



Grundig SAT Systems

HEADEND TERRESTRIC MODULE

HTM 300

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GRUNDIG Service (at the end of this user manual)

Channel/Frequency tables
Service Germany/Europa

Scope of delivery

1 amplifier cassette HTM 300
1 user manual

Technical data

CE This product conforms with the requirements of the 73/23/EC and 89/336/EC guidelines of the European Council.

The standards EN 50083-2, EN 50083-2/A1, EN 50083-1 and EN 60065 required for the CE certification are kept to.

Inputs

Aerial inputs:

UHF A	Channel set 1 ...5, optional channel set 6 ...8
UHF B	Channel set 9, optional channel set 6 ...8
VHF	Channel set 10 ...11
FM	Channel set 12

Channels/frequencies:

FM	87.5 ... 108 MHz
VHF, 8 channels	C5 - C12, 175.25 ... 224.25 MHz
FM, 40 Channels	C21 - C60, 471.25 ... 783.25 MHz

Input level:

VHF/UHF	56 ... 85 dB μ V
FM	50 ... 70 dB μ V

Amplification:

UHF	typ. 45 dB, adjustable from 4 dB to 45 dB
VHF	typ. 46 dB, adjustable from -8 dB to 46 dB
FM	adjustable from 20 dB to 40 dB with the level control at the front of the cassette.

Noise:

Noise figure	7.4 dB
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Output

Output level:

VHF/UHF	100 dB μ V
FM	90 dB μ V
<u>Modulation range:</u>	100 dB μ V (\geq 60dB s/n ratio, 12 carriers) 119 dB μ V (to EN 50083-5, part 3.1)

Connectors

RF input:	4 IEC sockets (2 x UHF, 1 x VHF, 1 x FM)
RF output:	1 IEC socket
9-pin SUB-D socket:	e.g. for software downloading
10-pin connector strip:	for all supply voltages and serial interface

Ambient temperature	-10°C ... +50°C
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The terrestrial amplifier cassette HTM 300

The selective amplifier cassette HTM 300 serves for processing terrestrial radio and television channels to make them appropriate for the injection into a cable network. The amplifier cassette is a cost-saving solution for small systems, especially if many terrestrial radio and television channels can be received.

The cassette can be operated in the GRUNDIG head stations STC 316, STC 332, STC 1200, STC 1880, STC 800/880, and STC 80.

All TV channels are individually processed in a selective way to keep unwanted aerial signals away from the cable network. The amplification can be adjusted for every TV channel in a wide range to make certain that all TV channels have the same output level despite of different reception fieldstrengths.

The cassette has 2 UHF aerial inputs for differently oriented UHF aeriels. In addition, it has a VHF and an FM aerial input.

The cassette has 9 UHF channel filters for the range C21 to C60, 2 VHF channel filters for the range C5 to C12, and an FM broadband amplifier for the range 87.5 MHz to 108 MHz.

The assignment of the 9 UHF channel filters to the UHF inputs A and B via the variable input coupler is effected automatically.

Examples:

If 2 channel filters are assigned the UHF input B, 7 channel filters remain available for the UHF input A, or,
if 4 channel filters are assigned the UHF input B, 5 channel filters remain available for the UHF input A.

Programming of the cassette is carried out exclusively by means of the keyboard on the control unit of the head station.

It is necessary to adjust the reception channel and the current channel filter for every individual TV channel.

To prevent the settings of the current channel filter from being misadjusted, it is possible to extremely detune (= switch off) all input channels and the amplification of the other channel filters. This detuning is indicated in the display of the head station.

For difficult reception conditions requiring an exact frequency tuning, a finetuning function is provided.

The amplification of the FM broadband amplifier is adjusted by means of a level control at the front of the cassette.

