

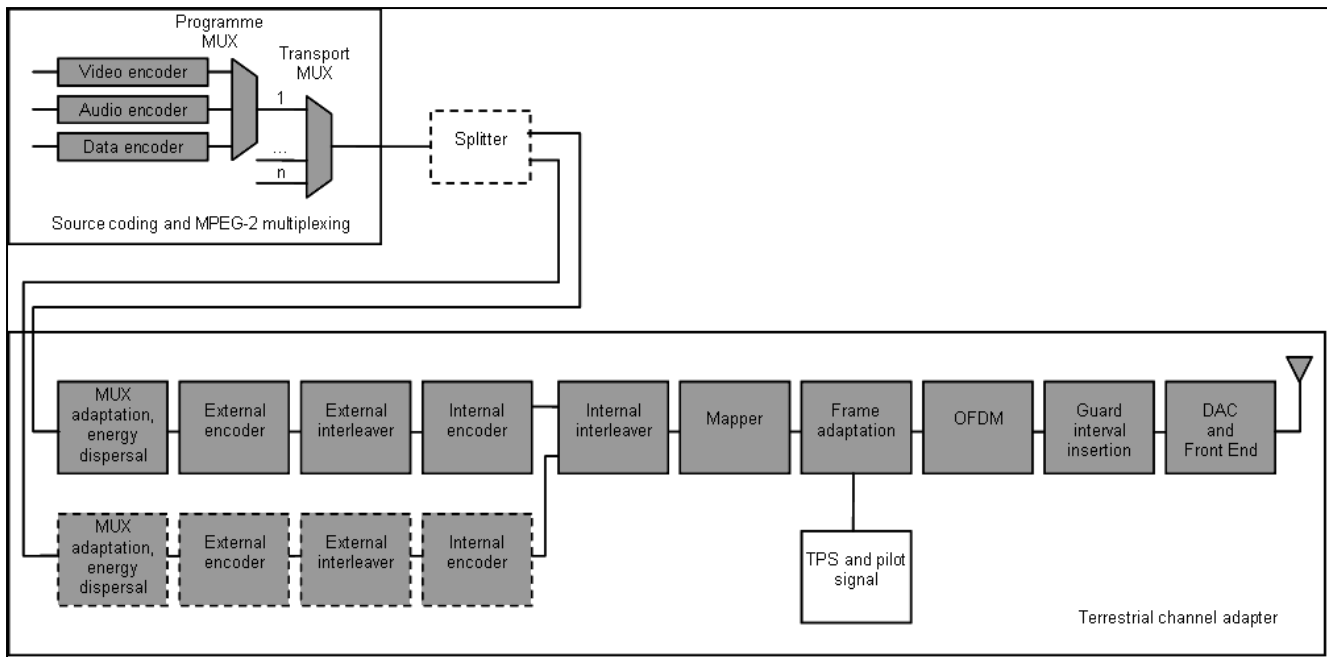


Figure 1: Chaîne de transmission DVB-T

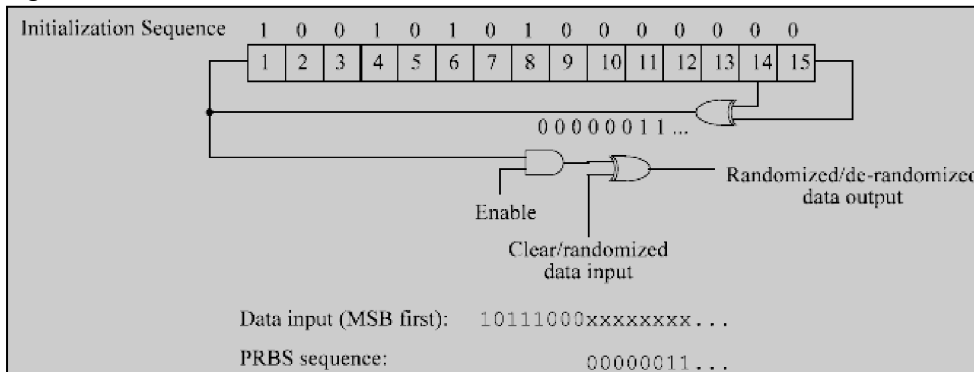
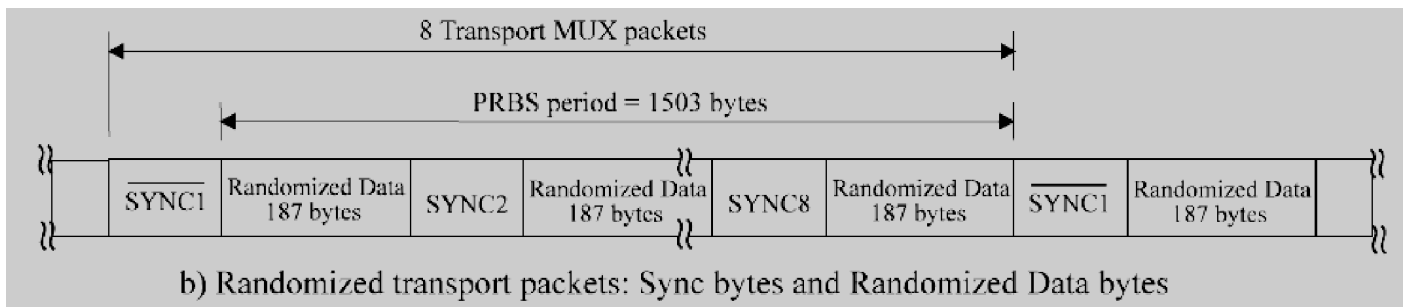
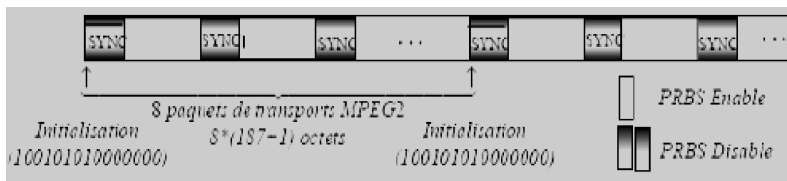


Figure 2:

Scrambler/descrambler schematic diagram



b) Randomized transport packets: Sync bytes and Randomized Data bytes

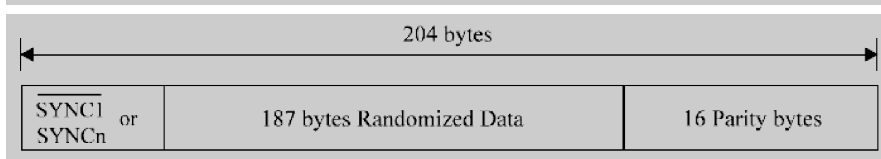


Figure 3:

c) Reed-Solomon RS(204,188,8) error protected packets

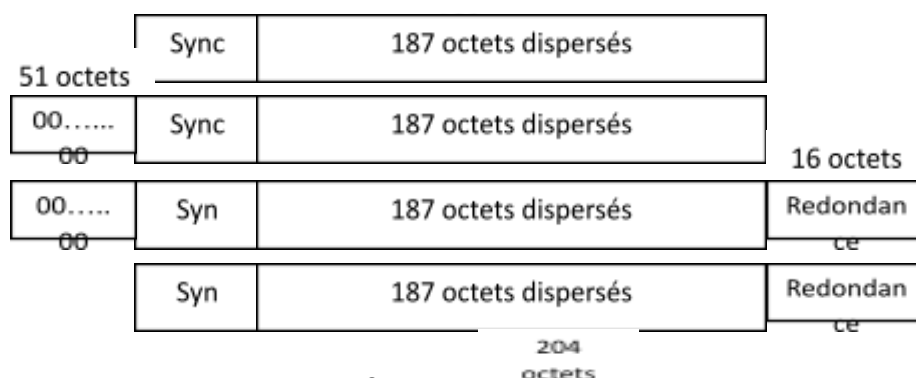


Figure 4: Raccourcissement du code de Reed-Salomon

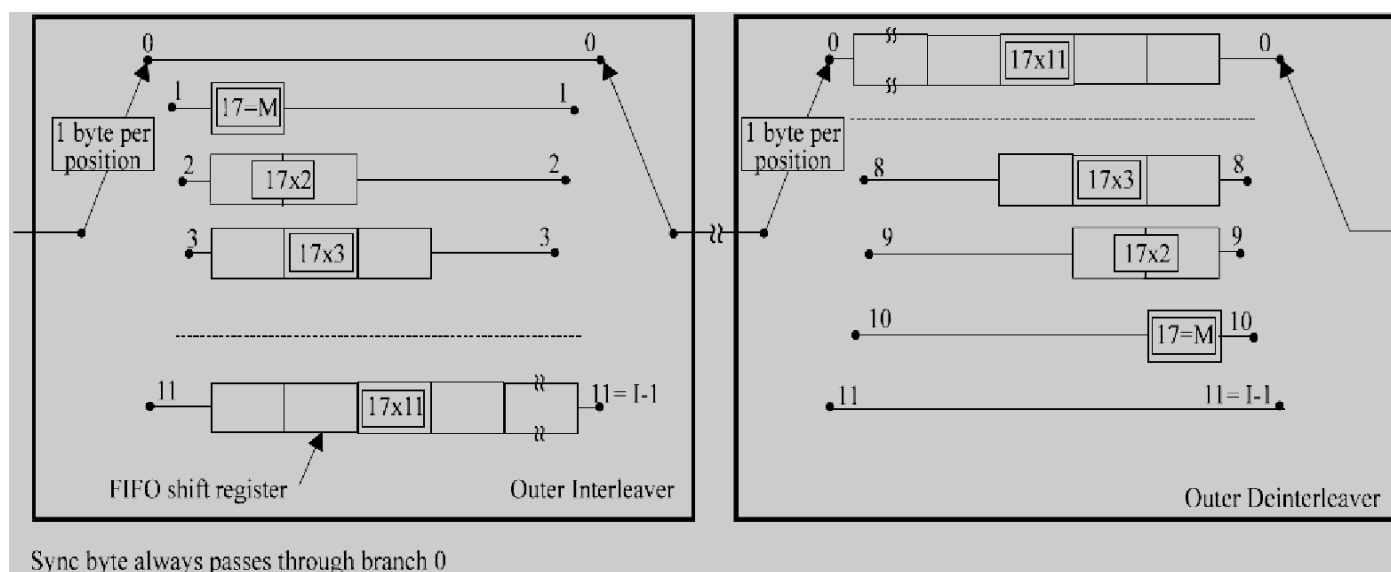


Figure 5: L'entrelaceur et le désentrelaceur

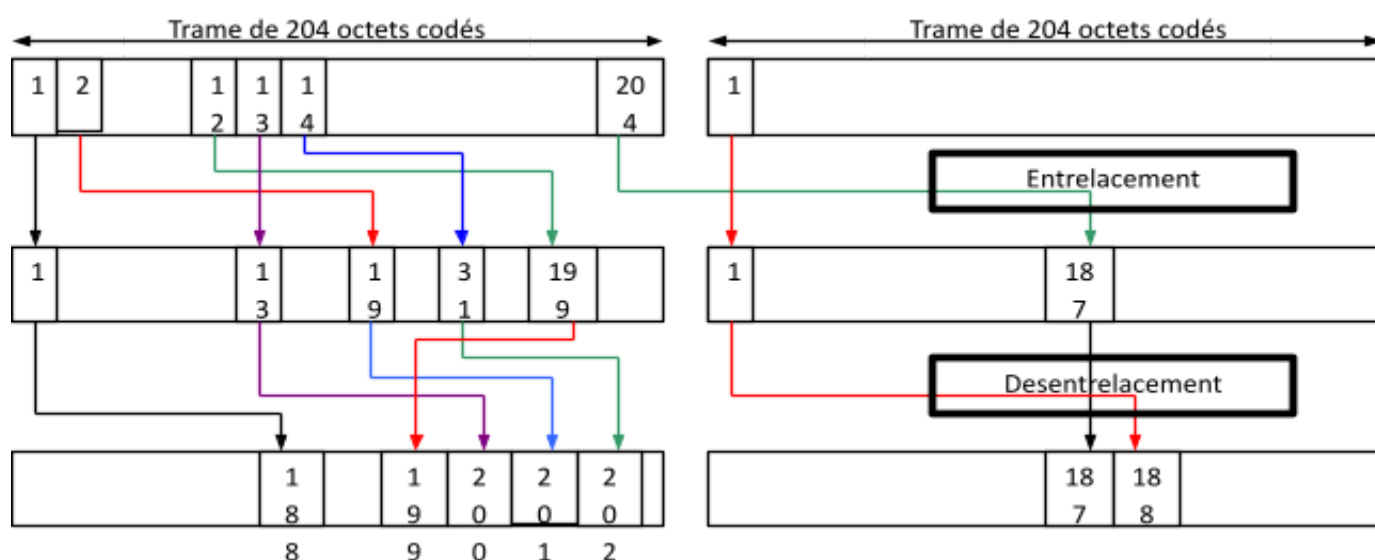


Figure 6: Entrelacement et désentrelacement

