LT 416

NTSC/PAL/SECAM PATTERN GENERATOR

INSTRUCTION MANUAL

LEADER ELECTRONICS CORP.

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6.	MAINT	ENANCE

To Avoid Personal Injury

It is recommended that only qualified personnel with technical knowledge use this instrument only after reading and fully understanding all functions of the instrument described this instruction manual.

This instrument is not designed and manufactured for consumers.

If you do not have enough knowledge on electricity, to avoid personal injury and prevent damage to this product, please be sure to use this product only under the supervision of an engineer who has sufficient knowledge about electronics.

Precautions on Contents

Should you find the contents in this manual and any of its technical terms confusing, please feel free to contact your local LEADER agent.

Symbols and Terms

Following terms and symbols indicate necessary warnings and cautions used in this manual and on the product are there for safe operation.

< Symbol >	The sections where this symbol is marked in this manual or instrument, if not correctly performed or practiced, could result in personal injury or cause serious danger to the instrument. Misuse could also produce unintentional movement to create an operational impediment on the instrument or other products that might be connected to it. Be sure to refer to the safety precautions in this manual to safely use the part of the instrument where the symbol is marked.
< Term >	Warning statements identify warning conditions that if disregarded or not correctly performed or adhered to, could result in serious personal injury or even loss of life.
< Term >	Caution statements identify caution conditions that if disregarded or not correctly performed or adhered to, could result in personal injury or damage to the instrument.

Review the following safety precautions to avoid operator's injury and loss of life and prevent damage and deterioration to this instrument. To avoid potential hazards, use this product as specified.



Warnings on the Cases and Panels of the Instrument

Operator should not remove any cases or panel for any reasons. If you touch inside the instrument it could result personal shock or fire hazard. Refrain from spilling any liquid on or inserting anything flammables or piece of metal into the ventilation of the instrument. Such actions could cause fire, shock, malfunction and be an accident hazard while the power is on.

Warnings on Power Line

Make sure to connect only to the rated power line voltage. Excess voltage may cause fire.

Confirm the voltage of the commercial power line before connecting the AC power cord. The power frequency of the power line should be 50/60 Hz.

Warning on the Power Cord

Use only the optional power cord that is attached to this instrument. The use of the power cord other than that attached could cause fire hazard.

If the attached cord is damaged stop using it and contact your local LEADER agent. Should you use a damaged cord, it could cause a shock or create a fire hazard. When you pull out the cord be sure to hold it by plug and pull from the socket not by holding the cord wire.

Warning on Fuse

When the fuse is melted the instrument stops operation. If the fuse melted, turn off the power switch and disconnect the power plug from the socket. If you change the fuse while the cord is connected to the socket, it could cause a shock hazard. Only use the specified type and rated current and voltage fuses.

If the cause for melting fuse is unclear or if you suspect there is damage to the instrument or if you have no proper fuse at hand please contact your local LEADER agent.





Caution on Input/Output Terminals

Input Terminals are rated with a maximum input. Do not supply an input over the specified rating in the standard section of the instruction manual. Also, do not supply external power to Output terminal, this could cause the instrument to malfunction.

Please conform to the above warnings and cautions for safe operation. There are cautions in each area of this instruction manual, so please conform to each caution. If you have any questions about this manual, please feel free to contact your local LEADER agent.

Caution when Not to Use the Instrument for a Long Time

Make sure to disconnect the power cord from the socket when you do not use the instrument for a long time.

1. INTRODUCTION

Thank you for purchasing Leader's measuring instruments.

Please read this instruction manual carefully to ensure correct and safe operation.

If you have any difficulties or questions on how to use the instrument after you have read this manual, please feel free to contact your local LEADER agent.

1.1 Scope of Warranty

This LEADER instrument has been manufactured under the strictest quality control guidelines.

LEADER shall not be obligated to furnish free service during the warranty period under the following conditions.

- 1. Repair of malfunction or damages resulting from fire, natural calamity, or improper voltage applied by the user.
- 2. Repair of an instrument that has been improperly repaired, adjusted, or modified by personnel other than a factory-trained LEADER representative.
- 3. Repair of malfunctions or damages resulting from improper use.
- 4. Repair of malfunctions caused by devices other than this instrument.
- 5. Repair of malfunctions or damages without the presentation of a proof of purchase or receipt bill for the instrument.

1.2 Operating Precautions

1.2.1 Line Voltage and Fuse

Confirm that the power line voltage is correct before connecting the power cord. The voltage range and fuse rating are indicated on the rear panel.

When replacing the fuse, turn the power switch off and disconnect the power cord from the mains.

Voltago Bango	Fuse	
vollage hange	Rating	LEADER Parts Number
90 to 250 V	T0.63AL, time-lag	436 3555 005

1.2.2 Reverse Voltage

• Shorting the output connectors

Do not short any output connectors to prevent damage to the instrument.

• Do not apply external voltage to the output connectors. It can cause trouble.

1.2.3 Installation

Do not use the instrument in the following environments.

- High temperature environments
 - Do not place the instrument under direct sunlight or near a heater (e.g., stove). Do not move the instrument from cold to warm environment abruptly, it may cause condensation.

Operating temperature range: 0 to 40 °C

• High humidity environments

Do not place the instrument in the high humidity environment (e.g., bathroom, near a humidor).

Operating humidity range: \leq 90 % RH

• Dusty environments

1.2.4 Mechanical Shock

Please be careful not to expose the instrument to other forms of severe mechanical shock as this product contains shock sensitive precise parts.

1.2.5 Calibration

When calibration or service is required, contact your local LEADER agent.

1.2.6 Routine Maintenance

When cleaning the instrument, do not use such solvents as thinner or benzol which will remove paint or damage the plastic surface. Use a soft cloth dampened with neutral detergent.

Do not drop water or detergent, or insert metal object into the instrument while cleaning. Otherwise, you run the risk of electrical shock or fire.

2. SPECIFICATIONS

2.1 GENERAL

Model LT 416 is a precision test-signal source which provides four color systems of NTSC, PAL, SECAM, and NTSC-4.43 for testing and adjusting all kind of video products such as TV, VTR etc.

In addition of a composite signal output, the generator provides a Y/C output and a component signal outputs (except SECAM) of Y/B-Y/R-Y and GBR so that it is suitable to a production line for video products of component system.

RF output is easily selected by setting channel number while the channels are preprogrammed by each countries.

15 test patterns including color bars, raster, convergence and circle satisfy the most desired applications.

2.2 FEATURES

• Conforms to four standards (i.e., NTSC, PAL, SACAM, NTSC-4.43)

This generator is ideal for adjusting and testing TVs, VTRs, and AV equipments.

S connector

An S connector is provided to output Y and C signals for adjusting AV equipments with S connector.

Component video signal output

This generator outputs the composite video signal and component video signal. Since Y/ B-Y/ R-Y or G/ B/ R is output, the generator allows test signals for component AV system adjustment and testing. (The SECAM color signals (B-Y, R-Y) are not output.)

• RF setting

The channel plan based on the country system is provided for easier RF frequency setting.

Various test patterns

The 15 patterns including color bar and circle are provided for various adjustment and test processes.

2.3 Specifications

2.3.1 Composite Video Signal Output

(1)	Color System:	NTSC, PAL, SECAM, NTSC-4.43
(2)	Scanning Method	
	NTSC/ NTSC-4.43:	525-line interlace scanning
	PAL/ SECAM:	625-line interlace scanning
	(Progressive scanning c	an be performed for all color systems when the
	CIRCLE or CONVERGE	ENCE pattern is selected.)
(3)	Field frequency	
	NTSC:	59.94 Hz ±30 ppm
		(60.06 Hz \pm 30 ppm for progressive
		scanning)
	PAL/ SECAM:	50 Hz ±30 ppm
		(50.08 Hz \pm 30 ppm for progressive
		scanning)
	NTSC-4.43:	59.94 Hz ±150 ppm
		(60.06 Hz \pm 150 ppm for progressive
		scanning)
(4)	Line frequency	
	NTSC:	15.734 kHz ±30 ppm
	PAL/ SECAM:	15.625 kHz ±30 ppm
	NTSC-4.43:	15.734 kHz ±150 ppm
(5)	Subcarrier Frequency	
	NTSC:	3.579545 MHz ±30 ppm
	PAL:	4.43361875 MHz ±30 ppm
	NTSC-4.43:	4.43361875 MHz ±50 ppm
		(Progressive scanning can be selected when
		CIRCLE or CONVERGENCE patterns is
		selected.)
(6)	Video Generating System:	Digital system using 4 fsc sampling (without
		SECAM)
(7)	Number of Quantitative Bits:	8 bits
(8)	Output Impedance:	75Ω
(9)	Output Level:	1 Vp-p ± 50 mVp-p (Between sync tip and
		100 % white)

