Review of the VDL/4 Technical Manual concerning DLS burst formats

EUROCAE WG51/SG2 (VDL/4 MOPS)

Legend:

Changes originating from the review of the DLS burst formats (subject of this report)

Changes originating from the review of the DLS protocol specification (separate action)

Text Proposals:

Table 1-5. Burst format

Description	Octet	Bit number							
		8	7	6	5	4	3	2	1
Flag	-	0	1	1	1	1	1	1	0
Autonomous/directed flag (a/d), reservation ID (rid), version number (ver)	1	s_{27}	s_{26}	s_{25}	ver_3	ver_2	ver_1	rid	a/d
Source address (s)	2	s_{24}	s_{23}	s_{22}	s_{21}	s_{20}	s_{19}	s_{18}	s_{17}
	3	s_{16}	s_{15}	s_{14}	s_{13}	s_{12}	s_{11}	s_{10}	s_9
	4	s_8	s_7	s_6	s_5	s_4	s_3	s_2	s_1
Message ID (mi)	5	mi_k ~~mi_k~~ n_k	~~mi_k~~			mi_4	mi_3	mi_2	mi_1
Information	6	in_k							
	7 - n-5			. . . . .					
	n-4								
Reservation data (rd)	n-3		in_1	rd_k	. . . . .				
Extended reservation ID (erid)	n-2	$erid_k$	. . . . .			erid 1			rd_1
CRC (c)	n-1	c_9	c_{10}	c_{11}	c_{12}	c_{13}	c_{14}	c_{15}	c_{16}
	n	c_1	c_2	c_3	c_4	c_5	c_6	c_7	c_8
Flag	-	0	1	1	1	1	1	1	0

. . . . . Denotes variable length field

1.3.2.3 Message ID

The message ID (mi) of the burst shall be encoded in the variable length field as defined in Table 1-5. The bits of the burst message ID field shall be as defined in Table 1-6a.

Table 1-6a. Message ID assignment

Message ID field								Assigned burst type	VSS user
Mi$_8$	mi 7	mi 6	mi 5	mi 4	mi 3	mi 2	mi$_1$		
x	x	x	x	x	x	x	0	Synchronization burst (see 1.5.3.1.5.2)	LME
x	x	x	x	1	1	0	1	DLS bursts (see 1.4.2.3)	DLS
x	x	x	x	X	0	1	1		
x	x	x	x	x	1	1	1		
1	0	0	1	0	1	0	1		
x	x	1	0	0	1	0	1		
x	0x	0x	1x	0x	0	0	1	General request burst	Defined by r-mi
x	0	0	0	0	1	0	1	No operation	VSS
x	1	0	0	0	1	0	1	Network entry burst	VSS
0	0	0	1	0	1	0	1	Message ID extension to next 4 bits	
x	01	01	11	0	01	0	1	General response burst	Defined by r-mi
x	0	1	1	0	1	0	1	Reserved for future use	
x	1	0	1	0	1	0	1	Reserved for future use	
	0	0	0	1	0	0	1	Reserved for future use	
	0	0	0	1	1	0	1	Reserved for future use	
	0	0	1	0	0	0	1	General response burst	Defined by r-mi
	0	0	1	0	1	0	1		
				To		0	1	Reserved for future use	
	0	0	1	1	1	0	1		
	0	1	0	0	0	0	1	Reserved for future use	
	0	1	0	0	1	0	1		
	0	1	0	1	0	0	1	Reserved for future use	
	0	1	0	1	1	0	1		
	0	1	1	0	0	0	1	DLS burst	DLS
	0	1	1	0	1	0	1	Reserved for future use	
	0	1	1	1	0	0	1	Reserved for future use	
	0	1	1	1	1	0	1	Reserved for future use	
	1	0	0	0	0	0	1	Reserved for future use	
	1	0	0	0	1	0	1	Network entry burst	VSS
	1	0	0	1	0	0	1	Bursts defined in ADS-B application standards	ADS-B application
	1	0	0	1	1	0	1		
				To		0	1	Reserved for future use	

Message ID field								Assigned burst type	VSS user
x	1	1	1	1	1	0	1	x	x
x	0	0	0	0	0	1	1	x	x
x	x	x	x	To	x	1	1	Reserved for future use	x
x	1	1	1	1	1	1	1	x	x

Note.— Bits denoted as x are available for use within the information field.

