

## Anhang A: Breakpoints für VDSL2 PSD Masken

Eine Erweiterung dieser Liste ist jederzeit möglich und wird bei jeder Versionsänderung in diesem Anhang eingearbeitet.

Alle Breakpoints sind in dBm aufgelistet.

### VDSL2-POTS

EL ≤ 8,8 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-49,66
500,25	-54,81
526,13	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-49,66
797,81	-57,87
828,00	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-49,66
573,56	-55,62
1099,69	-60,52
1108,31	-59,56
1138,50	-40,67
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-49,66
573,56	-55,62
1104,00	-60,56
1160,06	-62,10
1185,94	-62,80
1621,50	-74,47
2199,38	-79,58
2272,69	-71,15
2307,19	-51,53
3751,88	-54,81

8,8 dB < EL ≤ 11,7 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-52,87
500,25	-59,68
530,44	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-52,87
802,13	-63,80
810,75	-56,83
836,63	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-52,87
1104,00	-66,76
1155,75	-60,76
1185,94	-41,58
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-52,87
1104,00	-67,31
1526,63	-79,78
1621,50	-82,51
2199,38	-88,86
2277,00	-79,86
2350,31	-71,37
2380,50	-51,69
3751,88	-54,81

11,7 dB < EL <= 14 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-55,36
500,25	-63,50
534,75	-59,50
564,94	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-55,36
802,13	-68,41
875,44	-59,91
905,63	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-55,36
1099,69	-72,54
1194,56	-61,54
1224,75	-42,33
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-55,36
1104,00	-72,60
1621,50	-88,80
2203,69	-95,64
2311,50	-83,14
2410,69	-71,64
2440,88	-51,83
3751,88	-54,81

14 dB < EL <= 16 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-57,50
500,25	-66,79
560,63	-59,76
590,81	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-57,50
797,81	-72,33
909,94	-59,58
940,13	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-57,50
573,56	-68,26
1099,69	-77,12
1229,06	-62,16
1259,25	-43,00

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-57,50
573,56	-68,26
1160,06	-79,09
1185,94	-79,97
1668,94	-94,99

1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

2229,56	-95,00
2363,25	-79,57
2432,25	-71,57
2462,44	-51,88
3751,88	-54,81

16 dB < EL <= 18,3 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-60,13
500,25	-70,80
595,13	-59,80
625,31	-40,00
1104,00	-40,00
1621,50	-50,00
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-60,13
802,13	-77,24
953,06	-59,74
983,25	-40,00
1104,00	-40,00
1621,50	-50,00
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-60,13
948,75	-79,99
1099,69	-82,65
1125,56	-79,65
1267,88	-63,15
1298,06	-43,75
1621,50	-50,00
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-60,13
948,75	-79,99
1121,25	-83,35
1453,31	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

18,3 dB < EL <= 20,5 dB

Frequenz [kHz]	VDSL2- POTS- Breakpoints- 500- Downstream
138,00	-62,49
500,25	-74,40
625,31	-59,90
655,50	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- POTS- Breakpoints- 800- Downstream
138,00	-62,49
728,81	-79,97
802,13	-81,60
819,38	-79,60
991,88	-59,60
1022,06	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- POTS- Breakpoints- 1100- Downstream
138,00	-62,49
728,81	-79,97
1099,69	-87,65
1168,69	-79,65
1306,69	-63,65
1336,88	-44,50
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- POTS- Breakpoints- 2200- Downstream
138,00	-62,49
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- POTS- Maske- 1500- Downstream
138,00	-62,49
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1500,75	-95,00
1634,44	-79,50

Frequenz [kHz]	VDSL2- POTS- Breakpoints- 1600- Downstream
138,00	-62,49
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1599,94	-95,00
1755,19	-77,00

1720,69	-69,50
1750,88	-50,26
2208,00	-51,30
3751,88	-54,81

1841,44	-67,00
1871,63	-50,57
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1700-Downstream
138,00	-62,49
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1703,44	-95,00
1837,13	-79,50
1923,38	-69,50
1953,56	-50,72
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1800-Downstream
138,00	-62,49
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1802,63	-95,00
1936,31	-79,50
2022,56	-69,50
2052,75	-50,95
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1900-Downstream
138,00	-62,49
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-2000-Downstream
138,00	-62,49
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

