KENWOOD

NTSC COLOR PATTERN GENERATOR

CG-921

PAL COLOR PATTERN GENERATOR

CG-922

INSTRUCTION MANUAL

KENWOOD CORPORATION

CONTENTS

A product of

KENWOOD CORPORATION

17-5, 2-chome, Shibuya, Shibuya-ku, Tokyo 150, Japan

1. GENERAL

The color pattern generator, CG-921 (or CG-922), is a test pattern generator that generates the optimum signal for the adjustment service to the television or VTR in the NTSC mode (or PAL-B, G, or H mode).
This generator is small and light-weight and its size is same as that of our multi-meter, DL-712. It is operated by batteries or an external DC power supply.

2. FEATURES

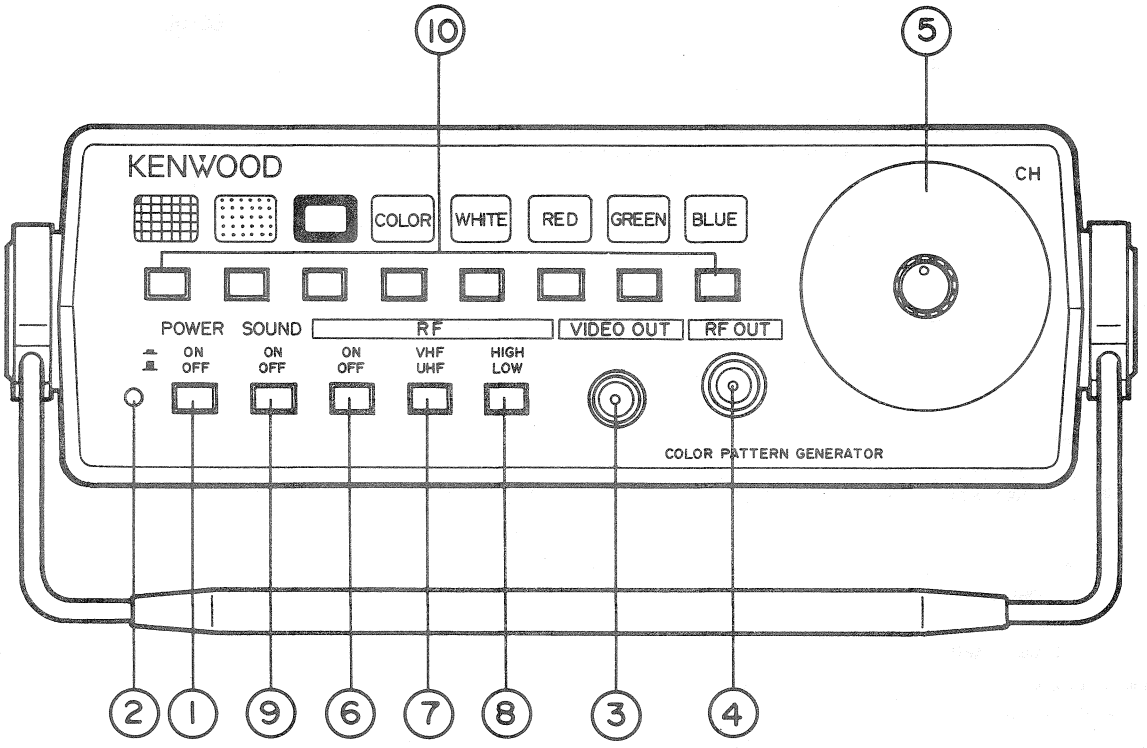
- Operation is very easy.
- The generator is operated by four UM2 batteries.
- Small and light-weight
- All radio frequencies including VHF and UHF are covered.
- The radio frequency can be changed on the panel.
- The regular synchronization signals including the equalizing pulse and cut-in pulse are output.
- The RF output sound carrier can be turned on and off.
- The corner marker is provided in the cross hatch pattern.
- Although CG-922 is applied to PAL-B, G, or H, generators for PAL-I and PAL-D are also available.