The message ID shall define the VSS user which is responsible for handling the message, following completion of processing required within the VSS.

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Table 1-50. General request bit encoding

Description	Octet	Bit number							
		8	7	6	5	4	3	2	1
	5	r-mi$_{15}$	0 0 0.			r-mi$_1$0	0	0	1
requested message ID (r-mi)	6	x	r-mi$_n$	. . . . .					r-mi$_{20}$
VSS user specific parameter (prm)	7	prm$_8$	prm$_7$	prm$_6$	Prm$_5$	prm$_4$	prm$_3$	prm$_2$	Prm$_1$
	8	prm$_{16}$	prm$_{15}$	prm$_{14}$	Prm$_{13}$	prm$_{12}$	prm$_{11}$	prm$_{10}$	Prm$_9$
	8+1–3	. . . . .							
	8n–2	prm$_{8n}$	prm$_{8n-1}$	prm$_{8n-2}$	Prm$_{8n-3}$	prm$_{8n-4}$	prm$_{8n-5}$	prm$_{8n-6}$	Prm$_{8n-7}$

	. . . . .		Denotes variable length field

1.3.20.1 General response burst format

A station shall transmit a general response burst (either a general failure or general confirm) as defined in Table 1-52 with the parameters defined in Table 1-53 in response to certain requests from another station as described below. The requested message ID (r-mi) shall indicate the identity of the peer VSS user to which a response is being generated. The general response burst shall include one of the following reservation fields: unicast request reservation, information transfer request or response. The destination subfield contained in the reservation field shall indicate which VSS user is being responded to.

Table 1-52. General response bit encoding

Description	Octet	Bit number							
		8	**7**	**6**	**5**	**4**	**3**	**2**	**1**
Confirm/failure flag (ok)	5	ok	0	0	1	0	0	0	1
Requested message ID (r-mi)	6	res	$r\text{-}mi_k$	. . .					$r\text{-}mi_1$
Reserved bit (res)	7	res	res	res	res	res	res	res	Res
Backoff delay (bd)	8	bd_8	bd_7	bd_6	bd_5	bd_4	bd_3	bd_2	bd_1
error type (err)	9	err_8	err_7	err_6	err_5	err_4	err_3	err_2	err_1
VSS user specific Parameter (prm)	10	prm_8	prm_7	prm_6	Prm_5	prm_4	prm_3	prm_2	prm_1
	11	prm_{16}	prm_{15}	prm_{14}	Prm_{13}	prm_{12}	prm_{11}	prm_{10}	prm_9
	11+n-3	. . . . .							
	12+n-2	prm_{8n} prm_k	prm_{8n-1} prm_{k-1}	prm_{8n-2} prm_{k-2}	Prm_{8n-3} prm_{k-3}	prm_{8n-4} prm_{k-4}	prm_{8n-5} prm_{k-5}	prm_{8n-6} prm_{k-6}	prm_{8n-7} prm_{k-7}

	. . . . .		Denotes variable length field

1.4.2.3 DLS burst formats

1.4.2.3.1 DLS burst

A ~~DLS~~ station that implements the DLS protocol shall transmit the DLS bursts defined in Table 1-57, 1-57e, 1-57f and 1-57g with the VSS user supplied QoS and reservation parameters.

Table 1-57. Normal Unicast DLS burst format

Description	Octet	Bit Number							
		8	7	6	5	4	3	2	1
~~burst~~ message ID	5	res	~~0~~ res	~~?~~ res	~~1~~ res	01	01	0	1
DLS DLPDU	6	As per Section 1.4.2.3.2							
	7								
	8								
	9								
	10								

All bits labelled res are reserved and shall be set to zero.

Note 1.— The DLS DLPDU field may continue past octet 10.

The DLS burst shall consist of one or two DLS DLPDUs combined according to the procedures of Section 1.4.4.12. A DATA DLPDU shall be the final field in the burst (and thus the burst can contain only one of these fields).

Note 2. — DLS burst will be able to combine up to two DLPDUs. DATA and UDATA must come last because they are variable length DLPDUs.

1.4.2.3.2 DLS DLPDU encoding

The DLS DLPDU field shall indicate the DLPDU type and contain, as appropriate, the priority subfield, the more bit, the toggle bit, the initialise bit and length subfield.

DATA DLPDUs shall consist of a single octet containing link control information and a variable length information field~~ and DATA DLPDUs~~ shall be encoded as defined in Table 1-57a.