20,5 dB < EL <= 22,6 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-64,75

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-64,75

500,25	-77,90
655,50	-59,87
685,69	-40,00
1099,69	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

573,56	-79,97
797,81	-85,73
849,56	-79,98
1026,38	-59,48
1056,56	-40,00
1099,69	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-64,75
573,56	-79,97
1099,69	-92,50
1211,81	-79,54
1341,19	-64,54
1371,38	-45,16
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-64,75
573,56	-79,97
1160,06	-94,85
2229,56	-95,00
2363,25	-79,57
2432,25	-71,57
2466,75	-51,89
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1500-Downstream
138,00	-64,79
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
1500,75	-95,00
1634,44	-79,50
1720,69	-69,50
1750,88	-50,34
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1600-Downstream
138,00	-64,79
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
1599,94	-95,00
1725,00	-80,50
1733,63	-79,50
1755,19	-77,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1700-Downstream
138,00	-64,79
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,74
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1800-Downstream
138,00	-64,79
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
1802,63	-95,00
1936,31	-79,50
2013,94	-70,50
2044,13	-50,93
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1900-Downstream
138,00	-64,79
569,25	-79,88
1104,00	-92,52
1164,38	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-2000-Downstream
138,00	-64,79
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

22,6 dB < EL <= 25,5 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-67,93
418,31	-79,97
500,25	-82,76
526,13	-79,73
698,63	-59,73
728,81	-40,00
1104,00	-40,00

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-67,93
418,31	-79,97
797,81	-91,59
901,31	-79,84
1073,81	-59,84
1104,00	-40,00
1164,38	-41,17



1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-67,93
418,31	-79,97
927,19	-94,99
1129,88	-95,00
1263,56	-79,54
1388,63	-65,04
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-67,93
418,31	-79,97
927,19	-94,99
2229,56	-95,00
2363,25	-79,57
2440,88	-70,57
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1500-Downstream
138,00	-67,97
414,00	-79,84
927,19	-95,00
1500,75	-95,00
1634,44	-79,50
1716,38	-70,00
1746,56	-50,32
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1600-Downstream
138,00	-67,97
414,00	-79,84
927,19	-95,00
1599,94	-95,00
1733,63	-79,50
1841,44	-67,00
1871,63	-50,57
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1700-Downstream
138,00	-67,97
414,00	-79,84

Frequenz [kHz]	VDSL2-POTS-Maske-1800-Downstream
138,00	-67,97
414,00	-79,84

927,19	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,70
2208,00	-51,30
3751,88	-54,81

927,19	-95,00
1802,63	-95,00
1936,31	-79,50
2013,94	-70,50
2044,13	-50,95
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1900-Downstream
138,00	-67,97
414,00	-79,84
927,19	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-2000-Downstream
138,00	-67,97
414,00	-79,84
927,19	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

25,5 dB < EL <= 27,4 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-70,39
327,75	-79,81
500,25	-86,50
560,63	-79,50
733,13	-59,50
763,31	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
810,75	-95,00
944,44	-79,72
1112,63	-60,22
1142,81	-40,75
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1500-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
1500,75	-95,00
1634,44	-79,50
1712,06	-70,50
1742,25	-50,24
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1600-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
1599,94	-95,00
1733,63	-79,50
1811,25	-70,50
1841,44	-50,50
1871,63	-50,57
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1700-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50

Frequenz [kHz]	VDSL2-POTS-Maske-1800-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
1802,63	-95,00
1936,31	-79,50
2013,94	-70,50

1944,94	-50,70
2208,00	-51,30
3751,88	-54,81

2044,13	-50,93
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1900-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-2000-Downstream
138,00	-70,39
327,75	-79,81
763,31	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

27,4 dB < EL <= 29,6 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-72,47
276,00	-80,11
500,25	-89,68
759,00	-59,68
789,19	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-72,47
276,00	-80,11
651,19	-95,00
845,25	-95,00
1142,81	-60,57
1173,00	-41,33
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-72,47
276,00	-80,11
651,19	-95,00

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-72,47
276,00	-80,11
651,19	-95,00

