

SERVICE MANUAL

liyama 97

19" Digital Controlled Color Monitor

TABLE OF CONTENTS

1. PRECAUTIONS AND NOTICES.....	2
2. SPECIFICATIONS.....	4
3. USER OSD MAIN MENU DESCRIPTION.....	20
4. ADJUSTMENT PROCEDURE / DDC DATA.....	32
5. FACTORY OSD MAIN MENU INSTRUCTION.....	41
6. TROUBLE SHOOTING FLOW CHART.....	46
7. WAVE FORMS.....	51
8. EXPLODED CIRCUIT DIAGRAMS.....	58
9. DISASSEMBLY INSTRUCTION.....	59
10. PCB LAYOUT DIAGRAMS.....	60
11. SCHEMATIC DIAGRAM.....	63
12. BOM LIST	66
13. RECOMMENDED SPARE PARTS	75

1. PRECAUTIONS AND NOTICES

WARNING!

This service information designed for experience repair technicians only and is not designed for use by the general public.

It does not contain warnings or cautions to avoid non-technical individuals of potential dangers in attempting to service a product.

Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt within this service information by anyone else could result in serious injury or death.

CAUTION

No modification of any circuit should be attempted. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and servicing guideline.

1. SAFETY CHECK

Care should be taken while servicing this CRT display because of the high voltage used in the deflection circuits these voltages are exposed in such are as the associated fly-back and yoke circuits.

2. FIRE AND SHOCK HAZARD

Insert an isolation transformer between the CRT display and AC power line before servicing the chassis.

In servicing pay attention to original lead dress especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as result of the short circuit.

All the protective devices must be reinstalled per original design.

Soldering must be inspected for possible cold solder joints, frayed leads, damaged insulation, solder splashes or sharp solder points. Be certain to remove all foreign material.

3. LEAKAGE CURRENT COLD CHECK

Unplug the AC cord and connect a jumper between the two prongs on the plug.

Turn the CRT display power switch "on".

Measure the resistance value with an ohmmeter between the jumper AC plug and each exposed metallic part on the CRT display such as the metal frame, screwheads, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm minimum.

4. LEAKAGE CURRENT HOT CHECK

Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.

Connect a 1500 ohm,10 watt resistor, paralleled a 0.15uF capacitor between each exposed metallic part and a good earth ground (as shown in Fig 1).

Use an AC voltmeter with 1000 ohm/volt or more sensitivity and measure the AC voltage across the

combination 1500 ohm resistor and 0.15uF capacitor.

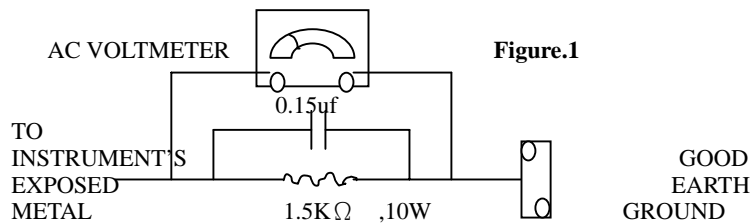
Move the resistor connection to each exposed metallic part and measure the voltage.

Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.

Voltage measured must not exceed 7.5 volt RMS, from any exposed metallic part to ground. A leakage current tester may be used in the above hot check, in which case any current measured must not exceed 5.0 milliamps .In the case of a measurement exceeding the 5.0 milliamp value, a rework is required to eliminate the change of a shock hazard.

Note:

High voltage is present when this CRT display is operating. Always discharge the anode of the picture tube to the display chassis to prevent shock hazard.



5. IMPLOSION PROTECTION

All picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage and scratching during installation .Use only replacement picture tubes.

6. X-RADIATION

WARNING: The only potential source of X-Radiation is the picture tube. However when the high voltage circuitry is operating properly there is no possibility of X-Radiation problem .The basic precaution which must be exercised is to keep the high voltage at the following factory-recommended level.

Note: It is important to use an accurate periodically calibrated high voltage meter.

7.1 If cannot be adjusted 26.0 KV immediate service is required to prevent the possibility of damage.

7.2 To prevent X-Radiation possibility it is essential to use the specified picture tube.

2. SPECIFICATIONS

1.0 SCOPE

1.1 Introduction

Product Configuration	This specification defines the configuration and performance requirements for the following monitors:
America	Model Name P97f+-1 Model Number VS10283
America	Model Name P97f+B-1 Model Number VS10283
Europe	Model Name P97f+SB-1 Model Number VS10283
Pacific Asia	Model Name P97f+SB-1 Model Number VS10283
China	Model Name P97f+-1 Model Number VS10283

1.2 Product Definition

Top Level Assembly	The top level assembly shall contain the monitor, tilt/swivel base, power cable, video cable, User's Guide and INF & ICM CD-ROM.
--------------------	--

1.3 Magnetic Requirements

P97f+/B-1 (North America)	$B_h = 250 \pm 10 \text{ mG}$, $B_v = 450 \pm 10 \text{ mG}$
P97f+SB-1E (Europe)	$B_h = 250 \pm 10 \text{ mG}$, $B_v = 450 \pm 10 \text{ mG}$
P97f+SB-1P (Asia Pacific)	$B_h = 400 \pm 10 \text{ mG}$, $B_v = 240 \pm 10 \text{ mG}$
P97f+-1G (China)	$B_h = 340 \pm 10 \text{ mG}$, $B_v = 360 \pm 10 \text{ mG}$

Alignment condition in production process, $B_h = 0 \text{ mG}$, $B_v =$ depends on target Hemisphere locations.

1.4 Mass Production Release

Mass Production Approval	Mass Production shall not begin until Iiyama has issued a Mass Production Release.
Component Approvals	All exterior plastic components screen printed components, labels, shipping cartons, protective foam, and printed materials require approval by Iiyama prior to Mass Production Release.

1.5 Change Control

Engineering Change Orders	All Engineering changes to the product shall be approved in
---------------------------	---

	writing by Iiyama.
1.6 Service	
Documentation / Service Manual	Bills of Material, Schematics, Service Manual, and Assembly Drawings shall be provided in compliance with Iiyama Specification VSCSPCSMVRG1.0, Service Manual, Vendor Requirements Guide.

