Modulation	Code rate	$C/N^{(1)}$ (dB)	Bit rate$^{(2)}$ (Mbit/s)
QPSK	2/3	6.9	= 7
16-QAM	2/3	13.1	= 13
64-QAM	2/3	18.7	= 20

1

Proposed preferable DVB-T mode types for measurements on protection ratios

Wanted signal	Unwanted signal
	ATSC 6 MHz
ATSC 6 MHz	15 19$^{(1)}$

2

Channel	$N-1$	$N+1$
ATSC 6 MHz	−27	−27

3

Channel	$N \pm 2$ and other out-of-band channels
ATSC 6 MHz	−58

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Modulation	Code rate	Gaussian channel	Rice channel	Rayleigh channel
QPSK	1/2	5	7	8
QPSK	2/3	7		
16-QAM	2/3	13		
16-QAM	3/4	14	16	20
64-QAM	2/3	19	20	22

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Wanted signal	Unwanted signal (Analogue TV system including sound carriers)	
	M/NTSC	PAL B
ATSC 6 MHz	2 7$^{(1)}$	9

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Wanted signal		Unwanted signal
Constellation	Code rate	PAL/SECAM
QPSK	2/3	–47
16-QAM	2/3	–43
64-QAM	2/3	–38

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Wanted signal	Unwanted signal	Unwanted channels	Protection ratio
ATSC	M/NTSC	$N \pm 2$ to $N \pm 8$	–58

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Wanted analogue system	Tropospheric interference	Continuous interference
B, D, D1, G, H, K/PAL	34	40
I/PAL	37	41
B, D, K, L/SECAM	35	41

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Wanted analogue system	Tropospheric interference	Continuous interference
B, D, D1, G, H, I, K/PAL	– 9	–5
B, D, K, L/SECAM	– 6	–1

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Protection ratio related to the wanted sound carrier		Unwanted signal	
Wanted sound signal		DVB-T 7 MHz	DVB-T 8 MHz
FM	Tropospheric case	6	5
	Continuous case	16	15
AM	Tropospheric case	21	20
	Continuous case	24	23
NICAM	Tropospheric case	5	4
PAL B/G	Continuous case	6	5
NICAM	Tropospheric case		
System I	Continuous case		
NICAM	Tropospheric case	12	11
System L	Continuous case	13	12

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Protection ratio related to the wanted sound carrier	Centre frequency of the DVB-T signal minus sound carrier frequency		
	With negative offset	No offset	With positive offset
	4.250 – 0.166 MHz = 4.084 MHz	4.250 MHz	4.250 + 0.166 MHz = 4.416 MHz
Tropospheric case	–1	–2	–4
Continuous case	+1	0	–2

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Frequency (MHz)	200			550			700		
System variant guard interval 1/4	QPSK 2/3	16-QAM 2/3	64-QAM 2/3	QPSK 2/3	16-QAM 2/3	64-QAM 2/3	QPSK 2/3	16-QAM 2/3	64-QAM 2/3
Noise bandwidth, B (MHz)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Receiver noise figure, F (dB)	5	5	5	7	7	7	7	7	7
Receiver noise input voltage, U_N[1] (dB(μV))	8.4	8.4	8.4	10.4	10.4	10.4	10.4	10.4	10.4
Receiver carrier/noise ratio[2] (C/N) (dB)	6.9	13.1	18.7	6.9	13.1	18.7	6.9	13.1	18.7
Urban noise (dB)	1	1	1	0	0	0	0	0	0
Minimum receiver input voltage, U_{min} (dB(μV))[1]	16.3	22.5	28.1	17.3	23.5	29.1	17.3	23.5	29.1
Conversion factor[1] K (dB)	12.4	12.4	12.4	20.5	20.5	20.5	24.5	24.5	24.5
Feeder loss A_f (dB)	3	3	3	3	3	3	5	5	5
Antenna gain, G (dB)	5	5	5	10	10	10	12	12	12
minimum field strength for fixed reception, E_{min} (dB(μV/m))[1]	26.7	32.9	38.5	31.8	37.6	42.6	35.8	41.6	46.6