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Screening factor

The products which are marked with the Klasse-A sign, fulfil the higher demand for EN 50083-2A1:

up to	300	MHz	≥	85 dB
	300 -	470	MHz	≥ 80 dB
	470 -	1000	MHz	≥ 75 dB
	1000 -	3000	MHz	≥ 55 dB

Technical Informations/ Product Index

Chapter T

Technical information and regulations

Impedance

All technical details in this catalogue refer to a coaxial connection with an impedance of 75 Ohm, in case of symmetrical connections to 300 Ohm..

Main voltage

All main operated products in this catalogue comply to the specifications of standard IEC 38, dated May, 1987 with a main voltage of 230 VAC + 6 % / - 10 %.

Maximum output level

1. Amplifiers and converters 47 - 862 MHz

The maximum permissible output levels conform to the standard DIN EN 50083 Part 3 according to the following intermodulation ratios.

Measurement procedure IEC 728-1:

A. Multi-range, range and group amplifiers, converters

in receiving stations

- a) 66 dB for 3rd order interference products
- b) 60 dB for 2nd order interference products, which are produced from signals in the range of 87,5 - 108 MHz and fall into the range of 174 - 230 MHz and 470 - 862 MHz.

The value of a) is valid for an occupancy of two channels. In case of more than two channels, the usual reduction of the output level must be taken into consideration (see table).

The smaller value from a) and b) is valid as the maximum operating level.

in distribution networks

- a) 60 dB for 3rd order products
- b) 60 dB for 2nd order products

The value of a) is valid for an occupancy of two channels. In case of more than two channels, the usual reduction of the output level must be taken into consideration (see table).

This also applies to amplifiers which are connected in series (cascaded), when doubling of the number of cascaded amplifiers the value a) must be reduced resp. by 3 dB.

The smaller value from a) and b) is valid as the maximum operating level.

B. Channel amplifiers, converters

54 dB for 3rd order products

Channel occupancy for range and multiplex amplifiers

If more than one channel is received, the max. output level (3rd order) should be reduced according to the following table:

No. of occupied channels	Level reduction in dB
2	- 0
3	- 2
4	- 3
5	- 4
6	- 5
7	- 5,5
8	- 6
10	- 7
12	- 8
16	- 9
24	- 11
36	- 12,5

All received channels must be counted, even if they are not to be used.

All radio channels are counted as one television channel, if the radio FM level is approx. 6-10 dB lower than the TV level. In case of equal levels, each FM channel must be counted as one channel.

2. Amplifiers with frequency range 950 - 2150 MHz

The maximum permissible output level conforms with the standard DIN EN 50083 Part 3, as the level by which an intermodulation ratio of 35 dB is complied to (2 transmitters measuring method IEC 728-1).

3. CATV line distribution amplifiers

The maximum permissible output level complies to FTZ standard 1R8-15, for an intermodulation ratio of 72 dB for 3rd order interference products and 69 dB for 2nd order interference products.

It is valid for an occupancy of up to 12 TV channels and 24 radio signals or 36 TV and 24 radio signals.

When using post amplifiers in distribution networks of private CATV and MATV systems, an intermodulation ratio of 60 dB for 2nd and 3rd order interference products must be complied with, according to DIN EN 50083 Part 3.

European standards, regulations and guidelines

The European standards of the DIN EN 50083 range resp. the VDE 0855 apply for antenna reception and distribution systems.

These standards were set by the European committee for electro-technical standards (CENELEC) and apply for all European countries.

1. Overview of standards of the CENELEC DIN EN 50083 range – Cable distribution systems for sound and television signals

- a) DIN EN 50083-1 Safety requirements
- b) DIN EN 50083-2 Electromagnetic compatibility of apparatus
- c) DIN EN 50083-2/A1 (design) Design of supplement to DIN EN 50083-2 about electro-magnetic compatibility of apparatus
- d) DIN EN 50083-3 Active broad band units for distribution networks
- e) DIN EN 50083-4 Passive broad band units for distribution networks
- f) DIN EN 50083-5 Units for head-ends
- g) DIN EN 50083-6 Optical units
- h) DIN EN 50083-7 System requirements
- i) DIN EN 50083-8 Electromagnetic compatibility of systems
- j) DIN EN 50083-9 (design) Design about interfaces for CATV/SMATV-head-ends and equivalent professional units.