1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1500-Downstream
138,00	-72,47
651,19	-95,00
1500,75	-95,00
1634,44	-79,50
1712,06	-70,50
1742,25	-50,24
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1600-Downstream
138,00	-72,47
651,19	-95,00
1599,94	-95,00
1733,63	-79,50
1811,25	-70,50
1841,44	-50,50
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1700-Downstream
138,00	-72,47
651,19	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,70
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1800-Downstream
138,00	-72,47
651,19	-95,00
1802,63	-95,00
1936,31	-79,50
2013,94	-70,50
2044,13	-50,93
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1900-Downstream
138,00	-72,47

Frequenz [kHz]	VDSL2-POTS-Maske-2000-Downstream
138,00	-72,47

651,19	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
2208,00	-51,30
3751,88	-54,81

651,19	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

29,6 dB < EL <= 31,4 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-74,42
228,56	-79,99
500,25	-92,71
612,38	-79,68
784,88	-59,68
815,06	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-74,42
228,56	-79,99
556,31	-94,93
828,00	-95,00
961,69	-79,75
1134,19	-59,75
1164,38	-41,17
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-74,42
228,56	-79,99
556,31	-94,93
1129,88	-95,00
1263,56	-79,54
1388,63	-65,04
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-74,42
228,56	-79,99
556,31	-94,93
2229,56	-95,00
2363,25	-79,57
2440,88	-70,57
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1500-Downstream
138,00	-74,78
560,63	-95,00
1500,75	-95,00
1634,44	-79,50
1716,38	-70,00
1746,56	-50,29
2208,00	-51,30
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1600-Downstream
138,00	-74,78
560,63	-95,00
1599,94	-95,00
1733,63	-79,50
1811,25	-70,50
1841,44	-50,50
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1700-Downstream
138,00	-74,78
560,63	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,70
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1800-Downstream
138,00	-74,78
560,63	-95,00
1802,63	-95,00
1936,31	-79,50
2018,25	-70,00
2048,44	-50,96
2208,00	-51,30
3751,88	-54,81

31,4 dB < EL <= 34,3 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-77,65
444,19	-95,00
521,81	-95,00
828,00	-59,61
858,19	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-77,65
444,19	-95,00
832,31	-95,00
966,00	-79,50
1129,88	-60,50
1160,06	-41,08
1621,50	-50,00
2208,00	-51,30

3751,88	-54,81
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3751,88	-54,81
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Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-77,65
444,19	-95,00
1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-77,65
444,19	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1200-Downstream
138,00	-77,65
444,19	-95,00
1198,88	-95,00
1332,56	-79,50
1418,81	-69,50
1449,00	-49,58
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1300-Downstream
138,00	-77,65
444,19	-95,00
1302,38	-95,00
1436,06	-79,50
1522,31	-69,50
1552,50	-50,06
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1400-Downstream
138,00	-77,65
444,19	-95,00
1401,56	-95,00
1535,25	-79,50
1621,50	-69,50

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1500-Downstream
138,00	-77,65
444,19	-95,00
1500,75	-95,00
1634,44	-79,50
1712,06	-70,50



1651,69	-50,08
2208,00	-51,30
3751,88	-54,81

1742,25	-50,28
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1600-Downstream
138,00	-77,65
444,19	-95,07
1630,13	-95,00
1763,81	-79,50
1841,44	-70,50
1871,63	-50,57
2208,00	-51,30
3751,88	-54,81

34,3 dB < EL <= 37 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-80,59
362,25	-95,00
530,44	-95,00
664,13	-79,50
836,63	-59,50
866,81	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-80,59
362,25	-95,00
832,31	-95,00
966,00	-79,50
1104,00	-63,50
1129,88	-60,50
1160,06	-41,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-80,59
362,25	-95,00
1129,88	-95,00

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-80,59
362,25	-95,00
2238,19	-95,00

1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1200-Downstream
138,00	-80,59
362,25	-95,00
1198,88	-95,00
1332,56	-79,50
1418,81	-69,50
1449,00	-49,58
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1300-Downstream
138,00	-80,59
362,25	-95,00
1302,38	-95,00
1436,06	-79,50
1522,31	-69,50
1552,50	-49,81
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1400-Downstream
138,00	-80,59
362,25	-95,00
1401,56	-95,00
1535,25	-79,50
1621,50	-69,50
1651,69	-50,04
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1500-Downstream
138,00	-80,59
362,25	-95,00
1500,75	-95,00
1634,44	-79,50
1716,38	-70,00
1746,56	-50,25
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1600-Downstream
138,00	-80,59

