

RAB Example 1 Parallel CS + PS and associated SRB

This document details 2 simultaneous RABs and associated SRBs from TS32.108

The RABs are:

1. Conversational symmetrical Circuit Switched 64 kbps
2. Interactive or Background asymmetric Packet Switched 128 kbps DL, 64 kbps UL

The SRB is symmetrical at 3.4 kbps

6.10.2.4.1.52

**Conversational / unknown / UL:64 DL:64 kbps / CS RAB +
Interactive or background / UL:64 DL:128 kbps / PS RAB +
UL:3.4 DL:3.4 kbps SRBs for DCCH**

Uplink

Transport channel parameters

Transport channel parameters for Conversational / unknown / UL:64 kbps / CS RAB

Higher layer	RAB/Signalling RB		RAB
RLC	Logical channel type		DTCH
	RLC mode		TM
	Payload sizes, bit		640
	Max data rate, bps		64000
	TrD PDU header, bit		0
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		640
	TFS	TF0, bits	0x640
		TF1, bits	2x640(alt. 4x640)
	TTI, ms		20(alt. 40)
	Coding type		TC
	CRC, bit		16
	Max number of bits/TTI after channel coding		3948(alt. 7884)
	Uplink: Max number of bits/radio frame before rate matching		1974(alt. 1971)
	RM attribute		150-195

Transport channel parameters for Interactive or background / UL:64 kbps / PS RAB

Higher layer	RAB/Signalling RB		RAB
RLC	Logical channel type		DTCH
	RLC mode		AM
	Payload sizes, bit		320
	Max data rate, bps		64000
	AMD PDU header, bit		16
MAC	MAC header, bit		0
	MAC multiplexing		N/A
Layer 1	TrCH type		DCH
	TB sizes, bit		336
	TFS	TF0, bits	0x336
		TF1, bits	1x336
		TF2, bits	2x336
		TF3, bits	3x336
		TF4, bits	4x336
	TTI, ms		20
	Coding type		TC
	CRC, bit		16
	Max number of bits/TTI after channel coding		4236
	Uplink: Max number of bits/radio frame before rate matching		2118
	RM attribute		130-170

Transport channel parameters for UL:3.4 kbps SRBs for DCCH

Higher layer	RAB/signalling RB User of Radio Bearer	SRB#1 RRC	SRB#2 RRC	SRB#3 NAS_DT High prio	SRB#4 NAS_DT Low prio
RLC	Logical channel type	DCCH	DCCH	DCCH	DCCH
	RLC mode	UM	AM	AM	AM
	Payload sizes, bit	136	128	128	128
	Max data rate, bps	3400	3200	3200	3200
	AMD/UMD PDU header, bit	8	16	16	16
MAC	MAC header, bit	4	4	4	4
	MAC multiplexing	4 logical channel multiplexing			
Layer 1	TrCH type	DCH			
	TB sizes, bit	148 (alt 0, 148)			
	TFS	0x148 (alt 1x0)			
	TF0, bits	1x148			
	TF1, bits				
	TTI, ms	40			
	Coding type	CC 1/3			
	CRC, bit	16			
	Max number of bits/TTI before rate matching	516			
	Uplink: Max number of bits/radio frame before rate matching	129			
	RM attribute	155-185			

TFCS

TFCS size	20
TFCS	(Conv. 64 kbps RAB, I/B 64 kbps RAB, DCCH)= (TF0, TF0, TF0), (TF0, TF1, TF0), (TF0, TF2, TF0), (TF0, TF3, TF0), (TF0, TF4, TF0), (TF1, TF0, TF0), (TF1, TF1, TF0), (TF1, TF2, TF0), (TF1, TF3, TF0), (TF1, TF4, TF0), (TF0, TF0, TF1), (TF0, TF1, TF1), (TF0, TF2, TF1), (TF0, TF3, TF1), (TF0, TF4, TF1), (TF1, TF0, TF1), (TF1, TF1, TF1), (TF1, TF2, TF1), (TF1, TF3, TF1), (TF1, TF4, TF1)