The DIN EN 50083-1 and DIN EN 50083-2 have legal character through the low voltage guideline and through the European EMV guidelines.

The **DIN EN 50083-1** deals above all with the relevant safety regulations concerning grounding, lightning protection, potential equalization, mechanical firmness etc. and refers among other things to EN 60065 concerning power supplies.

The **DIN EN 50083-2 and the design for the DIN EN 50083-2/A1** include all important guidelines concerning electromagnetic compatibility e.g. screening factor, s/n ration, interference irradiation, flow-in, transmission screening etc. which up now have been partly included in the pre-standards DIN V VDE 0855 Part 10, 11 and 12.

The **CE marking of Polytron products acknowledges the conformity with these specified standards.** The other parts of the EN 50083 range have, like every standard, recommending character.

2. RGA-guideline for planning, set-up, transfer, service and operation of community systems/private broad band systems, 7. edition, status July 1, 1993.

3. Technical guidelines for large community systems, produced by the German professional association for reception antennas in ZVEI.

4. Recommendations of the ANGA - ZVEI forum from September, 1996 resp. October, 1998:

- 4.1. TV-cable networks – Future safety through development to interactive broad band networks.
- 4.2. TV-cable networks – Future safety through development to interactive broad band networks - part II, network development.

Sources:

EN standards	CENELEC European committee for electronic standardisation Central office: Rue de Stassart 35 B-1050 Brussels
VDE regulations	VDE-Verlag GmbH Bismarckstrasse 33 10625 Berlin (Germany)
DIN standard leaflets	BEUTH-Verlag GmbH Burggrafenstrasse 4-7 10787 Berlin (Germany)
Technical guidelines	Fachverband Empfangsanlagen im ZVEI Blumenstrasse 6 90402 Nürnberg (Germany)
Recommendations of the ANGA-ZVEI Forum	Fachverband Empfangsantennen- und Breitbandverteilterchnik im ZVEI Stresemannallee 19 60596 Frankfurt/Main (Germany) Fax +49 69 6302288
RGA guidelines	VISTAS-Verlag GmbH Bismarckstrasse 84 10672 Berlin (Germany)
FTZ guidelines	Fernmeldetechnisches Zentralamt Am Kavalleriesand 64295 Darmstadt (Germany)
Official journals of the DBP	Verlagspostamt P.O. Box 109001 50482 Köln (Germany)

S/N ratio, noise figure

conversion table

Signal to noise ratio, noise figure

The noise level of a 75 Ω resistor in relation to a bandwidth of 5 MHz (TV channel) has a value of 2 dBμV.

The signal to noise ratio is the difference between the effective level and the noise level.

The noise figure states how many dB an amplifier degrades the signal to noise ratio.

S/N ratio	> 46 dB	37 dB	30 dB	< 26 dB
Noise	noise free	visible but not disturbing	visible disturbing	noise pre-dominates
Picture quality	very good	good	bad	useless

Example: Antenna level: 50 dBμV, noise figure: 4 dB, noise level: 2 dBμV

S/N ratio = 50 dBμV – 4 dB – 2 = 44 dB

Amplifier operating level: 95 dBμV, gain 20 dB / Noise figure: 5 dB, noise level: 2 dBμV