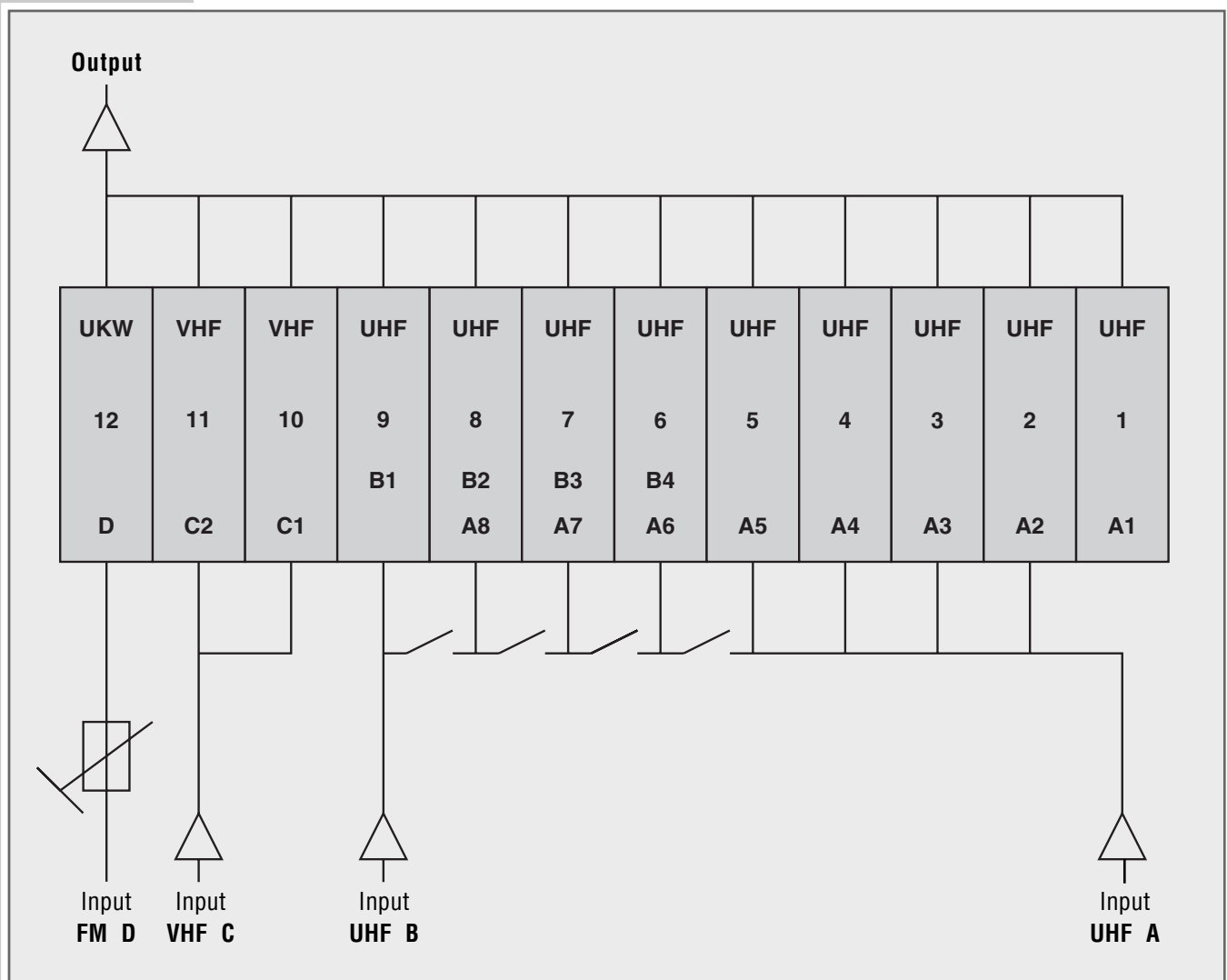
All digital settings are saved in the cassette, that is, they are retained even if the cassette is disconnected from the mains supply and installed into another head station.

All radio stations and TV channels are available at a common output and are fed from there into the signal bus of the head station.

Important:

- Inputs which are not used with this cassette must be terminated with a 75 Ω resistor.
- Input signals with a level ≥ 84 dB μ V must be attenuated by means of an input filter.
- The level range of the FM broadband amplifier can be adjusted with the level control at the front of the cassette. Amplification from 20 dB to 40 dB.
- It is possible to update the software at any time via the 9-pin Sub-D socket of the cassette.
For this, a personal computer and the WinSelVer programme are required.
- For the installation of this cassette into the GRUNDIG head station STC 1880, the additional Installations Set STC 1880 which is available as optional accessory is required.