0 to 1 Vp-p, continuous variable

NTSC: 0 % ("7.5 %" model optionally (10) Setup Level: available) PAL/SECAM/NTSC 4.43:0% (11) Output connector Variable output: BNC Fixed output: RCA jack 1 1 each 1 (12) Number of Outputs: Sync Signal (1) Sync Signal Amplitude NTSC/ NTSC-4.43: 286 mVp-p ±14 mVp-p PAL/ SECAM: 300 mVp-p ±15 mVp-p Horizontal Sync Width: 4.7 μs ±200 ns (same spec.) Vertical Sync Width NTSC/ NTSC-4.43: ЗH PAL/ SECAM: 2.5H Vertical Blanking Period NTSC/ NTSC-4.43: 20H PAL/ SECAM: 25H (2) Color Burst Amplitude NTSC/NTSC-4.43: 286 mVp-p ±23 mVp-p PAL: 300 mVp-p ±24 mVp-p Number of Cycles NTSC: 9 cycles PAL: 10 cycles NTSC-4.43: 11 cycles (3) SECAM Color Identification Signal Amplitude D'R Line: 540 mVp-p +40 mVp-p, -50 mVp-p D'B Line: 500 mVp-p ±50 mVp-p SECAM Color (Back porch on the horizontal blanking period) (4) Amplitude D'R Line: 215 mVp-p ±25 mVp-p D'B Line: 167 mVp-p ±20 mVp-p

2.3.2

2.3.3 Test Patterns

(1)	Color Bar:	100/ 0/ 75/ 0 Full-field Color Bar			
(2)	Demodulator Pattern (Not output when the SECAM is selected)				
	PAL:	Combination of normal and reversed B-Y			
		and R-Y for each line			
	NTSC:	Combination of normal and reversed B-Y,			
		R-Y, I, and Q for each line			
	line n:	R-Y, -(R-Y), B-Y, -(B-Y), R-Y, -(R-Y), B-Y,			
		-(B-Y)			
	line n+1:	-(R-Y), R-Y, B-Y, -(B-Y), R-Y, -(R-Y),-(B-Y),			
		B-Y			
	line n:	I, -I, Q, -Q, I, -I, Q, -Q			
	line n+1:	-I, I, Q, -Q, I, -I, -Q, Q			
(3)	Multiburst				
	Frequency				
	NTSC/ NTSC-4.43:	0.5, 1.0, 2.0, 3.0, 3.58, 4.2 MHz			
	PAL/ SECAM:	0.5, 1.0, 2.0, 4.0, 4.8, 5.5 MHz			
	Amplitude:	100 %(*)			
(4)	Raster				
	Output eight colors in combination with red, green and, blue				
	Color: 100 % white, yellow, cyan, green, magenta, red, blue, black				
	Amplitude:	Same as color bars			
(5)	Window				
	Window Amplitude:	100 %(*)			
(6)	Step				
	10 equal steps from 0 mV to	700 mV white			
(7)	Circle Pattern:	White circle pattern (with black fringe) on the			
		convergence pattern			
	Color Burst:	on/off selectable			
	Interlace/ Progressive:	Selectable			
	(Flicker may occur on the bord	er of convergence and circle patterns.)			
(8)	Convergence				
	Luminance Amplitude:	75 %(*)			
	Number of Vertical Lines				
	NTSC/ NTSC-4.43:	17			
	PAL/ SECAM:	19			

Number of Horizontal Lines		
NTSC/ NTSC-4.43:	14	
PAL/ SECAM:	15	
Horizontal Line Width:	2 lines	
Number of Dots		
NTSC/ NTSC-4.43:	16 x 13	
PAL/ SECAM:	18 x 14	
Dot Pulse Vertical Width:	2 lines	
Color Burst:	On/ off selectable	
Interlace/ Progressive:	Selectable	
(*) Notes on pattern specifications		

Signal amplitude (100 %) is as follows.

PAL/ SECAM:	700 mVp-p
NTSC/ NTSC-4.43:	714 mVp-p
Accuracy:	Same as the composite signal

2.3.4 Y/ C Separation Output

Specifications:	Same as the composite signal
Output Impedance:	75 Ω
Connector:	S type
Number of Outputs:	1

2.3.5 Y, B-Y, R-Y Output

-	
Output Signal (*2):	Y, B-Y, R-Y
Y Output Amplitude	
NTSC/ NTSC-4.43:	714 mVp-p ±36 mV
PAL:	700 mVp-p ±35 mV
Sync Signal Amplitude	
NTSC/ NTSC-4.43:	286 mVp-p ±14 mV
PAL:	300 mVp-p ±15 mV
B-Y, R-Y Output Amplitude:	525 mVp-p ±26 mV
Output Impedance:	75 Ω
Connector:	BNC
Number of Outputs:	1 each
(*2) B-Y and R-Y are output when	the SECAM is selected;
Y is only output.	

2.3.6 R, G, B Output

Output Signal (*3):	R, G, B, C.SYNC	
R, G, B Output Amplitude:	700 mVp-p \pm 35 mV (NTSC, PAL,	
	NTSC-4.43)	
C.SYNC Output Amplitude:	C-MOS Level (NTSC, PAL, SECAM,	
	NTSC-4.43)	
Output Impedance:	75 Ω	
Connector:	BNC	
Number of Outputs:	1 each	
(Pulse poise may be superimposed a the leading and trailing edges of the P. (

(Pulse noise may be superimposed n the leading and trailing edges of the R, G and B Sync signals.)

(*3) R, G, B are output when the SECAM is selected;

C.SYNC is only output.

2.3.7 RF Output

System		
NTSC:	М	
PAL:	B, D, G, H, I, K	
SECAM:	B, D, G, H, K, L	
(The RF is disabled when the NTS	C-4.43 is selected)	
Carrier Frequency Range:	VHF and UHF	
Carrier Frequency Setting Method:	Direct setting using programmed country	
	channel plan (Arbitrary frequency cannot be	
	set)	
Modulation Polarity:	Negative or Positive	
Modulation System:	Double sideband	
Sound Signal		
Intercarrier Frequency:	4.5, 5.5, 6.0, 6.5 MHz	
Modulation Signal:	1 kHz ±200 Hz	
Modulation System:	FM or AM	
Output Voltage		
VHF:	At least 1 mVrms (into 75 Ω)	
UHF:	At least 0.5 mVrms (into 75 Ω)	
Number of Output:	1 (75 Ω, BNC)	
Since a double sideband modulation sy	stem is used for the RF signal of the LT 416.	

such parameters as P/S ratio do not conform to the official standards.

Therefore, video noise or audio noise may appear on a TV monitor, etc. when the RF signal of the LT 416 is applied.

2.3.8 Sound Output

Output Signal:	1 kHz \pm 100 Hz, sine wave
Amplitude:	1.2 Vp-p (into 600 Ω)
Output Impedance:	600 Ω
Number of Output:	1 (RCA jack)

2.3.9 General Specifications

Environmental Conditions	
Operating Temperature:	0 to 40 °C
Operating Humidity:	\leq 90 % RH (without condensation)
Spec-Guaranteed Temperature:	10 to 30 °C
Spec-Guaranteed Humidity:	\leq 85 % RH (without condensation)
Operating Environment:	Indoor use
Operating Altitude:	Up to 2000 m
Overvoltage Category:	П
Pollution Degree:	2
Power Requirements:	90 to 250 VAC, 50/ 60 Hz Max.15 W
Dimensions:	426 (W) x 88 (H) x 300 (D) mm (excluding projections)
Weight:	4.6 kg
Accessories:	Power cord1
	Instruction manual 1

3. PANEL DESCRIPTION

Please refer to each item number described on Figure 3-1 and 3-2 for the described instruction after 4.0PERATING PROCEDURE.

3.1 Front Panel



Figure 3-1 Front Panel

① POWER switch

Push this switch in to apply power. Release this switch for turning power off.

- Pattern keys Select the pattern.
- 3 R, G, B keys

Set raster color when the raster pattern is selected. Eight colors can be set in combination with the keys pressed.

- PROGRESSIVE/ INTERLACE key Select the scanning system when "CIRCLE" or "CONVERGENCE" is selected by using the "Pattern Keys 2." When the PROGRESSIVE is selected, the key LED light. When the INTERLACE is selected, the key LED goes off.
- 5 BURST key

Selects the color burst on or off when "CIRCLE" or "CONVERGENCE" is selected by using the "Pattern Keys ②." When the signal with color burst is output, the key LED lights; when the signal without color burst is output, the key

LED goes off.

country number.

In the SECAM system, this key is used to turn on or off the reference burst.

 COUNTRY/ CHANNEL ⑦ CHANNEL/ COUNTRY display ⑧ SELECT keys This block is used to control the RF frequency.
 Press the COUNTRY/ CHANNEL ⑥ when selecting the TV channel number and

When the COUNTRY LED light, the country number being selected is displayed on the CANNEL/ COUNTRY display ⑦.

When the CHANNEL LED light, the TV channel being selected is displayed on the CHANNEL/ COUNTRY display ⑦.

Use the SELECT [®] to select the country number and channel number. The COUNTRY/ CHANNEL ⁶ is also used to turn on or off the sound subcarrier on the RF output.

9 SYSTEM

Selects the color system.

- AUDIO OUTPUT connector
 Outputs 1 kHz sine wave in fixed level.
 RCA jack is used. Output impedance is 600 Ω.
- VIDEO OUTPUT connector
 Outputs composite video signal in fixed level.
 RCA jack is used. Output impedance is 75 Ω.
- Y/C OUTPUT connector
 Outputs Y and C video signals in fixed level.
 S connector is used. Output impedance for both Y and C is 75 Ω.
 - (i) VIDEO OUTPUT (i) LEVEL (i) OUTPUT This group is used to control the composite video signal output level. OUTPUT connector is BNC, and output impedance is 75 Ω. The level is calibrated at the PRESET (detent) position. The output level can be set from 0 V (MIN, immediately before the detent position) to the preset level (MAX) by rotating the OUTPUT LEVEL control.
 (i) RF OUTPUT (i) LEVEL (i) OUTPUT This group is used to control the RF output level.
 - OUTPUT connector is BNC, and output impedance is 75 Ω .