3. SPECIFICATIONS

		CG-921	CG-922
【Video mode】		NTSC mode	PAL mode
【Video output】			
Output connector		RCA pin connector	
Output level	Video	714mVp-p (75Ω terminated)	700mVp-p (75Ω terminated)
	Synchroni-zation	286mVp-p (75Ω terminated)	300mVp-p (75Ω terminated)
【Synchronous signal】			
Horizontal synchronous frequency		15.734kHz	15.625kHz
Vertical synchronous frequency		59.94Hz	50.00Hz
Sub-carrier frequency		3.579545 MHz ± 200Hz	4.43361875MHz ± 200Hz
【RF output】			
VHF	LOW	CH. in Japan 1～3 CH. in USA 2～6	CH. in West Europe 2～4
	HIGH	4～12 7～13	5～12
UHF		13～62 14～83	21～69
Output connector		F connector	PAL connector
Output level		VHF: 1 mV or more (75Ω terminated) UHF: 0.5mV or more (75Ω terminated)	
【Sound】			
Sound carrier frequency		4.5MHz	5.5MHz
Sound frequency		Approximately 1kHz	
Sound carrier output		Toggling between ON and OFF possible	

		CG-921	CG-922
【Pattern】			
Cross hatch		15(V)×11(H) with corner marker	
Dot		15(V)×11(H)	
Window		White on the black background	
Brightness order full-field color bar		White (75%), yellow, cyan, green, magenta, red, blue, black	
White raster		100% white	
Red raster			
Green raster			
Blue raster			
【Power supply】		Four UM2 batteries	
External power supply		DC 6V, 80mA or more (Max.15V)	
Battery life	Manganese battery	Approx.25 hours (at RF OFF), Approx.15 hours (at RF ON)	
	Alkali battery	Approx.80 hours (at RF OFF), Approx.40 hours (at RF ON)	
【Weight】		Approximately 760g (including batteries)	
【Dimentions】	Flame dimentions	162×60×130mm (width/height/depth)	
	Maximum dimentions	185×63×147mm (width/height/depth)	
【Operating temperature/ humidity range】		0～40℃ 80%RH or less	
【Within specification temperature/humidity range】		23～5℃ 80%RH or less	
【Accessories】		Instruction manual …… 1, RCA pin cord …… 1, Antenna cord …… 1	

4. PANEL EXPLANATION



① POWER Switch
Power switch. If this switch is pressed, the LED lights and the generator becomes operational. This switch should be pushed off whenever the generator is put out off battery operation.

② POWER LED
If this LED lights, power is on.

③ VIDEO OUT Terminal
Video signal output terminal. The output voltage is 1 Vp-p when terminated with 75Ω.

④ RF OUT Terminal
This output pin AM-modulates the video signal into the RF signal for output. All channels of LOW and HIGH of VHF and UHF are coverd.

⑤ Tuning Dial
This dial changes the RF signal channel.

⑥ RF ON/OFF Switch
ON/OFF of the RF signal is controlled. When this switch is ON, the RF signal is output from RF OUT in ④.

⑦ VHF/UHF Switch
The frequency band of the RF signal is switched.

⑧ VHF HIGH/LOW Switch
This switch is valid only when VHF has been selected by VHF/UHF switch ⑦. With these two switches (⑦ and ⑧), changeover to three bands; VHF LOW/HIGH and UHF, is done.

⑨ SOUND ON/OFF Switch
ON/OFF of the sound carrier in the RF signal is controlled.

⑩ Pattern Selector Switches
This switch selects from eight patterns. From left to right, cross hatch, dot, window, color bars, white raster, red raster, green raster, and blue raster are provided.

⑪ EXT Power Terminal
External DC power supply input terminal.
External DC power supply should be nominally 6 V, 80 mA or more.

⑫ **Battery Case**

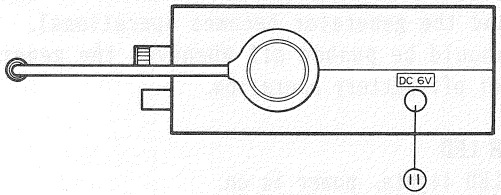
This case contains batteries. Four UM2 batteries are used. The polarity is indicated inside the battery case. If batteries are not set correctly, the generator may be troubled. Therefore, care must be taken.