2.0 GENERAL REQUIREMENTS

2.1 General Specifications

Test Procedures	Monitor performance shall be evaluated by Iiyama with the equipment and procedures specified in the Iiyama Test & Measurement Specification “VSCTMTSPEC001”.
Warm Up	Video performance shall be measured after a warm up period of 30 minutes.
Vertical Magnetic Field	The Vertical Magnetic Field specified in paragraph 1.3 shall be used for all video evaluation.
Horizontal Magnetic Field	Zero \pm 10 mG shall be used for all video evaluation unless otherwise specified.
Test Resolution & Frequency	Factory Presets.
Test Image Size	Factory Default.
Contrast and Brightness Controls	Factory Default.

3.0 VIDEO INTERFACE

3.1 Video Interface

Video Connection	High Density DB-15
Default Input Connector	High Density DB-15
Video Cable Length	1.83 meters
Video Cable Color	Match w/cabinet
Video Cable Strain Relief	Twice the weight of the monitor or 18 kg for five minutes.
Video Cable Connector DB-15 Pinout	Compliant with IBM 8513 and VESA DDC 1/2B.
Video Signals	700 mV full scale, 1,000 mV full scale
Video Impedance	75 Ohms
Maximum PC Video Signal	950 mV with no damage to monitor
Maximum Mac Video Signal	1250 mV with no damage to monitor
Sync Signals	TTL compliant with 1kOhm to 10kOhm internal pull up resistors.
DDC 1/2B	Compliant with Revision 2.1

Sync Compatibility	Separate Sync, and Composite Sync
Video Compatibility	The monitor shall be compatible with all PC type computers, MacIntosh computers, and after market video cards.

4.0 power

4.1 *Power Supply*

Input Voltage Range	90 - 264 VAC
Input Frequency Range	48 – 62 Hertz
Fuse	Internal and not user replaceable
Power Dissipation - typical	97 W
Power Dissipation - maximum	130 W
Power Supply Inrush	< 30 amperes for ½ cycle @ 120 VAC < 60 amperes for ½ cycle @ 240 VAC
Power Supply Cold Start	The power supply shall start and function properly when under full load, with all combinations of input voltage, input frequency, operating temperature and a cold CRT filament.
Power Supply Transient Immunity	The monitor shall be able to withstand an ANSI/IEEE C62.41-1980 6000V 200 ampere ring wave transient test with no damage.
Power Supply Line Surge Immunity	The monitor shall be able to withstand 1.5 times nominal line voltage for one cycle with no damage.
Power Supply Missing Cycle Immunity	The monitor shall function properly, without reset or visible screen artifacts, when ½ cycle of AC power is randomly missing
Power Supply Degauss	The monitor shall degauss when powered on.
Power Supply Acoustics	During startup and normal operation, the power supply shall not produce audible noise that would be detectable by the user. Audible shall defined to be in compliance with ISO 7779 (DIN EN27779:1991) Noise measurements of machines acoustics. Degausser and Power Switch noise shall not be considered.

4.2 *Power Interface*

Monitor Connector	IEC-320 (10 ampere) type male power receptacle.
Power Cable Length	>= 1.83 meter
Power Cable Color	Match with cabinet
“-M” Model	3-prong NEMA 5-15P type plug (US Wall Type)

“-E” Model	Shuko CEE-7
“-P” Model	3-prong NEMA 5-15P type plug (US Wall Type)
“-G” Model	Great Wall Type
4.3 <i>Power Saving Operation</i>	
Method	VESA DPMS Signaling
Power Consumption	ON Mode < 130 Watts (maximum) SLEEP Mode < 4 Watts OFF Mode < 3 Watts
Recovery Time	ON Mode = N/A OFF < 10 sec

5.0 FRONT PANEL CONTROLS and indicators

5.1 *Front Panel Hardware Controls*

Power Switch	Push Button
Power LED	Green - ON Orange - Active Off

5.2 *High Brightness Function Switch*

High Brightness short key –Normal	NORMAL: TEXT/SPREADSHEET
High Brightness short key –UltraBrite	ULTRABRITE:GRAPHICS/GAME/VIDEO

5.3 *Video Controls*

Control Type	OSD. The OSD shall be compliant with the Iiyama On-Screen Display Control Specification, VSCOSDSPECTBD.
OSD Lock	OSD LOCK: Press and hold [1] and the down arrow for 6 second. If any buttons are pressed the message OSD LOCK will display for 5 second. OSD Unlock: Press and hold [1] and the down arrow again for 10 second
OSD Controls	Contrast Brightness Horizontal Size Horizontal Position Vertical Size Vertical Position Zoom Pincushion

Pincushion Balance
 Trapezoid
 Parallelogram
 Tilt
 Degauss
 ViewMeter
 ViewMatch Color (9300K, 6500K, 5000K, User)
 OSD Position
 Moire Reduction
 Language (English, French, German, Italian, Spanish, T. Chinese, S. Chinese
 Convergence[H.Convergence,V. Convergence]
 V. Linearity [V. Linr.Cen, V. Linr.Sym]
 Hooking [Top Hooking, Bottom Hooking]
 Purity [Purity, T-L, T-R, B-L, B-R, Purity Recall]
 Memory Recall
 The OSD shall save new settings when it is turned off the by the user or when it times out. There shall not be a separate save.
 The OSD shall save new settings when it is turned off the by the user or when it times out. There shall not be a separate save.

6.0 ELECTRICAL REQUIREMENTS

6.1 *Horizontal / Vertical Frequency*

Horizontal Scan Range	30kHz ~ 110kHz
Vertical Refresh Rate	50Hz ~ 160Hz.
Sync Polarity	Independent of sync polarity.

6.2 *Primary Preset*

Primary Preset # 1	VESA 1600 X 1200 @ 85 HZ
Primary Preset # 2	VESA 1280 x 1024 @ 85 Hz

6.3 *Other Factory Presets*

VGA 720 x 400 @ 70 Hz	
VGA 640 x 480 @ 60Hz	Mac 1152 x 870 @ 75 Hz
VESA 800 x 600 @ 85 Hz	
VESA 1024 x 768 @ 75 Hz, 85Hz	VESA 1600 x 1200 @ 75Hz,

VESA 1280 x 1024 @ 75Hz	VESA 2048 x 1536 @ 60Hz
Factory Preset Mode: 11	
6.4 User Presets	
Number of User Presets Available	10
6.5 Changing Modes	
Maximum Mode Change Time	< 1.5 sec
Mode Change Image	The image shall blank while the monitor changes modes.

