

**Agenda Item:** 8.6  
**Source:** Ericsson  
**Title:** **General requirements on L3 signalling in 25.103**  
**Document for:** Decision

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## 1 Introduction

This contribution discusses the requirements that have to be set for the UE behaviour when performing normal RRC signalling with UTRAN. An outline of these requirements is proposed to be included into 25.103 [1].

## 2 Discussion

Several procedures controlling the radio network interaction between UTRAN and the UE require a response from the UE. E.g. when UTRAN assigns physical or logical resources to a specific UE, UTRAN expects an answer. If the UE does not answer, a proper UTRAN design could do retransmissions or enter some fault case procedure. The UTRAN actions for this case is implementation dependent and not within the scope of this paper.

However, if the response delay is different between different UEs, it is very hard to design an effective radio network. It is therefore essential that general requirements are set on the UE with respect to response times for normal RRC signalling.

Since, all specifications within WG2 are related to single protocols, and setting requirements regarding response times on protocol level is quite uninteresting; there should be requirements on the total interaction between protocols and physical layer actions. The proper specification for these requirements is within the scope of WG4 and the 25.103 specification.

All the above requirements should be included in the chapter "Timing characteristics".

### 2.1 Signalling response delay

Several messages for signalling require a response from the UE. Some of these messages also include e.g. physical channel establishment. The response delay has therefore been divided into a general processing delay and an action delay. The general processing delay can be tested for messages where no additional actions should be performed by the UE. The additional action delay could then be tested with a similar messages that includes some specific action to be performed by the UE.

### 2.2 Signalling processing

There should also be a general requirement on the highest frequency that the UE can receive and process messages. E.g. that if UTRAN sends an RRC message every  $N^{\text{th}}$  frame it should be possible for the UE to process this message and send a reply or perform the actions required in those messages.

## 3 Proposed text to 25.103

### 17 Timing characteristics

#### 17.4 Signalling requirements

##### 17.4.1 Signalling response delay

For all messages requiring a RRC response to be sent to the network, the UE shall send that response with a maximum delay specified below. This delay consists of several delay parts. The first part is a general processing delay in order to create the response. The second part is dependent on some specific actions the UE shall perform according to that particular message.

The signalling response delay is defined as the time from when the UE receives the RRC message from UTRAN, until the UE successfully has performed actions according to the RRC message and the UE tries to transmit the RRC response message over the Uu interface.

This signalling response delay shall not exceed the sum of general processing delay and all action delays related to the specific RRC message.

TTI for DCCH carrying RRC signalling [ms]	Maximum General processing delay
10	
20	
40	
80	

Delay part caused by a specific action	Maximum delay for this action [ms]
Establishment of new dedicated channel	
Establishment of all radio bearer(s) in one RRC message	
Re-configuration of all radio bearer(s) in one RRC message	
Release of all radio bearer(s) in one RRC message	
...	

For all actions not listed the requirement on delay is zero.

#### 17.4.2 Signalling processing

If several consecutive RRC messages are sent to the UE, the UE shall be able to process the messages in parallel with the receiving of the next messages. The UE shall also perform actions according to the RRC messages and if applicable send answers to the messages in parallel with receiving new messages. The requirement on signalling processing is stated in the table below.

TTI for DCCH carrying RRC signalling [ms]	Maximum number of RRC messages in one TTI
10	
20	
40	
80	

## 4 Proposal

It is proposed that chapter 17.4 of chapter 3 is included in chapter 17 of 25.103 [1].

## 5 References

[1] 3GPP TS 25.103 v2.0.0: "RF Parameters in Support of Radio Resource Management"