Either manganese or alkali, batteries can be used.

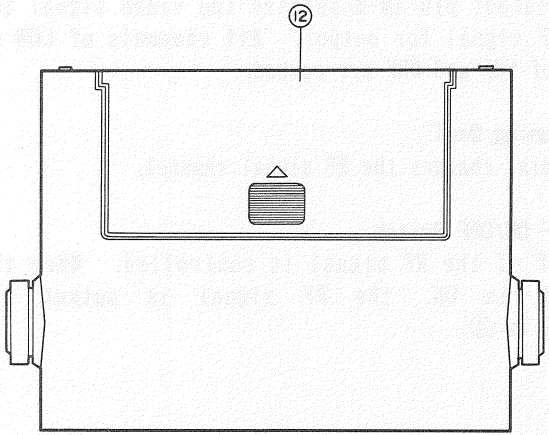
To prevent the bateries from consumption, turn off the power supply when the generator is not used.

The battery life is longer in the intermittent operation than the continous operation.

When the battery capacity becomes smaller over time, the screen image may waver or decrease in amplitude, or no pattern may be displayed. Replace with new batteries in such a case.



The polarity should be as shown below.



5. OPERATING PROCEDURE

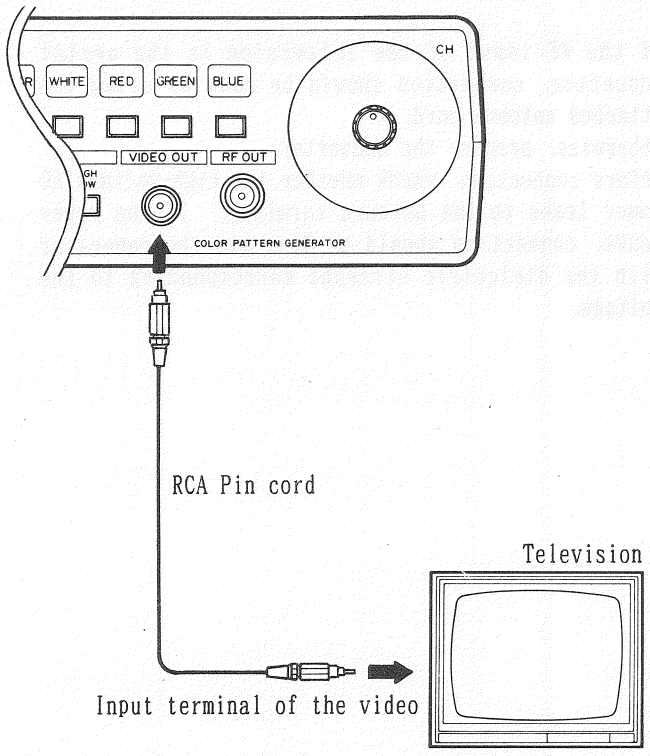
5-1 CAUTION

Follow the instructions in the operation manual for the television or VTR when the television or VTR is adjusted by using this generator. Do not touch the primary power supply and the high-voltage power supply of the television.

