) ratio. |
| snirAvg | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dB * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Averaged signal to (noise+interference) ratio. |
| xpdMin | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dB * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Minimum cross polarization discrimination. |
| xpdMax | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dB * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Maximum cross polarization discrimination. |
| xpdAvg | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: dB * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Averaged cross polarization discrimination. |
| rfTempMin | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: Celsius * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Lowest temperature (in degree Celsius) of the radio module inside the outdoor unit. |
| rfTempMax | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: Celsius * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Highest temperature (in degree Celsius) of the radio module inside the outdoor unit. |
| rfTempAvg | Integer  -99 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: Celsius * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Averaged temperature (in degree Celsius) of the radio module inside the outdoor unit. |
| defectBlocksSum | Integer  -1 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: blocks * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_16\_BIT | Total number of blocks that were defect after receiving and could not be corrected by the FEC. |
| timePeriod | Integer  -1 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_32\_BIT | Total length of the measurement period. |

## G826ThresholdCrossAlarmType

Allows defining a threshold cross alarm.

Applied Stereotypes:

Attributes for G826ThresholdCrossAlarmType

Table 1: Attributes for G826ThresholdCrossAlarmType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| g826ValueKind | G826Type  ./. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA | Kind of performance value that shall be equipped with a threshold alarm. |
| alarmRaisingThreshold | Integer  -1 | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: YES * bitLength: LENGTH\_32\_BIT | Number of events required for raising the threshold cross alarm. |
| alarmClearingThreshold | Integer  -1 | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: YES * bitLength: LENGTH\_32\_BIT | Number of events required for clearing the threshold cross alarm. |
| granularityPeriod | GranularityPeriodType  ./. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 2 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA | Period of the performance data collection. |

## RadioSignalIdType

Applied Stereotypes:

Attributes for RadioSignalIdType

Table 1: Attributes for RadioSignalIdType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| numericRadioSignalID | Integer  -1 | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: YES * bitLength: LENGTH\_32\_BIT | Only relevant if (supportedRadioSignalIdDatatype==INTEGER): 0 = the receiver ignores the signal ID of the received signal. Any other value = the receiver exclusively synchronizes on signals with the same signal ID. -1 = to be used, if numericRadioSignalID is not supported or for expectedRadioSignalID, if it has to equal transmittedRadioSignalID. |
| alphanumericRadioSignalID | String  Not yet defined. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: YES * bitLength: NA | Only relevant if (supportedRadioSignalIdDatatype==STRING): Empty String = the receiver synchronizes on the received signal regardless of the signal ID of the received signal. Any other entry = the receiver exclusively synchronizes on signals with the same signal ID. Not yet defined. = to be used, if alphanumericRadioSignalID is not supported or for expectedRadioSignalID, if it has to equal transmittedRadioSignalID. |

## TimeXStatesType

Applied Stereotypes:

Attributes for TimeXStatesType

Table 1: Attributes for TimeXStatesType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| timeXStateSequenceNumber | Integer  ./. | 1 | R | OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Sequence number of the performance value. |
| \_transmissionMode | TransmissionMode  ./. | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   PassedByReference  OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA | Operated transmission mode. |
| time | Integer  -1 | 1 | R | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: true * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_32\_BIT | Sum of all seconds the transmitter operated the transmission mode. |

## XltsThresholdCrossAlarmType

Applied Stereotypes:

Attributes for XltsThresholdCrossAlarmType

Table 1: Attributes for XltsThresholdCrossAlarmType

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Multiplicity** | **Access** | **Stereotypes** | **Description** |
| levelThresholdSecondKind | XLevelThresholdSecondKindType  ./. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 1 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA | Defines whether receive (RLTS) or transmit (TLTS) level triggers the threshold cross alarm. |
| xltsLevel | Integer  99 | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: dBm * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | If (LevelThresholdSecondKindType==RLTS): Receive level, which has to be undercut, for the performance counter incrementing the number of seconds. If (LevelThresholdSecondKindType==TLTS): Transmit level, which has to be exceeded, for the performance counter incrementing the number of seconds. See also ETSI EN 301 129 V1.1.2 (1999-05). |
| amountOfSeconds | Integer  -1 | 1 | RW | OpenModelAttribute   * partOfObjectKey: 0 * isInvariant: false * valueRange: no range constraint * unit: s * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: YES * bitLength: LENGTH\_32\_BIT | Number of seconds, which has to be exceeded for causing the threshold cross alarm to raise for this period. |
| granularityPeriod | GranularityPeriodType  ./. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 2 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: NA | Period of the performance data collection. |
| xltsThresholdCrossAlarmDefinitionNumber | Integer  ./. | 1 | RW | OpenModelAttribute   * partOfObjectKey: 3 * isInvariant: true * valueRange: no range constraint * unit: no unit defined * support: MANDATORY   OpenInterfaceModelAttribute   * AVC: NO * bitLength: LENGTH\_8\_BIT | Sequence number of the definitions. |