OUTPUT LEVEL control sets the output level. Clockwise rotation increases output level.

3.2 Rear Panel

This section describes the rear panel according to Figure 3-2.



19 Y, B-Y, R-Y connectors

Output component video signal with fixed level. Luminance signal (Y) and color difference signal (B-Y, R-Y) are output.

Output impedance of each connector is 75 Ω .

20 R, G, B, C.SYNC connectors

Output RGB video signal and composite sync signal with fixed level. Output impedance of R, G, and B connectors are 75 Ω . The C.SYNC is output in C-MOS level.

21 Inlet

Connect the accessory power cord.

Usable AC voltage range is 90 to 250 V, universal.

22 Fuse holder

The fuse rating is indicated on the rear panel. When replacing the fuse, rotate the fuse holder cap counterclockwise using a Phillips screwdriver to remove the cap.

23 Ground terminal

This terminal is connected to the chassis, and is used for grounding.

Serial number plate
 Instrument serial number. Provide this number when contacting us.

4. OPERATING PROCEDURE

4.1 Turning Power On

4.1.1 Connecting Power Plug

Check the mains voltage and current capacity for correct before connecting the instrument.

4.1.2 Turning Power On

Always confirm that the instrument is not in a volatile or flammable environment before turning the power on.

4.1.3 Warm-Up Time

You should allow the instrument to warm up for at least 30 minutes.

4.2 Connection

4.2.1 Cable

Table 4-1 lists a cable to be used.

Output Connector	Signal	Connector	cable
10 AUDIO OUTPUT	Sound	RCA	Shield wire
(1) VIDEO OUTPUT	Composite video	RCA	75Ω coaxial cable
12 Y/C OUTPUT	Y/C difference signal	S connector	S cable
15 OUTPUT	Composite video	BNC	75Ω coaxial cable
18 OUTPUT	RF	BNC	75Ω coaxial cable
(19) Y, B-Y, R-Y	Y	BNC	75Ω coaxial cable
	B-Y	BNC	75Ω coaxial cable
	R-Y	BNC	75Ω coaxial cable
20 R, G, B, C.SYNC	R	BNC	75Ω coaxial cable
	G	BNC	75 Ω coaxial cable
	В	BNC	75Ω coaxial cable
	C.SYNC	BNC	Shield wire

Table 4-1

* Do not apply ± 1 V (DC or AC peak) or higher external voltage to the output connectors.

4.2.2 Termination

When the equipment under test is connected, the cable end should be terminated with appropriate impedance for correct output level. Table 4-2 shows the output impedance and termination impedance for each connector.

Output Connector	Signal	Ternination	
1 AUDIO OUTPUT	Sound	600 Ω	
(1) VIDEO OUTPUT	Composite video	75 Ω	
⁽²⁾ Y/C OUTPUT	Y/C difference signal	75 Ω	
(15) OUTPUT	Composite video	75 Ω	
18 OUTPUT	RF	75 Ω	
19 Y, B-Y, R-Y OUTPUT	Υ	75 Ω	
	B-Y	75 Ω	
	R-Y	75 Ω	
20 R, G, B,	R	75 Ω	
C.SYNC OUTPUT	G	75 Ω	
	В	75 Ω	
	C.SYNC	C-MOS output	

Table 4-2

4.3 Color System Selection

Pressing the SYSTEM key (9) selects the color system

(i.e., NTSC \rightarrow PAL \rightarrow SECAM \rightarrow NTSC-4.43) sequentially. Lit LED indicates the selected system.

Pressing this key obtains the latest settings (e.g., pattern, RF frequency) related to each system.

4.4 Composite Video Signal

4.4.1 VIDEO OUTPUT connector

(1) Preset Output Level

When the OUTPUT LEVEL control 1 is set to PRESET position, the output level between sync tip and 100 % white is 1 Vp-p (into 75 Ω).



Figure 4-1 Preset position

(2) Variable Output Level

The output level can be set from 0 V (MIN, immediately before the detent position) to the preset level (MAX) by rotating the OUTPUT LEVEL control ⁽¹⁾. Clockwise rotation increases output level.

4.4.2 Fixed VIDEO OUTPUT Connector (1)

The output level between sync tip and 100% white is 1 Vp-p (into 75 Ω) regardless of the OUTPUT LEVEL control (1) setting.

4.5 Component Video Signal

4.5.1 Y, B-Y, R-Y Connectors 19

Use the Y, B-Y, R-Y connectors (19) to output Luminance and color difference signals. Output levels are fixed regardless of the LEVEL control (14). The SECAM color signals (B-Y, R-Y) are not output.

4.5.2 R, G, B, C.SYNC Connectors 20

Use the R, G, B, C.SYNC connectors ⁽²⁾ to output R, G, and B signals. The C.SYNC is used to synchronize the R, G, and B signals. Output levels are fixed regardless of the LEVEL control ⁽¹⁴⁾.

The SECAM only outputs C.SYNC.

4.6 Y/C Separation Signal

4.6.1 Y/C OUTPUT Connector 12

The Y/C OUTPUT connector 12 is used to connect an unit equipped with S connector. Output level is fixed; same as the composite signal.

4.7 Audio Signal

4.7.1 AUDIO OUTPUT Connector 10

The AUDIO OUTPUT connector 0 outputs audio signal. The signal is 1 kHz, 1.2 Vp-p (into 600 Ω) fixed. Pin jack is used.

4.8 RF Signal

4.8.1 OUTPUT Connector 18

Use the OUTPUT connector $\widehat{\mbox{(18)}}$ to output RF signal. This connector cannot be used when the NTSC 4.43 is selected.

4.8.2 Level Control 17

Use the RF OUTPUT LEVEL control 1. to set output level.

Rotating the control clockwise increases RF output level; fully clockwise for maximum output level, and vise versa.



Figure 4-2 RF OUTPUT group

4.9 Pattern Settings

(1) Using Pattern Key 2

Use the Pattern key ② to select the pattern. Selected pattern key LED lights. The DEM key is disable when the SECAM is selected.

(2) Raster Color Settings

The raster color can be selected in combination with the R, G, and B keys (3) when the RASTER pattern is selected by using the pattern key (2).

(Figure 4-3 shows the key combinations to select a green raster.)

Table 4-3 shows color and key combinations.

	White	Black	Red	Green	Blue	Yellow	Cyan	Magenta
R Key	ON	OFF	ON	OFF	OFF	ON	OFF	ON
G Key	ON	OFF	OFF	ON	OFF	ON	ON	OFF
B Key	ON	OFF	OFF	OFF	ON	OFF	ON	ON

Table 4-3 Raster color and key combinations

* ON : LED lights. OFF : LED goes off.



Figure 4-3 Key combinations to select green

(3) Interlace/Progressive Scanning Selection

The SCAN key ④ is used to select the scanning system when the CIRCLE or CONVERGENCE pattern is selected by using the Pattern key ②.

The key operation is toggled.

When the PROGRESSIVE is selected, the indicator lights. When the INTERLACE is selected, the indicator goes off.

If the TV screen becomes difficult to watch due to flickering, select PROGRESSIVE to reduce the amount of flicker.

(4) Color Burst, Reference Burst On/Off

The BURST key (5) is used to set the color burst or reference burst on or off when the CIRCLE or CONVERGENCE pattern is selected by using the Pattern key (2). The key operation is toggled.

The indicator lights when the burst is set on, and vise versa.

If the TV screen becomes difficult to watch due to the coloring of the vertical line edge, set the burst off to reduce this effect.

The BURST(5) key is used to set the color burst on or off when the NTSC, PAL, or NTSC 4.43 is selected by using SYSTEM key (9). The BURST (5) key is also used to set the reference burst on or off when the SECAM is selected by using SYSTEM key (9).

4.10 RF Channel Settings

4.10.1 Setting Method

(1) About RF Output Settings

The combination of country number (COUNTRY) and channel (CHANNEL) is used for setting the RF output frequency and RF system (i.e., modulation system, sound subcarrier).

See 5.3 "Channel Plan Table" to select the desired RF frequency and RF system.

Note that arbitrary RF frequency and RF system cannot be set.

- (2) Setting Procedure
 - Use the COUNTRY/CHANNEL key (6), COUNTRY/CHANNEL display (7), and SELECT key (8) for setting RF system.
 - The COUNTRY/CHANNEL key 6 operation is toggled. The COUNTRY LED lights in country number setting mode; the CHANNEL LED lights in channel number setting mode.
 - The CHANNEL/COUNTRY display ⑦ shows the country number (COUNTRY LED on) or channel number (CHANNEL LED on).
 - The SELECT key (8) is used to select the country number (COUNTRY LED on) or channel number (CHANNEL LED on).
 Pressing Up key increments the number by one; Down key Decrements the number by one.
 - Refer to Section 4.10.6, "Sound Subcarrier Level Selection" for detail.



