

# #12: Capacity calculation in ONF-TR-532 word/pdf document

Status	EXECUTED
Stakeholders	
Outcome	
Due date	
Owner	Thorsten Heinze

## Decision

Adding an additional chapter to the TR-532 document, which is proposing (but not prescribing) a method for calculating the current air interface capacity from the status attributes of the microwave information model.

Proposing to calculate the air interface capacity =  $\text{AirInterface::AirInterfaceStatus::transmissionModeCur} \rightarrow \text{TransmissionModeType::channelBandwidth} / \text{AirInterface::AirInterfaceStatus::transmissionModeCur} \rightarrow \text{TransmissionModeType::symbolRateReductionFactor} * \log_2(\text{AirInterface::AirInterfaceStatus::transmissionModeCur} \rightarrow \text{TransmissionModeType::modulationScheme}) * \text{AirInterface::AirInterfaceStatus::transmissionModeCur} \rightarrow \text{TransmissionModeType::codeRate} / 1.15$

Explaining the `AirInterface::AirInterfaceStatus::transmissionModeCur->TransmissionModeType::symbolRateReductionFactor` to express a reduced symbol rate e.g. `symbolRateReductionFactor = 4` for ¼ BPSK or `symbolRateReductionFactor = 2` for ½ BPSK.

Adding a calculation prescription into the comments of the `AirInterface::AirInterfaceStatus::codeRateCur` attribute

Prescribing to calculate the `AirInterface::AirInterfaceStatus::codeRateCur` = number of symbols carrying payload information / number of transmitted symbols

Prescribing to calculate the number of symbols carrying payload information = number of transmitted symbols - (number of symbols carrying overhead information + number of redundant symbols for forward error correction)

Ignoring the request for advice for calculating the capacity of different link configurations (example: 1+1HSB), because link configuration does not impact air interface capacity

## Background

Content of the Mantis Bugtracker

Description	<p>The capacity calculation of an <code>airInterface</code> is described in an email but should be part of ONF-TR-532.</p> <p>In addition the algorithm for calculation of <code>AirInterface::AirInterfaceStatus::codeRateCur</code> should be added to this attribute, so that every vendor calculate the code-rate the same way. Not sure, whether a reference implementation in Centennial will help.</p> <p>How to calculate the structure capacity in case of</p> <ul style="list-style-type: none"> <li>- 1:1 between Structure and AirInterface</li> <li>- XPIC</li> <li>- MEMO</li> <li>- Diversity</li> <li>- 1+1 HSB</li> </ul>
Additional Information	<p>[...]</p> <p><math>\text{txCapacity} = \text{AirInterface::AirInterfaceConfiguration::txChannelBandwidth} * \log_2(\text{AirInterface::AirInterfaceStatus::modulationCur}) * \text{AirInterface::AirInterfaceStatus::informationRateCur} / 1,15 ;</math></p> <p><a href="https://login.opennetworking.org/bin/c5i?mid=6&amp;rid=49&amp;k1=36&amp;k2=1882&amp;tid=1489367352">https://login.opennetworking.org/bin/c5i?mid=6&amp;rid=49&amp;k1=36&amp;k2=1882&amp;tid=1489367352</a> [^]</p> <p><code>AirInterface::AirInterfaceStatus::informationRateCur</code> should be replaced by <code>AirInterface::AirInterfaceStatus::codeRateCur</code> according to 161215_TR-532_MW_IM_v1_0.02</p> <p>[...]</p>