S/N ratio: 95 dBμV – 20 dB – 5 dB – 2 dBμV = 68 dB

Conversion table dB-values to voltage ratio for gain and attenuation

Value	Gain +	Attenuation –	Value	Gain +	Attenuation –	Value	Gain +	Attenuation –
0 dB	1,00	1,00	4,5 dB	1,67	0,60	9,0 dB	2,82	0,35
0,5 dB	1,06	0,94	5,0 dB	1,78	0,56	9,5 dB	3,00	0,33
1,0 dB	1,12	0,89	5,5 dB	1,88	0,53	10,0 dB	3,16	0,3265
1,5 dB	1,19	0,84	6,0 dB	2,00	0,50	20,0 dB	10	0,1000
2,0 dB	1,25	0,80	6,5 dB	2,12	0,47	30,0 dB	31,60	0,03165
2,5 dB	1,33	0,75	7,0 dB	2,24	0,45	40,0 dB	100	0,010000
3,0 dB	1,41	0,71	7,5 dB	2,37	0,42	50,0 dB	316	0,003165
3,5 dB	1,50	0,67	8,0 dB	2,50	0,40	60,0 dB	1000	0,001000
4,0 dB	1,60	0,63	8,5 dB	2,66	0,38	70,0 dB	3160	0,0003165

With the help of this table it is possible to calculate each intermediate value exactly to 0,5 dB. Two examples:

A) 67,5 dB gain: 60 dB (factor 1000) 7,5 dB (factor 2,37) thus 67,5 dB = 1000 x 2,37 = 2370 times

B) 58,5 dB attenuation: - 50 dB (factor 0,003165), - 8,5 dB (factor 0,38) thus - 58,5 dB = 0,003165 x 0,38 = 0,001202 times

Conversion table – level to voltage dBμV in μV and mV / 75 Ohm

Value	0 dBμV	1 dBμV	2 dBμV	3 dBμV	4 dBμV	5 dBμV	6 dBμV	7 dBμV	8 dBμV	9 dBμV	
0 dBμV	1,00	1,12	1,25	1,41	1,59	1,78	2,00	2,24	2,51	2,82	μV
10 dBμV	3,16	3,55	3,98	4,47	5,01	5,62	6,31	7,08	7,94	8,91	μV
20 dBμV	10,0	11,2	12,5	14,1	15,9	17,8	20,0	22,4	25,1	28,2	μV
30 dBμV	31,6	35,5	39,9	44,7	50,1	56,2	63,1	70,8	79,4	89,1	μV
40 dBμV	0,10	0,11	0,13	0,14	0,16	0,18	0,20	0,22	0,25	0,28	mV
50 dBμV	0,32	0,36	0,40	0,45	0,50	0,56	0,63	0,71	0,79	0,89	mV
60 dBμV	1,00	1,12	1,25	1,41	1,59	1,78	2,00	2,20	2,51	2,82	mV
70 dBμV	3,16	3,55	3,98	4,47	5,01	5,62	6,31	7,08	7,94	8,91	mV
80 dBμV	10,0	11,2	12,5	14,1	15,9	17,8	20,0	22,4	25,1	28,2	mV
90 dBμV	31,6	35,5	39,8	44,7	50,1	56,2	63,1	70,8	79,4	89,1	mV
100 dBμV	100	112	125	141	159	178	200	224	251	282	mV
110 dBμV	316	355	398	447	501	562	631	708	794	891	mV
120 dBμV	1000	1122	1259	1413	1585	1778	1995	2239	2512	2818	mV

Television standards

STANDARD	CCIR		OIRT		GB	F	FCC	old, resp. rare						
	B	G	D	K	I	L	M	A	C	E	F	H	K 1	N
No. of lines	625	625	625	625	625	625	525	405	625	819	819	625	625	625
Channel bandwidth (MHz)	7	8	8	8	8	8	6	5	7	14	7	8	8	6
Video bandwidth (MHz)	5	5	6	6	5,5	6	4,2	3	5	10	5	5	6	4,2
Vision / Sound spacing	+ 5,5	+ 5,5	+ 6,5	+ 6,5	+ 6	+ 6,5	+ 4,5	- 3,5	+ 5,5	+ 11,5	+ 5,5	+ 5,5	+ 6,5	+ 4,5
Vestigial sideband (MHz)	0,75	0,75	1,25	0,75	1,25	1,25	0,75	0,75	0,75	2	0,75	1,25	1,25	0,75
Picture modulation	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.	Pos.	Pos.	Pos.	Pos.	Neg.	Neg.	Neg.
Sound modulation	FM	FM	FM	FM	FM	AM	FM	AM	AM	AM	AM	FM	FM	FM