5-2 CONNECTING METHOD

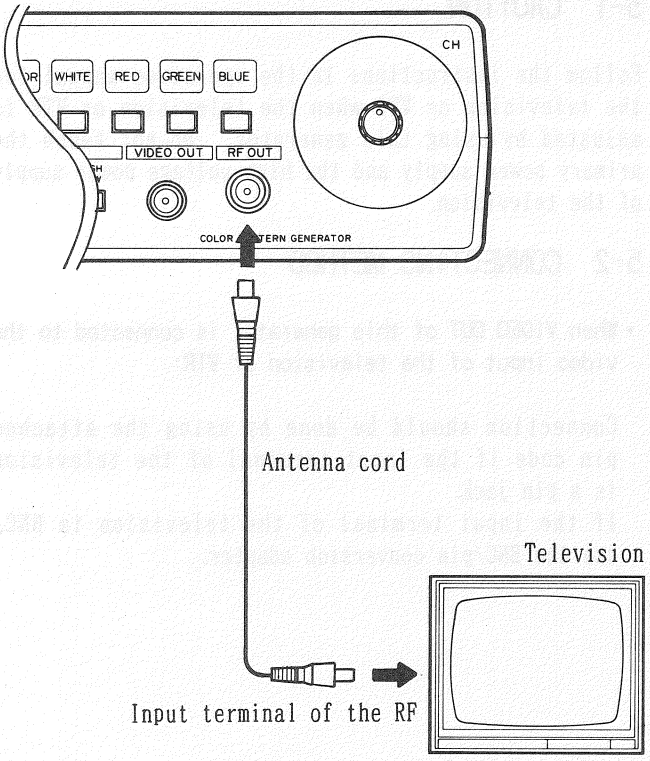
- When VIDEO OUT of this generator is connected to the video input of the television or VTR:

  Connection should be done by using the attached pin code if the input terminal of the television is a pin jack.
  If the input terminal of the television is BNC, use the BNC/pin conversion adapter.



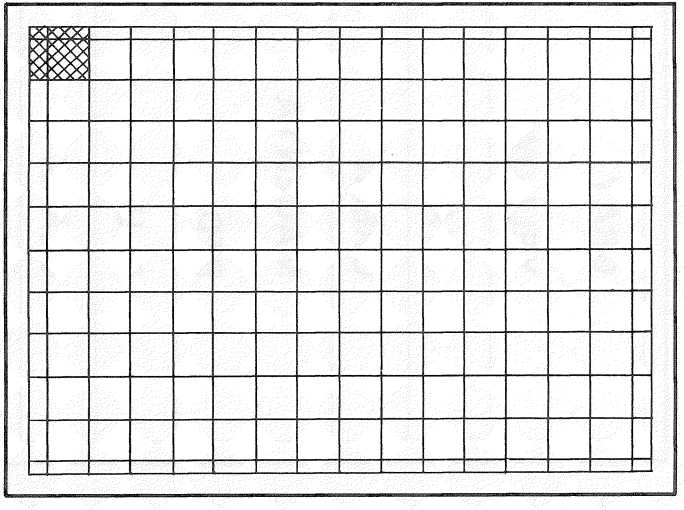
▪ When RF OUT of this generator is connected to the RF input of the television:

If the RF input of the television is the aerial connector, connection should be done by using the attached antenna cord.
Otherwise, prepare the converter.
Before connection, check whether the high-voltage AC power leaks to the antenna terminal. If the power leaks, connection should be done via the capacitor with the dielectric strenght corresponding to the voltage.