7.0 CATHODE RAY TUBE

7.1 Cathode Ray Tube

CRT	Mitsubishi, M46LXH62X31 <u>Iiyama must approve, in writing, any change of CRT before implementation.</u>
Size	19"
Diagonal	18" minimum
Mask Type	Aperture Grille
Pitch	0.24mm
Faceplate Treatment	AR - Film coating
Transmission Percentage	47.5%
Implosion Protection	The CRT shall have implosion protection and will meet the requirements of UL-1418 and IEC-65.
Hemisphere	North
Shock	Follow Tube Spec

8.0 IMAGE PERFORMANCE

8.1 Factory Defaults	
Preset Color	9300 °K
Contrast Control	Maximum
Brightness Control	Raster just extinguish (Raster <= 0.08 Ft-L)
8.2 Display Size	
Horizontal Display Size, Primary Preset	353 mm +/- 4 mm
Horizontal Display Size, Other Presets	353 mm +/- 4 mm
Vertical Display Size, Primary Preset	265 mm +/- 4 mm

Vertical Display Size, Other Presets	265 mm +/- 4 mm	
Display Size Adjustment	All preset modes shall expand to full screen size.	
8.3 Display Centering Requirements		
Horizontal, Primary Preset	<= 4.0 mm, correctable to zero	
Horizontal, Other Presets	<= 4.0 mm, correctable to zero	
Vertical, Primary Preset	<= 4.0 mm, correctable to zero	
Vertical, Other Presets	<= 4.0 mm, correctable to zero	
8.4 Raster Linearity		
Linearity Equation $\frac{Hi - Low}{(Hi + Low)} \times 100\% \leq XX\%$	Linearity Testing Pattern: 4:3 aspect ratio 12 x 9 blocks @ Factory Default Size	
	Primary Mode	Other Preset Modes
Horizontal, Adjacent	<= 4 %	<= 4%
Horizontal, Worst Case	<= 5 %	<= 5%
Vertical, Adjacent	<= 4%	<= 4%
Vertical, Worst Case	<= 5 %	<= 5%
8.5 Trapezoid Distortion		
Horizontal, AB - CD	<= 2 mm, correctable to zero mm	
Vertical, AC - BD	<= 2 mm	
8.6 Parallelogram Distortion		
AD - BC	<= 2 mm, correctable to zero mm	
8.7 Orthogonality		
Orthogonality	<= 1.0 degrees	
8.8 Line Straightness Requirements		
Line Straightness	No visible hooks or S-curve distortion.	
8.9 Jitter		
Jitter	No visible	
8.10 Tilt / Rotation		
Vertical Field, Paragraph 1.3. Zero, North, South, East, & West Horizontal Field,	<= 2 mm, adjustable to zero	

Paragraph 1.3	
8.11 2 mm Box (Total Geometric Error)	
Top	$\leq 2.0 \text{ mm}$
Bottom	$\leq 2.0 \text{ mm}$
Left	$\leq 2.0 \text{ mm}$
Right	$\leq 2.0 \text{ mm}$
8.12 Focus/Moiré	
Refer to Test & Measurement Specification.	
8.13 Convergence	
A Zone (d = 265mm at preset)	$\leq 0.25 \text{ mm}$
B Zone (outside circle, d = 297mm)	$\leq 0.35 \text{ mm}$
8.14 Image Regulation	
Static with Luminance	$\leq 0.5 \text{ mm each side}$
Dynamic with Luminance	$\leq 0.5 \text{ mm each side}$
Temperature and Line Voltage	$\leq 0.5 \text{ mm each side}$
8.15 Preset Color Temperatures	
9300K + 8 M. P. C. D.	TCO 03 Compliant
6500K + 8 M. P. C. D.	TCO 03 Compliant
5000K + 8 M. P. C. D.	TCO 03 Compliant
8.16 CRT Color Uniformity	
1931 CIE “x” worst case variation	TCO 03 Compliant
1931 CIE “y” worst case variation	TCO 03 Compliant
8.17 Video Amplifier Linearity, Input Step	
1931 CIE “x” 600 mv to 700 mv change	$ X_{600 \text{ mv}} - X_{700 \text{ mv}} < 0.007$
1931 CIE “y” 600 mv to 700 mv change	$ Y_{600 \text{ mv}} - Y_{700 \text{ mv}} < 0.003$
8.18 Video Amplifier Linearity, Input Voltage or Contrast Control	
1931 CIE “x” change with input voltage or contrast control.	$ X_{25.75 \text{ Ft-L}} - X_{10 \text{ Ft-L}} < 0.007$ $ X_{25.75 \text{ Ft-L}} - X_{30 \text{ Ft-L}} < 0.007$
1931 CIE “y” change with input voltage or contrast control.	$ Y_{25.75 \text{ Ft-L}} - Y_{10 \text{ Ft-L}} < 0.003$ $ Y_{25.75 \text{ Ft-L}} - Y_{30 \text{ Ft-L}} < 0.003$
8.19 Purity	
Vertical Field, Paragraph 1.3. Zero, North,	No visible impingement - Full scan flat Red, Green &

South, East, & West Horizontal Field, Paragraph 1.3	Blue fields. Uniform full scan flat white field.
8.20 Luminance Level	
Luminance Level (Primary Preset and 9300 °K only)	28 ± 4 Ft-L with Contrast at max. and Brightness at 50% (Raster ≤ 0.08 Ft-L) with full white field.
Luminance Level at 20% of default image setting (Primary Preset and 9300 °K only)	34 ± 4 Ft-L with Contrast at maximum and Brightness at 50%.
UltraBrite: Luminance Level at 20% of default image setting (Primary Preset and 9300°K only)	75 ± 7 Ft-L with Contrast at maximum and Brightness at cut off.
Luminance Level at min contrast (Primary Preset and 9300 °K only)	No Visible video with Contrast at minimum and Brightness at 50% with full white field.
Luminance Level at min brightness (Primary Preset and 9300 °K only)	Blank raster with Contrast at maximum, Brightness at 0%, and no active video input.
Luminance Level (Primary Preset and 9300 °K only)	Auto Luminance $ L_{\text{full scan}} - L_{\text{default size}} < 2.0$ Ft-L
8.21 Luminance Uniformity	
Luminance Uniformity (Primary Preset)	> 80%
8.22 Front of Screen Bandwidth	
Refer to Test & Measurement for definition	
8.23 Video Performance	
Optimized Video Performance	Aurora Geforce 4MX 440 AGP
Acceptable Video Performance	ATI RADEON 7500 AGP
8.24 Raster Artifacts	
Video Artifacts	No Visible Peaking, Ringing, Streaking, Sag, or Smearing Artifacts when driven by the specified video cards in any video mode within the horizontal or vertical frequency range of the monitor
Video Skew	No Visible Complimentary Color Transition Artifacts in any video mode within the horizontal or vertical frequency range of the monitor.
Deflection, Power Supply, and Grounding Artifacts	No visible artifacts in any specified video mode within the horizontal or vertical frequency range of the monitor