Physical channel parameters

DPCH Uplink	Min spreading factor	8
	Max number of DPDCH data bits/radio frame	4800
	Puncturing Limit	0.88

Downlink

Transport channel parameters

Transport channel parameters for Conversational / unknown / DL:64 kbps / CS RAB

Higher layer	RAB	
RLC	Logical channel type	
	DTCH	
	RLC mode	
	TM	
	Payload sizes, bit	
MAC	640	
	Max data rate, bps	
	64000	
	TrD PDU header, bit	
	0	
Layer 1	MAC header, bit	
	0	
	MAC multiplexing	
	N/A	
	TrCH type	
	DCH	
	TB sizes, bit	
	640	
	TFS	TF0, bits
		0x640
		TF1, bits
		2x640(alt. 4x640)
	TTI, ms	
	20(alt. 40)	
	Coding type	
	TC	
	CRC, bit	
	16	
	Max number of bits/TTI after channel coding	
	3948(alt. 7884)	
	RM attribute	
	150-195	

Transport channel parameters for Interactive or background / DL:128 kbps / PS RAB

Higher layer	RAB	
RLC	RAB/Signalling RB	
	Logical channel type	
	DTCH	
	RLC mode	
	AM	
MAC	Payload sizes, bit	
	320	
	Max data rate, bps	
	128000	
	AMD PDU header, bit	
Layer 1	16	
	MAC header, bit	
	0	
	MAC multiplexing	
	N/A	
	TrCH type	
	DCH	
	TB sizes, bit	
	336	
	TFS	TF0, bits
		0x336
		TF1, bits
		1x336
		TF2, bits
		2x336
		TF3, bits
		4 x336
		TF4, bits
		8 x336
	TTI, ms	
	20	
	Coding type	
	TC	
	CRC, bit	
	16	
	Max number of bits/TTI after channel coding	
	8460	
	RM attribute	
	120-160	

Transport channel parameters for DL:3.4 kbps SRBs for DCCH

Higher layer	RAB/signalling RB		SRB#1	SRB#2	SRB#3	SRB#4
	User of Radio Bearer		RRC	RRC	NAS_DT High prio	NAS_DT Low prio
RLC	Logical channel type		DCCH	DCCH	DCCH	DCCH
	RLC mode		UM	AM	AM	AM
	Payload sizes, bit		136	128	128	128
	Max data rate, bps		3400	3200	3200	3200
	AMD/UMD PDU header, bit		8	16	16	16
MAC	MAC header, bit		4	4	4	4
	MAC multiplexing		4 logical channel multiplexing			
Layer 1	TrCH type		DCH			
	TB sizes, bit		148 (alt 0, 148) (note)			
	TFS	TF0, bits	0x148 (alt 1x0) (note)			
		TF1, bits	1x148			
	TTI, ms		40			
	Coding type		CC 1/3			
	CRC, bit		16			
	Max number of bits/TTI before rate matching		516			
	RM attribute		155-185			
NOTE: alternative parameters enable the measurement "transport channel BLER" in the UE.						

TFCS

TFCS size	20
TFCS	(Conv. 64 kbps RAB, I/B 128 kbps RAB, DCCH)= (TF0, TF0, TF0), (TF0, TF1, TF0), (TF0, TF2, TF0), (TF0, TF3, TF0), (TF0, TF4, TF0), (TF1, TF0, TF0), (TF1, TF1, TF0), (TF1, TF2, TF0), (TF1, TF3, TF0), (TF1, TF4, TF0), (TF0, TF0, TF1), (TF0, TF1, TF1), (TF0, TF2, TF1), (TF0, TF3, TF1), (TF0, TF4, TF1), (TF1, TF0, TF1), (TF1, TF1, TF1), (TF1, TF2, TF1), (TF1, TF3, TF1), (TF1, TF4, TF1)