362,25	-95,00
1599,94	-95,00
1733,63	-79,50
1811,25	-70,50
1841,44	-50,50
2208,00	-51,30
3751,88	-54,81

37 dB < EL ≤ 40 dB

Frequenz [kHz]	VDSL2-POTS-Breakpoints-500-Downstream
138,00	-83,89
288,94	-95
530,44	-95
836,63	-59,5
866,81	-40
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-800-Downstream
138,00	-83,89
288,94	-95
832,31	-95
966,00	-79,5
1104,00	-63,50
1129,88	-60,5
1160,06	-41,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-1100-Downstream
138,00	-83,89
288,94	-95
1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Breakpoints-2200-Downstream
138,00	-83,89
288,94	-95
2238,19	-95
2371,88	-79,5
2440,88	-71,50
2471,06	-51,90
3751,88	-54,91

Frequenz [kHz]	VDSL2-POTS-Maske-1200-Downstream
138,00	-83,89
288,94	-95,00
1198,88	-95,00
1332,56	-79,50
1418,81	-69,50
1449,00	-49,58
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1300-Downstream
138,00	-83,89
288,94	-95,00
1302,38	-95,00
1436,06	-79,50
1522,31	-69,50
1552,50	-49,81
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2-POTS-Maske-1400-Downstream
138,00	-83,89
288,94	-95,00
1401,56	-95,00
1535,25	-79,50
1621,50	-69,50
1651,69	-50,04
2208,00	-51,30
3751,88	-54,81

## VDSL2-ISDN

EL <= 8,8 dB

Frequenz [kHz]	VDSL2-ISDN-Breakpoints-500-Downstream
138,00	0,00
276,00	-51,95
500,25	-54,81
526,13	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30

Frequenz [kHz]	VDSL2-ISDN-Breakpoints-800-Downstream
138,00	0,00
276,00	-51,95
797,81	-57,87
828,00	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30

3751,88	-54,81
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3751,88	-54,81
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Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
138,00	0,00
276,00	-51,95
573,56	-55,62
1099,69	-60,52
1108,31	-59,56
1138,50	-40,67
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
138,00	0,00
276,00	-51,95
573,56	-55,62
1104,00	-60,56
1160,06	-62,10
1185,94	-62,80
1621,50	-74,47
2199,38	-79,58
2272,69	-71,15
2307,19	-51,53
3751,88	-54,81

8,8 dB < EL <= 11,7 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-55,89
500,25	-59,68
530,44	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-55,89
802,13	-63,80
810,75	-56,83
836,63	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-55,89
1104,00	-66,76
1155,75	-60,76

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-55,89
1104,00	-67,31
1526,63	-79,78

1185,94	-41,58
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

1621,50	-82,51
2199,38	-88,86
2277,00	-79,86
2350,31	-71,37
2380,50	-51,69
3751,88	-54,81

11,7 dB < EL ≤ 14 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-58,97
500,25	-63,50
534,75	-59,50
564,94	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-58,97
802,13	-68,41
875,44	-59,91
905,63	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-58,97
1099,69	-72,54
1194,56	-61,54
1224,75	-42,33
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-58,97
1104,00	-72,60
1621,50	-88,80
2203,69	-95,64
2311,50	-83,14
2410,69	-71,64
2440,88	-51,83
3751,88	-54,81

14 dB < EL ≤ 16 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-58,97
500,25	-63,50
534,75	-59,50
564,94	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-58,97
802,13	-68,41
875,44	-59,91
905,63	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

138,00	0,00
276,00	-61,62
500,25	-66,79
560,63	-59,76
590,81	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

138,00	0,00
276,00	-61,62
797,81	-72,33
909,94	-59,58
940,13	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
138,00	0,00
276,00	-61,62
573,56	-68,26
1099,69	-77,12
1229,06	-62,16
1259,25	-43,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
138,00	0,00
276,00	-61,62
573,56	-68,26
1160,06	-79,09
1185,94	-79,97
1668,94	-94,99
2229,56	-95,00
2363,25	-79,57
2432,25	-71,57
2462,44	-51,88
3751,88	-54,81