9.0 SCREEN DEFECTS

9.1 *Missing Pixels*

Maximum Size	Follow CRT spec.
Maximum Quantity	Follow CRT spec.
Minimum Distance Between Defects	Follow CRT Spec.

10.0 MECHANICAL

10.1 *Bezel Opening*

Diagonal Bezel Opening	18"
------------------------	-----

10.2 *Dimensions*

Width	459 mm
Height	476 mm
Depth	478 mm
Footprint Width (Base)	270 mm
Footprint Depth (Base)	270 mm
Monitor Weight	Net: 23.4 Kg

10.3 *Tilt / Swivel*

Up	15 degrees
Down	5 degrees
Right	>= 90 degrees
Left	>= 90 degrees

10.4 *Cabinet Material*

Cabinet Plastic Material	TCO 03/99 Compliant Material
External Plastic Cabinet Components	All external cabinet components (bezel, rear cabinet, and tilt/swivel base) shall be made of the same material and the same color.
Internal Plastic Cabinet Components	All internal plastic cabinet components shall be in compliance with the requirements of TCO.
Exterior Bezel, Rear Cabinet, and Tilt/Swivel Base Color	The 1976 CIE L*a*b Colorspace Coordinates of the bezel, rear cabinet, and tilt/swivel base shall be: For Beige: L*= <u>77.71 +/-0.50</u> , a*= <u>-.10 +/- 0.35</u> , b*= <u>2.40 +/- 0.50</u> when measured with a 10° Supplementary Standard Observer and D ₆₅ Standard Illuminant. The “Delta E” deviation from the standard color shall be less than 0.80 “Delta E”. Exterior paint shall not be used.

Black Cabinet.	<p>For black design: $L^* = 32.60 \pm 0.50$, $a^* = 0.24 \pm 0.35$, $b^* = -3.14 \pm 0.50$, when measured with a 10° Supplementary Standard Observer and D_{65} Standard Illuminant. The “Delta E” deviation from the standard color shall be less than 0.80 “Delta E”. Exterior paint shall not be used.</p> <p>The first tone (silver) of bezel $L^* = 86.91 \pm 1.0$ $a^* = -0.43 \pm 0.5$ $b^* = -0.94 \pm 0.5$ $dE < 1.0$.</p> <p>The second tone (Iiyama black) $L^* = 31.70 \pm 0.75$, $a^* = 0.00 \pm 0.50$, $b^* = -1.10 \pm 0.50$, when measured with a 10° Supplementary Standard Observer and D_{65} Standard Illuminant.</p> <p>*Note: dE for front bezel and rear cabinet should be < 1.0</p>
Two Tone Cabinet (Silver Black)	
Cabinet Component’s Color Difference	The color difference between any two cabinet components shall be less than 0.80 “Delta E”, in the 1976 CIE L^*a^*b Colorspace.
Cabinet Color Drift Due To UV-Light	The color drift due to UV-Light shall be less than 10.0 “Delta E” in the 1976 CIE L^*a^*b colorspace. Testing shall be performed according to the requirements of ASTM Test Method D4459-93.
Cabinet Texture	The cabinet texture shall conform to Mold-Tech # 11010 unless specified otherwise. This texture shall be used on all external textured surfaces.
Samples	The vendor shall submit textured color chips, plastic material specifications, and Material Safety Data Sheets for approval.
10.5 Mechanical Specifications	
Screen Printed Parts	Artwork shall be provided by Iiyama. The Iiyama Bezel Graphics Specification, VSCBGRSPEC001 controls logo position..
Bird Logo	The Iiyama Bird Logo Plate Specification, VSCBLPSPEC001 controls bird logo position.
Molded Plastic	Workmanship shall be inspected according to the Iiyama Molded Plastic Parts Specification, VSCMPPSPEC001.

11.0 ENVIRONMENTAL

11.1 *Environmental Conditions*

Operating Temperature	0°C to +40°C
Storage Temperature	-40°C to +60°C
Operating Relative Humidity	5% to 95% Non-Condensing
Storage Relative Humidity	5% to 95% Non-Condensing
Operating Altitude	-400 meters to +3000 meters
Storage Altitude	-400 meters to +12,000 meters

12.0 PACKAGING

12.1 *Package Specifications*

Iiyama Packaging Specification	The “Top Level Assembly” shall meet the Iiyama Corporation Packaging Specification, VSCPACSPEC001. The Test Plan shall be provided for Iiyama review and approval.
Ink	The ink shall not rub off after a suitable drying time.
Foam Material	EPS material.
Multiple Trips	The carton shall withstand 10 trips by any combination of air, rail, land, or sea transportation.
Shipping Carton Type	One Piece Construction
Shipping Carton Handholds	Yes
Width	570 mm
Height	567 mm
Depth	570 mm
Gross Weight	27.0 Kg
40' Container Loading - Non-Palletized	336 units
Pallet Specification	Packaged units shall be palletized, if required, in accordance with the Iiyama Pallet Specification, VSCPALSPEC001.
40' Container Loading - Palletized	240 units

12.2 *Vibration*

Vibration Frequency	5 - 250Hz
Acceleration	1.0 G
Sweep Time	1 oct. / min
Test Time	60 min per axis
Vibration Test Data	Vibration Test Data shall be submitted for approval to Iiyama before Mass Production.