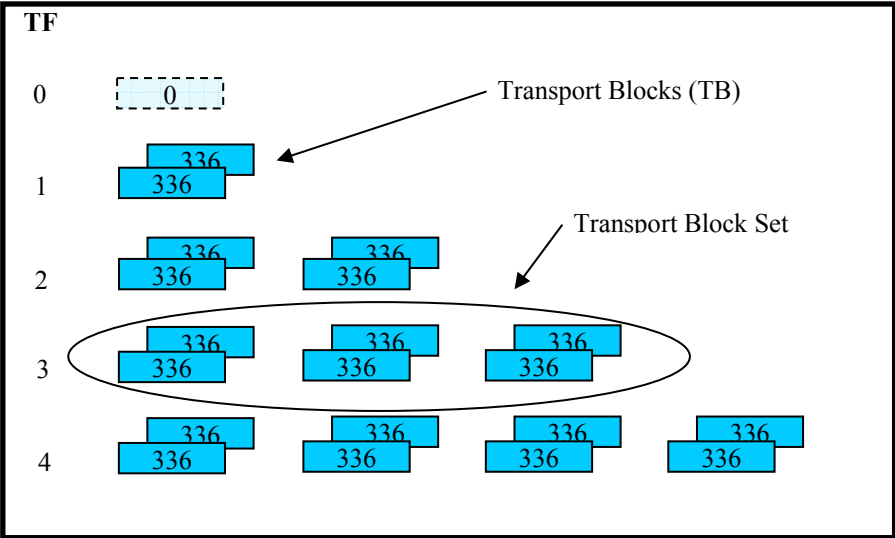
Physical channel parameters

DPCH	DTX position	Flexible
Downlink	Spreading factor	8
	DPCCH	Number of TFCI bits/slot
		8
		Number of TPC bits/slot
		8
		Number of Pilot bits/slot
		16
	DPDCH	Number of data bits/slot
		608
		Number of data bits/frame
		9120

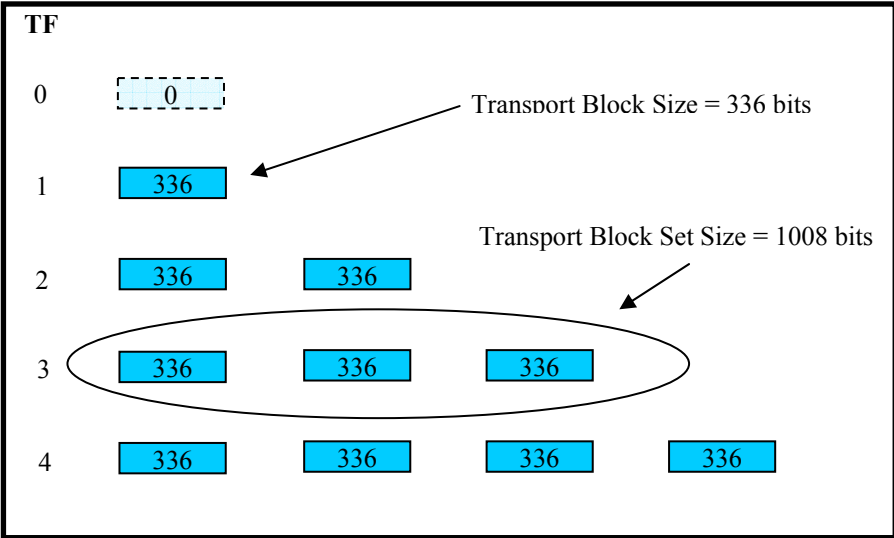
The Transport Format Sets (TFS) of each Transport Channel

(The 6 boxes represent the individual transport channels and show the elements (transport formats) of the 6 Transport Format Sets (TFS))