International TV systems

Country	VHF	UHF	Colour
Algeria	B	G	PAL
Argentina	N	-	PAL
Australia	B	B	PAL
Austria	B	G	PAL
Bahrain	B	G	PAL
Belgium	B	G	PAL
Brasil	M	M	PAL
Bulgaria	D	K	SECAM
China	D	K	PAL
Croatia	B	G	PAL
Cyprus	B	G	SECAM
Czech Republic	D	K	SECAM
Denmark	B	G	PAL
Egypt	B	G	SECAM
Finland	B	G	PAL
France	L	L	SECAM
Germany	B	G	PAL
Gibraltar	B	G	PAL
Great Britain	-	I	PAL
Greece	B	G	SECAM
Holland	B	G	PAL
Hong Kong	-	I	PAL
Hungary	D	K	SECAM
Iceland	B	G	PAL
India	B	-	PAL
Indonesia	B	-	PAL
Iran	B	G	SECAM
Iraq	B	G	SECAM
Ireland	I	I	PAL
Israel	B	G	PAL
Italy	B	G	PAL
Jordan	B	G	PAL
Kuwait	B	G	PAL

Country	VHF	UHF	Colour
Lebanon	B	G	SECAM
Libya	B	G	SECAM
Luxembourg	B	G / L	PAL/SECAM
Malta	B	-	PAL
Malaysia	B	G	PAL
Mexico	M	M	NTSC
Monaco	L	G	SECAM
Marocco	B	G	SECAM
Nigeria	B	-	PAL
Norway	B	G	PAL
Pakistan	B	G	PAL
Philippines	M	-	NTSC
Poland	D	K	SECAM
Portugal	B	G	PAL
Oman Sultanate	B	G	PAL
Romania	D	K	PAL
Russia (CIS)	D	K	SECAM
Saudi Arabia	B	G	SECAM/PAL
Singapore	B	G	PAL
Slovakia	D	K	SECAM
Slovenia	B	G	PAL
Spain	B	G	PAL
Sri Lanka	B	-	PAL
South Africa	I	I	PAL
Sweden	B	G	PAL
Switzerland	B	G	PAL
Syrian	B	G	PAL
Thailand	B	G	PAL
Tunisia	B	G	PAL/SECAM
Turkey	B	G	PAL
U.A.E.	B	G	PAL
U.S.A.	M	M	NTSC
Yemen P.D.R.	B	-	PALB

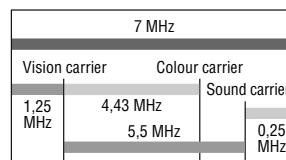
Channel-Frequency table Table according to CCIR, standard B and G

