

# S9.4.5 SRACs

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## STM ATB

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# 1 Preface

**Text, STMA-78962** - This document gathers copies of the SRACs included in the manuals or the exported constraints to the ETCS on-board.



## 1.1 References

### **Text, STMA-29361 - Reference documents**



All the documents references used in this document can be found in the document  [P6.1](#)

[Bibliography](#) available in the Polarion folder  [Processes](#)

### **Abbreviations, definitions and terminology**


An overview of the abbreviations, definitions and terminology used in this document can be found in document  [P6.2 List of abbreviations, definitions and terms](#) available in the Polarion folder  [Processes](#)

### **Requirement identification**

The STM ATB project makes use of an automated requirement management system. In this system each requirement has been identified as a work item. Each work item has been automatically assigned with a unique ID, with the format "STMA-<number>". As a result requirement ID's are not in logical order. An overview of all the used STMA-numbers is given in document  [P6.3 Requirement Overview](#) available in the Polarion folder  [Processes](#)

## 2 SRACs

### 2.1 Development

**STMA-79830** - Before final homologation of the first train series a safety qualification test shall be performed. The extent of the safety qualification test has to be agreed with the National Safety Authority. [ Verified]

### 2.2 Installation

**STMA-2702** - The minimum reaction time available to the driver shall be 1.7s taking into account the time delays defined below.

*note 1: a longer available driver reaction time shall be aspired.*

*Note 2: Digital outputs may be used for direct communication to a sound generator and/or the EB.*

*Note 3: The use of digital outputs for communication to a sound module, to meet this requirement shall be discouraged.*

*Note 4: The use of digital outputs for commanding the EB, to meet this requirement shall be discouraged.*

*Note 5 The time delays according to UIC models (see above) are assumed to be:*


- $T\_BRAKE\_BUILDUP\_P = 3.8s$
- $T\_BRAKE\_BUILDUP\_G = 16.4s$

$T\_ADDITIONAL$  will be calculated as  $T\_BRAKE\_BUILDUP\_x - T\_BRAKE\_EMERGENCY$   
(set to "0" in case the resulting value is negative)

[ Verified]


#### **STMA-2763 -**

The ETCS on-board shall provide a speed value to the STM ATB which is less than 1.2s older than the real speed value, i.e.

The delay in speed measurement plus the maximum delay in the communication including the time between two speed values being sent via the profibus shall be less than 1.2s [ Verified]

#### **STMA-10382 -**

If the ETCS MODE is "SN" and the "override function is activated" then

The ETCS on-board shall still execute EB commands received from the STM ATB as if the override function is not activated. [ Verified]

#### **STMA-2681 -**

If the "STM state" of the STM ATB (as reported by the STM) is different from DA, then the ETCS

on-board shall not display any ATB information as sent by the STM ATB directly to the DMI. (thus delete the information if the state changes from DA to another state). [🔍 Verified]

#### **STMA-2692 -**

The response on switching on the ETCS on-board plus STM ATB is a responsibility of the ETCS on-board equipment.

The ETCS on-board shall guarantee a safe response if switched on while driving. [🔍 Verified]

**STMA-5126 -** The STMATB will communicate 500ms as "Idle\_cycle\_timeout" value in the connect request telegrams send to the BIU, and send an idle telegram if no other telegram has been sent during 300ms. To maximize the delay in processing an EB-command in case of a lost BIU connection the sum of the following delays may not exceed 1400ms:

- The time between the last idle or data telegram addressed to the BIU is put on the Profibus by the STMATB and the moment the BIU closes the connection, i.e. puts a disconnect telegram at the Profibus.
- The time between the moment the STMATB closes the connection to the STMctrl function (i.e. puts a disconnect telegram addressed to the STMctrl function at the Profibus) and the moment the EVC provides a safe state, i.e. commands the EB by opening the brake loop.

*Note: together with the other delays this will limit the delay in commanding the EB in case of a connection fault to maximum 2s.*

[🔍 Verified]

**STMA-17352 -** The minimum safety level implemented for the connection between the STM ATB and the STM controller function shall be SL2 [🔍 Verified]

**STMA-17349 -** The minimum safety level implemented (and communicated in packet STM-2) for the connection between the STM ATB and the BIU function shall be SL2 [🔍 Verified]

**STMA-17350 -** The minimum safety level implemented (and communicated in packet STM-2) for the connection between the STM ATB and the DMI function (DMI channels) shall be SL0 [🔍 Verified]

**STMA-17347 -** The minimum safety level implemented (and communicated in packet STM-2) for the connection between the STM ATB and the TIU function shall be SL2 [🔍 Verified]

**STMA-14951 -** The risk on having intermittent interruptions of the connection to (or inside) the ATB coils (antenna's) , simultaneously in the left and right coil circuit shall be less than  $1 \cdot 10^{-9}$ /hour. [🔍 Verified]

## 2.3 Maintenance

### **Text, STMA-76734 -**

In case of replacing an STM ATB the replacement shall be a valid version for the concerning vehicle, i.e. a version compliant to the STM ATB specification version with which the vehicle has been homologated.

## 2.4 Usage

### **Text, STMA-75262 - "White Lamp" indicator is "on" while the brakes are not operated.**

If the "White Lamp" indicator is "on" while the brakes are not operated, then the driver shall switch off the STM ATB as to be described in the vehicle specific user manual, and proceed operation at 80km/h up to reaching the first location where the train can be taken out of service. At that location the train shall be taken out of service.

### **Text, STMA-75267 - Unexpected "Cab Signal" different from Yellow (40km/h)**

If a "Cab Signal" is shown which is not expected based on the outside signals, then the driver shall report the location. In case the fault is not due to a known infrastructure issue the train shall be taken out of service at the end station for investigation.

In case of a second "unexpected "Cab Signal" different from Yellow (40km/h)" at a different location, the driver shall switch off the STM ATB as to be described in the vehicle specific user manual, and proceed operation at 80km/h up to reaching the first location where the train can be taken out of service. At that location the train shall be taken out of service.

### **Text, STMA-75282 - Level NTC ATB is not indicated as option at startup**

If level NTC ATB is not presented at the ETCS DMI as an option after start-up, then either the STM ATB is switched off, or the STM ATB didn't pass the self test and didn't start. In such a case, if the train has to run at an ATBEG equipped line, the train shall be taken out of service (at a feasible location).