The block diagram of the amplifier cassette



INSTALLATION, CONNECTING

Installing the cassette into the head station, connecting it, and adjusting the level

Installing the cassette into the head station STC1880 or STC 80

Caution:

Before fitting a new cassette or replacing an existing one, it is absolutely necessary to disconnect the mains plug from the head station.

Only when installing into the head station STC 1880:

- 1 Remove the installation material and the installation instructions from the installation set STC 1880. Complete the cassette HTM 300, plug it into the extension slot provided in the respective head station, then connect and fix it.
 - The cassette is now connected with all necessary supply voltages and data lines and ready for use
- 2 Inject the terrestrial RF signals (FM, VHF and UHF) via the respective input sockets of the cassette HTM 300.
- 3 Connect the RF cable of a measuring receiver to the output socket of the cassette HTM 300.
- 4 Reconnect the head station to the mains power supply.
- 5 Adjust the output level of all channels of the cassette HTM 300 to 100dB μ V (± 2 dB).
- 6 Disconnect the mains plug of the head station from the wall outlet.
- 7 **STC 1880:**
Plug a commercially available level control into the output socket of the cassette HTM 300.
- 8 Connect the output socket of the level control via a RF cable to the free input socket (F-connector, screw terminal) of the head station's output collector.
or
- 8 **STC 80:**
Connect the output socket of the cassette via a RF cable to the input socket of the output collector (combiner) of the head station.
- 9 Connect the measuring receiver to the »**OUTPUT**« socket of the head station.
- 10 Reconnect the head station to the mains power supply.
- 11 Use the appropriate level control to adjust the output level determined before on the head station.

In this way it is assured that the output levels of all cassettes fitted are equal.

Installation into any other GRUNDIG head station

Caution:

Before fitting a new cassette or replacing an existing one, it is absolutely necessary to disconnect the mains plug from the head station.

- 1 Connect the aerial cable of the terrestrial aerial with the RF input socket of the measuring receiver, select any terrestrial TV channel (e.g. "ZDF") on the measuring receiver, measure the reception level and note down the value.
- 2 Disconnect the mains cable of the head station from the wall outlet.
- 3 Connect the aerial cable of the terrestrial aerial with the corresponding input socket of the output collector (combiner) to which the cassette HTM 300 is later to be connected.
- 4 Connect the measuring receiver to the »**OUTPUT**« socket of the head station.
- 5 Reconnect the head station to the mains power supply.
- 6 Measure the reception level of the same TV channel (e.g. "ZDF") and use the corresponding level control on the head station to adjust the level measured and noted down before.
- 7 Disconnect the mains cable of the head station from the wall outlet.
- 8 Plug the cassette HTM 300 into the extension slot provided on the head station, then connect and fix it.
- 9 Connect the measuring receiver to the **OUTPUT** « socket of the head station.
- 10 Reconnect the head station to the mains power supply.
- 11 Adjust the output level of all channels of the cassette HTM 300 to 100dB μ V (± 2 dB).
- 12 Use the level control to adjust the output level determined before on the head station.

In this way it is assured that the output levels of all cassettes fitted are equal.

