Table 1: S2X System configurations and application areas

System configurations		Broadcast services	Interactive services	DSNG	Professional services	VL-SNR
FECFRAME (normal) (see MODCODs below)	64 800 (bits)					
QPSK	1/4,1/3, 2/5 (S2-MODCODs)	N	N	N	N	N
	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (S2-MODCODs)	N	N	N	N	N
	13/45	N	N	N	N	N
	9/20; 11/20	N	N	N	N	N
8PSK	3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (S2-MODCODs)	N	N	N	N	N
	23/36; 25/36; 13/18	N	N	N	N	N
8APSK-L (note 7)	5/9;26/45	N	N	N	N	N
16APSK	2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (S2-MODCODs)	N	N	N	N	N
	26/45; 3/5; 28/45; 23/36; 25/36; 13/18; 7/9; 77/90	N	N	N	N	N
16APSK-L (note 7)	5/9; 8/15; 1/2; 3/5; 2/3	N	N	N	N	N
32APSK	3/4, 4/5, 5/6, 8/9, 9/10 (S2-MODCODs)	N	N	N	N	N
	32/45; 11/15; 7/9	N	N	N	N	N
32APSK-L (note 7)	2/3	N	N	N	N	N
64APSK	11/15; 7/9; 4/5; 5/6	O	N	N	N	O
64APSK-L (note 7)	32/45	O	N	N	N	O
128APSK	3/4; 7/9	NA	O	O	N	NA
256APSK	32/45; 3/4	NA	O	O	N	NA
256APSK-L (note 7)	29/45; 2/3; 31/45; 11/15	NA	O	O	N	NA
FECFRAME (short) (see MODCODs below)	16 200 (bits)					
QPSK	1/4,1/3, 2/5 (S2-MODCODs)	NA	N	O	N	N
	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9 (S2-MODCODs)	NA	N	O	N	N
	11/45; 4/15; 14/45; 7/15 8/15; 32/45	NA	N	O	N	N
8PSK	3/5, 2/3, 3/4, 5/6, 8/9 (S2-MODCODs)	NA	N	O	N	N
	7/15; 8/15; 26/45; 32/45	NA	N	O	N	N
16APSK	2/3, 3/4, 4/5, 5/6, 8/9 (S2-MODCODs)	NA	N	O	N	N
	7/15; 8/15; 26/45; 3/5; 32/45	NA	N	O	N	N

System configurations		Broadcast services	Interactive services	DSNG	Professional services	VL-SNR
32APSK	3/4, 4/5, 5/6, 8/9 (S2-MODCODs)	NA	N	O	N	N
	2/3; 32/45	NA	N	O	N	N
VL-SNR Header (see MODCODs below) (note 1)		O	O	O	NA	N
QPSK	2/9 (normal)	NA	O	O	NA	N
BPSK	1/5; 4/15; 1/3 (short) 1/5; 11/45; 1/3 (medium)	NA	O	O	NA	N
BPSK-S Spreading Factor 2	1/5; 11/45 (short)	NA	O	O	NA	N
Fixed Size Super-frame (notes 8 and 11)		NA	O	O	O	O/NA (note 9)
Part 2 PLHEADER (note 5)	8-bits	N	N	N	N	N
Extended PLHEADER For Wide-band mode (note 5)	8+8 bits (time slicing)	O	O	NA	O	O
GSE-High Efficiency Mode	For GSE/GSE-Lite (note 6)	N	N	N	N	N
Roll-off 0,15; 0,10 and 0,05		N	N	N	N	N
Channel bonding (note 2)		N (note 3)	NA	NA	O	NA
VCM (note 4)		N	N	N	N	N
ACM		NA	N	O	O	N
Beam Hopping Periodic BH, VLSNR (note 8) (Superframe Format 5) (note 10)		O	O	O	O	O
Traffic driven BH VLSNR (note 8) (Superframe Format 6)		O	O	O	O	O

System configurations		Broadcast services	Interactive services	DSNG	Professional services	VL-SNR
Traffic driven BH, no VL-SNR (note 8) (Superframe Format 7)		O	O	O	O	NA
N = normative, O = optional, NA = not applicable.						
NOTE 1: Ability to skip VL-SNR frames: Normative. NOTE 2: Requires Input Stream Synchronizer, Null-Packet Deletion and Dummy Frame insertion. NOTE 3: Normative for broadcast services in case of optional multiple tuner receivers. NOTE 4: Any S2X receiver shall be able to recognize the whole set of MODCODS within the PLHeader and skip the XFECFrame if the MODCOD is not supported. NOTE 5: The present document, PLHEADER and Extended PLHEADER for wideband transponders (ETSI EN 302 307-1 [3] or ETSI EN 302 307-2 (the present document), Annex M) cannot coexist in the same carrier but either can coexist with the VL-SNR header. NOTE 6: GSE is optional while support for GSE-Lite in GSE-HEM is normative across all the services. NOTE 7: xxx-L= MODCODs optimized for quasi-linear channels. NOTE 8: Each of the Annex E formats are individually optional. NOTE 9: Not all Annex E Super-Frame Formats support VL-SNR. They are different from the VL-SNR XFECFRAMEs in clause 5.5.2. NOTE 10: Format 5 can also be used for continuous transmission scenarios. NOTE 11: Fixed size Superframes refer to Annex E Formats 0, 1, 2, 3 and 4.						