16 dB < EL <= 18,3 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-64,87
500,25	-70,80
595,13	-59,80
625,31	-40,00
1104,00	-40,00
1621,50	-50,00
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-64,87
802,13	-77,24
953,06	-59,74
983,25	-40,00
1104,00	-40,00
1621,50	-50,00
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-64,87
1099,69	-82,65
1125,56	-79,65
1267,88	-63,15
1298,06	-43,75
1621,50	-50,00
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-64,87
1121,25	-83,35
1453,31	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

18,3 dB < EL <= 20,5 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-67,78
500,25	-74,40
625,31	-59,90
655,50	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-67,78
728,81	-79,97
802,13	-81,60
819,38	-79,60
991,88	-59,60
1022,06	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-67,78
728,81	-79,97
1099,69	-87,65
1168,69	-79,65
1306,69	-63,65
1336,88	-44,50
1621,50	-50,00

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-67,78
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50



2208,00	-51,30
3751,88	-54,81

2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1500- Downstream
276,00	-67,78
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1500,75	-95,00
1634,44	-79,50
1720,69	-69,50
1750,88	-50,26
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1600- Downstream
276,00	-67,78
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1599,94	-95,00
1755,19	-77,00
1841,44	-67,00
1871,63	-50,57
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1700- Downstream
276,00	-67,78
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1703,44	-95,00
1837,13	-79,50
1923,38	-69,50
1953,56	-50,72
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1800- Downstream
276,00	-67,78
728,81	-79,97
1104,00	-87,73
1298,06	-95,00
1802,63	-95,00
1936,31	-79,50
2022,56	-69,50
2052,75	-50,95
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1900- Downstream
276,00	-67,78
728,81	-79,97

Frequenz [kHz]	VDSL2- ISDN- Maske- 2000- Downstream
276,00	-67,78
728,81	-79,97

1104,00	-87,73
1298,06	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
3751,88	-54,81

1104,00	-87,73
1298,06	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

20,5 dB < EL <= 22,6 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-70,59
500,25	-77,90
655,50	-59,87
685,69	-40,00
1099,69	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-70,59
573,56	-79,97
797,81	-85,73
849,56	-79,98
1026,38	-59,48
1056,56	-40,00
1099,69	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-70,59
573,56	-79,97
1099,69	-92,50
1211,81	-79,54
1341,19	-64,54
1371,38	-45,16
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-70,59
573,56	-79,97
1160,06	-94,85
2229,56	-95,00
2363,25	-79,57
2432,25	-71,57
2466,75	-51,89
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1500- Downstream
276,00	-70,62
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
1500,75	-95,00
1634,44	-79,50
1720,69	-69,50
1750,88	-50,34
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1600- Downstream
276,00	-70,62
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
1599,94	-95,00
1725,00	-80,50
1733,63	-79,50
1755,19	-77,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1700- Downstream
276,00	-70,62
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,74
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1800- Downstream
276,00	-70,62
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
1802,63	-95,00
1936,31	-79,50
2013,94	-70,50
2044,13	-50,93
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1900- Downstream
276,00	-70,62
569,25	-79,88
1104,00	-92,52
1164,38	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50

Frequenz [kHz]	VDSL2- ISDN- Maske- 2000- Downstream
276,00	-70,62
569,25	-79,88
1104,00	-92,61
1164,38	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50

2143,31	-51,16
2208,00	-51,30
3751,88	-54,81

2242,50	-51,38
3751,88	-54,81

20,5 dB < EL ≤ 25,5 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-74,51
418,31	-79,97
500,25	-82,76
526,13	-79,73
698,63	-59,73
728,81	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-74,51
418,31	-79,97
797,81	-91,59
901,31	-79,84
1073,81	-59,84
1104,00	-40,00
1164,38	-41,17
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-74,51
418,31	-79,97
927,19	-94,99
1129,88	-95,00
1263,56	-79,54
1388,63	-65,04
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-74,51
418,31	-79,97
927,19	-94,99
2229,56	-95,00
2363,25	-79,57
2440,88	-70,57
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1500- Downstream
276,00	-74,55

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1600- Downstream
276,00	-74,55

414,00	-79,84
927,19	-95,00
1500,75	-95,00
1634,44	-79,50
1716,38	-70,00
1746,56	-50,32
2208,00	-51,30
3751,88	-54,81