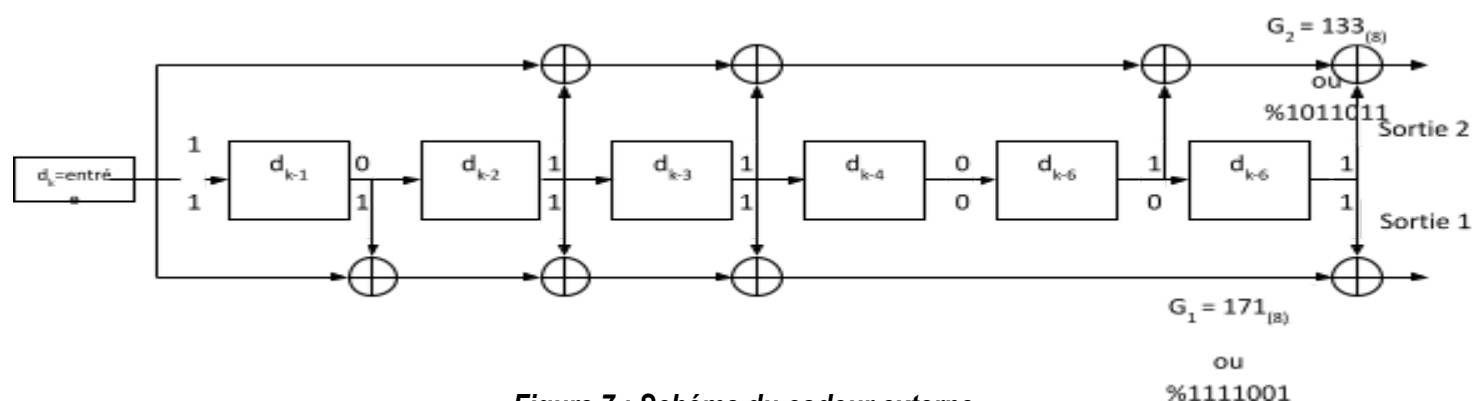


Figure 7 : Schéma du codeur externe

R_c	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{5}{6}$	$\frac{7}{8}$
d_{free}	10	6	5	4	3
X	1	10	101	10101	1000101
Y	1	11	110	11010	1111010
I	X_1	$X_1Y_2Y_3$	X_1Y_2	$X_1Y_2Y_4$	$X_1Y_2Y_4Y_6$
Q	Y_1	$Y_1X_3Y_4$	Y_1X_3	$Y_1X_3X_5$	$Y_1Y_3X_5X_7$

