Televes

QPSK-PAL

1 CH

User manual

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1.- TECHNICAL SPECIFICATIONS

1.1.- QPSK-PAL Ref. 557801

QPSK demodulator	**LNB powering:**	13/17V (±0.5 V⎓) / OFF 22KHz (±2Khz) (Selec. ON/OFF)	**Input symbol rate:**	3 - 45 Mbaud
	Input through losses:	< 1.5 dB (950-2150 MHz)	**Symbol rate capture range:**	± 960 ppm
	Input frequency:	950 - 2150 MHz	**Roll-off factor:**	35%
	Frequency steps:	1 MHz	**Convolutional code:**	1/2, 2/3, 3/4, 5/6, 7/8
	Locking margin:	± 5 MHz	**De-scrambling:**	ETS300421
	Input level:	44 to 84 dBµV (-65 to 25 dBm)	**De-interleaving:**	ETS300241
	VSWR input (75 ohm):	> 7 dB (950 - 2150 MHz)	**Block code:**	RS(204,188)
MPEG-2-Video decoding	**Input format 1:**	MPEG-1	**Chrominance Format:**	4:2:0
	Decoding:	ISO/IEC 11172-2	**Video resolution:**	Max. 720 x 576
	Input format 2:	MPEG-2	**WSS Signaling:**	Active
	Decoding:	ISO/IEC 13818-2 (MP@ML)	**PAL subtitle insertion:**	Active
	TS input rate:	Max. 90 Mbits/seg	**Base band video output:**	RJ45 connector
	Video rate:	1.5 to 15 Mbits/seg		
MPEG-2-Audio decoding	**Input format:**	MPEG-1, MPEG-2	**Audio output:**	Mono
	Decoding:	LAYER 1, LAYER 2		
RF output	**Output frequency:**	46-862 MHz	**VSWR output (75 ohm):**	10 dB min. 14 dB tip.
	Frequency steps:	250 KHz	**Through losses:**	< 1.5 dB (46-862 MHz)
	Maximum output level:	80 dBµV ±5 dB	**Spurious level:**	55 dBc min. >60 dBc tip.
	Regulation margin:	> 15 dB		
General	**Consumption:**	5V⎓: 800 mA tip 15V⎓: 400 mA tip. 18V⎓: 300 mA max. (if powering a converter) / 0 A (powering converter off)		
	Protecion level:	IP20		

The technical specifications are defined with a maximum room temperature of 40º C.

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1.2.- Technical specifications Amplifier ref. 5075

Amplifier	**Frequency range:**	47 ... 860 MHz	**Connector:**	"F"
	Gain:	45 ± 2 dB	**Powering:**	15 V⎓
	Regulation margin:	20 dB	**Consumption at 15 V:**	800 mA
	Output level (60 dB):	105 dBµV (42 CH CENELEC)	**Test socket:**	-30 dB

1.3.- Technical specifications Power Supply ref. 5029

Power Supply	**Mains voltage:**	230 ± 15 % V~	**Maximum current provided:**	24V⎓ (0,55 A) 18V⎓ (0,8 A) 15V⎓ (4,2 A)(1) 5V⎓ (6,6 A)
	Output voltages:	5, 15, 18, 24V⎓		

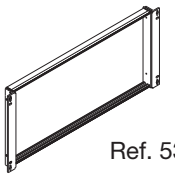
(1) If you use 24V and/or 18V, you need to take the power consumed by these from the 15V power.

2.- REFERENCE DESCRIPTION

Ref. 557801 .... QPSK-PAL (46 - 862 MHz)

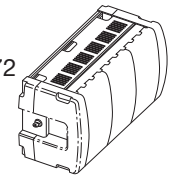
Ref. 5075 .... Launch Amplifier (47 - 862 MHz)

Ref. 5029 .... Power Supply Unit (230 V~ ± 15 % - 50/60 Hz)
(24 V⎓ - 0,55 A)
(18 V⎓ - 0,8 A)
(15 V⎓ - 4,2 A)(1)
(5 V⎓ - 6,6 A)



Ref. 5301

Ref. 5072



Ref. 7234 .... Universal Programmer

Ref. 5071 .... Wall support (10 mod. + PSU)

Ref. 5239 .... Wall support (12 mod. + PSU)