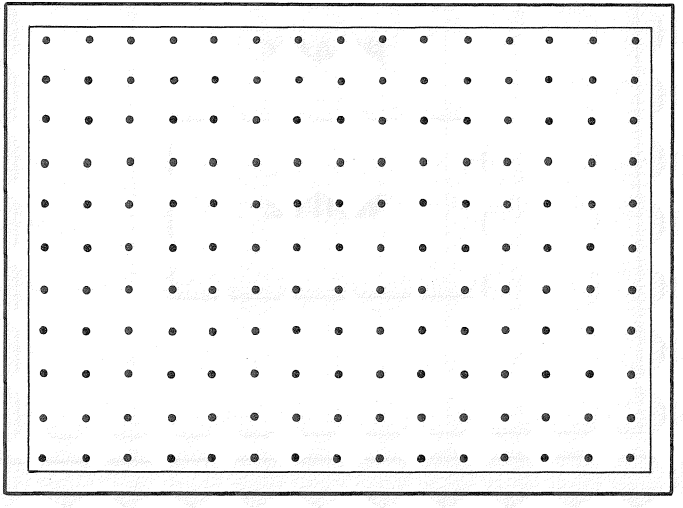
5-3 USE OF EACH PATTERN

◎ CROSS HATCH PATTERN



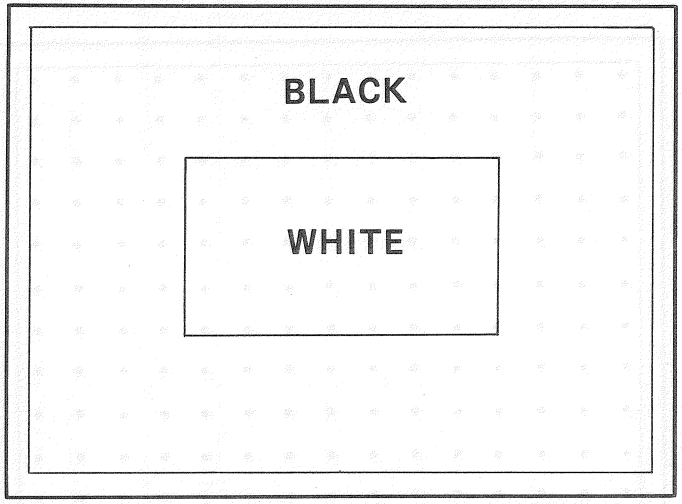
Grid pattern with 15 vertical lines and 11 horizontal lines.
It is used to adjust the linearity, focus, and convergence. Since the corner marker is provided, whether the polarity is corrected can be judged after the polarizing yoke has been changed.

◎ DOT PATTERN



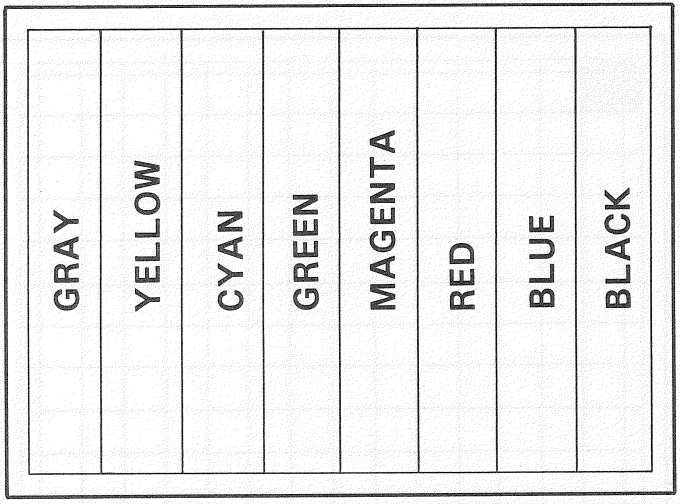
Dot pattern with 15 vertical dots and 11 horizontal dots.
It is used to adjust the linearity, focus, and convergence.

◎ WINDOW PATTERN



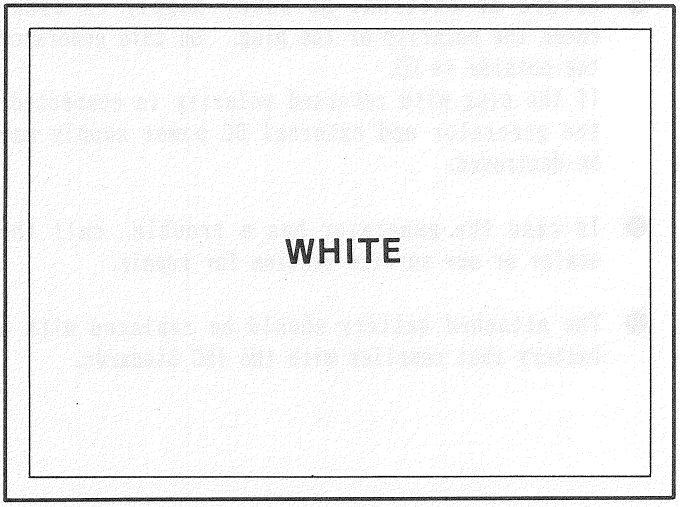
Used to adjust the video circuit or to evaluate stability of the high voltage.

◎ COLOR BARS PATTERN



Full-field color bars. It is used to adjust the chroma circuit.