THE MENU GUIDE

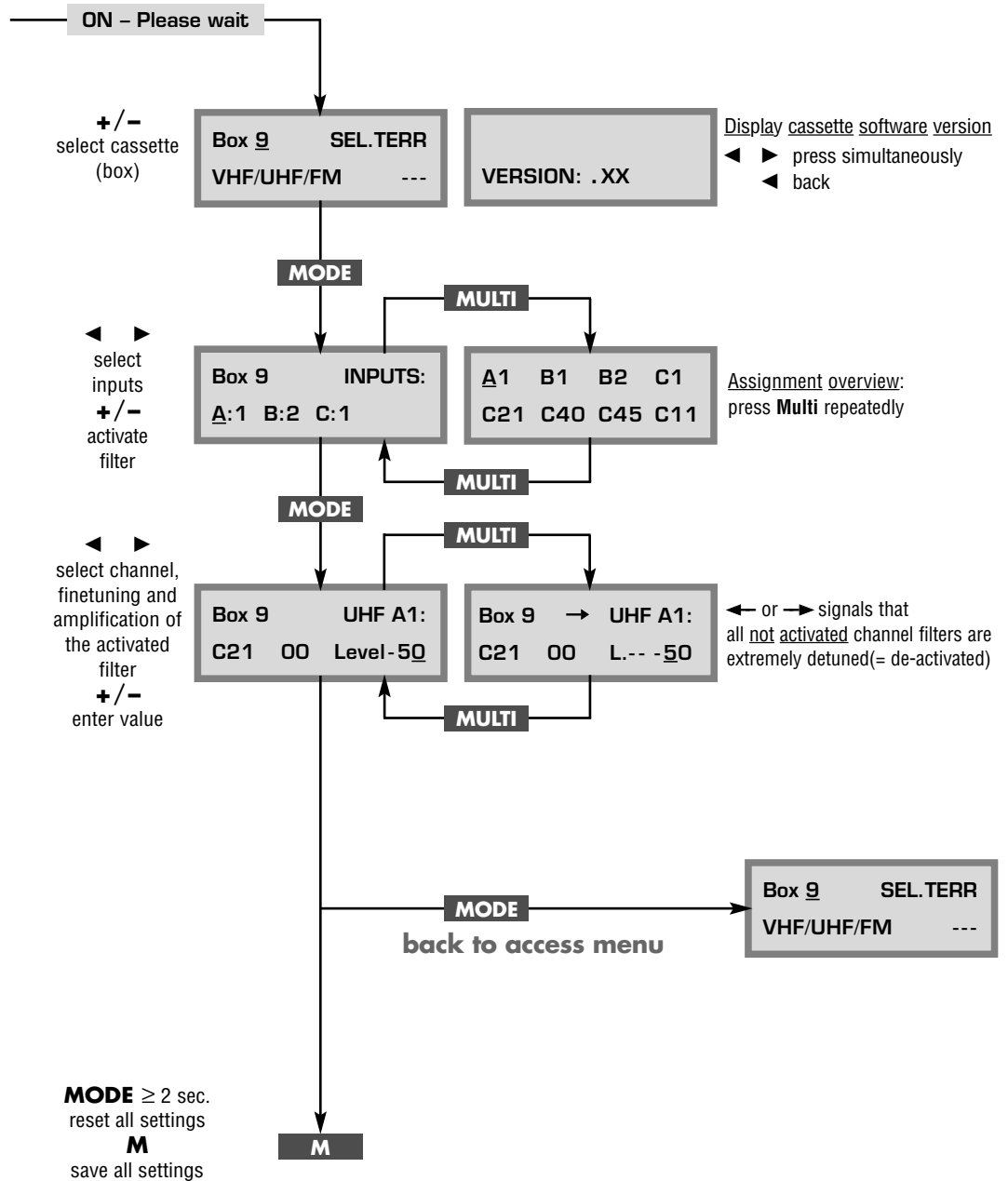


Note:

You may select the individual menus or menu items by pressing the **MODE** button. To go back to the access menu without saving the settings made, press the **MODE** button longer than 2 seconds.

When in a menu, use the ◀ ▶ buttons to select the desired setting, then the + or - buttons to change the settings.

Press the **M** button to save all settings and to return to the access menu.



Programming the cassette



Programming of the cassette is effected exclusively via the keyboard of the head stations's control unit.

The user is guided by means of the two-line display on the control unit.

1 You may select the following menu items with the **MODE** button:

- Access menu, cassette software version indication
- Select cassette (Box No.)
- Select inputs and activate channel filter
- Settings of the activated channel filter
- Select input channel, finetuning
- Adjust amplification level
- Save all settings

The access menu

- Cassette software indication

- 1 After switching on, the access menu, e.g. »Box 9 SEL. TERR«, appears in the display of the control unit.
- 2 If desired or necessary, you may indicate the software version of this cassette (Box) by pressing the ◀ ▶ buttons at the same time.
 - "VERSION .01", for example, appears in the display of the head station.

Box 9 SEL.TERR
VHF/UHF/FM ---

VERSION: .XX ---

Box 9 SEL.TERR
VHF/UHF/FM ---

Box 9 INPUTS:
A:1 B:2 C:1

A1 B2 B2 C1
C21 C40 C45 C11

Select cassette (Box No.)