12.3 Drop	
Weak Corner	61 cm
Six Faces	61 cm
3 Edges Radiating From Weak Corner	61 cm
Drop Test Data	Drop Test Data shall be submitted for approval to Iiyama before Mass Production.
Minimum Drop Qty	4 units

13.0 MANUALS AND DOCUMENTATION

13.1 Inserted Materials

User's Guide, Rear Label, and all other Inserted Material Samples	Production samples of the User's Guide, Rear Label and all other Inserted Materials will be provided to Iiyama for approval before Mass Production.
---	---

14.0 REGULATORY AND SAFETY:

14.1 North America

Regulatory Filing	Regulatory filing should be made under multiple listing and/or under the Model Number "VS10283"
	UL1950, cUL950 or CSA 22.2 DHHS Part 21, Subpart J X-ray protection FCC, Part 15, Subpart J, Subpart B ICES-003, Class B EPA Energy Star

14.2 International

	CE, CB, MPRII, TUV/GS, TUV/Ergo, TCO 03, TCO99, GOST, SASO, BSMI, PSB, C-Tick, CCC
14.3 Power Management	
Power Management	
	Amendment to Energy Star Version 2 MOU, dated

15.0 Video communications

15.1 EDID Standard and Structure

EDID File Format	VESA's EDID Standard Version #3, Revision #0, EDID Structure Version #1, Revision #3.
------------------	---

15.2 EDID Vendor Name	
EDID VENDOR NAME	VSC: Byte 8 – 5Ah, Byte 9 - 63h.
15.3 EDID PRODUCT ID	
EDID PRODUCT ID	Byte 10 – 1A, Byte 11- 28
15.4 EDID Established Timing	
EDID ESTABLISHED TIMING	Shall match with the factory timing settings specified by Iiyama above in section 6.0
15.5 Approvals	
EDID Data File Contents	File contents shall be approved by Iiyama prior to Mass Production Release

16.0 Coding Assignment

16.1 Serial Number Format	
Format	PPPYYWWnnnnn where PPP = Serial Number Prefix Code YY = Last two digit of manufacturing year WW = Manufacturing week nnnnn = Production sequence number (Assigned by factory)
16.2 Regional Serial Number Prefix Code	
America (M) P97f+-1	S/N Code: P99
America (M) P97f+B-1	S/N Code: P9B
Europe (E) P97f+SB-1	S/N Code: P9C
Asia Pacific (P) P97f+SB-1	S/N Code: P9D
China (G) P97f+-1	S/N Code: P9A
16.3 UPC Coding	
America (M) P97f+-1	UPC Code: 766907 05531 3
America (M) P97f+B-1	UPC Code: 766907 05551 1
Europe (E) P97f+SB-1	UPC Code: 766907 05561 0
Asia Pacific (P) P97f+SB-1	UPC Code: 766907 05571 9
China (G) P97f+-1	UPC Code: 766907 05541 2

16.4 FCC ID Code	
FCC ID	Self DoC

16.5 EDID data

Extended Display Identification Data (EDID)

Iiyama P97f+

EDID S/N Match with

Physical S/N

AAA = Define in section 16.2

S I G N A L	ID Manufacturer Name	VSC
	ID Product Code	1A28
	ID Serial Number	AAAYYWWnnnnn
	Week of Manufacture	[As Defined]
	Year of Manufacture	[As Defined]
	EDID Version.Revision	Ver 1.3
	Level	<input checked="" type="checkbox"/> 0.700V / 0.300V <input type="checkbox"/> 0.714V / 0.286V <input type="checkbox"/> 1.000V / 0.400V
	Input Setup Inputs	Analog / Digital <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Separate Sync <input checked="" type="checkbox"/> Composite Sync <input type="checkbox"/> Sync on Green
	Serration of V	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Max. H. Image Size	367 cm
C O	Max V. Image Size	275 cm
	Gamma	3.0
	DPMS	<input type="checkbox"/> Stand-By <input type="checkbox"/> Suspend <input checked="" type="checkbox"/> Off
	Display Type	<input type="checkbox"/> Mono / Gray <input checked="" type="checkbox"/> RGB Color <input type="checkbox"/> Non-RGB Multicolor
	Red	x: 0.623 y: 0.338

L	Green	x: 0.280	y: 0.604
O	Blue	x: 0.150	y: 0.071
R	White	x: 0.283	y: 0.297

17.0 reliability

17.1 MTBF

Required MTBF	70,000 hours by the most current revision of MIL Handbook 217F
Thermal Test Plan and Procedures	The Thermal Test Plan and Procedures shall be submitted for Iiyama review and approval prior to DVT.
Thermal Test Results	Thermal Test Results for DVT and PVT level product shall be submitted for Iiyama review and approval.
Life Test Plan and Procedures	The Life Test Plan and Procedures shall be submitted for Iiyama review and approval prior to DVT.
Life Test Duration	The Life Test shall be based on a minimum of 100,000 actual operating hours.
Life Test Samples	Life Test shall be conducted on a minimum of 25 units.
Life Test Failures	Failed units may be repaired and used for further Life Test. Failures shall be noted in the test report.
Life Test Sample ECN/ECO Upgrades	Units under test may be upgraded against an approved ECN/ECO. Hours of test after the upgrade shall be noted in the test report. Hours of test before the upgrade shall not be used in calculating total operating hours.
Preliminary Life Test Results	Preliminary Life Test Results for DVT level product shall be submitted for Iiyama review and approval prior to Mass Production Release. The preliminary report shall be based on a minimum of 33,000 actual operating hours.
Life Test Results	Life Test Results for DVT level product shall be submitted for Iiyama review and approval no later than 90 days after Mass Production Release.

