

## CHANGE REQUEST

# 25.224 CR 123 # rev 2 # Current version: 3.12.0 #

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

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

<b>Title:</b>	# DTX and Special Bursts in case of no data on S-CCPCH and Beacon Channels #		
<b>Source:</b>	# Siemens #		
<b>Work item code:</b>	# TEI #	<b>Date:</b>	# 27/08/2003 #
<b>Category:</b>	# F #	<b>Release:</b>	# R99 #
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6)

<b>Reason for change:</b> #	<p>In UTRA TDD, S-CCPCH and PDSCH can be sent as Beacon. The Beacon functionality requires that transmission at fixed reference power is always on, i.e. that Node B always transmits “something” on channelization code C(16,1) and midamble shift m(1) in the Beacon TS’s.</p> <p>Unlike P-CCPCH, where availability of broadcast data is virtually guaranteed all the time, the case of no data passed or no valid TB to L1 passed in a given TTI can occur on S-CCPCH and PDSCH. With the current specs, the case of no data would result in DTX on these channels.</p> <p>While this is obviously no problem for any non-Beacon location, if S-CCPCH and PDSCH are mapped to the Beacon, this is an open contradiction with the Beacon functionality which mandates that “something” must be sent on the Beacon Channel every frame.</p> <p>Also, the general case of DTX for S-CCPCH not mapped to Beacon channels when no data is currently not addressed in 25.224 – DTX still refers only to dedicated and shared physical channels.</p>
<b>Summary of change:</b> #	<p>The Special burst shall be transmitted on the Beacon channel in case of no data on S-CCPCH and PDSCH when mapped to the Beacon location.</p> <p>DTX, but no Special Bursts, shall be applied to S-CCPCH in case of no data and when not a Beacon Channel.</p>

**Consequences if not approved:** ⌘ Contradictory behaviour mandated for network equipment in specification (Beacon functionality in 25.221 and 25.224, but DTX implied by 25.222).  
 UE cell search performance degraded and UE inter-mode / inter-RAT neighbor measurements for Handover preparation that require Case 2 SCH allocations, such as GSM is likely to fail (see TDOC GP-03-1983).  
**Isolated impact analysis:**  
 This CR is a correction to a mandated functionality (Beacon function of Physical Channels in Beacon locations) where the current specification (TS25.221 and TS25.224) imposes contradictory requirements (Beacon channel) on the network equipment.  
 If the UE implements this change, but not the network, no impact compared to the current state of the specification, i.e. a UE will still be able to receive “normal” data bursts on secondary Beacons in addition to the Special Burst for the case of no data here. If the network implements the change, but not the UE, no impact - the UE will still be able to receive “normal” data bursts on the secondary Beacon as by current state of the specification.

**Clauses affected:** ⌘ 4.5

	Y	N		
<b>Other specs affected:</b>		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

**Other comments:** ⌘ None

## 4.5 Discontinuous transmission (DTX) ~~of Radio~~ Frames procedure

The DTX procedure ~~is shall be~~ applied ~~to for~~ CCRCHs mapped to ~~dedicated and shared physical channels (S-CCPCH, PUSCH, PDSCH, UL DPCH and, DL DPCH, PUSCH and PDSCH)~~, if the total bit rate of the CCRCH differs from the total channel bit rate of the physical channels allocated to this CCRCH.

Rate matching is used in order to fill resource units completely, that are only partially filled with data. In the case that after rate matching and multiplexing no data at all is to be transmitted in a resource unit the complete resource unit ~~is~~ shall be discarded from transmission (DTX), unless a Special Burst is transmitted in the RU. This applies also to the case where only one resource unit is allocated and no data has to be transmitted.

### 4.5.X Description of Special Bursts

The Special Burst has the same timeslot format as the burst used for data provided by higher layers. If the timeslot format contains a TFCI field, then the TFCI field shall be filled with "0" bits. The Special Burst may also carry layer 1 control symbols such as TPC bits for the purposes of inner-loop power control. The data portions of the Special Burst are filled with an arbitrary bit pattern.

The transmission power of the Special Burst shall be the same as that of the substituted physical channel of the CCRCH. In the case of uplink physical channels where autonomous spreading factor change by the UE is permitted by higher layers, the substituted physical channel is considered to be that which would have been employed for the lowest non-zero rate TFC within the set of allowed TFC's and the transmission power of the Special Burst shall again correspond to that of the physical channel substituted.

### 4.5.1 Use of Special Bursts ~~for~~ during DTX

In the case that after link establishment there are no transport blocks provided for transmission by higher layers for ~~any~~ given CCRCH mapped to UL DPCH, DL DPCH, PUSCH or PDSCH physical channels ~~after link establishment~~, then a Special Burst shall be transmitted in the first allocated frame of the transmission pause. If, including the first frame, there is a consecutive period of Special Burst Period (SBP) frames without transport blocks provided by higher layers, then another ~~s~~Special ~~b~~Burst shall be generated and transmitted at the next possible frame. This pattern shall be continued until transport blocks are provided for the CCRCH by the higher layers. SBP shall be provided by higher layers. The value of SBP shall be independently specified for uplink and for downlink and shall be designated as

SBGP (special burst generation period) for uplink transmissions

SBSP (special burst scheduling parameter) for downlink transmissions

The default value for both SBGP and SBSP shall be 8.

~~This special burst shall have the same slot format as the burst used for data provided by higher layers. The special burst is filled with an arbitrary bit pattern, contains a TFCI and TPC bits if inner loop PC is applied and is transmitted for each CCRCH individually on the physical channel which is defined to carry the TFCI. The TFCI of the special burst is filled with "0" bits. The transmission power of the special burst shall be the same as that of the substituted physical channel of the CCRCH carrying the TFCI.~~

The Special Burst shall be transmitted using the physical channel with the lowest physical channel sequence number (p) as defined by the rate matching function in [9].

Special Bursts shall not be transmitted for CCRCHs mapped to S-CCPCH in non-Beacon locations, i.e. only DTX shall be applied to these physical channels.

## 4.5.2 Use of Special Bursts for Initial Establishment / Reconfiguration

Upon initial establishment or reconfiguration for either 160 ms following detection of in-sync, or until the first transport block is received from higher layers, both the UE and the Node B shall transmit the special burst for each CTrCH mapped to UL DPCH, DL DPCH, PUSCH and PDSCH physical channels. ~~for each assigned resource which was scheduled to include a TFCI.~~

The Special Burst shall be transmitted using the physical channel with the lowest physical channel sequence number ( $p$ ) as defined by the rate matching function in [9].

## 4.5.3 Use of Special Bursts for DTX on Beacon Channels

In the case that a beacon-function physical channel (S-CCPCH or PDSCH) would be DTX'd, then a Special Burst shall be transmitted on the Beacon Channel in that frame instead in order to maintain the beacon functionality.