Range Channel	Channel border MHz	Vision carrier MHz	Colour carrier MHz	Sound carrier MHz	DVB-T Center frq. MHz ¹⁾	
	4 - 30	Data return path				
Band I	2	47 ... 54	48,25	52,68	53,75	
	3	54 ... 61	55,25	59,68	60,75	
	4	61 ... 68	62,25	66,68	67,75	
		70 - 75	Data forward path			
	80,15	Pilot frequency				
Band II	2-70	87,5 ... 108	FM FM / 3,4 - 2,8 mm			
Lower hyperband (USB)	S 2	111 ... 118	112,25	116,68	117,75	
	S 3	118 ... 125	119,25	123,68	124,75	
	S 4	125 ... 132	126,25	130,68	131,75	
	S 5	132 ... 139	133,25	137,68	138,75	
	S 6	139 ... 146	140,25	144,68	145,75	
	S 7	146 ... 153	147,25	151,68	152,75	
	S 8	153 ... 160	154,25	158,68	159,75	
	S 9	160 ... 167	161,25	165,68	166,75	
	S 10	167 ... 174	168,25	172,68	173,75	
	Band III	5	174 ... 181	175,25	179,68	180,75
6		181 ... 188	182,25	186,68	187,75	
7		188 ... 195	189,25	193,68	194,75	
8		195 ... 202	196,25	200,68	201,75	
9		202 ... 209	203,25	207,68	208,75	
10		209 ... 216	210,25	214,68	215,75	
11		216 ... 223	217,25	221,68	222,75	
12		223 ... 230	224,25	228,68	229,75	
Upper hyperband (OSB)		S 11	230 ... 237	231,25	235,68	236,75
		S 12	237 ... 244	238,25	242,68	243,75
		S 13	244 ... 251	245,25	249,68	250,75
		S 14	251 ... 258	252,25	256,68	257,75
	S 15	258 ... 265	259,25	263,68	264,75	
	S 16	265 ... 272	266,25	270,68	271,75	
	S 17	272 ... 279	273,25	277,68	278,75	
	S 18	279 ... 286	280,25	284,68	285,75	
	S 19	286 ... 293	287,25	291,68	292,75	
	S 20	293 ... 300	294,25	298,68	299,75	
Extra hyperband (ESB)	S 21	302 ... 310	303,25	307,68	308,75	
	S 22	310 ... 318	311,25	315,68	316,75	
	S 23	318 ... 326	319,25	323,68	324,75	
	S 24	326 ... 334	327,25	331,68	332,75	
	S 25	334 ... 342	335,25	339,68	340,75	
	S 26	342 ... 350	343,25	347,68	348,75	
	S 27	350 ... 358	351,25	355,68	356,75	
	S 28	358 ... 366	359,25	363,68	364,75	
	S 29	366 ... 374	367,25	371,68	372,75	
	S 30	374 ... 382	375,25	379,68	380,75	
	S 31	382 ... 390	383,25	387,68	388,75	
	S 32	390 ... 398	391,25	395,68	396,75	
	S 33	398 ... 406	399,25	403,68	404,75	
	S 34	406 ... 414	407,25	411,68	412,75	
	S 35	414 ... 422	415,25	419,68	420,75	
	S 36	422 ... 430	423,25	427,68	428,75	
	S 37	430 ... 438	431,25	435,68	436,75	
	S 38	438 ... 446	439,25	443,68	444,75	

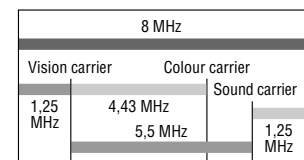
¹⁾ IF 38,9 MHz

Range Channel	Channel borders MHz	Vision carrier MHz	Colour carrier MHz	Sound carrier MHz	DVB-T Center frq. MHz ¹⁾
Band IV	21	470 ... 478	471,25	475,68	476,75
	22	478 ... 486	479,25	483,68	484,75
	23	486 ... 494	487,25	491,68	492,75
	24	494 ... 502	495,25	499,68	500,75
	25	502 ... 510	503,25	507,68	508,75
	26	510 ... 518	511,25	515,68	516,75
	27	518 ... 526	519,25	523,68	524,75
	28	526 ... 534	527,25	531,68	532,75
	29	534 ... 542	535,25	539,68	540,75
	30	542 ... 550	543,25	547,68	548,75
	31	550 ... 558	551,25	555,68	556,75
	32	558 ... 566	559,25	563,68	564,75
	33	566 ... 574	567,25	571,68	572,75
	34	574 ... 582	575,25	579,68	580,75
	35	582 ... 590	583,25	587,68	588,75
	36	590 ... 598	591,25	595,68	596,75
	37	598 ... 606	599,25	603,68	604,75
	Band V	38	606 ... 614	607,25	611,68
39		614 ... 622	615,25	619,68	620,75
40		622 ... 630	623,25	627,68	628,75
41		630 ... 638	631,25	635,68	636,75
42		638 ... 646	639,25	643,68	644,75
43		646 ... 654	647,25	651,68	652,75
44		654 ... 662	655,25	659,68	660,75
45		662 ... 670	663,25	667,68	668,75
46		670 ... 678	671,25	675,68	676,75
47		678 ... 686	679,25	683,68	684,75
48		686 ... 694	687,25	691,68	692,75
49		694 ... 702	695,25	699,68	700,75
50		702 ... 710	703,25	707,68	708,75
51		710 ... 718	711,25	715,68	716,75
52		718 ... 726	719,25	723,68	724,75
53		726 ... 734	727,25	731,68	732,75
54		734 ... 742	735,25	739,68	740,75
55		742 ... 750	743,25	747,68	748,75
56		750 ... 758	751,25	755,68	756,75
57		758 ... 766	759,25	763,68	764,75
58		766 ... 774	767,25	771,68	772,75
59		774 ... 782	775,25	779,68	780,75
60		782 ... 790	783,25	787,68	788,75
61		790 ... 798	791,25	795,68	796,75
62		798 ... 806	799,25	803,68	804,75
63		806 ... 814	807,25	811,68	812,75
64		814 ... 822	815,25	819,68	820,75
65		822 ... 830	823,25	827,68	828,75
66		830 ... 838	831,25	835,68	836,75
67		838 ... 846	839,25	843,68	844,75
68		846 ... 854	847,25	851,68	852,75
69		854 ... 862	855,25	859,68	860,75