# Enumeration Types

## DirectionType

Contains Enumeration Literals:

* TX:
* RX:
* NONE:

## G826Type

Contains Enumeration Literals:

* ES:
  + Errored Seconds. Threshold cross alarm will relate to TypeDefinitions::AirInterfacePerformanceType::es .
* SES:
  + Severely Errored Seconds. Threshold cross alarm will relate to TypeDefinitions::AirInterfacePerformanceType::ses .
* CSES:
  + Consecutive Severely Errored Seconds. Threshold cross alarm will relate to TypeDefinitions::AirInterfacePerformanceType::cses .
* UAS:
  + Unavailable Seconds. Threshold cross alarm will relate to TypeDefinitions::AirInterfacePerformanceType::unavailability.
* NOT\_SPECIFIED:

## GranularityPeriodType

The enumeration with the options for granularity period of the performance data.

Contains Enumeration Literals:

* UNKNOWN:
* PERIOD-15-MIN:
* PERIOD-24-HOURS:
* NOT\_YET\_DEFINED:

## InterfaceStatusType

Current Interface Status

Contains Enumeration Literals:

* UP:
  + Ready to pass packets. It is expected that the LogicalTerminationPoint::operationalState attribute is expressing this logical layer being available for use (means: ENABLED), while this value occurs.
* DOWN:
  + The interface does not pass any packets. It is expected that the LogicalTerminationPoint::operationalState attribute is expressing this logical layer being NOT available for use (means: DISABLED), while this value occurs.
* TESTING:
  + In some test mode. No operational packets can be passed. It is expected that the LogicalTerminationPoint::operationalState attribute is expressing this logical layer being NOT available for use (means: DISABLED), while this value occurs.
* UNKNOWN:
  + Status cannot be determined for some reason. While this value occurs, the LogicalTerminationPoint::operationalState attribute, which is expressing the availability of the logical layer for being used, might have either ENABLED or DISABLED as value.
* DORMANT:
  + Waiting for some external event. It is expected that the LogicalTerminationPoint::operationalState attribute is expressing this logical layer being available for use (means: ENABLED), while this value occurs.
* NOT\_PRESENT:
  + Some component (typically hardware) is missing. It is expected that the LogicalTerminationPoint::operationalState attribute is expressing this logical layer being NOT available for use (means: DISABLED), while this value occurs.
* NOT\_YET\_DEFINED:
  + While this value occurs, the LogicalTerminationPoint::operationalState attribute, which is expressing the availability of the logical layer for being used, might have either ENABLED or DISABLED as value.

## LayerProtocolNameType

A controlled list of LayerProtocol names.

Contains Enumeration Literals:

* LAYER\_PROTOCOL\_NAME\_TYPE\_AIR\_LAYER:

## LoopBackType

Contains Enumeration Literals:

* RF\_TO\_REMOTE:
  + Returning the header information of the remote site back to the remote site on the radio interface between both outdoor units.
* RF\_TO\_LOCAL:
  + Returning the header information of the local site back to the local site on the radio interface between both outdoor units.
* IF\_TO\_REMOTE:
  + Returning the header information of the remote site back to the remote site on the intermediate frequency interface between local indoor unit and outdoor unit.
* IF\_TO\_LOCAL:
  + Returning the header information of the local site back to the local site on the intermediate frequency interface between local indoor unit and outdoor unit.
* NONE:

## RadioSignalIdDatatypeType

Contains Enumeration Literals:

* INTEGER:
* STRING:
* NOT\_YET\_DEFINED:

## XLevelThresholdSecondKindType

According to ETSI EN 301 129 V1.1.2 (1999-05) chapter B.1.1

Contains Enumeration Literals:

* RLTS:
* TLTS:
* NOT\_YET\_DEFINED:

# Primitive Types