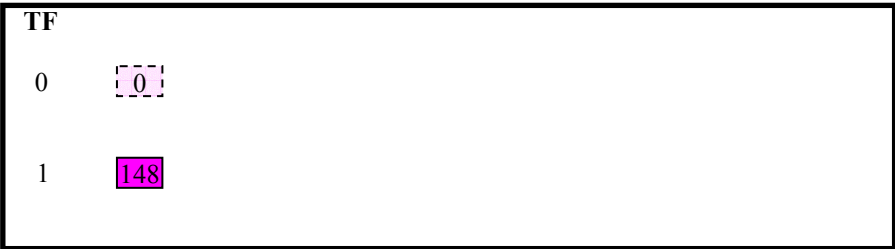
DL I/B 128 kbps RAB Transport Format Set



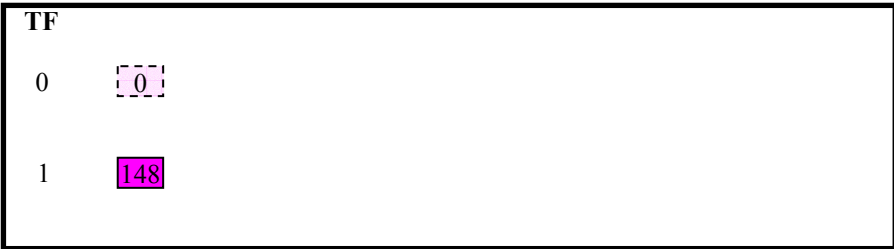
UL I/B 128 kbps RAB Transport Format Set