Ch. allocation:
VHF I, VHF III, USB, OSB



Ch. allocation:
UHF IV, UHF V, ESB



Range	Channel	Channel borders MHz	Vision carrier MHz	Sound carrier MHz
Standard A / Great Britain				
I	B 1	41,25 ... 46,25	45,00	41,50
	B 2	48 ... 53	51,75	48,25
	B 3	53 ... 58	56,75	53,25
	B 4	58 ... 63	61,75	58,25
	B 5	63 ... 68	66,75	63,25
III	B 6	176 ... 181	179,75	176,25
	B 7	181 ... 186	184,75	181,25
	B 8	186 ... 191	189,75	186,25
	B 9	191 ... 196	194,75	191,25
	B 10	196 ... 201	199,75	196,25
	B 11	201 ... 206	204,75	201,25
	B 12	206 ... 211	209,75	206,25
	B 13	211 ... 216	214,75	211,25
	B 14	216 ... 221	219,75	216,25
Standard B / Italy				
I	A	52,5 ... 56,5	53,75	59,25
	B	61 ... 68	62,25	67,75
(II)	C	81 ... 88	82,25	87,75
(III)	D	174 ... 181	175,25	180,75
	E	182,5 ... 189,5	183,75	189,25
	F	191 ... 198	192,25	197,75
	G	200 ... 207	201,25	206,75
	H	209 ... 216	210,25	215,75
	H 1	216 ... 223	217,25	222,75
	H 2	223 ... 230	224,25	229,75
	Standard D / OIRT			
I	I	48,5 ... 56,5	49,75	56,25
	II	58 ... 66	59,25	65,75
	III	76 ... 84	77,25	83,75
(II)	IV	84 ... 92	85,25	91,75
	V	92 ... 100	93,25	99,75
III	VI	174 ... 182	175,25	181,75
	VII	182 ... 190	183,25	189,75
	VIII	190 ... 198	191,25	197,75
	IX	198 ... 206	199,25	205,75
	X	206 ... 214	207,25	213,75
	XI	214 ... 222	215,25	221,75
	XII	222 ... 230	223,25	229,75
Standard G / Maroc				
III	M 4	162 ... 170	163,25	168,75
	M 5	170 ... 178	171,25	176,75
	M 6	178 ... 186	179,25	184,75
	M 7	186 ... 194	187,25	192,75
	M 8	194 ... 202	195,25	200,75
	M 9	202 ... 210	203,25	208,75
	M 10	210 ... 218	211,25	216,75

Range	Channel	Channel borders MHz	Vision carrier MHz	Sound carrier MHz	
Standard I / Ireland					
I	A	44,5 ... 52,5	45,75	51,75	
	B	52,5 ... 60,5	53,75	59,75	
	C	60,5 ... 68,5	61,75	67,75	
III	D	174 ... 182	175,25	181,25	
	E	182 ... 190	183,25	189,25	
	F	190 ... 198	191,25	197,25	
	G	198 ... 206	199,25	205,25	
	H	206 ... 214	207,25	213,25	
	I	214 ... 222	215,25	221,25	
	J	222 ... 230	223,25	229,25	
Standard I / South Africa					
III	4	174 ... 182	175,25	181,25	
	5	182 ... 190	183,25	189,25	
	6	190 ... 198	191,25	197,25	
	7	198 ... 206	199,25	205,25	
	8	206 ... 214	207,25	213,25	
	9	214 ... 222	215,25	221,25	
	10	222 ... 230	223,25	229,25	
	11	230 ... 238	231,25	237,25	
	13	246 ... 254	247,25	253,25	
	Standard L / France				
	I	L 02	49,00 ... 57,00	55,75	49,25
		L 03	53,75 ... 61,75	60,50	54,00
		L 04	57,00 ... 65,00	63,75	57,25
III	L 05	174,75 ... 182,75	176,00	182,50	
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Satellite equipment