Ref. 5073 .... Blank plate

Ref. 4061 .... "F" 75 ohm adapter load

Ref. 5072 .... Universal cabinet

Ref. 5069 .... Cabinet of 14 modules + power supply unit

Ref. 5301 .... 19" subrack

Ref. 5052 .... PAL headend control

Ref. 5334 .... Ventilation Unit

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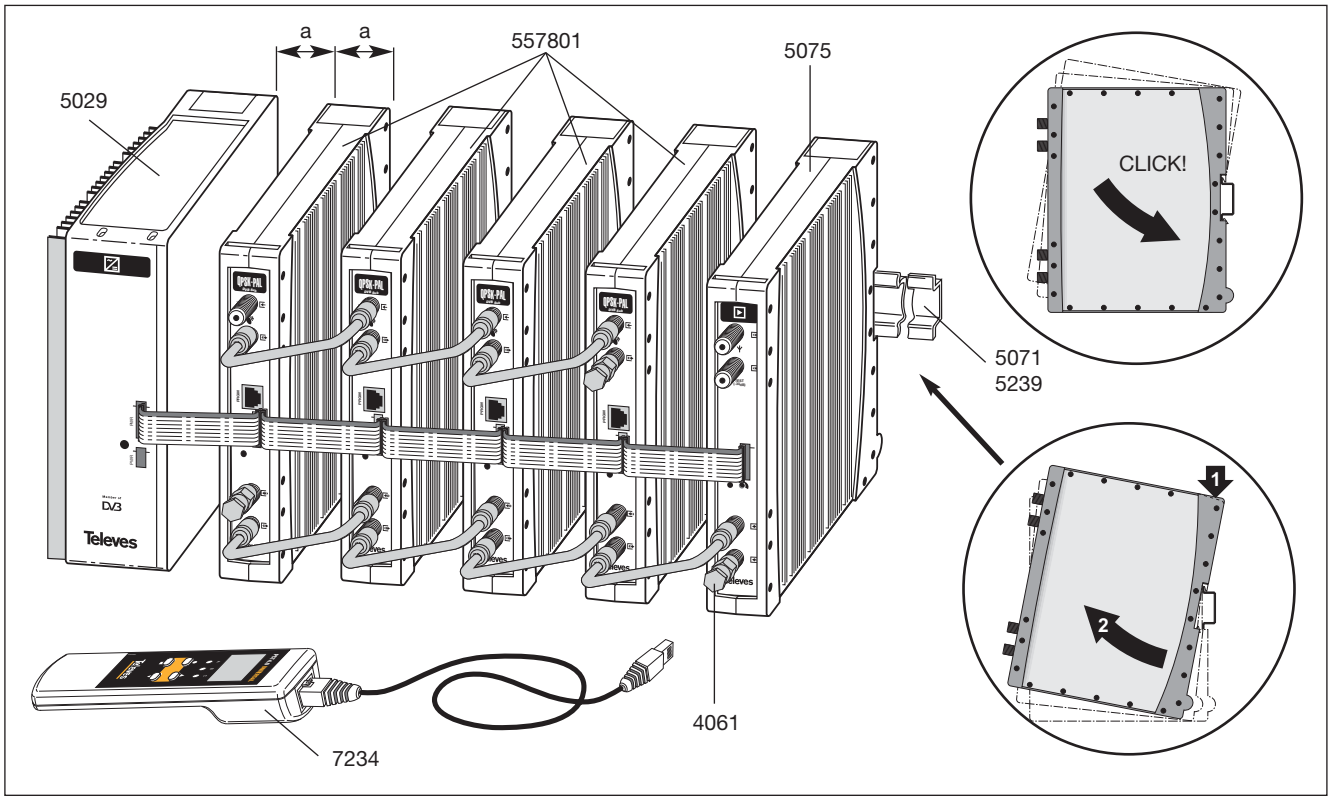
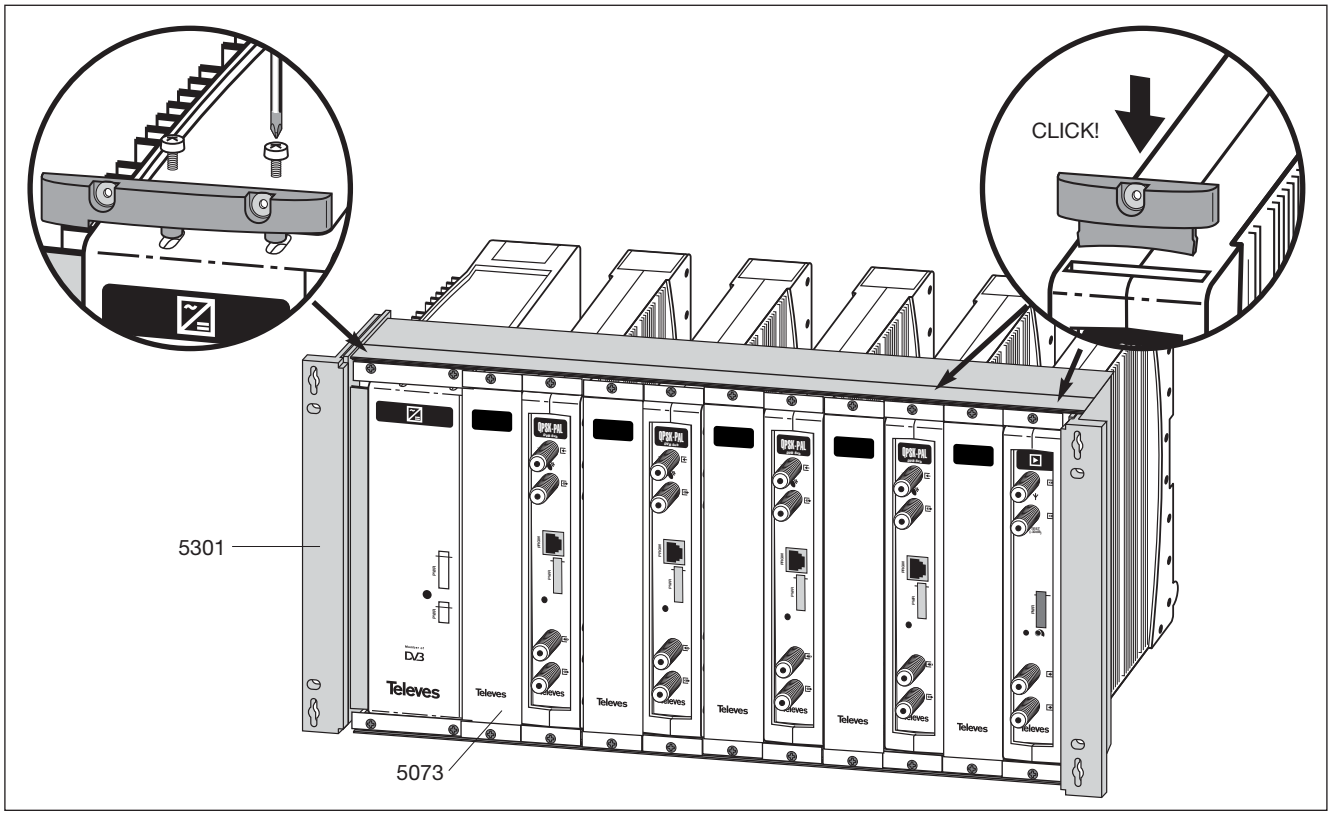
3 .- MOUNTING

3.1.- Wall mounting



3.2.- 19” rack mounting



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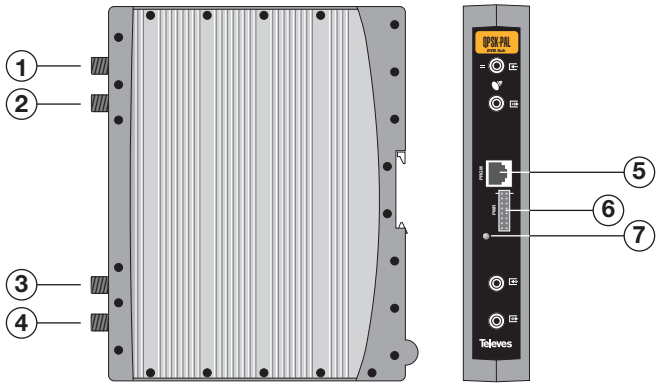
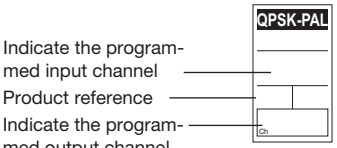
4. - ELEMENT DESCRIPTION

4.1.- QPSK-PAL



1.- IF input
2.- IF output
3.- RF input
4.- RF output
5.- Programmer PC connector
6.- Powering input
7.- LED



The QPSK-PAL transmodulator turns a TV or radio channel (chosen by the user) from the existing channels in a satellite transponder (QPSK modulation and an approximate bandwidth of 36 MHz) into a VHF/UHF channel (PAL modulation and a bandwidth of 7/8 MHz).