Figure 4-4 RF control group

4.10.2 Setting Procedure

(1) About Country Number

A country number is attached to each channel plan. To select the channel plan of country or region to be set, select the corresponding number.

(2) Country Number Selection

Refer to Step (2) in Section 4.10.1, "RF Output Settings."

(3) Finding Desired Channel Plan

Example to set the channel plan of Germany VHF: According to the Section 5.2, "Broadcast System/Channel Plan by Country/Region," the channel plan "5" will be obtained.

4.10.3 Selecting Channel

(1) About Channel Number

The channel number is displayed in two digits.

Alphanumeric characters are used for the channel numbers of some channel plan. This generator converts alphanumeric channel number into numeric ones for display convenience.

Section "5.3, "Channel Plan Table" shows the correspondence between both types of numbers.

- (2) Channel Number SelectionRefer to Step (2) in Section 4.10.1, "RF Output Settings."
- (3) Numeric Channel NumberThe actual channel number is displayed.
- (4) Alphanumeric Channel Number

The actual channel number is converted into alphanumeric channel number and displayed.

Example: When the Australia VHF channel is selected, the actual channel number "5A" is converted into "7" and displayed.

4.10.4 Restriction by [SYSTEM 9]

The color system must be selected by using SYSTEM key (9) before selecting the country number. Otherwise, the country number cannot be selected.

4.10.5 RF Modulation

A double sideband modulation system is used for the RF signal.

4.10.6 RF Setting Example

This section describes an example to set the FRANCE VHF FB channel.

 See Section 5.2, "Broadcast System/Channel Plan by Country/Region" and find "France. "According to the table, the SECAM system and country number "25" will be obtained.

Finland	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Puerto Rico	NTSC	USA [VHF]	0	USA UHF	1
France	SECAM	FRANCE [VHF]	25	FRANCE [UHF]	26
Polynesia	SECAM	FOT [VHF]	28		
Bulugaria	SECAM	OIRT [VHF](D)	23	CCIR UHF(K)	24

(2) Refer to Section 5.3, "Channel Plan Table" and find the "SECAM FRANCE [VHF]" table.

(3) Select the SECAM by pressing the SYSTEM key (9).

	Countries/	/Areas Number	25					
	RF	System	l	-				
	ch. No.	LED display	fv (MHz)	fs (MHz)				
	FΑ	1	47.75	54.25				
•	FΒ	2	55.75	62.25				
	FC1	3	60.50	67.00				

SECAM FRANCE [VHF]

- (4) Press the COUNTRY/CHANNEL key (6) for the country selection mode (COUNTRY).
- (5) Display "25" on the COUNTRY/CHANNEL display ⑦ by pressing the SELECT key ⑧.
- (6) Press the COUNTRY/CHANNEL key (6) for the channel selection mode (CHANNEL).
- (7) Display "2" on the COUNTRY/CHANNEL display \bigcirc by pressing the SELECT key 8.

4.10.7 Sound Subcarrier Level Selection

The sound subcarrier signal is added to the RF signal when the instrument is shipped from the factory. The subcarrier level can be reduced about 20 dB.

To reduce the level, hold down the COUNTRY/CHANNEL key ⁶ until "oF" appears on the COUNTRY/CHANNEL display ⁷.

To obtain the original level, hold down the COUNTRY/CHANNEL key ⁽⁶⁾ until "on" appears on the COUNTRY/CHANNEL display ⁽⁷⁾.

A subcarrier noise may be superimposed on the RF signal. Set the subcarrier "oF," in this case.

4.11 Battery Backup

4.11.1 Backup Capability

This generator retains the setting conditions (e. g., system, pattern settings,country number,TV channel number) even when the power is turned off. Data is retained about 14 days with a fully charged backup battery (ambient temperature: \leq 40 °C ,relative humidity: \leq 80 %),

4.11.2 Battery

Rechargeable battery is used.

4.11.3 Battery Life

When backup period becomes short, the battery should be replaced. When replacing the battery, contact your local LEADER agent.

4.12 Fuse Replacement

When the fuse burns out, replace it according to the procedure below.

- (1) Remove the power cord from the mains to prevent accident.
- (2) Rotate the fuse holder cap counterclockwise using a Phillips screwdriver to remove the cap.
- (3) Replace damaged fuse with new one.
- (4) Use only the fuse of correct type and rating for replacement.Do not use such wire as copper lead. It can cause fire.
- (5) After the fuse is replaced, mount the cap surely.
- (6) Excessive tightening may broken the cap. If it is broken, the fuse holder must be replaced to prevent trouble. In this case, contact your local LEADER agent.

5. CHANNEL PLAN

5.1 Broadcast System

Table 5-1 lists the major parameters of the broadcast system.

System	М	В	G	Н	Ι	D, K	L
Channel Bandwidth (MHz)	6	7	8	8	8	8	8
Sound Subcarrier Frequency (MHz)	4.5	5.5	5.5	5.5	6	6.5	6.5
Video Modulation Polarity	Ι	-	_	-	Ι	-	+
Sound Modulation System	FM	FM	FM	FM	FM	FM	AM

Table 5-1 Major parameters of broadcasting system

5.2 Broadcast System/Channel Plan for Country/ Region

*Note that the contents with regard to the channel plan are only for your reference because estimated information is listed for some countries/regions.

	Color	VHF		UHF	
Countries/Areas	System	System	Co. No.	System	Co. No.
Afghanistan	PAL	CCIR VHF(B)	5		
Albania	PAL	ITALY VHF	14	CCIR UHF(G)	7
Algeria	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Angola	PAL	ANGOLA VHF	12	CCIR UHF(G)	7
Australia	PAL	AUSTRALIA VHF	15	AUSTRALIA UHF	16
Austria	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Bahamas	NTSC	USA VHF	0		
Bahrain	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Bangladesh	PAL	CCIR VHF(B)	5		
Barbados	NTSC	USA VHF	0		
Belgium	PAL	CCIR VHF(B)	5	CCIR UHF(H)	8
Belize					
Benin	SECAM	FOT VHF	28	CCIR UHF(K)	24
Bermuda	NTSC	USA VHF	0		
Bolivia	NTSC	USA VHF	0		
Bosnia Herzegovina	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Botswana	PAL	SOUTH AFRICA VHF(I)	18	CCIR UHF(I)	9

Table 5-2 Broadcast System/Channel Plan by Country/Region

	Color	VHF		UHF	
Countries/Areas	System	System	Co. No.	System	Co. No.
Brunei	PAL	CCIR VHF(B)	5		
Bulgaria	SECAM	OIRT VHF(D)	23	CCIR UHF(K)	24
Burkina Faso	SECAM	FOT VHF	28	CCIR UHF(K)	24
Burundi	SECAM	FOT VHF	28	CCIR UHF(K)	24
Cambodia	PAL	CCIR VHF(B)	5		
Cameroun	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Canada	NTSC	USA VHF	0	USA UHF	1
Central Africa Republic	SECAM	FOT VHF	28	CCIR UHF(K)	24
Chad	SECAM	OIRT VHF(D)	23	CCIR UHF(K)	24
Chile	NTSC	USA VHF	0	USA UHF	1
China	PAL	CHINA VHF	19	CHINA UHF	20
CIS	SECAM	OIRT VHF(D)	23	CCIR UHF(K)	24
Congo	SECAM	OIRT VHF(D)	23	CCIR UHF(K)	24
Costa Rica	NTSC	USA VHF	0	USA UHF	1
Coto d'Ivoire	SECAM	IVORY COAST VHF	27	CCIR UHF(K)	24
Croatia	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Cuba	NTSC	USA VHF	0	USA UHF	1
Cyprus	PAL	CCIR VHF(B)	21	CCIR UHF(G)	22
Czecho	SECAM	OIRT VHF(D)	23	CCIR UHF(K)	24
Denmark	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Diego Garcia	NTSC	USA VHF	0		
Djibouti	SECAM	FOT VHF	28		
Dominica (Commonwelth. of)	NTSC	USA VHF	0		
Dominica Republic	NTSC	USA VHF	0	USA UHF	1
Ecuador	NTSC	USA VHF	0	USA UHF	1
Egypt	PAL	CCIR VHF(B)	21	CCIR UHF(G)	22
El Salvador	NTSC	USA VHF	0	USA UHF	1
England				CCIR UHF(G)	7
Ethiopia	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Fiji	PAL	CCIR VHF(B)	5		
Finland	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
France	SECAM	FRANCE VHF	25	FRANCE UHF	26
French Polynesia	SECAM	FOT VHF	28		
Gabonese	SECAM	FOT VHF	28	CCIR UHF(K)	2
Gambia	PAL	SOUTH AFRICAVHF(I)	5	CCIR UHF(I)	7