◎ WHITE RASTER PATTERN



Used to adjust the white balance or brightness of the television.

◎ RED, GREEN and BLUE RASTER PATTERNS

Used to adjust purity of colors on the television.

5-4 RF OUTPUT

- Connect according to 5-2.
- Turn on the RF ON/OFF switch ⑥ on the panel.
- Select the desired band using the band selecting switches ⑦ and ⑧ on the panel.
- Select the desired channel using the tuning dial ⑤ on the panel.
- Turn on the SOUND ON/OFF switch ⑨ if the sound is needed.
- The sound frequency is approximately 1 kHz. The modulation level is approximately 25 kHz for CG-921 and approximatly 50kHz for CG-922. The sound sub-carrier is 4.5 MHz for CG-921 and 55MHz for CG-922.

6. PRECAUTIONS FOR USE

- Before an external DC power supply is used, check the polarity of the plug. On this generator, the outside is ⊕.
  If the plug with reversed polarity is connected, the generator and external DC power supply may be destroyed.

- In case the generator has a trouble, call the sealer or our service section for repair.

- The attached battery should be replaced with a battery that complies with the IEC Stanards.

BROADCASTING SYSTEM

Standard broadcasting mode	B	G, H	I	M
Number of scanning lines	625	625	625	625
Channel band width	7 MHz	8 MHz	8 MHz	6 MHz
Fs (sound) - Fp (video)	+5.5MHz	+5.5MHz	+6 MHz	+4.5MHz
Sound modulation method	F_3 (±50kHz)	F_3 (±50kHz)	F_3 (±50kHz)	F_3 (±25kHz)
Color system	PAL	PAL	PAL	NTSC
Country	West Europe (VHF) Australia New Zealand	West Europe (UHF) Australia (UHF)	United Kingdom (UHF) Ireland Republic of South Africa Tanzania Hong Kong	Japan USA Korea Canada Taiwan

VHF BROADCASTING CHANNELS

CG-921

Channels in Japan

CH. No.	Video frequency MHz
1	91.25
2	97.25
3	103.25
4	171.25
5	177.25
6	183.25
7	189.25
8	193.25
9	199.25
10	205.25
11	211.25
12	217.25

Channels in USA

CH. No.	Video frequency MHz
2	55.25
3	61.25
4	67.25
5	77.25
6	83.25
7	175.25
8	181.25
9	187.25
10	193.25
11	199.25
12	205.25
13	211.25

fs-fp = 4.5MHz

CG-922

Channels in West Europe

CH. No.	Video frequency MHz
1	41.25
2	48.25
3	55.25
4	62.25
5	175.25
6	182.25
7	189.25
8	196.25
9	203.25
10	210.25
11	217.25
12	224.25

Channels in Italy

CH. No.	Video frequency MHz
A	53.75
B	62.25
C	82.25
D	175.25
E	183.75
F	192.25
G	201.25
H	210.25
H 1	217.25
H 2	224.25

fs-fp = 5.5MHz

Channels in New Zealand

CH. No.	Video frequency MHz
1	45.25
2	55.25
3	62.25
4	175.25
5	182.25
6	189.25
7	196.25
8	203.25
9	210.25

fs-fp = 5.5MHz

Channels in Ireland

CH. No.	Video frequency MHz
A	45.75
B	53.75
C	61.75
D	175.25
E	183.25
F	191.25
G	199.25
H	207.25
J	215.25

fs-fp = 6MHz

Channels in South Africa

CH. No.	Video frequency MHz
4	175.25
5	183.25
6	191.25
7	199.25
8	207.25
9	215.25
10	223.25
11	231.25
12	—
13	247.43

fs-fp = 6MHz

Channels in China

CH. No.	Video frequency MHz
1	49.75
2	57.75
3	65.75
4	77.25
5	85.25
6	168.25
7	176.25
8	184.25
9	192.25
10	200.25
11	208.25
12	216.25