3. USER OSD MAIN MENU DESCRIPTION

1.0 Functional Descriptions

Function	Description
Contrast	Increase or decrease contrast ratio.
Brightness	Increase or decrease brightness.
Position	Shifts image to the right, left, up or down.
Size	Increases image size in either the horizontal or vertical directions.
Zoom	To zoom in and out of video display screen.
Pincushion	Bows right and left vertical edges outward or inward.
Pin Balance	Bows right and left vertical edges to the right or to the left
Trapezoid	Tilts right and left vertical edges outward or inward to increases or decreases the upper horizontal width.
Parallel	Tilts right and left vertical edges to the right or left.
Tilt	Rotates the screen image clockwise or counter-clockwise.
Degauss	Activate degauss circuit.
View Meter	Displays status of monitor signals.
View Match Color	Select desired color setting and adjusting of red, blue level.
OSD Position	To adjust H, V of OSD position.
Moiré Reduction	Increase or decrease horizontal moiré reduction.
Language	Allows user to select between 7 language display options.
Convergence	Shifts red and blue verticals left or right, the green is stationary. Shifts red and blue horizontal up and down, the green is stationary.
V. Linearity	To adjust the bottom/top vertical linearity into centered/symmetry.
Hooking	Bottom/Top corner hooking adjustment.
Purity	Control the landing of the beam.
Memory Recall	Reset factory default settings.
D-SUB / BNC	To select input signal.

Note:

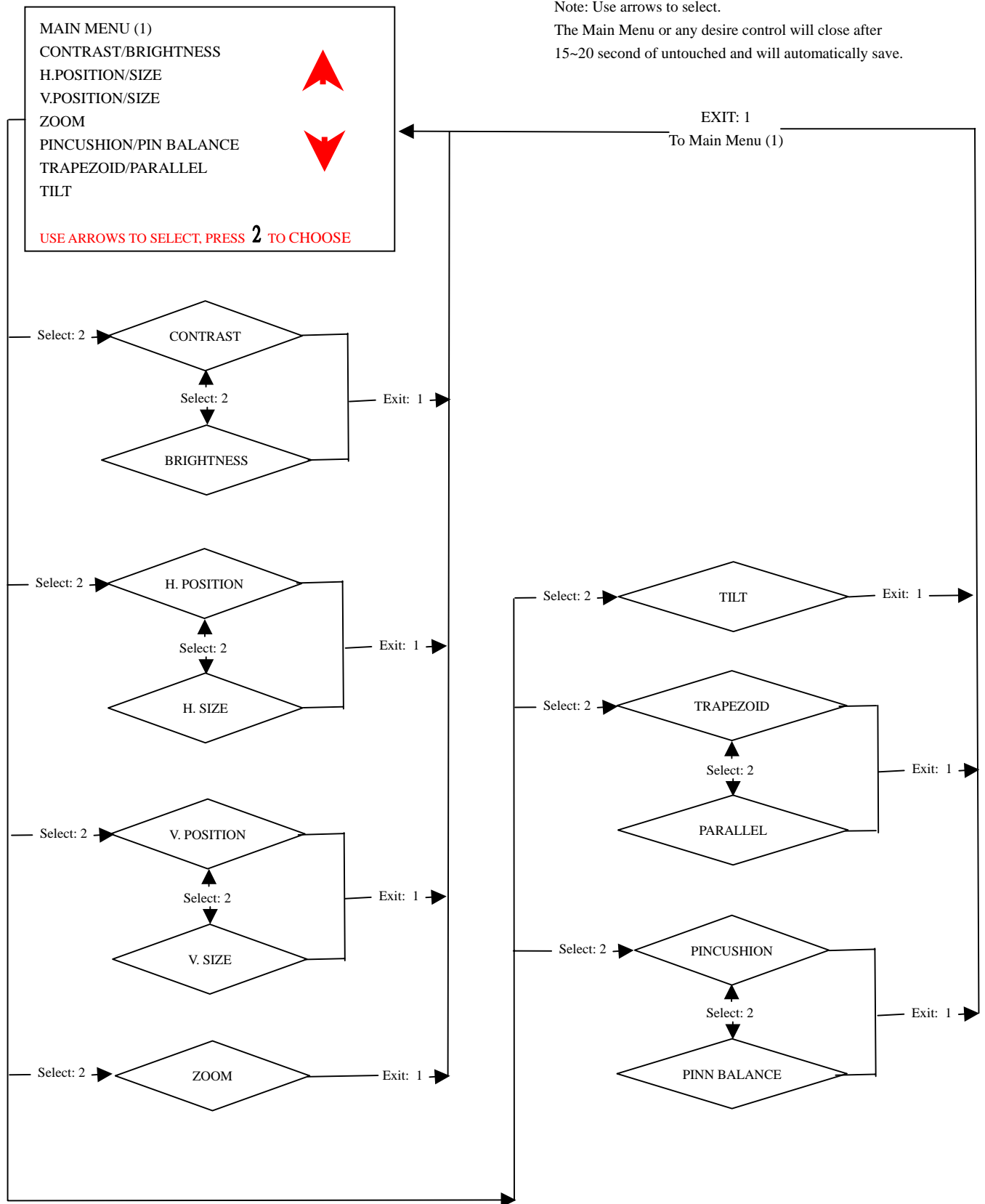
See the Appendix section for sample illustrations for each function.