- 1 Use the + or - button to select the desired cassette (Box No.).

Select inputs (UHF, VHF, FM) and activate channel filter

- 1 Press the **MODE** button. The »INPUTS« menu appears in the display.
- 2 Use the ◀ ▶ buttons to select the inputs A, B, C, then use the + or - button to activate the number of required channel filters.
- 3 If desired or necessary, select the assignment of the channel filters to the inputs A, B, C by repeatedly pressing the **MULTI** button.

Continued on next page.

Box 9		UHF A1:
C21	00	Level 00

Box 9	→	UHF A1:
C21	00	L... -50

Box 9		UHF A1:
C21	00	Level 00

Box 9		UHF A1:
C21	-18	Level 00

Box 9		UHF A1:
C21	-18	Level 00

Box 9		UHF A1:
C21	auto	

Settings of the activated channel filter

- 1 Press the **MODE** button. The menu for the activated channel filter, e.g. »Box 9 UHF A1«, appears in the display.

Note:

To prevent the settings of the activated channel filter from being mis-adjusted, all input channels and the amplification of the other channel filters must extremely be detuned (= de-activated) using the **MULTI** button. If the input channel of the activated channel filter is C44 or lower, all other channel filters are set to max. channel/frequency and min. amplification. If the input channel of the activated channel filter is C45 or higher, all other channel filters are set to min. channel/frequency and min. amplification. The degree of detuning is indicated by an arrow in the display.

Meaning of the arrow:

- arrow pointing to the left = detuning to min. channel frequency,
- arrow pointing to the right = detuning to max. channel frequency.

Selecting the input channel, finetuning

- 1 Use the ◀ ▶ buttons to select the C (= channel) menu item then use the + or - button to select the input channel.

Note:

In the case of difficult reception conditions requiring an exact channel or frequency setting, it is possible to finetune every input channel in the range of -99 to +99 corresponding to about ±2 channels.

- 2 Use the ◀ ▶ buttons to select the 00 (= finetuning) menu item then use the + or - button to finetune the input channel.

Adjusting the amplification – automatically

Important:

Before using the automatic level control you must disconnect the FM aerial from the »UKW D« aerial input.

- 1 Use the ◀ ▶ buttons to select the Level (= amplification level) menu item.

Note:

Level range:

00 = max. amplification (typ. 45 dB) to -99 = min. amplification (typ. 5 dB).

- 2 Use the + or - button to start the automatic amplification adjustment.
 - The display indicates the automatic amplification adjustment.

Box 9	UHF A1:
C21	-18 Level 00

Adjusting the amplification – manually

- 1 Use the ◀ ▶ buttons to select the amplification value then use the + or – button to adjust the desired value.

Note:

If no measurement receiver is at your disposition for the adjustments, please refer to the level indication in the display of the headend station for your orientation.

In order to use this level indication, you must disconnect the FM aerial from the »UKW D« aerial input.

L. – – too low amplification,

L. + – optimum amplification,

L. + + too high amplification.

Note:

The level range of the FM broadband amplifier can be adjusted with the level control at the front of the cassette: amplification range from 20 dB to 40 dB.

Saving all settings

Caution:

If you wish to recover the old settings, press the **MODE** button until the access menu, e.g. »Bx 9 SEL. TERR«, re-appears in the display of the control unit.

– The previous settings are recovered.

or

Box 9	SEL.TERR
VHF/UHF/FM	---

- 1 Press the **M** button to save the new settings.
 - The access menu, e.g. »Bx 9 SEL. TERR«, re-appears in the display.

To adjust further channel filters repeat the above steps.

Note:

After having saved the settings, all adjusted channel filters are activated.

It may happen that the amplification of one or several channel filters is slightly changed when assigning adjacent channels.

It is therefore possible to manually adjust the amplification of these channel filters after the assignment.

Follow these steps:

- 1 Press the **MODE** button repeatedly until the channel filter to be corrected appears in the display.
- 2 Use the ◀ ▶ buttons to select the amplification level then use the + or – button to adjust the desired level.
- 3 Press the **M** button to save the setting.