Tableau 1: Poinçonnage du code convolutif

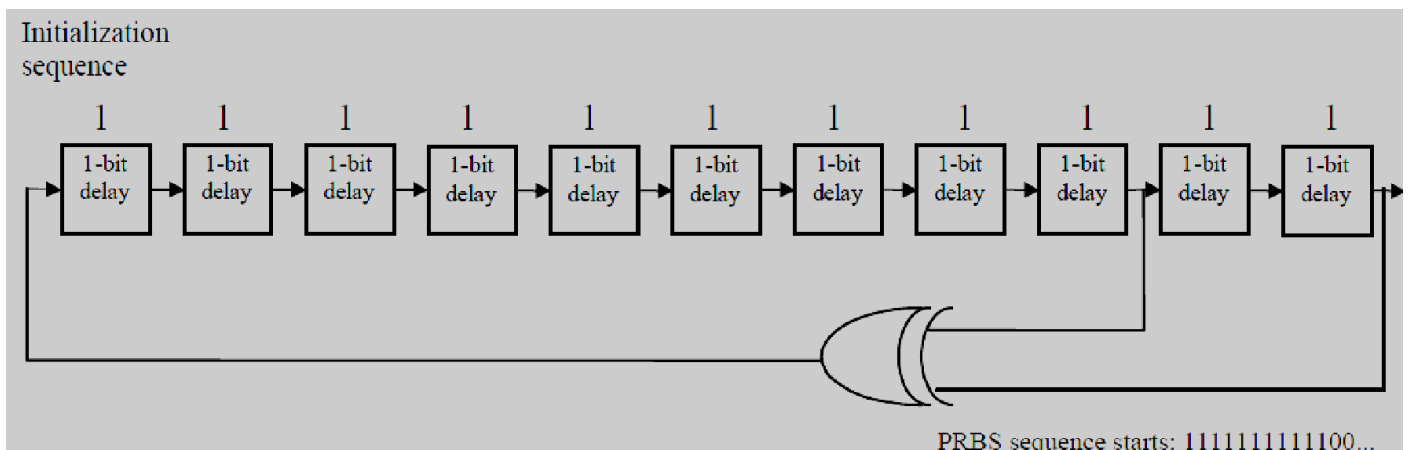
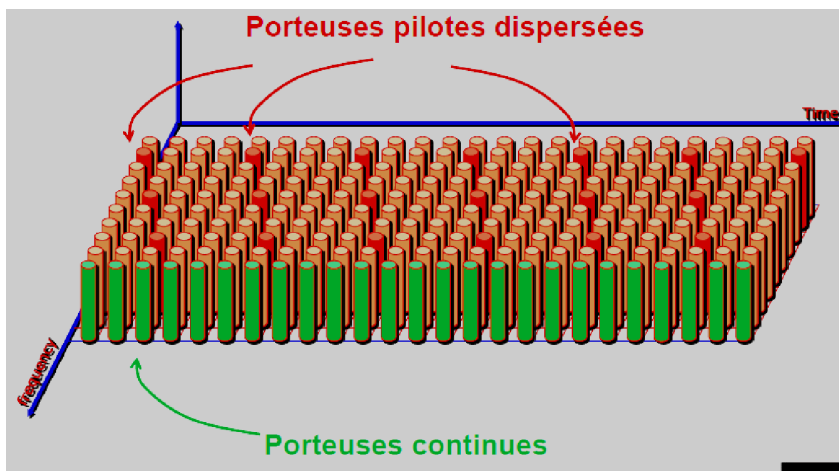
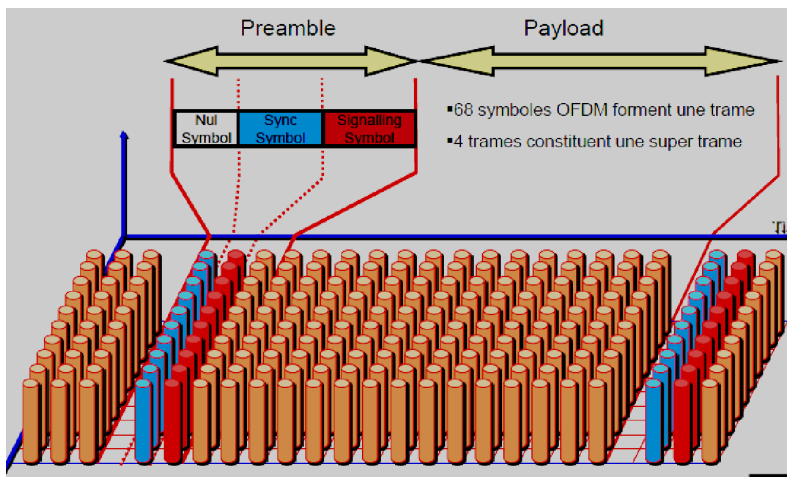
Parameter	8K mode	2K mode
Number of carriers K	6 817	1 705
Value of carrier number $K_{\min}$	0	0
Value of carrier number $K_{\max}$	6 816	1 704
Duration T_U (see note 2)	896 μs	224 μs
Carrier spacing $1/T_U$ (see notes 1 and 2)	1 116 Hz	4 464 Hz
Spacing between carriers $K_{\min}$ and $K_{\max}$ $(K-1)/T_U$ (see note 2)	7,61 MHz	7,61 MHz
NOTE 1: Values in italics are approximate values.		
NOTE 2: Values for 8 MHz channels. Values for 6 MHz and 7 MHz channels are given in tables E.1 and E.2		