414,00	-79,84
927,19	-95,00
1599,94	-95,00
1733,63	-79,50
1841,44	-67,00
1871,63	-50,57
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1700- Downstream
276,00	-74,55
414,00	-79,84
927,19	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,70
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1800- Downstream
276,00	-74,55
414,00	-79,84
927,19	-95,00
1802,63	-95,00
1936,31	-79,50
2013,94	-70,50
2044,13	-50,95
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1900- Downstream
276,00	-74,55
414,00	-79,84
927,19	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 2000- Downstream
276,00	-74,55
414,00	-79,84
927,19	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

25,5 dB < EL <= 27,4 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-77,54
327,75	-79,81
500,25	-86,50
560,63	-79,50
733,13	-59,50
763,31	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
810,75	-95,00
944,44	-79,72
1112,63	-60,22
1142,81	-40,75
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1500- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
1500,75	-95,00
1634,44	-79,50

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1600- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
1599,94	-95,00
1733,63	-79,50

1712,06	-70,50
1742,25	-50,24
2208,00	-51,30
3751,88	-54,81

1811,25	-70,50
1841,44	-50,50
1871,63	-50,57
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1700- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,70
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1800- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
1802,63	-95,00
1936,31	-79,50
2013,94	-70,50
2044,13	-50,93
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1900- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 2000- Downstream
276,00	-77,54
327,75	-79,81
763,31	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

27,4 dB < EL <= 29,6 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-80,11
500,25	-89,68
759,00	-59,68

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-80,11
651,19	-95,00
845,25	-95,00

789,19	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

1142,81	-60,57
1173,00	-41,33
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-80,11
651,19	-95,00
1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-80,11
651,19	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1500- Downstream
276,00	-80,11
651,19	-95,00
1500,75	-95,00
1634,44	-79,50
1712,06	-70,50
1742,25	-50,24
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1600- Downstream
276,00	-80,11
651,19	-95,00
1599,94	-95,00
1733,63	-79,50
1811,25	-70,50
1841,44	-50,50
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1700- Downstream

Frequenz [kHz]	VDSL2- ISDN- Maske- 1800- Downstream



276,00	-80,11
651,19	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,70
2208,00	-51,30
3751,88	-54,81

276,00	-80,11
651,19	-95,00
1802,63	-95,00
1936,31	-79,50
2013,94	-70,50
2044,13	-50,93
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1900- Downstream
276,00	-80,11
651,19	-95,00
1901,81	-95,00
2035,50	-79,50
2113,13	-70,50
2143,31	-51,16
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 2000- Downstream
276,00	-80,11
651,19	-95,00
2001,00	-95,00
2134,69	-79,50
2212,31	-70,50
2242,50	-51,38
3751,88	-54,81

29,6 dB < EL <= 31,4 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-82,54
500,25	-92,71
612,38	-79,68
784,88	-59,68
815,06	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-82,54
556,31	-94,93
828,00	-95,00
961,69	-79,75
1134,19	-59,75
1164,38	-41,17
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-82,54
556,31	-94,93
828,00	-95,00
961,69	-79,75
1134,19	-59,75
1164,38	-41,17
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-82,54
556,31	-94,93
828,00	-95,00
961,69	-79,75
1134,19	-59,75
1164,38	-41,17
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

276,00	-82,54
556,31	-94,93
1129,88	-95,00
1263,56	-79,54
1388,63	-65,04
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

276,00	-82,54
556,31	-94,93
2229,56	-95,00
2363,25	-79,57
2440,88	-70,57
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1500- Downstream
276,00	-82,59
560,63	-95,00
1500,75	-95,00
1634,44	-79,50
1716,38	-70,00
1746,56	-50,29
2208,00	-51,30
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1600- Downstream
276,00	-82,59
560,63	-95,00
1599,94	-95,00
1733,63	-79,50
1811,25	-70,50
1841,44	-50,50
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1700- Downstream
276,00	-82,59
560,63	-95,00
1703,44	-95,00
1837,13	-79,50
1914,75	-70,50
1944,94	-50,70
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1800- Downstream
276,00	-82,59
560,63	-95,00
1802,63	-95,00
1936,31	-79,50
2018,25	-70,00
2048,44	-50,96
2208,00	-51,30
3751,88	-54,81