Countries / Areas	Color	VHF		UHF	
Countries/Areas	System	System	Co. No.	System	Co. No.
Gernany	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Ghana	PAL	CCIR VHF(B)	5		
Gibraltar	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Greenland	NTSC	USA VHF	0		
Grenada					
Guam	NTSC	USA VHF	0		
Guatemala	NTSC	USA VHF	0	USA UHF	1
Guinea	SECAM	FOT VHF	28		
	PAL			CCIR UHF(K)	10
Guyana					
Guyana-Bissau	PAL	SOUTH AFRICA VHF(I)	18	CCIR UHF(I)	9
Haiti	NTSC	USA VHF	0		
Hawaii	NTSC	USA VHF	0		
Hellenic Republic	PAL	CCIR VHF(B)	21	CCIR UHF(G)	22
Holland	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Hong Kong	PAL			CCIR UHF(I)	9
Hungary	SECAM	OIRT VHF(D)	23	CCIR UHF(K)	24
Iceland	PAL	CCIR VHF(B)	5		
India	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Indonesia	PAL	INDONESIA VHF	11		
Iran	SECAM	CCIR VHF(B)	21	CCIR UHF(G)	22
Iraq	SECAM	CCIR VHF(B)	21	CCIR UHF(G)	22
Ireland	PAL	IRELAND VHF	13	CCIR UHF(I)	9
Israel	PAL	CCIR VHF(B)	5	CCIR UHF(I)	9
Italy	PAL	ITALY VHF	14	CCIR UHF(G)	7
Jamaica	NTSC	USA VHF	0		
Japan	NTSC	JAPAN VHF	2	JAPAN UHF	3
Johnston Is. (USA)	NTSC	USA VHF	0		
Jordan	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Kenya	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Korea	NTSC	USA VHF	0	USA UHF	1
Kuwait	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Lebanon	SECAM	CCIR VHF(B)	21	CCIR UHF(G)	22
Lesotho	PAL	SOUTH AFRICA VHF(I)	18	CCIR UHF(I)	9
iberia	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7

O suntria s / Ans s s	Color	VHF		UHF	
Countries/Areas	System	System	Co. No.	System	Co. No.
Libya	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Luxembourg	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Macao Area	PAL			CCIR UHF(I)	9
Macedonia	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Madagascar	SECAM	FOT VHF	28	CCIR UHF(K)	24
Malawi	PAL	SOUTH AFRICA VHF(I)	18	CCIR UHF(I)	9
Malaysia	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Maldives	PAL	CCIR VHF(B)	5		
Mali	SECAM	CCIR VHF(B)	21	CCIR UHF(G)	22
Malta	PAL	CCIR VHF(B)	5		
Mauritania	SECAM	CCIR VHF(B)	21		
Mauritius	SECAM	CCIR VHF(B)	21	CCIR UHF(G)	22
Mexico	NTSC	USA VHF	0	USA UHF	1
Micronesia	NTSC	USA VHF	0		
Midway Is. (USA)	NTSC	USA VHF	0		
Monaco	PAL			CCIR UHF(G)	7
	SECAM	FRANCE VHF	25	CCIR UHF(G)	7
Mongolia	SECAM	OIRT VHF(D)	23		
Morocco	SECAM	MOROCCO VHF(B)	29	CCIR UHF(G)	22
Mozambique				CCIR UHF(G)	7
Myanmar	NTSC	USA VHF	0		
Namibia	PAL	SOUTH AFRICA VHF(I)	18	CCIR UHF(I)	9
Nepal	PAL	CCIR VHF(B)	5		
New Caledonia	SECAM	FOT VHF	28		
New Zealand	PAL	NEW ZEALAND VHF	17	CCIR UHF(G)	7
Nicaragua	NTSC	USA VHF	0	USA UHF	1
Niger	SECAM	FOT VHF	28	CCIR UHF(K)	24
Nigeria	PAL	CCIR VHF(B)	5	CCIR UHF(I)	9
North Korea	PAL	OIRT VHF(D)	6	CCIR UHF(K)	10
Norway	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Oman	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Pakistan	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Panama	NTSC	USA VHF	0	USA UHF	1
Papua New Guinea	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Philippines	NTSC	USA VHF	0	USA UHF	1

	Color	VHF		UHF	
Countries/Areas	System	System	Co. No.	System	Co. No.
Poland	SECAM	OIRT VHF(D)	23	CCIR UHF(K)	24
Portugal	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Puerto Rico	NTSC	USA VHF	0	USA UHF	1
Qatar	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Romania	PAL	CCIR VHF(D)	6	CCIR UHF(K)	10
Rwanda	SECAM	FOT VHF	28	CCIR UHF(K)	24
Sao Tome & Principe	PAL	CCIR VHF(B)	5		
Saudi Arabia	SECAM	CCIR VHF(B)	21	CCIR UHF(G)	22
	PAL	CCIR VHF(B)	5		
Seychelles	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Sierra Leone	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Singapore	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Slovakia	SECAM	OIRT VHF(D)	23	CCIR UHF(K)	24
Slovenia	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Somalia	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
South Africa	PAL	SOUTH AFRICA VHF(I)	18	CCIR UHF(I)	9
Spain	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Srbije & Montenegro	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Sri Lanka	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
St. Christopher & Nevis					
St. Lucia	NTSC	USA VHF	0		
St. Vincent					
Sudan	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Surinam	NTSC	USA VHF	0		
Swaziland	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Sweden	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Swiss	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Taiwan Areas	NTSC	TAIWAN VHF	4		
Tanzania	PAL	SOUTH AFRICA VHF(I)	18	CCIR UHF(I)	9
Thailand	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Тодо	SECAM	FOT VHF	28	CCIR UHF(K)	24
Trinidad & Tobago	NTSC	USA VHF	0		
Tunisia	PAL	CCIR VHF(B)	5	CCIR VHF(B)	7
	SECAM	CCIR VHF(B)	21	CCIR VHF(B)	22
Turkey	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Uganda	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7

Countries / A ross	Color	VHF		UHF	
Countries/Areas	System	System	Co. No.	System	Co. No.
United Arab Emirates	PAL	CCIR VHF(B)	5		
USA	NTSC	USA VHF	0	USA UHF	1
Venezuela	NTSC	USA VHF	0		
Viet Nam	PAL	CCIR VHF(D)	6	CCIR UHF(K)	10
Virginia Is. (USA)	NTSC	USA VHF	0		
Western Samoa	NTSC	USA VHF	0		
Yemen	PAL	CCIR VHF(B)	5	CCIR UHF(I)	9
Zaire	SECAM	FOT VHF	28	CCIR UHF(K)	24
Zambia	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7
Zimbabwe	PAL	CCIR VHF(B)	5	CCIR UHF(G)	7

5.3 Channel Plan Table

5.3.1 How to use Channel Plan Table



Table 5-1

5.3.2 Channel Plan Table

Countries/Areas Number		0		
RF System		М		
ch. No.	LED display	fv (MHz)	fs (MHz)	
2	2	55.25	59.75	
3	3	61.25	65.75	
4	4	67.25	71.75	
5	5	77.25	81.75	
6	6	83.25	87.75	
7	7	175.25	179.75	
8	8	181.25	185.75	
9	9	187.25	191.75	
10	10	193.25	197.75	
11	11	199.25	203.75	
12	12	205.25	209.75	
13	13	211.25	215.75	

NTSC USA [VHF]

Table 5-2

NTSC USA [UHF]

Countries/Areas Number		1		
RF	- System	М		
ch. No.	LED display	fv (MHz)	fs (MHz)	
ch. No. 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	LED display 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	fv (MHz) 471.25 477.25 483.25 489.25 495.25 501.25 507.25 513.25 519.25 525.25 531.25 531.25 537.25 543.25 549.25 555.25	fs (MHz) 475.75 481.75 493.75 499.75 505.75 511.75 517.75 523.75 529.75 535.75 541.75 541.75 547.75 553.75	
28 29 30 31 32 33 34 35 36 37	28 29 30 31 32 33 34 35 36 37	555.25 561.25 573.25 579.25 585.25 591.25 597.25 603.25 609.25	559.75 565.75 571.75 577.75 583.75 589.75 595.75 601.75 607.75 613.75	

11300			(contra	
Countrie	s/Areas Number	1		
RF	System	Ν	1	
ch. No.	LED display	fv (MHz)	fs (MHz)	
38 39 40 41 42 43 44 56 47 89 51 52 53 55 55 55 56 78 90 61 23 45 66 78 90 71 23 74 57 77 78 90 81 23 81 23 81 23 81 23 81 23 45 66 77 89 60 71 72 37 45 76 77 89 80 81 23 45 81 80 77 77 77 89 80 81 80 77 77 77 77 77 77 77 77 77 77 77 77 77	38 39 40 41 42 34 45 46 78 49 50 51 52 53 55 55 57 58 59 60 12 34 55 66 77 89 77 77 78 78 78 78 80 81 82 83	615.25 621.25 633.25 639.25 645.25 657.25 663.25 669.25 669.25 687.25 687.25 699.25 705.25 711.25 723.25 723.25 747.25 753.25 759.25 759.25 777.25 789.25 789.25 777.25 789.25 789.25 801.25 807.25 807.25 807.25 807.25 801.25 807.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.25 801.25 807.	619.75 625.75 631.75 643.75 649.75 655.75 661.75 677.75 677.75 679.75 697.75 703.75 709.75 715.75 727.75 733.75 751.75 751.75 751.75 769.75 751.75 769.75 775.75 781.75 793.75 799.75 805.75 811.75 811.75 823.75 811.75 823.75 841.75 823.75 841.75 853.75 847.75 853.75 859.75 859.75 877.75 853.75 859.	