2.0 APPENDIX FIGURES

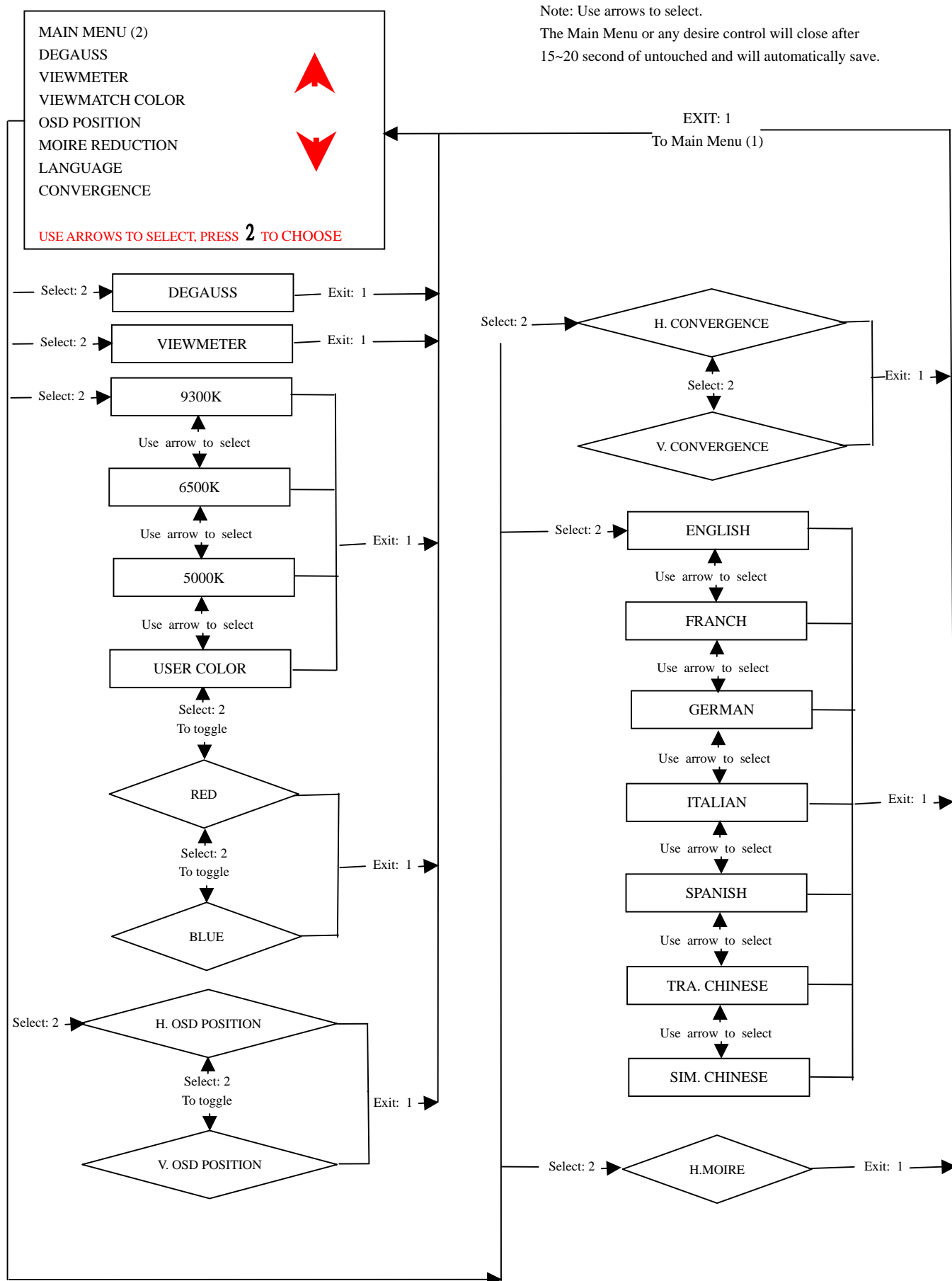
Function	Figure
Main Menu	1, 2,3
Contrast	4
Brightness	5
Position	6,8
Size	7,9
Zoom	10
Pincushion	11
Pin Balance	12
Trapezoid	13
Parallel	14
Tilt	15
Degauss	16
View Meter	17
View Match Color	18,19,20
OSD Position	21,22
Moiré Reduction	23
Language	24
Convergence	25,26
V. Linearity	27,28
Hooking	29,30
Purity	31,32,33,34,35,36,37
Memory Recall	38

3.0 OSD FLOW CHART

3.1 Main Menu 1



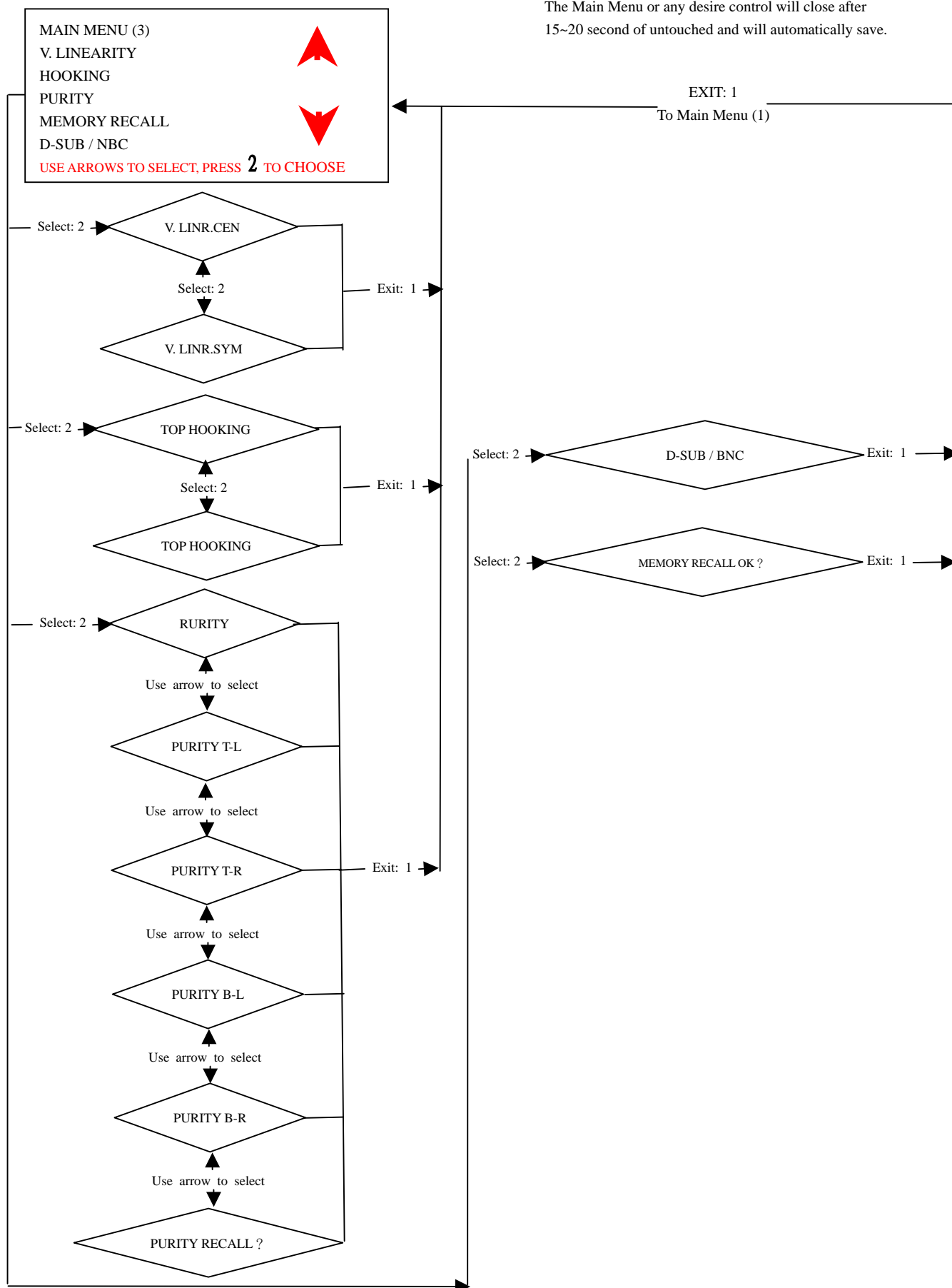
3.2 Main Menu 2



3.3 Main Menu 3

Note: Use arrows to select.