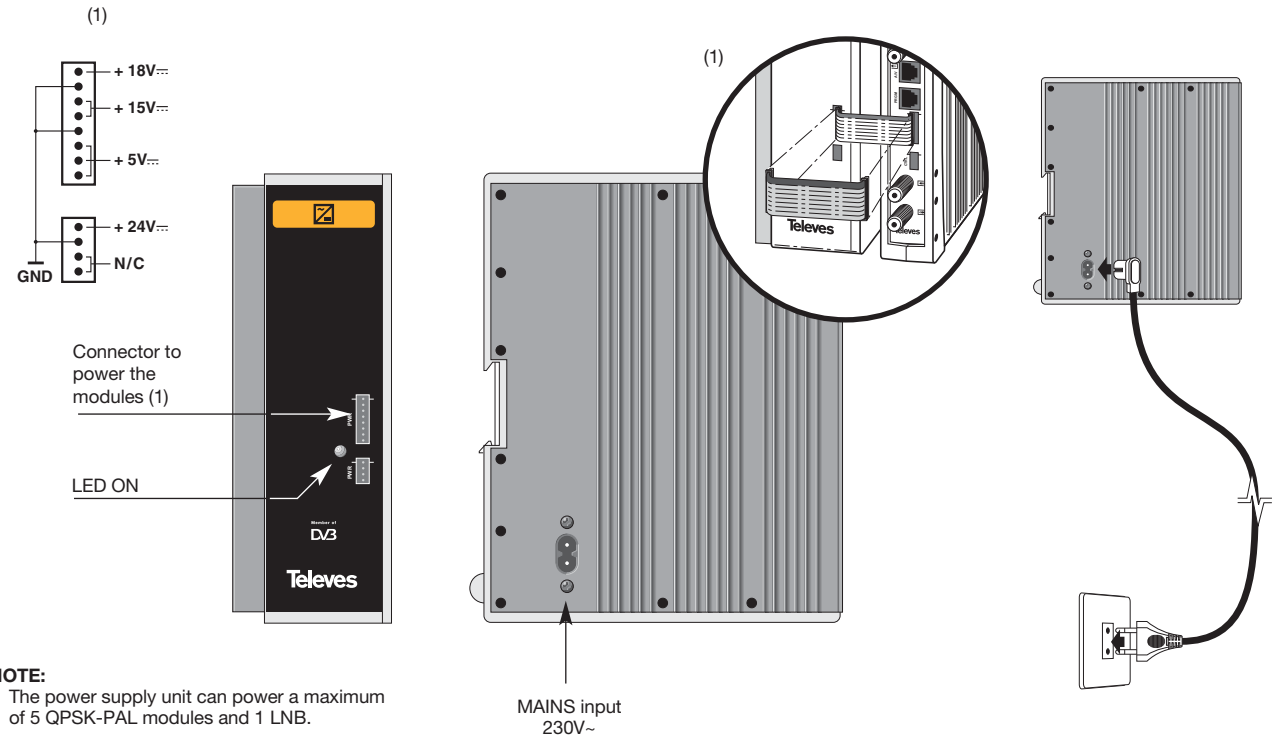
To do this, the unit carries out the QPSK demodulation of the input channel (transponder), thereby obtaining an MPEG-2 TS (MPEG-2 transport stream) to carry out the subsequent modulation (according to the standard) of the audio and video signals of the selected program in any channel or frequency between 46 and 862 MHz.

The selection of the different parameters (input frequency, S.R, output level, output frequency, ...) is carried out via the programmer ref. 7234, that connects to the front of the device.

The QPSK-PAL transmodulator disposes of an IF input and output in the upper “F” connectors with the aim of enabling the input signal to pass to various modules and to allow the powering of a converter via the IF input (13V or 18V), as well as to be able to generate a 22 KHz tone for the selection of the converter's oscillator.

It also has an RF input and output connector so as to be able to mix the channels for their subsequent amplification.

4.2.- Power supply unit



NOTE:
The power supply unit can power a maximum of 5 QPSK-PAL modules and 1 LNB.

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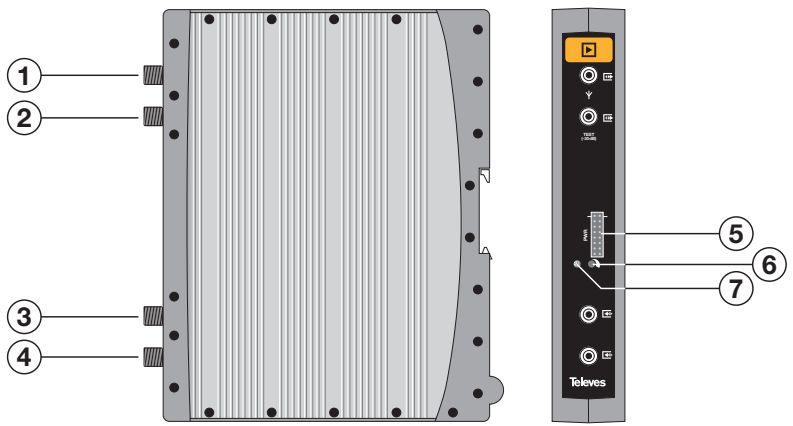
4.3.- Amplifier



1.- RF output
2.- Test socket
3.- RF Input
4.- RF Input
5.- Powering input
6.- Attenuator
7.- LED

The amplifier carries out the amplification of the generated channels in the QPSK-PAL transmodulators, covering a frequency range of 47 - 862 MHz.

It disposes of two input signal connectors to mix the channels coming from two systems. If only one of the inputs is used, it is advisable to load the unused input with 75 ohm, ref 4061.

The amplifier disposes of an output connector and a Test socket (-30dB) located at the top of the front panel.

The amplifier is powered with 15V via a cable, the same type as that used for powering the other modules of this system.

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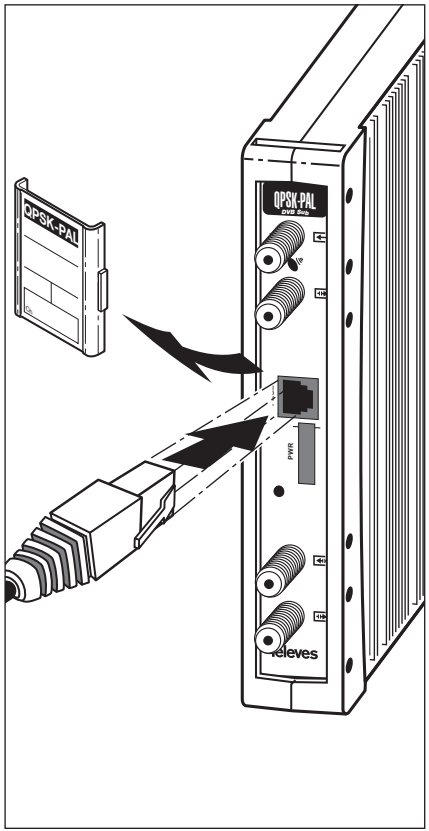
4.4. -Programmer PCT 4.0



The programmer consists of 4 buttons:

● : (short press) - Selects a digit within a specific programming menu.

▲ ▼ : Modification of the parameter (increases/decreases) pointed by the cursor.

■ : (short press) - Changes the programming menu.

● : (long press) - Changes from the main menu to the extended menu.

■ : (long press) - Saves and adjusts (from any menu or submenu).

■ + ● + ▲ : Increases the contrast of the screen.

■ + ● + ▼ : Decreases the contrast of the screen.

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5. - HOW TO USE THE PRODUCT

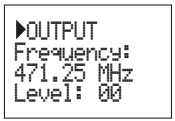
5.1.- MAIN MENU

When the programmer connector is inserted in the “PRGM” socket of the QPSK-PAL front pannel the first information displayed is the programmer version.

Then the unit version and build number are displayed:

a.- Output menu

The first main menu shows the output frequency/channel (depending on the freq. mode) and the output level.



The output frequency range is 47-862 MHz. The output level control ranges from 00 to 99.

To change the frequency you must press the ● button until is located over the selected digit. By using ▲ and ▼ you can modify the value of the digit. The following decimal values are permitted for the output frequency:

=> .00 MHz
=> .25 MHz
=> .50 MHz
=> .75 MHz

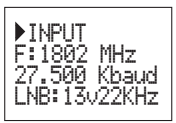
To modify the output channel and the output level you must press ● until the cursor is situated over the desired parameter, the value can be modified by pressing ▲ and ▼.