Box 9	UHF A1:
C21	-18 Level 00

GRUNDIG SERVICE

CCIR-Kanalraster/CCIR Channel Steps/Pas de canaux CCIR

Bild-Ton-Abstand: 5,5 MHz / Video-audio distance: 5.5 MHz / Ecart vidéo/audio: 5,5 MHz

Kanal	Freq. BT in MHz	Kanal	Freq. BT in MHz	Kanal	Freq. BT in MHz	Kanal	Freq. BT in MHz
Chann.	Frequ. in MHz	Chann.	Frequ. in MHz	Chann.	Frequ. in MHz	Chann.	Frequ. in MHz
Canal	Fréqu. en MHz	Canal	Fréqu. en MHz	Canal	Fréqu. en MHz	Canal	Fréqu. en MHz
C 2	48,25	S 16	266,25	S 41	463,25	C 45	663,25
C 3	55,25	S 17	273,25	C 21	471,25	C 46	671,25
C 4	62,25	S 18	280,25	C 22	479,25	C 47	679,25
S 2	112,25	S 19	287,25	C 23	487,25	C 48	687,25
S 3	119,25	S 20	294,25	C 24	495,25	C 49	695,25
S 4	126,25	S 21	303,25	C 25	503,25	C 50	703,25
S 5	133,25	S 22	311,25	C 26	511,25	C 51	711,25
S 6	140,25	S 23	319,25	C 27	519,25	C 52	719,25
S 7	147,25	S 24	327,25	C 28	527,25	C 53	727,25
S 8	154,25	S 25	335,25	C 29	535,25	C 54	735,25
S 9	161,25	S 26	343,25	C 30	543,25	C 55	743,25
S 10	168,25	S 27	351,25	C 31	551,25	C 56	751,25
C 5	175,25	S 28	359,25	C 32	559,25	C 57	759,25
C 6	182,25	S 29	367,25	C 33	567,25	C 58	767,25
C 7	189,25	S 30	375,25	C 34	575,25	C 59	775,25
C 8	196,25	S 31	383,25	C 35	583,25	C 60	783,25
C 9	203,25	S 32	391,25	C 36	591,25	C 61	791,25
C 10	210,25	S 33	399,25	C 37	599,25	C 62	799,25
C 11	217,25	S 34	407,25	C 38	607,25	C 63	807,25
C 12	224,25	S 35	415,25	C 39	615,25	C 64	815,25
S 11	231,25	S 36	423,25	C 40	623,25	C 65	823,25
S 12	238,25	S 37	431,25	C 41	631,25	C 66	831,25
S 13	245,25	S 38	439,25	C 42	639,25	C 67	839,25
S 14	252,25	S 39	447,25	C 43	647,25	C 68	847,25
S 15	259,25	S 40	455,25	C 44	655,25	C 69	855,25

France-Kanalraster/France Chann. Steps/Pas de canaux en France

Bild-Ton-Abstand: 6,5 MHz / Video-audio distance: 6.5 MHz / Ecart vidéo/audio: 6,5 MHz

Kanal	Freq. BT in MHz	Kanal	Freq. BT in MHz	Kanal	Freq. BT in MHz	Kanal	Freq. BT in MHz
Chann.	Frequ. in MHz	Chann.	Frequ. in MHz	Chann.	Frequ. in MHz	Chann.	Frequ. in MHz
Canal	Fréqu. en MHz	Canal	Fréqu. en MHz	Canal	Fréqu. en MHz	Canal	Fréqu. en MHz
C 21	471,25	C 34	575,25	C 47	679,25	C 60	783,25
C 22	479,25	C 35	583,25	C 48	687,25	C 61	791,25
C 23	487,25	C 36	591,25	C 49	695,25	C 62	799,25
C 24	495,25	C 37	599,25	C 50	703,25	C 63	807,25
C 25	503,25	C 38	607,25	C 51	711,25	C 64	815,25
C 26	511,25	C 39	615,25	C 52	719,25	C 65	823,25
C 27	519,25	C 40	623,25	C 53	727,25	C 66	831,25
C 28	527,25	C 41	631,25	C 54	735,25	C 67	839,25
C 29	535,25	C 42	639,25	C 55	743,25	C 68	847,25
C 30	543,25	C 43	647,25	C 56	751,25	C 69	855,25
C 31	551,25	C 44	655,25	C 57	759,25		
C 32	559,25	C 45	663,25	C 58	767,25		
C 33	567,25	C 46	671,25	C 59	775,25		