Table 1-57a. DATA DLPDU encoding

Octet	n								n+1	.....	n+m
Bit	8	7	6	5	4	3	2	1			
CTRL	M	T	re	c/r	~~IB~~res	0	0	0	Information field of length m octets		
INFO	M	T	pr_4	pr_3	pr_2	pr_1	1	0	Information field of length m octets		
~~UCTRL~~Reserved	~~ucid$_4$~~X	~~ucid$_3$~~X	~~ucid$_2$~~X	~~ucid$_1$~~X	0	1	0	0	Information field of length m octets		
~~UINFO~~ Reserved	0	0	0	0	1	1	0	0	Information field of length m octets		
Reserved	X	X	X	1	1	1	0	0	Information field of length m octets		
Reserved	X	X	1	0	1	1	0	0	Information field of length m octets		
Reserved	X	1	0	0	1	1	0	0	Information field of length m octets		
Reserved	1	0	0	0	1	1	0	0	Information field of length m octets		

Note 1.— "X" means 0 or 1.

Note 2. — The c/r bit indicates whether the CTRL DLPDU is a command (c/r=0) or response (c/r=1). The re bit indicates whether a response is expected (re=1) or not (re=0). These subfields are defined in Section1.5.2.6.

Note 3. — The command/response (c/r), response expected (re) and The UCTRL ID (ucid) subfields, are is defined in Table 1-71g. and Section 1.5.2.6.

RTS and SZOM DLPDUs shall consist of two octets containing link control information and shall be encoded as defined in Table 1-57b.

Table 1-57b. RTS Two-Octet DLPDUs encoding

Octet	n								n + 1							
Bit	8	7	6	5	4	3	2	1	8	7	6	5	4	3	2	1
CTRL_RTS	$lg_5$0	T	IB	0	1	0	0	1	pr_4 res	pr_3 res	pr_2 res	pr_1 res	lg_4	lg_3	lg_2	lg_1
INFO_RTS	$lg_5$0	T	0	1	1	0	0	1	pr_4	pr_3	pr_2	pr_1	lg_4	lg_3	lg_2	lg_1
UDATA_RTS	$lg_5$0	0	1	1	1	0	0	1	pr_4	pr_3	pr_2	pr_1	lg_4	lg_3	lg_2	lg_1
SZOM	neg_4	neg_3	neg_2	neg_1	1	1	0	1	seq_8	seq_7	seq_6	seq_5	seq_4	seq_3	seq_2	seq_1
Reserved	$lg_5$0	1	1	1	1	0	0	1	pr_4	pr_3	pr_2	pr_1	lg_4	lg_3	lg_2	lg_1
Reserved	1	X	X	0	1	0	0	1	X	X	X	X	X	X	X	X
Reserved	1	X	0	1	1	0	0	1	X	X	X	X	X	X	X	X
Reserved	1	0	1	1	1	0	0	1	X	X	X	X	X	X	X	X
Reserved	1	1	1	1	1	0	0	1	X	X	X	X	X	X	X	X

Note2.— "X" means 0 or 1.

ACK, CTS and other DLS link control DLPDUs shall consist of one octet containing link control information and. These DLPDUs shall be encoded as defined in Table 1-57c.

Table 1-57c. ACK, CTS and other DLS link controlSingle octet DLPDUs encoding

Octet	N							
Bit	8	7	6	5	4	3	2	1
UDATA_CTS	0	0	1	1	1	0	1	1
INFO_ACK	0	T	0	1	0	0	0	1
INFO_CTS	0	Tres	0	1	1	0	1	1
CTRL_ACK	0	T	IBres	0	0	0	0	1
CTRL_CTS	0	Tres	IBres	0	1	0	1	1
Reserved	0	X	X	1	0	1	0	1
FRMR_ACK	1	0	0	1	0	0	0	1
FRMR	1	0	0	1	0	1	0	1
DM/DISC	1	0	1	1	0	1	0	1
DM/FRMR	1	1	1	1	0	1	0	1
Reserved	1	0	1	1	1	0	1	1
Reserved	1	1	0	1	0	0	0	1
Reserved	1	X	0	1	1	0	1	1
Reserved	1	X	X	0	0	0	0	1
Reserved	X	X	X	0	0	1	0	1
Reserved	1	X	X	0	1	0	1	1
Reserved	X	X	1	1	0	0	0	1
Reserved	X	X	X	X	0	0	1	1
Reserved	1	1	X0	1	0	1	0	1
Reserved	X	X	X	X	0	1	1	1
Reserved	X	1	1	1	1	0	1	1
SZOM	neg_4	neg_3	neg_2	neg_1	1	1	0	1

Reserved	X	X	X	X	1	1	1	1

Note 4.— "X" means 0 or 1.