To switch between frequency mode and channel mode see 5.2. EXTENDED MENU.

b.- Input menu

The folowing menu enables the choice of input frequency (950-2150 MHz), input band rate QPSK (3-45 Mbaud) and the selecting of converter feed LNB (0V, 13V, 17V and tone 22KHz).

To modify a parameter you must press ● until the desired parameter flashes on and off. Then you can change the value using ▲ and ▼



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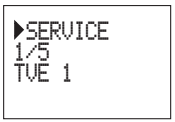
Should a shortcut is detected in the input connector (LNB powering enabled), the front led of the module will blink until this state disappears.

c.- Service menu

The name of the selected service is displayed along with the number of available services in the multiplex.



By pressing ▲ and ▼ buttons you can change the selected service.

d.- Audio menu

There are two different modes for the selection of the audio service: language search and index. (see point 5.2.b Audio Mode Menu in the EXTENDED MENU)

In **audio for language** you can choose two favourite languages for the audio. The unit will search for the audio correspondent to the first selected language. If it doesn't find it it will search for the second favourite. If it can't find any of the favourite languages the unit will select the first audio service of the program.

In this mode the unit searches for the selected audio even when this language is broadcasted in one of the channels of a dual service.

The list of languages that can be selected is:

'eng'	English
'fra'	French
'den'	Danish
'nor'	Norwegian
'spa'	Spanish
'ger'	German
'swe'	Swedish
'fin'	Finnish
'ita'	Italian
'dut'	Dutch
'por'	Portuguese
'pol'	Polish
'rus'	Russian
'mdr'	Chinese
'hun'	Hungarian
'jpn'	Japanese

'jpn'	Japanese
'lit'	Lithuanian
'est'	Estonian
'ara'	Arabic
'scc'	Serbian (Latin 1)
'cro'	Croatian
'ukr'	Ukrainian
'slo'	Slovakian
'bel'	Belarusian
'tur'	Turkish
'chi'	Chinese
'cze'	Czech
'rum'	Rumanian
'gre'	Greek
'lav'	Latvian
'kor'	Korean
'srp'	Serbian (Cyrillic 1)
'bul'	Bulgarian
'heb'	Hebrew
'che'	Chechen
'mol'	Moldavian
'slv'	Slovenian
'tlh'	Klingon

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NOTE: Sometimes the transmitted service does not identify the audio language correctly (for instance, it sends '---' instead of an audio identifier such as 'eng'), so the receiver cannot identify the selected language. Should this happens, it is recommended to use the manual mode to select the audio.

In **audio for index** the user selects the audio service from the list of available audios for the present program:

- **Audio for index:**

The corresponding audio subcarrier willl be modulated (L+R)/2.

R will be modulated in the audio subcarrier.

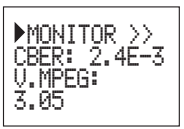
L will be modulated in the audio subcarrier.

NOTA: If the service of audio is dual mono (a language in the channel L and another one in channel R), the user it will have to select the suitable option (Right or Left). If R+L is selected will leave both languages, each one in its channel.

To carry out the modification the ● key must be pressed until the desired parameter flashes. Then the correspondent field can be modified using the ▲ and ▼ keys.

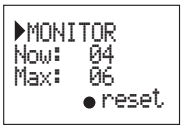
e.- Monitor menu 1

This menu shows the following information: estimation of the BER (bit error rate before Viterbi) and the firmware version of the MPEG decoder.



f.- Monitor menu 2

This menu indicates current temperature on a 1-10 scale, as well as the maximum temperature recorded at any time by the equipment. By pressing the ● key, the maximum is reset and updated according to current temperature.



The recommended operation ranges are as follows:

Optimal function: 0-6
High temperature: 7-8
Excessive temperature: 9-10

In the event that the maximum recorded lies outside the optimum range, the installation should be altered to bring down temperature. Should the QPSK-PAL modules be in a Ref 5069 cabinet installed and the working temperature be over the optimal level, the installation of a ventilation unit Ref 5334 is strongly recommended. To check whether this change has been successful, you can reset the maximum and check temperature value after a certain time.

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5.2.- EXTENDED MENU

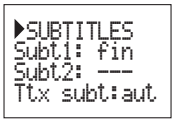
By pressing the ● key for more than three seconds, you can access a series of options that are less frequently used and that are called extended menus.

a.- Subtitles menu

The unit allows both DVB and teletext subtitling.

Two favourite languages can be selected for the subtitles, so that if the first language is not available it will choose the second one. It is also possible to disable the subtitles. The second favourite language can only be selected when the first language has already been enabled.

The selected language has preference over the subtitling type.



If the service does not show the subtitles automatically, you are requested to introduce the teletext page number where the subtitles are available.

The following options are possible for subtitling selection:

- **Subt. OFF:** All subtitles disabled.
- **Ttx. Subt aut:** Only Ttx subtitlig, either auto or user selected ttx page.
- **DVB subt.:** DVB subtitling only
- **DVB+Ttx:** DVB and TTX subtitling ***(priority for DVB).***

If the **Ttx.Subt** option is enabled the user can choose between **"aut"** mode (the unit searches for the page of the teletext automatically) or selecting a page of the teletext for the subtitles (usually page 888). This page will only be displayed if the unit doesn't find the teletext subtitles for the selected languages.

The list of available languages for subtitling is the same as the audio list (see page 13).

b.- Audio mode menu

In this menu the user can select the way the unit handles the audio service. Two options are possible: language or index.

- **Language:** two favourite languages can be selected for the audio in the audio menu. In this mode the unit automatically searches for the selected audio

- **Index:** the audio is selected from the available audios of the service. This option can be used if the audio information is not properly broadcasted.

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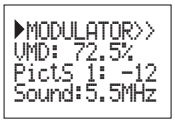
c.- Modulador menu 1

This menu shows the following parameters of the output modulation: video modulation depth (VMD), video to audio carrier ratio and subcarrier ratio frequency in MHz.



Video modulation depth: the possible values for the video modulation depht are:

1: 68.5%	**5:** 79.0%
2: 72.0%	**6:** 80.0%
3: 75.5%	**7:** 81.5%
4: 77.0%	**8:** 82.5%

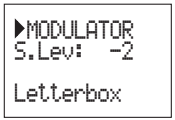
Video to audio carrier ratio: there are 8 possible values between -11 and -18 dB.

Subcarrier ratio frequency: for audio sub-carrier frequency the possible values that are selected 4.5, 5.5 , 6.0 and 6.5 MHz.

To carry out a modification the ● key must be pressed until the selected parameter flashes. Then the correspondent parameter can be modified by pressing the ▲ and ▼ keys.

d.- Modulator menu 2

This menu shows the following parameters: audio level and video format.



Audio level: The value displayed indicates the necessary audio input level to get a deviation of ±50KHz considering an input signal of 1KHz. This means that -15 dBm will generate a greater audio level than 7 dBm.

Audio input level (dBm)
7
5
3
1
0
-1
-2
-3
-4
-5
-7
-9
-13
-15

The video format: allows the selection of the video mode for programs in 16:9 format. Three possible modes are available:

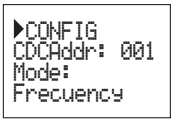
- Pan & Scan: Wide screen is scanned and panned left and right to give a fulll screen picture
- Letterbox: Picture with black bars on top and bottom of picture.
- Full Screen: The picture adapts to the whole screen but its contents are deformed.