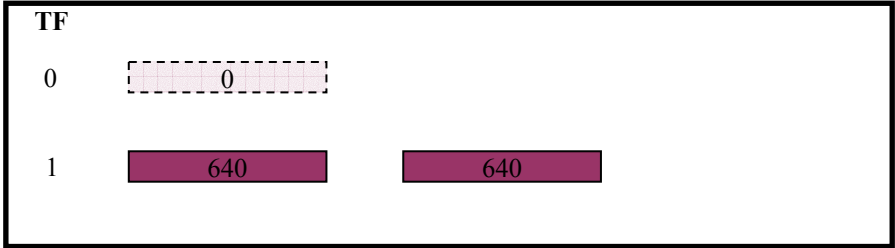
DL 3.4 kbps SRB Transport Format Set



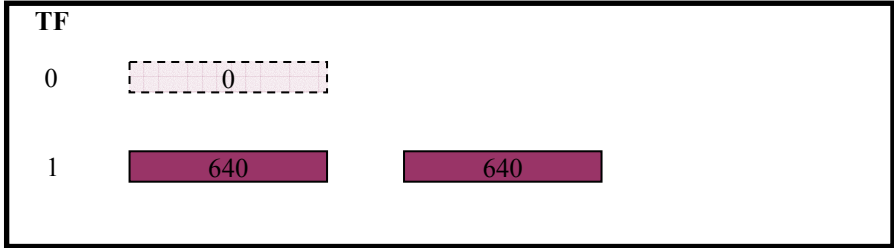
UL 3.4 kbps SRB Transport Format Set



DL Conv 64kbps RAB Transport Format Set

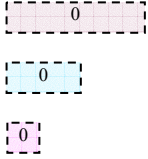
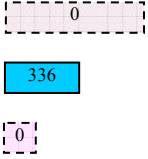
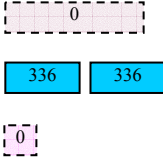
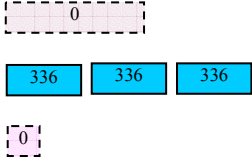
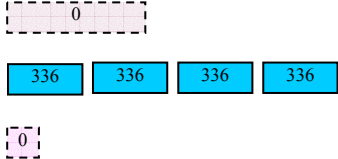
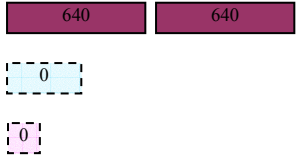
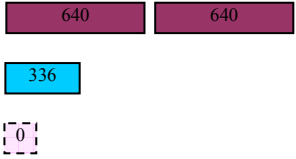
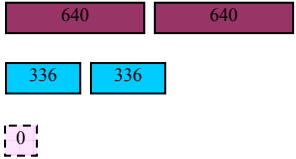
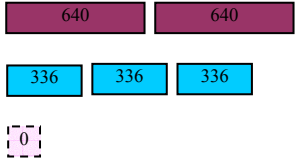
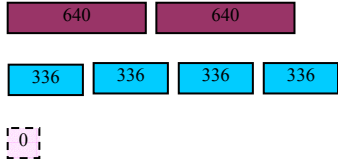
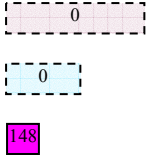
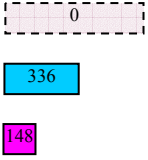
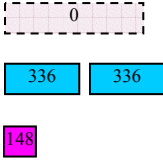
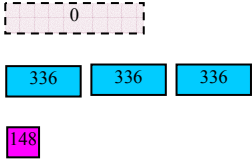
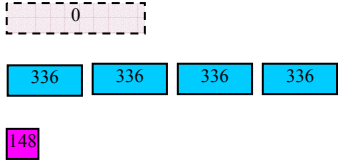
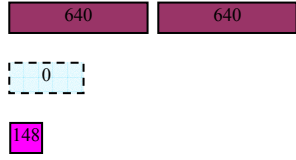
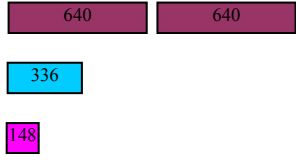
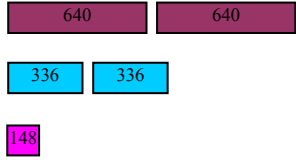
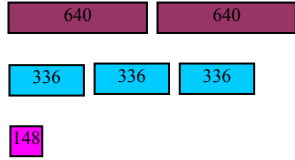
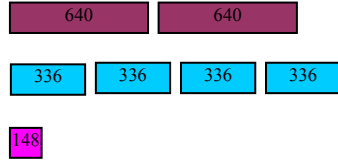


UL Conv 64kbps RAB Transport Format Set



The Uplink Transport Format Combination Set (TFCS)

(Each of the 20 elements in the set represents a possible transport format combination (TFC) of the 3 UL transport channels)

TF0, TF0, TF0 	TF0, TF1, TF0 	TF0, TF2, TF0 	TF0, TF3, TF0 	TF0, TF4, TF0 
TF1, TF0, TF0 	TF1, TF1, TF0 	TF1, TF2, TF0 	TF1, TF3, TF0 	TF1, TF4, TF0 
TF0, TF0, TF1 	TF0, TF1, TF1 	TF0, TF2, TF1 	TF0, TF3, TF1 	TF0, TF4, TF1 
TF1, TF0, TF1 	TF1, TF1, TF1 	TF1, TF2, TF1 	TF1, TF3, TF1 	TF1, TF4, TF1 

The Downlink Transport Format Combination Set (TFCS)

(Each of the 20 elements in the set represents a possible transport format combination (TFC) of the 3 DL transport channels)

TF0, TF0, TF0	TF0, TF1, TF0	TF0, TF2, TF0	TF0, TF3, TF0	TF0, TF4, TF0
TF1, TF0, TF0	TF1, TF1, TF0	TF1, TF2, TF0	TF1, TF3, TF0	TF1, TF4, TF0
TF0, TF0, TF1	TF0, TF1, TF1	TF0, TF2, TF1	TF0, TF3, TF1	TF0, TF4, TF1
TF1, TF0, TF1	TF1, TF1, TF1	TF1, TF2, TF1	TF1, TF3, TF1	TF1, TF4, TF1