All reserved header bits (labelled "res") ~~are reserved and~~ shall be set to zero on transmit and ignored on reciept.

A station receiving a reserved DLPDU from a peer with which it has a link shall reset the link in accordance with the procedures of setion 1.4.4.11. A station receiving a reserved DLPDU from a peer with which is does not have a link shall either respond with a DM/DISC, DM/FRMR or simply ignore the DLPDU.

1.4.2.3.3 Toggle bit

The T (Toggle) bit shall be alternately set to zero and one on each successful transmission..

At the start of a communication between two stations, or when the link is reset, the toggle bit shall be initiated according to the procedures of Section 1.4.3.3.1 for NSCOP communication and Section 1.4.3.3.2 for ZOCOP communication.

Note.—The T (Toggle) bit is sufficient to provide duplicate detection and rejection.

1.4.2.3.4 More bit

The M (More) bit shall be set to zero to indicate the end of a user data packet and to one to indicate that this fragment is not the last fragment in a multi-fragment user data packet and that further fragments will be transmitted.

Note.—The M (More) bit is set to 0 if a user data packet is sent as a single fragment or on the last fragment of a fragmented user data packet and to 1 otherwise. The receiver reassembles a fragmented user data packet on reception before passing it to the user.

1.4.2.3.5 Priority subfield

The priority subfield (pr) shall indicate the priority level of the transmission as defined in Section 1.4.1.6.

1.4.2.3.6 Length subfield

The length subfield (lg) shall indicate the length of the DLS burst containing a DATA DLPDU in slots. It shall be encoded as one less than the absolute length.

Note. — The calculation of length needs to take account of the size of the reservation protocol (default is response) and the effects of bit stuffing. A length of 1 slot would be encoded as 0000 binary and the maximum length of 16 slots would be encoded as 1111 binary.

1.4.2.3.7 Initialise bit

~~When~~ Prior to sending a CTRL_RTS or upon receipt of a CTRL_RTS with the IB (~~I~~nitialise~~) bB~~it~~)~~ is~~ set to one the ~~receiver~~ station shall initialise the T_t and T_r state variables and clear the send and receive arrays ~~whilst processing the DLPDU~~.

Note.— See Section 1.4.4.3.3.1 for the handling of INFO and CTRL DLPDUs in the process of being sent.

1.4.2.3.8 Negotiation subfield

The negotiation (neg) subfield shall indicate the link management parameters to be used for ZOCOP link control as defined in Table 1-57d:

Table 1-57d. Interpretation of negotiation subfield

Negotiation subfield	Parameters to use for ZOCOP link
0	VDL Mode 4 default parameters for version 0
1 – 15	reserved for future use

1.4.2.3.9 SZOM Sequence subfield

The SZOM sequence (seq) subfield shall indicate the SZOM sequence number.

1.4.2.3.10 UDATA DLPDU encoding

A DLS station wishing to send a UDATA shall transmit the UDATA burst defined in Table 1-57e with the VSS user supplied QoS and reservation parameters. The DLS station shall select between Tables 1-57e, 1-57f, or 1-57g based on the user data id (udid) of the message as defined by Table 1-57h.

Table 1-57e. One-byte UDATA burst format

Description	Octet	Bit Number							
		8	7	6	5	4	3	2	1
Message ID, UDATA user id	5	ud1$_8$	ud1$_7$	ud1$_6$	ud1$_5$	ud1$_4$	ucd	1	1
UDATA DLPDU	6	Information field							
	7								
	8								
	9								
	10								

Table 1-57f – Two byte UDATA burst format

Description	Octet	Bit Number							
		8	7	6	5	4	3	2	1
Message ID	5	1	1	1	1	0	ucd	1	1
UDATA user id	6	ud2$_8$	ud2$_7$	ud2$_6$	ud2$_5$	ud2$_4$	ud2$_3$	ud2$_2$	ud2$_1$
UDATA DLPDU	7	Information field							
	8								
	9								
	10								
	11								