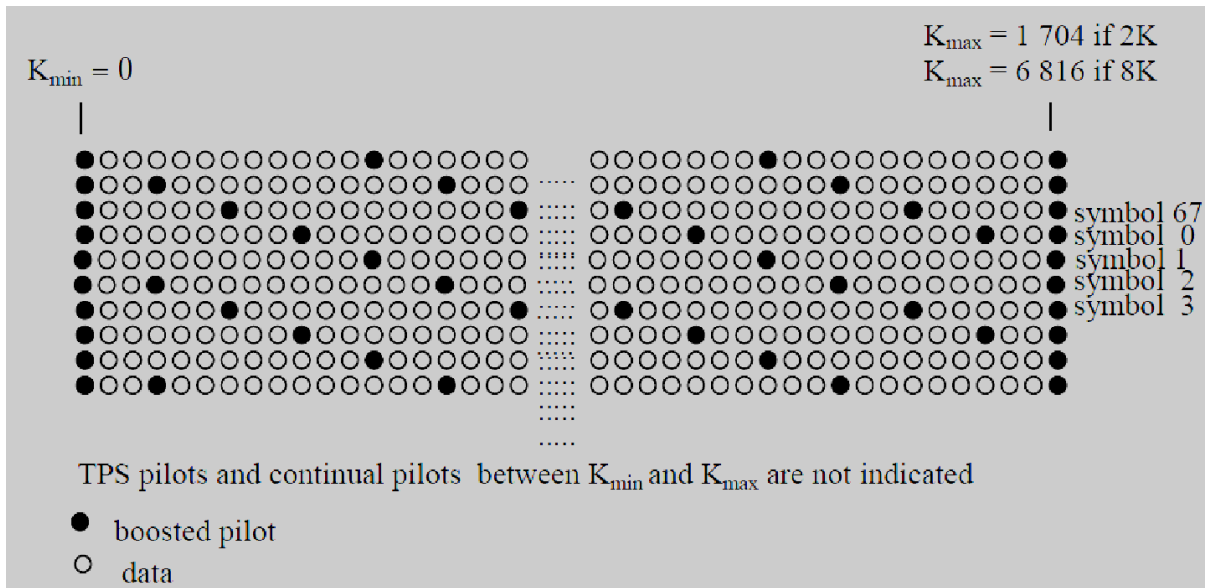
Mode	8K mode				2K mode			
Guard interval Δ / T_U	1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32
Duration of symbol part T_U	8 192 $\times T$ 896 μs (see note)				2 048 $\times T$ 224 μs (see note)			
Duration of guard interval Δ	2 048 $\times T$ 224 μs	1 024 $\times T$ 112 μs	512 $\times T$ 56 μs	256 $\times T$ 28 μs	512 $\times T$ 56 μs	256 $\times T$ 28 μs	128 $\times T$ 14 μs	64 $\times T$ 7 μs
Symbol duration $T_S = \Delta + T_U$	10 240 $\times T$ 1 120 μs	9 216 $\times T$ 1 008 μs	8 704 $\times T$ 952 μs	8 448 $\times T$ 924 μs	2 560 $\times T$ 280 μs	2 304 $\times T$ 252 μs	2 176 $\times T$ 238 μs	2 112 $\times T$ 231 μs
NOTE: Values for 8 MHz channels. Values for 6 MHz and 7 MHz channels are given in tables E.3 and E.4.								