fs-fp = 6.5MHz

Channels in Australia

CH. No.	Video frequency MHz
0	46.25
1	57.25
2	64.25
3	86.25
4	95.25
5	102.25
5A	138.25
6	175.25
7	182.25
8	189.25
9	196.25
10	209.25
11	216.25

fs-fp = 5.5MHz

UHF BROADCASTING CHANNELS
CG-921
Channels in Japan/USA

Japan CH. No.	USA CH. No.	Video frequency MHz (fp)	Japan CH. No.	USA CH. No.	Video frequency MHz (fp)	Japan CH. No.	USA CH. No.	Video frequency MHz (fp)
13	14	471.25	37	38	615.25	61	62	759.25
14	15	477.25	38	39	621.25	62	63	765.25
15	16	483.25	39	40	627.25		64	771.25
16	17	489.25	40	41	633.25		65	777.25
17	18	495.25	41	42	639.25		66	783.25
18	19	501.25	42	43	645.25		67	789.25
19	20	507.25	43	44	651.25		68	795.25
20	21	513.25	44	45	657.25		69	801.25
21	22	519.25	45	46	663.25		70	807.25
22	23	525.25	46	47	669.25		71	813.25
23	24	531.25	47	48	675.25		72	819.25
24	25	537.25	48	49	681.25		73	825.25
25	26	543.25	49	50	687.25		74	831.25
26	27	549.25	50	51	693.25		75	837.25
27	28	555.25	51	52	699.25		76	843.25
28	29	561.25	52	53	705.25		77	849.25
29	30	567.25	53	54	711.25		78	855.25
30	31	573.25	54	55	717.25		79	861.25
31	32	579.25	55	56	723.25		80	867.25
32	33	585.25	56	57	729.25		81	873.25
33	34	591.25	57	58	735.25		82	879.25
34	35	597.25	58	59	741.25		83	885.25
35	36	603.25	59	60	747.25			
36	37	609.25	60	61	753.25			

fs-fp = 4.5MHz

Channels in Europe and Africa

CH. No.	Video frequency MHz (fp)	CH. No.	Video frequency MHz (fp)
21	471.25	46	671.25
22	479.25	47	679.25
23	487.25	48	687.25
24	495.25	49	695.25
25	503.25	50	703.25
26	511.25	51	711.25
27	519.25	52	719.25
28	527.25	53	727.25
29	535.25	54	735.25
30	543.25	55	743.25
31	551.25	56	751.25
32	559.25	57	759.25
33	567.25	58	767.25
34	575.25	59	775.25
35	583.25	60	783.25
36	591.25	61	791.25
37	599.25	62	799.25
38	607.25	63	807.25
39	615.25	64	815.25
40	623.25	65	823.25
41	631.25	66	831.25
42	639.25	67	839.25
43	647.25	68	847.25
44	655.25	69	855.25
45	663.25		

☆ G or H mode : fs-fp = 5.5MHz

☆ I mode : fs-fp = 6MHz

☆ United Kingdom : Add 47 as a channel number.

☆ Germany : Add 39 as a channel number.

Channel in China

CH. No.	Video frequency MHz (fp)	CH. No.	Video frequency MHz (fp)	CH. No.	Video frequency MHz (fp)
13	471.25	32	663.25	51	815.25
14	479.25	33	671.25	52	823.25
15	487.25	34	679.25	53	831.25
16	495.25	35	687.25	54	839.25
17	503.25	36	695.25	55	847.25
18	511.25	37	703.25	56	855.25
19	519.25	38	711.25	57	863.25
20	527.25	39	719.25	58	871.25
21	535.25	40	727.25	59	879.25
22	543.25	41	735.25	60	887.25
23	551.25	42	743.25	61	895.25
24	559.25	43	751.25	62	903.25
25	607.25	44	759.25	63	911.25
26	615.25	45	767.25	64	919.25
27	623.25	46	775.25	65	927.25
28	631.25	47	783.25	66	935.25
29	639.25	48	791.25	67	943.25
30	647.25	49	799.25	68	951.25
31	655.25	50	807.25		

fs-fp = 6.5MHz