OIRT-Kanalraster/OIRT Channel Steps/Pas de canaux OIRT

Bild-Ton-Abstand: 6,5 MHz / Video-audio distance: 6.5 MHz / Ecart vidéo/audio: 6,5 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
R 1	49,75	s 14	271,25	C 21	471,25	C 46	671,25
R 2	59,25	s 15	279,25	C 22	479,25	C 47	679,25
R 3	77,25	s 16	287,25	C 23	487,25	C 48	687,25
R 4	85,25	s 17	295,25	C 24	495,25	C 49	695,25
R 5	93,25	s 18	303,25	C 25	503,25	C 50	703,25
s 1	111,25	s 19	311,25	C 26	511,25	C 51	711,25
s 2	119,25	s 20	319,25	C 27	519,25	C 52	719,25
s 3	127,25	s 21	327,25	C 28	527,25	C 53	727,25
s 4	135,25	s 22	335,25	C 29	535,25	C 54	735,25
s 5	143,25	s 23	343,25	C 30	543,25	C 55	743,25
s 6	151,25	s 24	351,25	C 31	551,25	C 56	751,25
s 7	159,25	s 25	359,25	C 32	559,25	C 57	759,25
s 8	167,25	s 26	367,25	C 33	567,25	C 58	767,25
R 6	175,25	s 27	375,25	C 34	575,25	C 59	775,25
R 7	183,25	s 28	383,25	C 35	583,25	C 60	783,25
R 8	191,25	s 29	391,25	C 36	591,25	C 61	791,25
R 9	199,25	s 30	399,25	C 37	599,25	C 62	799,25
R 10	207,25	s 31	407,25	C 38	607,25	C 63	807,25
R 11	215,25	s 32	415,25	C 39	615,25	C 64	815,25
R 12	223,25	s 33	423,25	C 40	623,25	C 65	823,25
s 9	231,25	s 34	431,25	C 41	631,25	C 66	831,25
s 10	239,25	s 35	439,25	C 42	639,25	C 67	839,25
s 11	247,25	s 36	447,25	C 43	647,25	C 68	847,25
s 12	255,25	s 37	455,25	C 44	655,25	C 69	855,25
s 13	263,25	s 38	463,25	C 45	663,25		

GB-Kanalraster/GB Channel Steps/Pas de canaux en GB

Bild-Ton-Abstand: 6,0 MHz / Video-audio distance: 6.0 MHz / Ecart vidéo/audio: 6,0 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
A	45,75	C 26	511,25	C 41	631,25	C 56	751,25
B	53,75	C 27	519,25	C 42	639,25	C 57	759,25
C	61,75	C 28	527,25	C 43	647,25	C 58	767,25
D	175,25	C 29	535,25	C 44	655,25	C 59	775,25
E	183,25	C 30	543,25	C 45	663,25	C 60	783,25
F	191,25	C 31	551,25	C 46	671,25	C 61	791,25
G	199,25	C 32	559,25	C 47	679,25	C 62	799,25
H	207,25	C 33	567,25	C 48	687,25	C 63	807,25
I	215,25	C 34	575,25	C 49	695,25	C 64	815,25
J	223,25	C 35	583,25	C 50	703,25	C 65	823,25
C 21	471,25	C 36	591,25	C 51	711,25	C 66	831,25
C 22	479,25	C 37	599,25	C 52	719,25	C 67	839,25
C 23	487,25	C 38	607,25	C 53	727,25	C 68	847,25
C 24	495,25	C 39	615,25	C 54	735,25	C 69	855,25
C 25	503,25	C 40	623,25	C 55	743,25		