Transmission frequency and SAT-IF frequency

The frequency of a satellite program within the SAT-IF is calculated from the transmission and LNB local oscillator frequency.

$$f_{IF} = f_S - f_{LO}$$

f_{IF} : SAT-IF frequency

f_S : Transmission frequency of program

f_{LO} : Local oscillator frequency of LNB

Guidelines

Level at the subscribers antenna wall outlet Transmission in the SAT-IF (950–2150 MHz)

Minimum level: 47 dB μ V

Maximum level: 75 dB μ V

Normally the minimum level is not as critical as the maximum level. The combination of many channels with high levels can cause the receiver to be overloaded. Thus, it is advisable that the maximum level is reduced according to the following formular:

$$7,5 \times \log (n-2)$$

n = Number of programs which are simultaneously transmitted on one cable.

Furtheron, it is important that the level differences between the lowest and highest frequency are reduced by approx 5 dB.

Otherwise, carriers with high levels may cause cross-modulation products, which decrease the IM-ratio in channels with low level.

The picture quality of the relevant programmes would suffer in this case.

Channels	Reduction	received max. level
10	6,8 dB	68,2 dB
20	9,4 dB	65,6 dB
30	10,8 dB	64,2 dB
40	11,8 dB	63,2 dB

Processing and transmission in VHF / UHF range (47- 862 MHz)

Minimum level: 60 dB μ V

Maximum level: 83 dB μ V

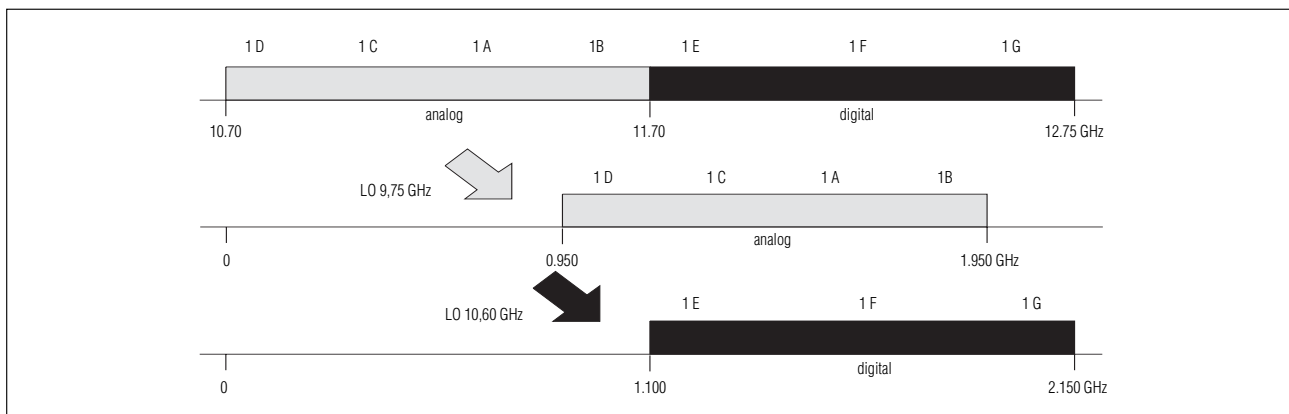
Noise figure of FM TV signals

Minimum values during 99% of the time of the worst month of the year:

at 36 MHz channel bandwidth: 12 dB

at 27 MHz channel bandwidth: 14 dB

Frequency ranges ASTRA 1A - 1G



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