31,4 dB < EL <= 34,3 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-86,51
444,19	-95,00
521,81	-95,00
828,00	-59,61
858,19	-40,00
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-86,51
444,19	-95,00
832,31	-95,00
966,00	-79,50
1129,88	-60,50
1160,06	-41,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-86,51
444,19	-95,00
1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-86,51
444,19	-95,00
1104,00	0,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1200- Downstream
276,00	-86,51
444,19	-95,00
1198,88	-95,00
1332,56	-79,50
1418,81	-69,50
1449,00	-49,58
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1300- Downstream
276,00	-86,51
444,19	-95,00
1302,38	-95,00
1436,06	-79,50
1522,31	-69,50
1552,50	-50,06
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1400- Downstream
276,00	-86,51
444,19	-95,00
1401,56	-95,00
1535,25	-79,50
1621,50	-69,50
1651,69	-50,08
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1500- Downstream
276,00	-86,51
444,19	-95,00
1500,75	-95,00
1634,44	-79,50
1712,06	-70,50
1742,25	-50,28
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1600- Downstream
276,00	-86,51
444,19	-95,07
1630,13	-95,00
1763,81	-79,50
1841,44	-70,50
1871,63	-50,57
2208,00	-51,30
3751,88	-54,81

**34,3 dB < EL <= 37 dB**

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-90,13
362,25	-95,00
530,44	-95,00
664,13	-79,50
836,63	-59,50
866,81	-40,00
1104,00	-40,00
1621,50	-50,00

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-90,13
362,25	-95,00
832,31	-95,00
966,00	-79,50
1104,00	-63,50
1129,88	-60,50
1160,06	-41,08
1621,50	-50,00

2208,00	-51,30
3751,88	-54,81

2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-90,13
362,25	-95,00
1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-90,13
362,25	-95,00
2238,19	-95,00
2371,88	-79,50
2440,88	-71,50
2471,06	-51,90
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1200- Downstream
276,00	-90,13
362,25	-95,00
1198,88	-95,00
1332,56	-79,50
1418,81	-69,50
1449,00	-49,58
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1300- Downstream
276,00	-90,13
362,25	-95,00
1302,38	-95,00
1436,06	-79,50
1522,31	-69,50
1552,50	-49,81
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1400- Downstream
276,00	-90,13
362,25	-95,00
1401,56	-95,00
1535,25	-79,50
1621,50	-69,50

Frequenz [kHz]	VDSL2- ISDN- Maske- 1500- Downstream
276,00	-90,13
362,25	-95,00
1500,75	-95,00
1634,44	-79,50
1716,38	-70,00

1651,69	-50,04
2208,00	-51,30
3751,88	-54,81

1746,56	-50,25
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1600- Downstream
276,00	-90,13
362,25	-95,00
1599,94	-95,00
1733,63	-79,50
1811,25	-70,50
1841,44	-50,50
2208,00	-51,30
3751,88	-54,81

37 dB < EL ≤ 40 dB

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 500- Downstream
276,00	-94,21
288,94	-95
530,44	-95
836,63	-59,5
866,81	-40
1104,00	-40,00
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 800- Downstream
276,00	-94,21
288,94	-95
832,31	-95
966,00	-79,5
1104,00	-63,50
1129,88	-60,5
1160,06	-41,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 1100- Downstream
276,00	-94,21
288,94	-95

Frequenz [kHz]	VDSL2- ISDN- Breakpoints- 2200- Downstream
276,00	-94,21
288,94	-95

1129,88	-95,00
1263,56	-79,50
1388,63	-65,00
1418,81	-46,08
1621,50	-50,00
2208,00	-51,30
3751,88	-54,81

2238,19	-95
2371,88	-79,5
2440,88	-71,50
2471,06	-51,90
3751,88	-54,91

Frequenz [kHz]	VDSL2- ISDN- Maske- 1200- Downstream
276,00	-94,21
288,94	-95,00
1198,88	-95,00
1332,56	-79,50
1418,81	-69,50
1449,00	-49,58
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1300- Downstream
276,00	-94,21
288,94	-95,00
1302,38	-95,00
1436,06	-79,50
1522,31	-69,50
1552,50	-49,81
1621,50	-49,97
2208,00	-51,30
3751,88	-54,81

Frequenz [kHz]	VDSL2- ISDN- Maske- 1400- Downstream
276,00	-94,21
288,94	-95,00
1401,56	-95,00
1535,25	-79,50
1621,50	-69,50
1651,69	-50,04
2208,00	-51,30
3751,88	-54,81