Table 2: Duration of symbol part for the allowed guard intervals for 8 MHz channels

Modulation scheme		Normalization factor
QPSK		$c = z/\sqrt{2}$
16-QAM	$\alpha = 1$	$c = z/\sqrt{10}$
	$\alpha = 2$	$c = z/\sqrt{20}$
	$\alpha = 4$	$c = z/\sqrt{52}$
64-QAM	$\alpha = 1$	$c = z/\sqrt{42}$
	$\alpha = 2$	$c = z/\sqrt{60}$
	$\alpha = 4$	$c = z/\sqrt{108}$

Table 3: Normalization factors for data symbols





Continual pilot carrier positions (index number k)													
2K mode							8K mode						
0	48	54	87	141	156	192	0	48	54	87	141	156	192
201	255	279	282	333	432	450	201	255	279	282	333	432	450
483	525	531	618	636	714	759	483	525	531	618	636	714	759
765	780	804	873	888	918	939	765	780	804	873	888	918	939
942	969	984	1 050	1 101	1 107	1 110	942	969	984	1 050	1 101	1 107	1 110
1 137	1 140	1 146	1 206	1 269	1 323	1 377	1 137	1 140	1 146	1 206	1 269	1 323	1 377
1 491	1 683	1 704					1 491	1 683	1 704	1 752	1 758	1 791	1 845
							1 860	1 896	1 905	1 959	1 983	1 986	2 037

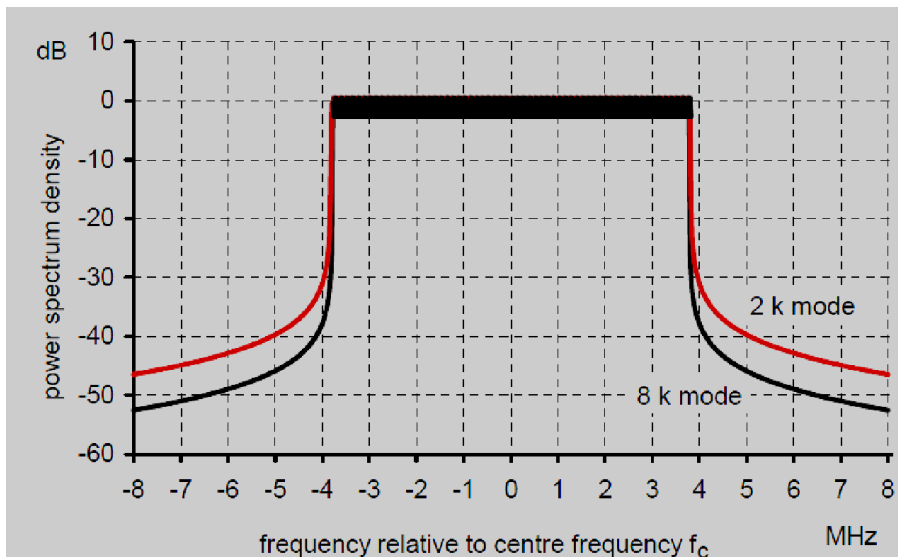


Figure 8: Theoretical DVB

transmission signal spectrum for guard interval $\Delta = T_u / 4$ (for 8 MHz channels)