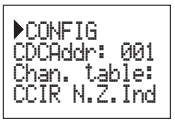
To carry out a modification the ● key must be pressed until the desired parameter flashes. Then the parameter can be modified just pressing the ▲ and ▼ keys.

e.- Configuration menu

Through this menu the address of the unit can be selected (so that it could be controlled by the Headend Controller CDC, not available in this reference).

From this menu you can switch between frequency and channel table mode.





The following channel tables are available:

Table 1: CCIR, New Zealand and Indonesia. Italian channels.

Table 2: China, Taiwan and CCIR hyperband.

Table 3: M/N, Chile.

Table 4: France.

Table 5: Australia.

Table 6: Southafrica, K1 (8 MHz), I (Ireland, 8MHz).

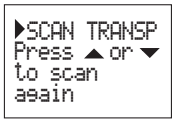
Table 7: Former URSS and OIRT.

Table 8: New CCIR table with all the channels

To carry out a modification the ● key must be pressed until the desired parameter flashes. Then the correspondent parameter can be modified by pressing ▲ and ▼.

f. Scan transponder menu

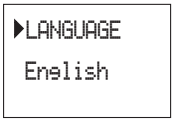
This menu allows the user to repeat the exploration of the input signal, for example, if the names of the services haven't been found. To force a new exploration just press ▲ or ▼.



This menu only appears when the unit is hooked.

g.- Language selection menu

The last extended menu allows the selection of the menus language (English/Spanish/German).



By pressing ▲ or ▼ you switch between different languages.

Note: It is necessary for the unit to be locked onto QPSK so that the following menus can be selected:

- Audio menu
- Audio for language/index (audio mode)
- Video format (letterbox, fullscreen...)
- Subtitles menu

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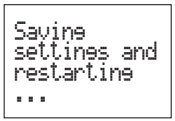
5.3.- PARAMETERS SAVING

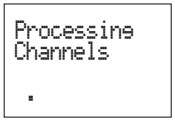
Once a parameter is modified to the desired value in any menu (normal or extended), to save the settings press ■ for three seconds. The display will show the following indication:



The command should not be withdrawn until the message disappears.

If the configuration paremeters are modified but not saved the previous configuration is retrieved after 30 sec. in other words the changes are discarded.

Whenever the input channel or frequency is modified, and once the unit has managed to lock onto the QPSK signal, an automatic search of all the available services will be carried out. While the analysis is taking place, the display will show the following message:



The time that this process will last depends on the number of services in the QPSK multiplex.

Finally, the LEDS indicate the following operational status:

- Left LED (A) = Enough input level (orientative).
- Central LED (B) = QPSK demodulator locked.
- Right LED (C) = MPEG synchronization (audio and/or video synchronized).

When the LEDs are ON indicate a correct operation. If any of them is OFF it indicates an abnormal operation.

TIP: The LED C will turn off any time that the selected program can't be correctly synchronize. This will happen either when the service is coded or has errors.

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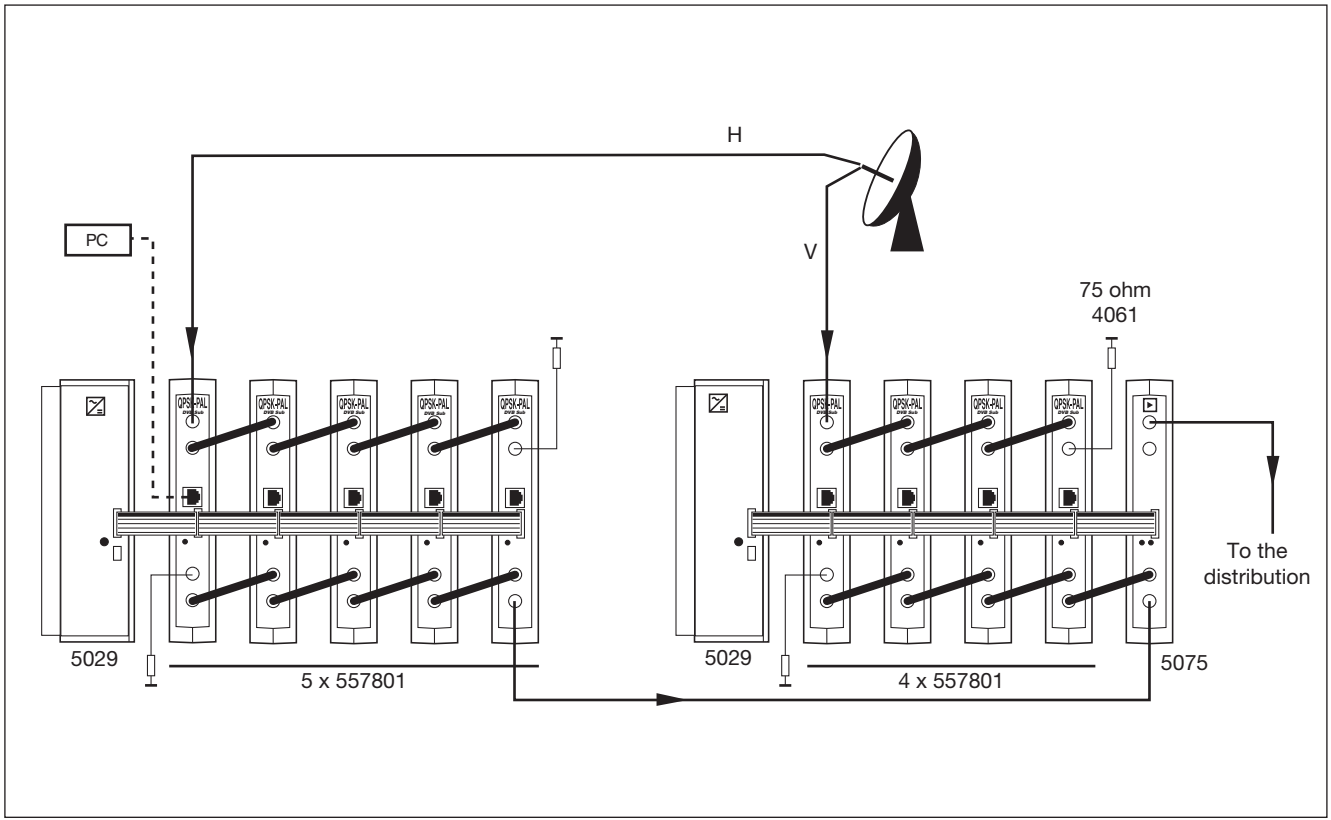
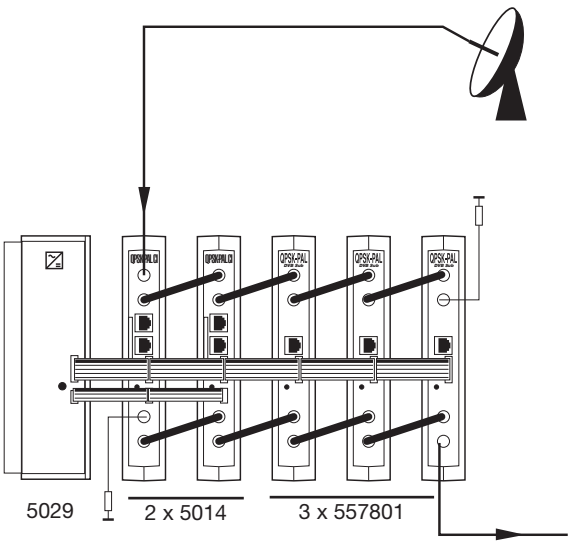
6.- TYPICAL APPLICATION