Table 1-57g – Three-byte UDATA burst format

Description	Octet	Bit Number							
		8	7	6	5	4	3	2	1
Message ID	5	1	1	1	1	1	ucd	1	1
UDATA user id	6	ud3$_{16}$	ud3$_{15}$	ud3$_{14}$	ud3$_{13}$	ud3$_{12}$	ud3$_{11}$	ud3$_{10}$	ud3$_9$
	7	ud3$_8$	ud3$_7$	ud3$_6$	ud3$_5$	ud3$_4$	ud3$_3$	ud3$_2$	ud3$_1$
UDATA DLPDU	8	Information field							
	9								
	10								
	11								
	12								

Note 1.— The UDATA DLPDU field may be up to ND4 octets long.~~continue past octet 12.~~

A DLS station sending a UCTRL shall set ucd to 0 and encode the appropriate ud field to the value of ucid per Table 1-57h. A DLS station sending a UINFO shall set ucd to 1 and encode the appropriate ud field to the value of uinf per Table 1-57h.

Table 1-57h. Encoding of the UDATA id value

UDATA id	Encoded by
0-29	Table 1-57e, ud1 = udid
30-285	Table 1-57f, ud2 = udid – 30
286-65821	Table 1-57g, ud3 = udid – 286

Note 2.— The UCTRL ID (ucid) subfield, is defined in Table 1-71g. The UINFO ID (uinf) subfield is defined in Table 1-57i

Table 1-57i. UINFO ID assignments

UINFO id	**Assignment**
0-60000	Reserved for future use
60001-65821	Messages reserved for transmission by ground station only and defined by ground station operator

1.4.2.3.12 Compressed combined RTS/INFO DLPDU encoding (type 1)

A DLS station wishing to send a combined RTS and INFO DLPDU according to the procedures of Section 1.4.4.12 when the priority of the RTS is different to that of the INFO packet shall transmit the compressed combined RTS/INFO (type 1) burst defined in Table 1-57i with the VSS user supplied QoS and reservation parameters. The T bit for the RTS shall be the inverse of the INFO T bit.

Table 1-57i. Compressed combined RTS/INFO (type 1) burst format

Description	Octet	Bit Number							
		8	7	6	5	4	3	2	1
Message ID	5	1	0	0	1	0	1	0	1
RTS priority and length	6	pr_4	pr_3	pr_2	pr_1	lg_4	lg_3	lg_2	lg_1
INFO priority, M and T	7	M	T	pr_4	pr_3	pr_2	pr_1	res	res
Compressed RTS/INFO (type 1) DLPDU	8	Information field							
	9								
	10								
	11								
	12								

Note.— The compressed combined RTS/INFO (type 1) DLPDU field may continue past octet 12.

1.4.2.3.13 Compressed combined RTS/INFO DLPDU encoding (type 2)

A DLS station wishing to send a combined RTS and INFO DLPDU according to the procedures of Section 1.4.4.12 when the priority of the RTS is the same as that of the INFO packet shall transmit the compressed combined RTS/INFO (type 2) burst defined in Table 1-57j with the VSS user supplied QoS and reservation parameters. The T bit for the RTS shall be the inverse of the INFO T bit and the priority the same as the INFO priority.

Table 1-57j. Compressed combined RTS/INFO (type 2) burst format

Description	Octet	Bit Number							
		8	7	6	5	4	3	2	1
Message ID, INFO M/T bits	5	M	T	1	0	0	1	0	1
RTS/INFO priority and RTS length	6	pr_4	pr_3	pr_2	pr_1	lg_4	lg_3	lg_2	lg_1
Compresssed RTS/INFO (type 2) DLPDU	7	Information field							
	8								
	9								
	10								
	11								

Note 1.— The compressed combined RTS/INFO (type 1) DLPDU field may continue past octet 11.

Note 2.- This burst format is intended to be used to link M-bit sequences where each fragment is part of the same user data packet and hence has the same priority.

1.4.3 DLS system parameters

The parameters needed by the DLS sublayer shall be as listed in Table 1-58.

DLS parameters for NSCOP communications shall be determined during the exchange of CTRL DLPDUs, if the default values are not to be used.

DLS parameters for ZOCOP communications shall be determined by the exchange of the negotiation subfield within the SZOM DLPDU.