China-Kanalraster/China Channel Steps/Pas de canaux en China

Bild-Ton-Abstand: 6,5 MHz / Video-audio distance: 6.5 MHz / Ecart vidéo/audio: 6,5 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
D 1	49,75	Z 14	272,25	D 13	471,25	D 38	711,25
D 2	57,75	Z 15	280,25	D 14	479,25	D 39	719,25
D 3	65,75	Z 16	288,25	D 15	487,25	D 40	727,25
D 4	77,25	Z 17	296,25	D 16	495,25	D 41	735,25
D 5	85,25	Z 18	304,25	D 17	503,25	D 42	743,25
Z 1	112,25	Z 19	312,25	D 18	511,25	D 43	751,25
Z 2	120,25	Z 20	320,25	D 19	519,25	D 44	759,25
Z 3	128,25	Z 21	328,25	D 20	527,25	D 45	767,25
Z 4	136,25	Z 22	336,25	D 21	535,25	D 46	775,25
Z 5	144,25	Z 23	344,25	D 22	543,25	D 47	783,25
Z 6	152,25	Z 24	352,25	D 23	551,25	D 48	791,25
Z 7	160,25	Z 25	360,25	D 24	559,25	D 49	799,25
D 6	168,25	Z 26	368,25	D 25	607,25	D 50	807,25
D 7	176,25	Z 27	376,25	D 26	615,25	D 51	815,25
D 8	184,25	Z 28	384,25	D 27	623,25	D 52	823,25
D 9	192,25	Z 29	392,25	D 28	631,25	D 53	831,25
D 10	200,25	Z 30	400,25	D 29	639,25	D 54	839,25
D 11	208,25	Z 31	408,25	D 30	647,25	D 55	847,25
D 12	216,25	Z 32	416,25	D 31	655,25	D 56	855,25
Z 8	224,25	Z 33	424,25	D 32	663,25	D 57	863,25
Z 9	232,25	Z 34	432,25	D 33	671,25		
Z 10	240,25	Z 35	440,25	D 34	679,25		
Z 11	248,25	Z 36	448,25	D 35	687,25		
Z 12	256,25	Z 37	456,25	D 36	695,25		
Z 13	264,25	Z 38	464,25	D 37	703,25		

USA-Kanalraster/USA Channel Steps/Pas de canaux en E. U. A.

Bild-Ton-Abstand: 4,5 MHz / Video-audio distance: 4.5 MHz / Ecart vidéo/audio: 4,5 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
c 2	55,25	P	253,25	c 33	585,25	c 60	747,25
c 3	61,25	Q	259,25	c 34	591,25	c 61	753,25
c 4	67,25	R	265,25	c 35	597,25	c 62	759,25
c 5	77,25	S	271,25	c 36	603,25	c 63	765,25
c 6	83,25	T	277,25	c 37	609,25	c 64	771,25
A	121,25	U	283,25	c 38	615,25	c 65	777,25
B	127,25	V	289,25	c 39	621,25	c 66	783,25
C	133,25	W	295,25	c 40	627,25	c 67	789,25
D	139,25	c 14	471,25	c 41	633,25	c 68	795,25
E	145,25	c 15	477,25	c 42	639,25	c 69	801,25
F	151,25	c 16	483,25	c 43	645,25	c 70	807,25
G	157,25	c 17	489,25	c 44	651,25	c 71	813,25
H	163,25	c 18	495,25	c 45	657,25	c 72	819,25
I	169,25	c 19	501,25	c 46	663,25	c 73	825,25
c 7	175,25	c 20	507,25	c 47	669,25	c 74	831,25
c 8	181,25	c 21	513,25	c 48	675,25	c 75	837,25
c 9	187,25	c 22	519,25	c 49	681,25	c 76	843,25
c 10	193,25	c 23	525,25	c 50	687,25	c 77	849,25
c 11	199,25	c 24	531,25	c 51	693,25	c 78	855,25
c 12	205,25	c 25	537,25	c 52	699,25	c 79	861,25
c 13	211,25	c 26	543,25	c 53	705,25	c 80	867,25
J	217,25	c 27	549,25	c 54	711,25	c 81	873,25
K	223,25	c 28	555,25	c 55	717,25	c 82	879,25
L	229,25	c 29	561,25	c 56	723,25	c 83	885,25
M	235,25	c 30	567,25	c 57	729,25		
N	241,25	c 31	573,25	c 58	735,25		
O	247,25	c 32	579,25	c 59	741,25		

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