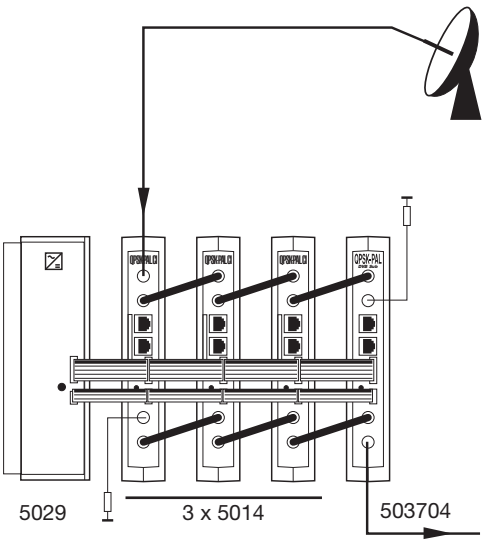


Mixed mounting QPSK/PAL ref 557801 or 503704 and QPSK/PAL CI ref 5014

Case A:



Case B:



When a single power supply 5029 is used fr the mounting of units 503704 or 557801 with units from ref. 5014, it will be possible to mount up to 5 units per power supply, as long as the maximum number of units of reference 5014 is 2.

Note: *It is advisable to connect 5014 (of the greatest consumption) closer to the power supply.*

7.- NORMS FOR RACK MOUNTING (max. 35 QPSK-PAL - 7 subracks 5 units high - 8.7")

7.1.- Installation of the rack with ventilation facilities.

To facilitate the renewal and circulation of air inside the rack, and thus reduce the temperature of the units thereby improving its characteristics, it is advisable to place 2 ventilation units of 25W, particularly when the rack with the QPSK-PAL is located in warm place, with a temperature higher than 40°C.

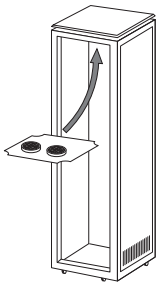


fig. 1

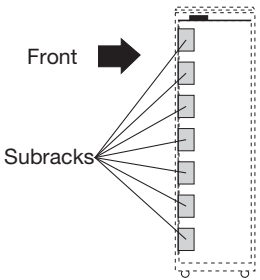


fig. 2

These ventilators will be placed on a tray, that is screwed onto the top part of the Rack, fig. 1 and 2, and in this way the ventilators will be able to extract the air from the QPSK-PAL and will be able to expel it via the gap (approx. 3-5 cm) at the top of the Rack. The new air will enter through the bottom of the rack, fig 3.

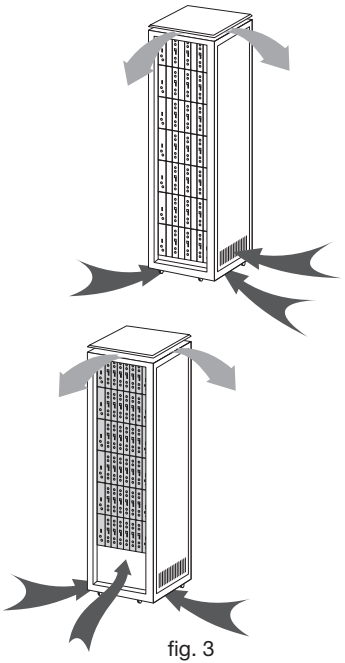


fig. 3

To mount the units in the rack with ventilation, you must mount a blank plate ref. 5073 between the modules to allow the correct ventilation of the equipment, fig. 4.

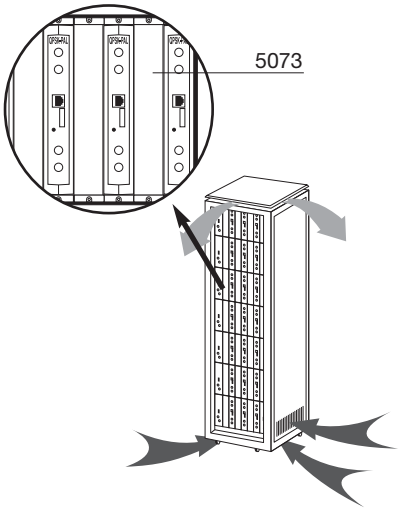


fig. 4

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It is very that this cycle functions correctly, therefore do not:

- Open the side doors, as this would cause the ventilators to extract the air from the outside rather than the air in the inside of the rack.
- Place objects close to the rack that may block the entry and exit points of the air.
- When the rack is not complete, the subracks should be placed from the top all the way down without leaving any gaps in the middle, fig 5.

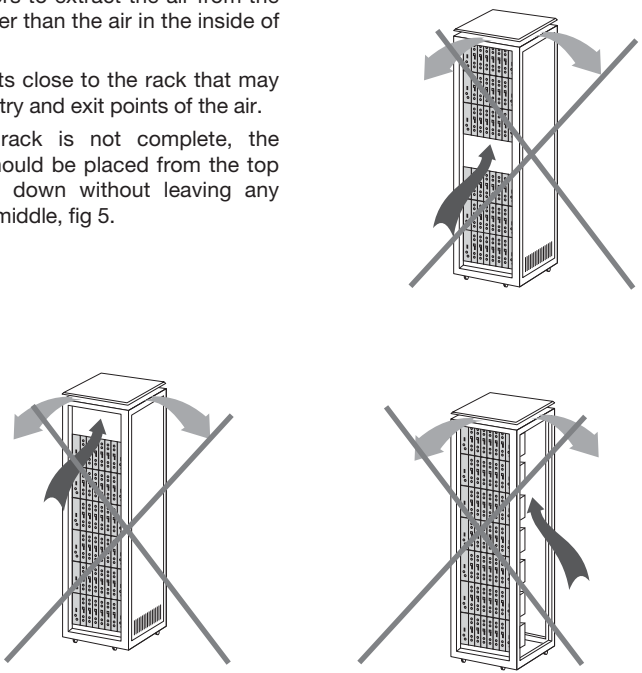

fig. 5

7.2.- Installation of the rack without ventilation facilities.

When the rack is located in an area where the temperature is approximately 40°C, it is advisable to install it in such a way that it is left totally open, in other words, without adding the side doors thus facilitating the ventilation of the units with the option of placing the blank plates ref. 5073, fig. 6.