Table 1-58. Data link service system parameters

Symbol	Parameter name	Minimum	Maximum	Default	Increment
TD1	ZOCOP link transmit reset timer	5 s	600 s	60 s	1 s
TD2	ZOCOP link receive reset timer	10 s	1200 s	90 s	1 s
ND1	Maximum number of octets in any user data packet	143 octets	2063 octets	1511 octets	1 octet
ND2	Maximum length of DLS transmission	2 octets	~~2063~~ 496 octets	86 octets	1 octet
ND3	Maximum length of fragment	1 slot	~~32~~ 16 slots	5 slots	1 slot
ND4	Maximum length of UDATA burst	23 octets	496 octets	271 octets	1 octet

Note 1.- The value of ND3 should be chosen such that the length of each DLS transmission containing the fragment is less than the maximum length of the DLS transmission defined by ND1.

Note 2.-- Keep-alives have been eliminated from the protocol as peer presence is performed with sync bursts and ground stations transmit an alert on startup per Section 1.5.5.1.3.1 or the ground system transmits a broadcast connection handoff.

Table 3-18. ADS-B request bit encoding

Description	Octet	Bit number							
		8	7	6	5	4	3	2	1
r-mi$_1$ (bit 8-4 = 0), burst ID Autonomous monitoring (sleep), Autonomous information (auto), Requested base altitude (r-b/a)	5	sleep 0	auto 0	r-b/a$_2$0	r-b/a$_1$0	0	0	0	1
~~Autonomous monitoring (sleep),~~	~~6~~	~~sleep~~	~~auto~~	~~res~~	~~res~~	~~res~~	~~res~~	~~r-b/a$_2$~~	~~r-b/a$_1$~~
~~Autonomous information (auto), Requested base altitude (r-b/a) ,~~ Auxiliary information (aux) Auxiliary information as required	~~7~~ 6 to m	see Tables 3-19 and 3-20							

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Table 3-19. ADS-B request bit encoding for sleep mode parameters when sleep bit = 1

Description	Octet	Bit number							
		8	7	6	5	4	3	2	1
Secondary reporting rate (snr), maximum sleep velocity (vel)	6~~7~~	snr$_4$	snr$_3$	snr$_2$	snr$_1$	vel$_4$	vel$_3$	vel$_2$	vel$_1$
Maximum sleep position (pos)	7~~8~~	pos$_8$	pos$_7$	pos$_6$	pos$_5$	pos$_4$	pos$_3$	pos$_2$	pos$_1$

…

Table 3-20. ADS-B request bit encoding for auto parameters when auto bit = 1

Description	Octet	Bit number							
		8	7	6	5	4	3	2	1
Length (lg), auxiliary data (aux), requested information field ID (r-id) ~~(included if auto = 0)~~*	k	lg$_2$	lg$_1$	aux$_2$	aux$_1$	r-id$_4$	r-id$_3$	r-id$_2$	r-id$_1$

* The r-id field may continue into additional octets depending on the variable part requested.

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Table 3-22. Example ADS-B request bit encoding for sleep mode with request for high-precision variable part

Description	Octet	Bit number							
		8	7	6	5	4	3	2	1
r-mi$_1$ (bit 8-4 = 0), burst ID Autonomous monitoring (sleep), Autonomous information (auto), Requested base altitude (r-b/a)	5	sleep (1)0	auto (1)0	r-b/a 0	r-b/a 0	0	0	0	1
~~Autonomous monitoring (sleep), Autonomous information (auto), Requested base altitude (r-b/a)~~	~~6~~	~~sleep (1)~~	~~auto (1)~~	~~res (0)~~	~~res (0)~~	~~res (0)~~	~~res (0)~~	~~r-b/a$_2$~~	~~r-b/a$_1$~~
Secondary reporting rate (snr), maximum sleep velocity (vel)	~~76~~	snr$_4$ (1)	snr$_3$ (1)	snr$_2$ (0)	snr$_1$ (1)	vel$_4$ (0)	vel$_3$ (1)	vel$_2$ (0)	vel$_1$ (0)
Maximum sleep position (pos)	~~87~~	pos$_8$ (0)	pos$_7$ (0)	pos$_6$ (0)	pos$_5$ (0)	pos$_4$ (1)	pos$_3$ (0)	pos$_2$ (1)	pos$_1$ (0)
Requested information field ID (r-id) ~~(included if auto = 0)~~	~~98~~	lg$_2$ (0)	lg$_1$ (0)	aux$_2$ (0)	aux$_1$ (0)	r-id$_4$ (1)	r-id$_3$ (0)	r-id$_2$ (1)	r-id$_1$ (0)