NTSC JAPAN [VHF]

Countries/Areas Number		2	2	
RF System		М		
ch. No.	LED display	fv (MHz)	fs (MHz)	
1	1	91.25	95.75	
2	2	97.25	101.75	
3	3	103.25	107.75	
4	4	171.25	175.75	
5	5	177.25	181.75	
6	6	183.25	187.75	
7	7	189.25	193.75	
8	8	193.25	197.75	
9	9	199.25	203.75	
10	10	205.25	209.75	
11	11	211.25	215.75	
12	12	217.25	221.75	

Table 5-4

NTSC JAPAN [UHF]

Countries/Areas Number		3		
RF	System	М		
ch. No.	LED display	fv (MHz)	fs (MHz)	
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 28	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 28	471.25 477.25 483.25 489.25 495.25 501.25 507.25 513.25 519.25 525.25 531.25 543.25 543.25 543.25 549.25 561.25 561.25 561.25 561.25 579.25 591.25 591.25 591.25 603.25 609.25 615.25	475.75 481.75 493.75 499.75 505.75 511.75 523.75 529.75 535.75 541.75 541.75 547.75 553.75 559.75 565.75 571.75 577.75 583.75 589.75 589.75 595.75 601.75 607.75 613.75 619.75	

NTSC JAPAN [UHF]

(cont'd)

Countries/Areas Number		3		
RF System		Μ		
ch. No.	LED display	fv (MHz)	fs (MHz)	
ch. No. 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57	LED display 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57	fv (MHz) 627.25 633.25 639.25 645.25 651.25 657.25 663.25 669.25 675.25 681.25 687.25 693.25 699.25 705.25 711.25 717.25 723.25 729.25 735.25	fs (MHz) 631.75 637.75 643.75 649.75 655.75 661.75 667.75 673.75 679.75 685.75 691.75 691.75 691.75 697.75 703.75 703.75 703.75 715.75 721.75 721.75 733.75 739.75	
58 59	58 59	741.25 747.25	745.75 751.75	
60 61 62	60 61 62	753.25 759.25 765.25	757.75 763.75 769.75	

NTSC TAIWAN [VHF]

Countries/Areas Number		4			
RF System		М			
ch. No. LED display		fv (MHz)	fs (MHz)		
7	7	175.25	179.75		
8	8	181.25	185.75		
9	9	187.25	191.75		
10	10	193.25	197.75		
11	11	199.25	203.75		
12	12	205.25	209.75		

Table 5-6

PAL CCIR(B)[VHF]

Countries/Areas Number		5		
RF System		В		
ch. No.	LED display	fv (MHz)	fs (MHz)	
2	2	48.25	53.75	
3	3	55.25	60.75	
4	4	62.25	67.75	
5	5	175.25	180.75	
6	6	182.25	187.75	
7	7	189.25	194.75	
8	8	196.25	201.75	
9	9	203.25	208.75	
10	10	210.25	215.75	
11	11	217.25	222.75	
12	12	224.25	229.75	

Table 5-7

PAL OIRT(D)[VHF]

Countries/Areas Number		6		
RF System		D		
ch. No.	LED display	fv (MHz)	fs (MHz)	
R1 R2 R3 R4 R5 R6 R7 R8 R9	1 2 3 4 5 6 7 8 9	49.75 59.25 77.25 85.25 93.25 175.25 183.25 191.25 199.25	56.25 65.75 83.75 91.75 99.75 181.75 189.75 197.75 205.75	
R10 R11 R12	10 11 12	207.25 215.25 223.25	213.75 221.75 229.75	

PAL CCIR(G)[VHF]

PAL CCIR(H)[UHF]

fs (MHz) 476.75 484.75 492.75 500.75 508.75 516.75 524.75 532.75 540.75 548.75 556.75 564.75 572.75 580.75 588.75 596.75 604.75 612.75 620.75 628.75 636.75 644.75 652.75 660.75 668.75 676.75 684.75 692.75 700.75 708.75 716.75 724.75 732.75 740.75 748.75 756.75 764.75 772.75 780.75 788.75 796.75 804.75 812.75 820.75 828.75 836.75 844.75 852.75 860.75

					()[-]	
Countrie	s/Areas Number	7	7	Countrie	s/Areas Number	8
RF	System	C	à	RF	⁻ System	ŀ
ch. No.	LED display	fv (MHz)	fs (MHz)	ch. No.	LED display	fv (MHz)
ch. No. 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	LED display 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	TV (MHZ) 471.25 479.25 487.25 495.25 503.25 511.25 519.25 527.25 535.25 543.25 551.25 559.25 567.25 575.25 583.25	TS (MHZ) 476.75 484.75 492.75 500.75 508.75 516.75 524.75 532.75 540.75 548.75 556.75 564.75 572.75 580.75 588.75	ch. No. 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	LED display 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	TV (MHZ) 471.25 479.25 487.25 495.25 503.25 511.25 519.25 527.25 535.25 543.25 551.25 559.25 567.25 575.25 583.25
33 36 37 38 39 40 41 42 43 44 45 46	33 36 37 38 39 40 41 42 43 44 45 46	591.25 599.25 607.25 615.25 623.25 631.25 639.25 647.25 655.25 663.25 671.25	596.75 604.75 612.75 620.75 628.75 636.75 644.75 652.75 660.75 668.75 676.75	33 36 37 38 39 40 41 42 43 44 45 46	33 36 37 38 39 40 41 42 43 44 45 46	591.25 599.25 607.25 615.25 623.25 631.25 639.25 647.25 655.25 663.25 671.25
47 48 49 50 51 52 53 54 55 56	47 48 49 50 51 52 53 54 55 56	679.25 687.25 695.25 703.25 711.25 719.25 727.25 735.25 743.25 751.25	684.75 692.75 700.75 708.75 716.75 724.75 732.75 740.75 748.75 756.75	47 48 49 50 51 52 53 54 55 56	47 48 49 50 51 52 53 54 55 56	679.25 687.25 695.25 703.25 711.25 719.25 727.25 735.25 743.25 751.25
57 58 59 60 61 62 63 64 65 66 67 68 69	57 58 59 60 61 62 63 64 65 66 67 68 69	759.25 767.25 783.25 791.25 799.25 807.25 815.25 823.25 831.25 839.25 847.25 855.25	704.75 772.75 780.75 788.75 796.75 804.75 812.75 820.75 828.75 836.75 844.75 852.75 860 75	57 58 59 60 61 62 63 64 65 66 67 68 69	57 58 59 60 61 62 63 64 65 66 67 68 69	759.25 767.25 783.25 791.25 799.25 807.25 815.25 831.25 839.25 847.25 855.25

PAL CCIR(I)[UHF]

PAL CCIR(K)[UHF]

fs (MHz) 477.75 485.75 493.75 501.75 509.75 517.75 525.75 533.75 541.75 549.75 557.75 565.75 573.75 581.75 589.75 597.75 605.75 613.75 621.75 629.75 637.75 645.75 653.75 661.75 669.75 677.75 685.75 693.75 701.75 709.75 717.75 725.75 733.75 741.75 749.75 757.75 765.75 773.75 781.75 789.75 797.75 805.75 813.75 821.75 829.75 837.75 845.75 853.75 861.75