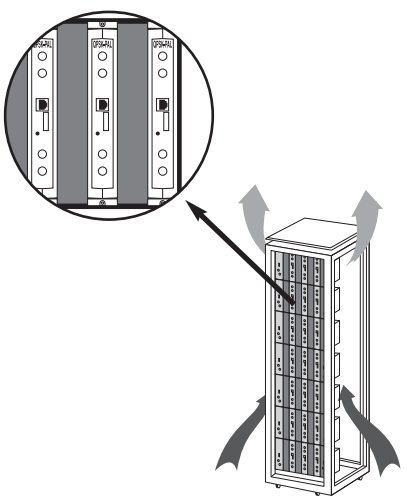

fig. 6

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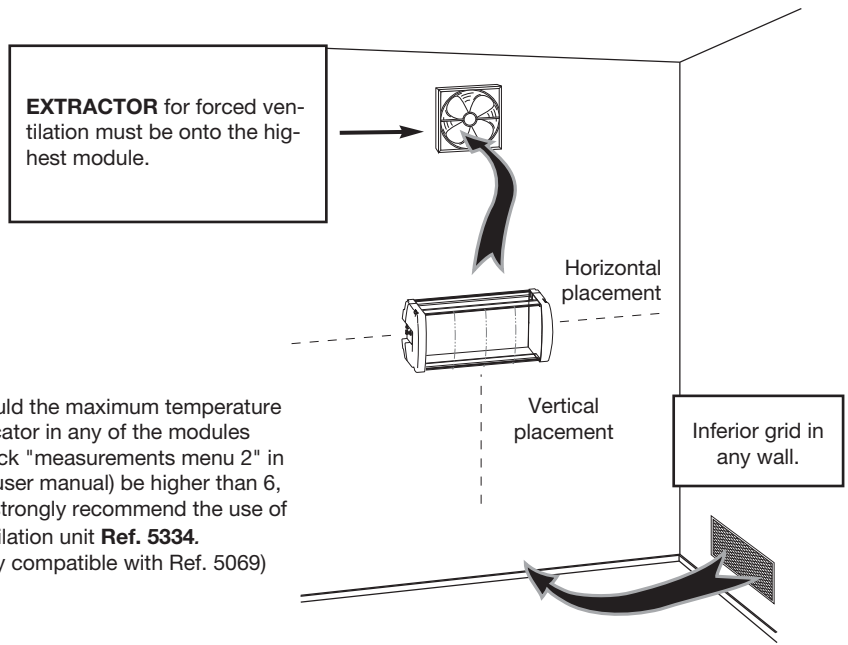
8.- NORMS FOR CABINET MOUNTING

IMPORTANT
The scheme of recommended ventilation is the one in the figure in any case of cabinet placement (horizontal or vertical).

The maximum temperature permitted surrounding the highest cabinet is 40ºC in both ways of placement, horizontal or vertical way.

Should the maximum temperature indicator in any of the modules (check "measurements menu 2" in the user manual) be higher than 6, we strongly recommend the use of ventilation unit **Ref. 5334.**
(Only compatible with Ref. 5069)

RECOMMENDED VENTILATION



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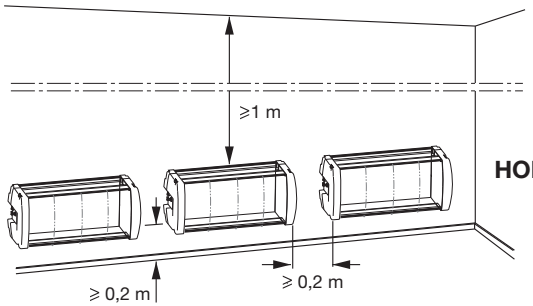
IMPORTANT

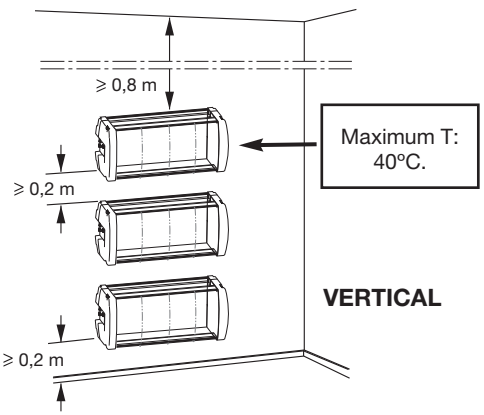
Horizontal placement of the cabinets is strongly recommended, hanging them with as less height as possible.

If the horizontal placement is impossible, then vertical placement is allowed.

Respect the recommended minimum distances in the attached schemes.



Place the cabinets with as less height as possible



A.- CHANNELS TABLE

CH	Tab1	Tab2	Tab3	Tab4	Tab5	Tab6	Tab7
	CCIRR N. Zealand Indonesia	China Taiwan Hyper-CCIRR	M/N Chile	France	Australia	South Africa K1 (8Mhz) I (8Mhz Ireland) French Terr. Angola (4….9)	USSR OIRT
0				47.75	46.25		
1		49.75		55.75	57.25		49.75
2	48.25	57.75	55.25	60.50	64.25	53.75	59.25
3	55.25	65.75	61.25	63.75	86.25	61.75	77.25
4	62.25	77.25	67.25		95.25	175.25	85.25
5	175.25	85.25	77.25		102.25	183.25	93.25
6	182.25	168.25	83.25		175.25	191.25	175.25
7	189.25	176.25	175.25		182.25	199.25	183.25
8	196.25	184.25	181.25		189.25	207.25	191.25
9	203.25	192.25	187.25		196.25	215.25	199.25
10	210.25	200.25	193.25	176.00	210.25	223.25	207.25
11	217.25	208.25	199.25	184.00	217.25	231.25	215.25
12	224.25	216.25	205.25	192.00	224.25		223.25
13		471.25	211.25	200.00		247.43 (247.5)	
14		479.25	471.25	208.00			
15		487.25	477.25	216.00			
16		495.25	483.25				
17		503.25	489.25				
18		511.25	495.25				
19		519.25	501.25				
20		527.25	507.25		138.25 (5 A)		
21	471.25	535.25	513.25		203.25 (9 A)		
22	479.25	543.25	519.25		209.25		
23	487.25	551.25	525.25		216.25		
24	495.25	559.25	531.25				
25	503.25	607.25	537.25				
26	511.25	615.25	543.25				
27	519.25	623.25	549.25		521.25		
28	527.25	631.25	555.25		527.25		
29	535.25	639.25	561.25		534.25		
30	543.25	647.25	567.25		541.25		

CH	Tab1	Tab2	Tab3	Tab4	Tab5	Tab6	Tab7
31	551.25	655.25	573.25		548.25		
32	559.25	663.25	579.25		555.25		
33	567.25	671.25	585.25		562.25		
34	575.25	679.25	591.25		569.25		
35	583.25	687.25	597.25		576.25		
36	591.25	695.25	603.25		583.25		
37	599.25	703.25	609.25		590.25		
38	607.25	711.25	615.25		597.25		
39	615.25	719.25	621.25		604.25		
40	623.25	727.25	627.25		611.25		
41	631.25	735.25	633.25		618.25		
42	639.25	743.25	639.25		625.25		
43	647.25	751.25	645.25		632.25		
44	655.25	759.25	651.25		639.25		
45	663.25	767.25	657.25		646.25		
46	671.25	775.25	663.25		653.25		
47	679.25	783.25	669.25		660.25		
48	687.25	791.25	675.25		667.25		
49	695.25	799.25	681.25		674.25		
50	703.25	807.25	687.25		681.25		
51	711.25	815.25	693.25		688.25		
52	719.25	823.25	699.25		695.25		
53	727.25	831.25	705.25		702.25		
54	735.25	839.25	711.25		709.25		
55	743.25	847.25	717.25		716.25		
56	751.25	855.25	723.25		723.25		
57	759.25		729.25		730.25		
58	767.25		735.25		737.25		
59	775.25		741.25		744.25		
60	783.25		747.25		751.25		
61	791.25		753.25		758.25		
62	799.25		759.25		765.25		
63	807.25		765.25		772.25		
64	815.25		771.25		779.25		
65	823.25		777.25		786.25		
66	831.25		783.25		793.25		
67	839.25		789.25		800.25		
68	847.25		795.25		807.25		

