Agenda item:	**10(?) [Release 4]**
Source:	**Golden Bridge Technology**
Title:	**Modified UE Capability to Support Simultaneous SCCPCH and DPCH in Release 4**
Document for:	**Discussion and Decision**

Introduction

Section 5.2.3 of TS25.306, UE Capability Specification, describes combinations of UE radio access parameters in the uplink for various UE capability classses. In this section there are certain downlink capability parameter combinations listed because they relate to uplink capabilities or to the uplink data rates for the different UE capability classes. Simultaneous reception of SCCPCH and DPCH is listed in this section with a note indicating the relationship between this downlink capability combination and the use of DRAC in the uplink. In fact there are other radio access capabilities which have a direct dependency on the simultaneous reception of SCCPCH and DPCH in the downlink. This contribution modifies this entry in the uplink combination table and expands the associated note to treat three other identified capability dependencies for Release 4.

Discussion

There are four identified UE capability features which relate and depend on the UE capability to simultaneously receive SCCPCH and DPCH. These four are listed and detailed here.

1. DRAC: DRAC control of uplink spreading factor (and uplink power) is achieved by signalling conveyed and broadcast on the SCCPCH. While a UE is receiving a downlink DPCH or a downlink DPCCH (in the case of active PCPCH uplink transmission), that UE will be unable to respond to DRAC signals and DRAC will fail. Under these conditions, the UE capability to simultaneously receive SCCPCH and DPCH is required for DRAC to function properly.

2. PDSCH: PDSCH may be used to carry downlink user or control plane data to the UE in two ways. In one way, the downlink data for each UE is carried by a the high rate PDSCH in non-contiguous segments which are multiplexed with other PDSCH segments intended for other UEs.   In the second way downlink data for each UE is carried simultaneously on the PDSCH and on the associated downlink DPDCH. When using the first mode for PDSCH transmission, the downlink data channel to the UE is discontinuous in time. If the UE is unable to simultaneously receive SCCPCH for FACH reception, the UE will not be able to respond to downlink DRAC commands, cell broadcast transmissions or directed FACH messages. For these reasons, simultaneous reception of SCCPCH and DPCH is recommended for any UE which supports PDSCH.

3. PCPCH: PCPCH is used on the uplink for packet data transmission for UEs in the Cell-FACH state. Packet data transmissions in the uplink may be configured to require acknowledged mode RLC ACKs to be received in the downlink to support continuous uplink transmissions. If the UE does not support simultaneous reception of FACH and DPCCH, the UE will terminate PCPCH uplink access in order to receive RLC ACKs on the FACH. In this way, many more CPCH accesses will be required to transmit any given volume of uplink traffic. Under these conditions, simultaneous reception of SCCPCH and DPCCH during PCPCH uplink transmission is highly recommended and will permit PCPCH transmissions to continue until the RLC buffer is emptied or until N_{Fmax} parameter has been exceeded.

4. Cell Broadcast Transmissions: Cell Broadcast capability permits a single downlink transmission to be simultaneously received by mulitple UEs in that cell. The Cell Broadcast messages are carried on the FACH channel on the SCCPCH. If a UE is in Cell-DCH state and in using a DPCH or PDSCH channel, it will not be able to receive Cell broadcast messages unless it has the capability to simultaneously receive SCCPCH and DPCH. For this reason it is recommended that simultaneous reception of SCCPHC and DPCH be supported for UEs using Cell broadcast services.

The attached draft CR modifies section 5.2.3 of TS25.306 to clarify these capability interdependencies.

Proposal

RAN1 should discuss and agree to the attached draft CR. RAN1 should forward the attached draft CR to RAN2 for discussion, approval and incorporation into the specification.

CR-Form-v3

CHANGE REQUEST

✍   **TS25.306**   **CR**   **xx**   ✍   rev   **-**   ✍   Current version: **3.0.0**   ✍

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

Proposed change affects: ✍   (U)SIM ☐   ME/UE **X**   Radio Access Network ☐   Core Network ☐

Title: ✍	Modified UE Capability for Simultaneous SCCPCH and DPCH
Source: ✍	Golden Bridge Technology,
Work item code: ✍ TEI4	***Date:*** ✍ 28 Feb 2001
Category: ✍ **C**	***Release:*** ✍ REL-4

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
2   *(GSM Phase 2)*
R96   *(Release 1996)*
R97   *(Release 1997)*
R98   *(Release 1998)*
R99   *(Release 1999)*
REL-4   *(Release 4)*
REL-5   *(Release 5)*

Reason for change: ✍	The clarifying Note 2 in section 5.2.3 is incomplete and ambiguous. Simultaneous reception of SCCPCH and DPCH has dependencies on other UE capabilities and should be supported as an option in all UE classes.
Summary of change: ✍	UE capability to support simultaneous SCCPCH and DPCH is modified for certain UE classes. Note 2 in section 5.2.3 is modified for clarification.
Consequences if not approved: ✍	Complex interdependencies between capability combinations in downlink and in uplink will remain untreated and could be ambiguous.

Clauses affected: ✍	5.2.3

Other specs affected: ✍	☐ Other core specifications ✍	
	☐ Test specifications	
	☐ O&M Specifications	

Other comments: ✍	

5.2.3 Combinations of UE Radio Access Parameters for UL

Table 5.2.3.1: UE radio access capability parameter combinations, UL parameters

Reference combination of UE Radio Access capability parameters in UL	32kbps class	64kbps class	128kbps class	384kbps class	768kbps class
Transport channel parameters					
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	NA	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	1	2	2	2	2
Maximum total number of transport blocks transmitted within TTIs that start at the same time	4	8	8	16	32
Maximum number of TFC in the TFCS	16	32	48	64	128
Maximum number of TF	32	32	32	32	64
Support for turbo encoding	No	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)					
Maximum number of DPDCH bits transmitted per 10 ms	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Simultaneous reception of SCCPCH, DPCH and PDSCH NOTE 2	No	No	No	No	No
Support of PCPCH	No	No	No	No	No
Physical channel parameters (TDD)					
Maximum Number of timeslots per frame	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	2
Minimum SF	8	2	2	2	2
Support of PUSCH	Yes/No NOTE 1	Yes	Yes	Yes	Yes

NOTE 1: Options represent different combinations that should be supported with conformance tests.

NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. Simultaneous reception of SCCPCH and DPCH is recommended for support of PDSCH, PCPCH and for Cell Broadcast. In release 99, this is limited to 1 SCCPCH.