Countrie	s/Areas Number	ç)	Countrie	s/Areas Number	10
RF	⁻ System	I		RF	- System	K
ch. No.	LED display	fv (MHz)	fs (MHz)	ch. No.	LED display	fv (MHz)
21	21	471.25	477.25	21	21	471.25
22	22	479.25	485.25	22	22	479.25
23	23	487.25	493.25	23	23	487.25
24	24	495.25	501.25	24	24	495.25
25	25	503.25	509.25	25	25	503.25
26	26	511.25	517.25	26	26	511.25
27	27	519.25	525.25	27	27	519.25
28	28	527.25	533.25	28	28	527.25
29	29	535.25	541.25	29	29	535.25
30	30	543.25	549.25	30	30	543.25
31	31	551.25	557.25	31	31	551.25
32	32	559.25	565.25	32	32	559.25
33	33	567.25	573.25	33	33	567.25
34	34	575.25	581.25	34	34	575.25
35	35	583.25	589.25	35	35	583.25
36	36	591.25	597.25	36	36	591.25
37	37	599.25	605.25	37	37	599.25
38	38	607.25	613.25	38	38	607.25
39	39	615.25	621.25	39	39	615.25
40	40	623.25	629.25	40	40	623.25
41	41	631.25	637.25	41	41	631.25
42	42	639.25	645.25	42	42	639.25
43	43	647.25	653.25	43	43	647.25
44	44	655.25	661.25	44	44	655.25
45	45	663.25	669.25	45	45	663.25
46	46	671.25	677.25	40	46	671.25
47	47	679.25	685.25	4/	47	679.25
48	48	687.25	693.25	48	48	687.25
49	49	695.25	701.25	49	49	695.25
50	50	703.25	709.25	50	50	703.25
51	51	711.25	717.25	51	51	711.25
52 52	52	719.20	723.23	52	52 52	719.20
53	53	725.25	733.23	53	53	725.25
54	54	735.25	741.20	54	54 55	735.25
55	55	743.23	749.20	55	55	743.25
50	50	751.25	757.25	50	50	751.25
58	58	759.25	705.25	58	58	759.25
50	50	707.25	781.25	50	50	707.25
60	59 60	783.25	789.25	60	59 60	783.25
61	61	705.25	709.25	61	61	703.25
62	62	791.25	805.25	62	62	791.25
62	63	807 25	813 25	62	62	807.25
64	64	815 25	821 25	64	64	815.25
65	65	823.25	829.25	65	65	823.25
66	60	831 25	837 25	66	60	831 25
67	67	839.25	845.25	67	67	839.25
~~~~	68	847.25	853.25	68	68	847.25
hX		047.7.7	(),),,,,,,,,			UT/ / / /

#### PAL INDONESIA [VHF]

Countries/Areas Number		11	
RF	System	В	
ch. No.	LED display	fv (MHz)	fs (MHz)
1A		*44.25	*49.75
2	2	55.25	60.75
3	3	62.25	67.75
4	4	175.25	180.75
5	5	182.25	187.75
6	6	189.25	194.75
7	7	196.25	201.75
8	8	203.25	208.75
9	9	210.25	215.75
10	10	217.25	222.75
11	11	224.25	229.75

Table 5-13

*1A channel can not be select.

# PAL IRELAND [VHF]

Countries/Areas Number		13		
RF System				
ch. No.	LED display	fv (MHz)	fs (MHz)	
A	1	45.75	51.75	
В	2	53.75	59.75	
C	3	61.75	67.75	
D	4	175.25	181.25	
E	5	183.25	189.25	
F	6	191.25	197.25	
G	7	199.25	206.25	
H	8	207.25	213.25	
J	9	215.25	221.25	

Table 5-15

# PAL ANGOLA [VHF]

Countries/Areas Number		12		
RF System		I		
ch. No.	LED display	fv (MHz)	fs (MHz)	
1	1	*43.75	*49.25	
2	2	52.25	58.25	
3	3	60.25	66.25	
4	4	175.25	181.25	
5	5	183.25	189.25	
6	6	191.25	197.25	
7	7	199.25	205.25	
8	8	207.25	213.25	
9	9	215.25	221.25	
10	10	223.25	229.25	

Table 5-14

CH No. 1 can not be select.

#### PAL ITALY [VHF]

Countries/Areas Number		14		
RF	⁻ System	В		
ch. No.	LED display	fv (MHz)	fs (MHz)	
A	1	53.75	59.25	
В	2	62.25	67.75	
C	3	82.25	87.75	
D	4	175.25	180.75	
E	5	183.25	189.75	
F	6	192.25	197.75	
G	7	201.25	206.75	
Н	8	210.25	215.75	
H1	9	217.25	222.75	
H2	10	224.25	229.75	

# PAL AUSTRALIA [VHF]

# PAL AUSTRALIA [UHF]

Countries/Areas Number		15			
RF	System	E	В		
ch. No.	LED display	fv (MHz)	fs (MHz)		
0	1	46.25	51.75		
1	2	57.25	62.75		
2	3	64.25	69.75		
3	4	86.25	91.75		
4	5	95.25	100.75		
5	6	102.25	107.75		
5A	7	138.25	143.75		
6	8	175.25	180.75		
7	9	182.25	187.75		
8	10	189.25	194.75		
9	11	196.25	201.75		
10	12	209.25	204.75		
11	13	216.25	221.75		

## Table 5-17

# PAL NEW ZEALAND [VHF]

Countries/Areas Number		17	
RF System		В	
ch. No.	LED display	fv (MHz)	fs (MHz)
1	1	45.25	50.75
2	2	55.25	60.75
3	3	62.25	67.75
4	4	175.25	180.75
5	5	182.25	187.75
6	6	189.25	194.75
7	7	196.25	201.75
8	8	203.25	208.75
9	9	210.25	215.75
10	10	217.25	222.75
11	11	224.25	229.75

#### Table 5-19 PAL SOUTH AFRICA [VHF]

Countries/Areas Number		18		
RF System		I		
ch. No.	LED display	fv (MHz)	fs (MHz)	
4	4	175.25	181.25	
5	5	183.25	189.25	
6	6	191.25	197.25	
7	7	199.25	205.25	
8	8	207.25	213.25	
9	9	215.25	221.25	
10	10	223.25	229.25	
11	11	231.25	237.25	
-	-	-	-	
13	13	247.43	253.43	

Countries/Areas Number		16		
RF System		В		
ch. No.	LED display	fv (MHz)	fs (MHz)	
ch. No. 28 29 30 31 32 33 4 35 36 37 38 9 40 41 23 44 56 57 58 56 61 62 63 64 65 66 67	LED display 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67	fv (MHz) 527.25 534.25 541.25 548.25 555.25 562.25 569.25 576.25 597.25 604.25 611.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 632.25 702.25 702.25 702.25 702.25 702.25 730.25 730.25 730.25 730.25 730.25 730.25 758.25 758.25 758.25 758.25 758.25 758.25 758.25 758.25 758.25	fs (MHz) 532.75 539.75 546.75 553.75 560.75 567.75 574.75 581.75 588.75 602.75 602.75 602.75 602.75 609.75 616.75 630.75 630.75 637.75 644.75 658.75 658.75 665.75 672.75 665.75 672.75 707.75 714.75 721.75 721.75 725.75 742.75 749.75 749.75 749.75 749.75 756.75 763.75 763.75 777.75 784.75 791.75 791.75 798.75	
68 69	68 69	807.25 814.25	812.75 819.75	

Table 5-18

PAL CHINA [VHF]

# PAL CHINA [UHF]

Countries/Areas Number		19	
RF	System	D	
ch. No.	LED display	fv (MHz)	fs (MHz)
1	1	49.75	56.25
2	2	57.75	64.25
3	3	65.75	72.25
4	4	77.25	83.75
5	5	85.25	91.75
6	6	168.25	174.75
7	7	176.25	182.75
8	8	184.25	188.75
9	9	192.25	198.75
10	10	200.25	206.75
11	11	208.25	214.75
12	12	216.25	222.75

Table 5-21

Countries/Areas Number		20		
RF	System	D		
ch. No.	LED display	fv (MHz)	fs (MHz)	
$\begin{array}{c} 13\\ 14\\ 15\\ 16\\ 17\\ 18\\ 19\\ 20\\ 22\\ 23\\ 24\\ 25\\ 26\\ 27\\ 28\\ 29\\ 30\\ 1\\ 32\\ 33\\ 45\\ 36\\ 37\\ 38\\ 90\\ 41\\ 42\\ 34\\ 45\\ 46\\ 47\\ 48\\ 9\\ 51\\ 52\\ 3\\ 54\\ 55\\ 57\\ 56\\ 57\\ \end{array}$	13 14 15 16 17 18 19 20 21 22 34 25 26 27 8 29 31 23 34 35 36 37 8 9 40 41 24 34 45 46 47 48 9 51 52 53 45 56 57	$\begin{array}{c} 471.25\\ 479.25\\ 487.25\\ 495.25\\ 503.25\\ 511.25\\ 519.25\\ 527.25\\ 535.25\\ 543.25\\ 551.25\\ 559.25\\ 607.25\\ 615.25\\ 607.25\\ 631.25\\ 639.25\\ 631.25\\ 639.25\\ 631.25\\ 639.25\\ 631.25\\ 639.25\\ 637.25\\ 639.25\\ 663.25\\ 679.25\\ 663.25\\ 703.25\\ 711.25\\ 703.25\\ 711.25\\ 719.25\\ 703.25\\ 711.25\\ 727.25\\ 735.25\\ 743.25\\ 751.25\\ 759.25\\ 743.25\\ 751.25\\ 759.25\\ 767.25\\ 775.25\\ 743.25\\ 799.25\\ 807.25\\ 807.25\\ 815.25\\ 839.25\\ 839.25\\ 839.25\\ 847.25\\ 855.25\\ 863.25\\ 863.25\\ \end{array}$	$\begin{array}{c} 477.75\\ 486.75\\ 493.75\\ 501.75\\ 509.75\\ 509.75\\ 517.75\\ 525.75\\ 533.75\\ 541.75\\ 549.75\\ 557.75\\ 565.75\\ 613.75\\ 629.75\\ 629.75\\ 629.75\\ 629.75\\ 645.75\\ 669.75\\ 669.75\\ 669.75\\ 669.75\\ 669.75\\ 669.75\\ 669.75\\ 701.75\\ 701.75\\ 709.75\\ 701.75\\ 709.75\\ 717.75\\ 725.75\\ 733.75\\ 741.75\\ 749.75\\ 757.75\\ 765.75\\ 733.75\\ 741.75\\ 749.75\\ 757.75\\ 765.75\\ 773.75\\ 789.75\\ 705.75\\ 813.75\\ 829.75\\ 813.75\\ 829.75\\ 845.75\\ 853.75\\ 845.75\\ 853.75\\ 861.75\\ 869.75\\ \end{array}$	