CH	Tab1	Tab2	Tab3	Tab4	Tab5	Tab6	Tab7
69	855.25		801.25		814.25		
70	53.75		807.25				
71	62.25	303.25 (S21)	813.25				
72	82.25	311.25	819.25				
73	175.25	319.25	825.25				
74	183.75	327.25	831.25				
75	192.25	335.25	837.25				
76	201.25	343.25	843.25				
77	210.25	351.25	849.25				
78	217.25	359.25	855.25				
79	224.25	367.25	861.25				
80	105.25	375.25					
81	112.25	383.25					
82	119.25	391.25					
83	126.25	399.25					
84	133.25	407.25					
85	140.25	415.25					
86	147.25	423.25					
87	154.25	431.25					
88	161.25	439.25					
89	168.25	447.25					
90	231.25	455.25					
91	238.25	463.25 (S41)					
92	245.25						
93	252.25						
94	259.25						
95	266.25						
96	273.25						
97	280.25						
98	287.25						
99	294.25						

Italian channels

“S” bands

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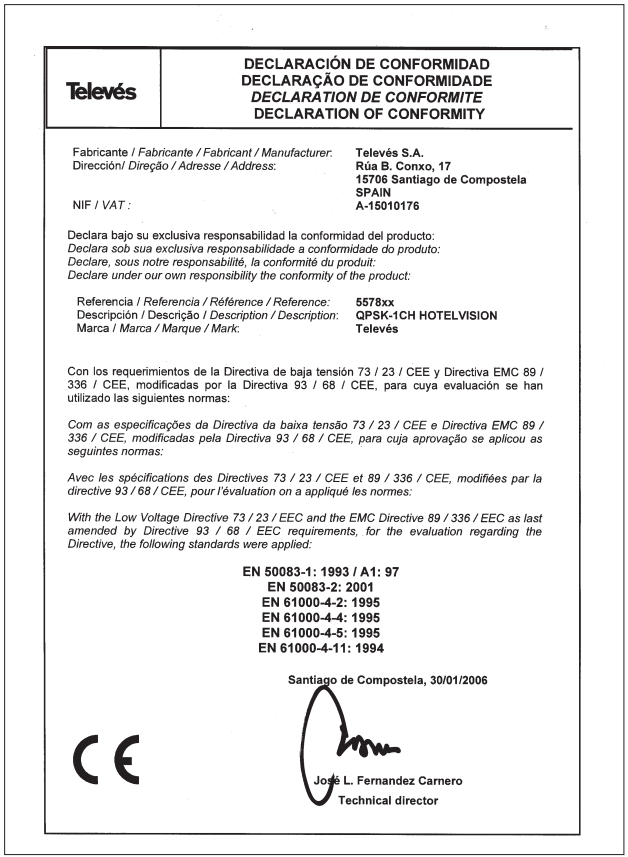
Tab8							
VHF				UHF			
CH	Video Carrier Frequency	CH	Video Carrier Frequency	CH	Video Carrier Frequency	CH	Video Carrier Frequency
C2	48.25	S18	280.25	C21	471.25	C52	719.25
C3	55.25	S19	287.25	C22	479.25	C53	727.25
C4	62.25	S20	294.25	C23	487.25	C54	735.25
L1	69.25	S21	303.25	C24	495.25	C55	743.25
L2	76.25	S22	311.25	C25	503.25	C56	751.25
L3	83.25	S23	319.25	C26	511.25	C57	759.25
S1	105.25	S24	327.25	C27	519.25	C58	767.25
S2	112.25	S25	335.25	C28	527.25	C59	775.25
S3	119.25	S26	343.25	C29	535.25	C60	783.25
S4	126.25	S27	351.25	C30	543.25	C61	791.25
S5	133.25	S28	359.25	C31	551.25	C62	799.25
S6	140.25	S29	367.25	C32	559.25	C63	807.25
S7	147.25	S30	375.25	C33	567.25	C64	815.25
S8	154.25	S31	383.25	C34	575.25	C65	823.25
S9	161.25	S32	391.25	C35	583.25	C66	831.25
S10	168.25	S33	399.25	C36	591.25	C67	839.25
C5	175.25	S34	407.25	C37	599.25	C68	847.25
C6	182.25	S35	415.25	C38	607.25	C69	855.25
C7	189.25	S36	423.25	C39	615.25		
C8	196.25	S37	431.25	C40	623.25		
C9	203.25	S38	439.25	C41	631.25		
C10	210.25			C42	639.25		
C11	217.25			C43	647.25		
C12	224.25			C44	655.25		
S11	231.25			C45	663.25		
S12	238.25			C46	671.25		
S13	245.25			C47	679.25		
S14	252.25			C48	687.25		
S15	259.25			C49	695.25		
S16	266.25			C50	703.25		
S17	273.25			C51	711.25		



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Com as especificações da Directiva da baixa tensão 73 / 23 / CEE e Directiva EMC 89 / 336 / CEE, modificadas pela Directiva 93 / 68 / CEE, para cuja aprovação se aplicou as seguintes normas:

Avec les spécifications des Directives 73 / 23 / CEE et 89 / 336 / CEE, modifiées par la directive 93 / 68 / CEE, pour l'évaluation on a appliqué les normes:

With the Low Voltage Directive 73 / 23 / EEC and the EMC Directive 89 / 336 / EEC as last amended by Directive 93 / 68 / EEC requirements, for the evaluation regarding the Directive, the following standards were applied:

EN 50083-1: 1993 / A1: 97
EN 50083-2: 2001
EN 61000-4-2: 1995
EN 61000-4-4: 1995
EN 61000-4-5: 1995
EN 61000-4-11: 1994

Santiago de Compostela, 30/01/2006

CE

José L. Fernandez Carnero
Technical director

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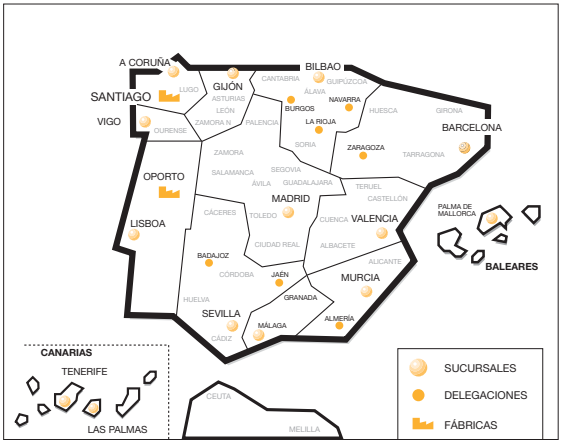

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