# SECAM CCIR(B)[VHF]

# SECAM CCIR(G)[UHF]

Countries/Areas Number		21	
RF System		В	
ch. No.	LED display	fv (MHz)	fs (MHz)
2	2	48.25	53.75
3	3	55.25	60.75
4	4	62.25	67.75
5	5	175.25	180.75
6	6	182.25	187.75
7	7	189.25	194.75
8	8	196.25	201.75
9	9	203.25	208.75
10	10	210.25	215.75
11	11	217.25	222.75
12	12	224.25	229.75

Table 5-23

Countries/Areas Number		22		
RF System		G		
ch. No.	LED display	fv (MHz)	fs (MHz)	
21 22 23 24 25 26 7 89 30 31 23 34 55 37 89 30 41 23 44 54 44 44 44 45 51 52 53 45 56 78 90 12 33 45 66 66 66 66 68 9	$\begin{array}{c} 21\\ 22\\ 23\\ 24\\ 25\\ 26\\ 27\\ 28\\ 29\\ 30\\ 31\\ 32\\ 33\\ 45\\ 36\\ 37\\ 38\\ 39\\ 41\\ 42\\ 43\\ 44\\ 56\\ 47\\ 48\\ 9\\ 50\\ 51\\ 52\\ 54\\ 55\\ 56\\ 57\\ 58\\ 90\\ 61\\ 23\\ 45\\ 66\\ 67\\ 69\\ 69\\ \end{array}$	$\begin{array}{c} 471.25\\ 479.25\\ 487.25\\ 495.25\\ 503.25\\ 511.25\\ 519.25\\ 527.25\\ 535.25\\ 543.25\\ 551.25\\ 559.25\\ 567.25\\ 575.25\\ 583.25\\ 599.25\\ 607.25\\ 615.25\\ 623.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 639.25\\ 711.25\\ 703.25\\ 711.25\\ 703.25\\ 711.25\\ 735.25\\ 743.25\\ 759.25\\ 743.25\\ 759.25\\ 743.25\\ 759.25\\ 775.25\\ 775.25\\ 775.25\\ 775.25\\ 799.25\\ 807.25\\ 815.25\\ 839.25\\ 839.25\\ 839.25\\ 839.25\\ 839.25\\ 839.25\\ 855.25\end{array}$	$\begin{array}{c} 476.75\\ 484.75\\ 492.75\\ 500.75\\ 508.75\\ 508.75\\ 516.75\\ 524.75\\ 532.75\\ 540.75\\ 548.75\\ 556.75\\ 564.75\\ 572.75\\ 580.75\\ 588.75\\ 596.75\\ 604.75\\ 620.75\\ 628.75\\ 620.75\\ 628.75\\ 628.75\\ 636.75\\ 628.75\\ 636.75\\ 636.75\\ 668.75\\ 668.75\\ 668.75\\ 668.75\\ 668.75\\ 700.75\\ 708.75\\ 708.75\\ 708.75\\ 708.75\\ 748.75\\ 748.75\\ 756.75\\ 748.75\\ 748.75\\ 756.75\\ 788.75\\ 788.75\\ 788.75\\ 788.75\\ 804.75\\ 812.75\\ 820.75\\ 828.75\\ 820.75\\ 828.75\\ 820.75\\ 828.75\\ 820.75\\ 828.75\\ 820.75\\ 828.75\\ 836.75\\ 844.75\\ 852.75\\ 844.75\\ 852.75\\ 844.75\\ 852.75\\ 844.75\\ 852.75\\ 844.75\\ 852.75\\ 860.75\\ 844.75\\ 852.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\ 860.75\\$	

# SECAM OIRT(D)[VHF]

# SECAM CCIR(K)[UHF]

Countries/Areas Number		23		
RF System		D		
ch. No. LED display		fv (MHz)	fs (MHz)	
R1	1	49.75	56.25	
R2 2		59.25	65.75	
R3 3		77.25	83.75	
R4 4		85.25	91.75	
R5 5		93.25	99.75	
R6 6		175.25	181.75	
R7	7	183.25	189.75	
R8 8		191.25	197.75	
R9 9		199.25	205.75	
R10	10	207.25	213.75	
R11	11	215.25	221.75	
R12	12	223.25	229.75	

Table 5-25

SECAM	CCIR(K)[UHF	]		
Countries/Areas Number		24		
RF	System	К		
ch. No.	LED display	fv (MHz)	fs (MHz)	
212234567890123345678901423445678901235555555678901234566789	21 22 3 4 5 6 7 8 9 3 3 3 3 3 3 3 3 3 3 3 4 4 2 3 4 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 3 4 5 6 7 8 9 0 4 1 2 3 4 4 5 6 7 8 9 0 1 2 3 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	471.25 479.25 487.25 503.25 511.25 527.25 535.25 543.25 551.25 559.25 567.25 575.25 591.25 591.25 607.25 615.25 631.25 631.25 637.25 637.25 637.25 637.25 637.25 637.25 637.25 637.25 637.25 637.25 703.25 711.25 711.25 735.25 743.25 757.25 743.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.	477.75 485.75 493.75 501.75 509.75 517.75 525.75 533.75 541.75 549.75 557.75 565.75 581.75 605.75 613.75 621.75 621.75 629.75 637.75 645.75 669.75 669.75 669.75 701.75 709.75 717.75 725.75 733.75 741.75 749.75 757.75 765.75 733.75 741.75 757.75 765.75 781.75 797.75 705.75 813.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 821.75 8	

# SECAM FRANCE [VHF]

# SECAM FRANCE [UHF]

Countries/Areas Number		25		
RF System		L		
ch. No. LED display		fv (MHz) fs (MHz		
FA	FA 1		54.25	
FB 2		55.75	62.25	
FC1	3	60.5	67	
FC	4	63.75	70.25	
F1	5	176	182.5	
F2	6	184	190.5	
F3	7	192	198.5	
F4	8	200	206.5	
F5	9	208	214.5	
F6	10	216	222.5	

Table 5-27

Countries/Areas Number		26		
RF System		L		
ch. No.	LED display	fv (MHz)	fs (MHz)	
21 22 3 4 25 6 7 8 9 0 1 2 3 3 3 3 5 6 7 8 9 0 1 2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 5 5 5 5 5 5	21 22 3 4 25 26 7 8 9 0 3 12 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 1 2 3 4 4 2 4 4 4 5 6 7 8 9 0 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	471.25 479.25 487.25 503.25 511.25 527.25 535.25 551.25 557.25 567.25 575.25 591.25 591.25 607.25 615.25 631.25 631.25 631.25 637.25 637.25 637.25 637.25 637.25 637.25 637.25 637.25 637.25 703.25 711.25 719.25 735.25 743.25 757.25 757.25 743.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 757.25 775.25 797.25 797.25 815.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.25 837.	477.75 486.75 493.75 501.75 509.75 517.75 525.75 533.75 541.75 549.75 557.75 565.75 581.75 605.75 613.75 621.75 621.75 629.75 637.75 645.75 669.75 669.75 669.75 701.75 709.75 717.75 725.75 733.75 741.75 749.75 757.75 757.75 741.75 757.75 765.75 781.75 797.75 705.75 813.75 829.75 821.75 821.75 821.75 821.75 821.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 757.75 7	

# SECAM IVORY COAST [VHF]

Countries/Areas Number		27		
RF System		K		
ch. No.	LED display	fv (MHz)	fs (MHz)	
1		*43.25	*49.75	
2	2	52.25	58.75	
3	3	60.25	66.75	
4	4	175.25	181.75	
5	5	183.25	189.75	
6	6	191.25	197.75	
7	7	199.25	205.75	
8	8	207.25	213.75	
9	9	215.25	221.75	

# SECAM FOT [VHF]

Countries/Areas Number		28			
RF System		K			
ch. No.	LED display	fv (MHz) fs (MHz)			
K4	4	175.25	181.75		
K5 5		183.25	189.75		
K6 6		191.25	197.75		
K7 7		199.25	205.75		
K8	8	207.25	213.75		
K9 9		215.25	221.75		

Table 5-30

Table 5-29

CH No. 1 can not be select.

SECAM MOROCCO [VHF]

Countries/Areas Number		29		
RF System		В		
ch. No.	LED display	fv (MHz)	fs (MHz)	
M4 M5 M6 M7 M8 M9	4 5 6 7 8 9	163.25 171.25 179.25 187.25 195.25 203.25 211.25	168.75 176.75 184.75 192.75 200.75 208.75 216.75	

#### 6. MAINTENANCE

The LT 416 is designed to provide stable performance when used properly. If the instrument requires adjustment or calibration after extended use, be sure to contact your nearest LEADER agent.



# 部件号码: LT 416



此标志适用于在中国销售的电子信息产品,依据 2006 年 2 月 28 日公布的 《电子信息产品污染控制管理办法》以及 SJ/T11364-2006《电子信息产品污染 控制标识要求》,表示该产品在使用完结后可再利用。数字表示的是环境保护使 用期限,只要遵守与本产品有关的安全和使用上的注意事项,从制造日算起在数 字所表示的年限内,产品不会产生环境污染和对人体、财产的影响。 产品适当使用后报废的方法请遵从电子信息产品的回收、再利用相关法令。 详细请咨询各级政府主管部门。

部件名称	有毒有害物质或元素 Hazardous Substances in each Part					
Parts	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
实装基板	×	0	0	0	0	0
主体部	×	0	×	0	0	0
开关电源	×	0	0	0	0	0
线材料一套	0	0	0	0	0	0
外筐	0	0	0	0	0	0
附件	0	0	0	0	0	0
包装材	0	0	0	0	0	0
电池	0	0	0	0	0	0

产品中有毒有害物质或元素的名称及含量

#### 备注)

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 规定的限量要求以下。

×: 表示该有毒有害物质或元素至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。

Ver.4