The Main Menu or any desire control will close after 15~20 second of untouched and will automatically save.



4.0 OSD MENU EXAMPLES

Note: Examples below illustrate using graphics with text

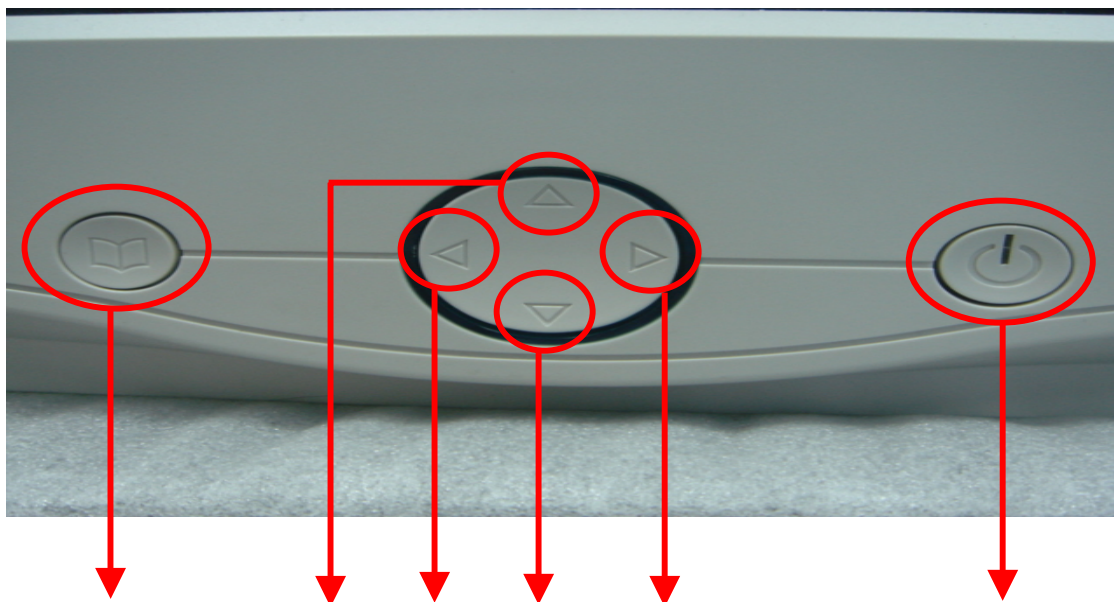


Fig. 1 Main Menu

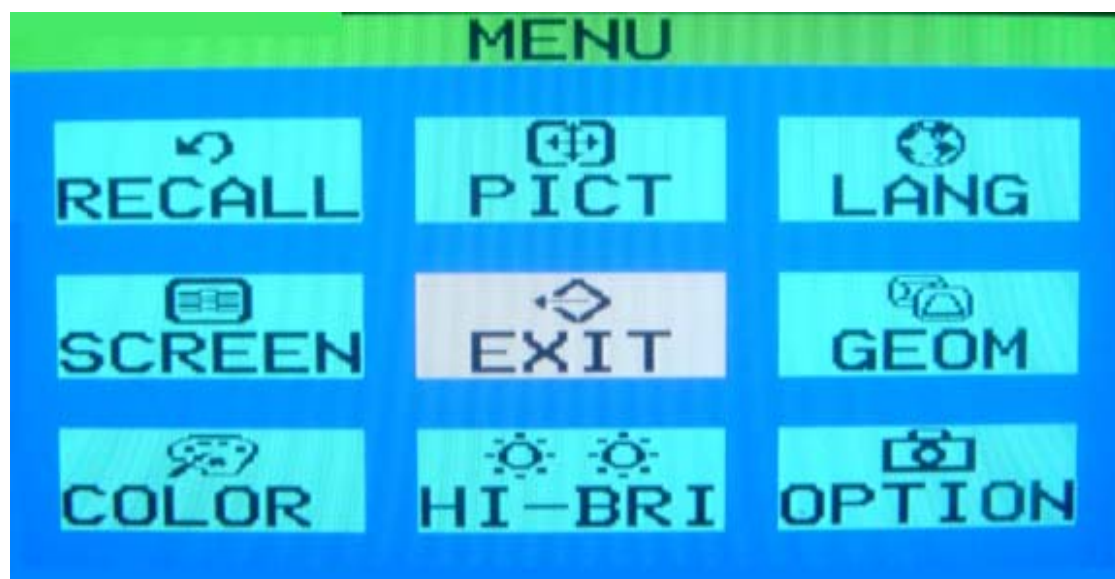


Fig. 2 Contrast adjustment and Brightness adjustment

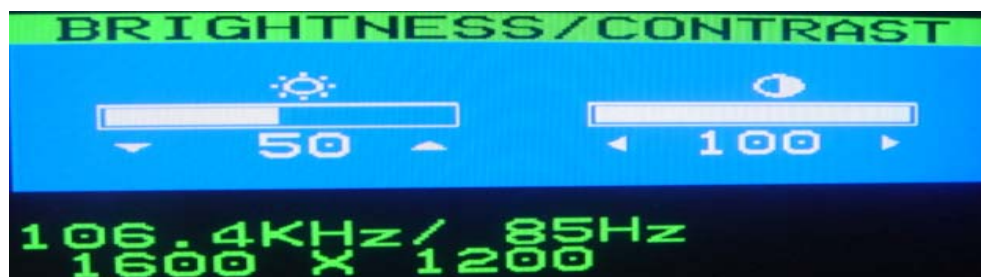


Fig. 3 Horizontal position adjustment



Fig. 4 Horizontal size adjustment

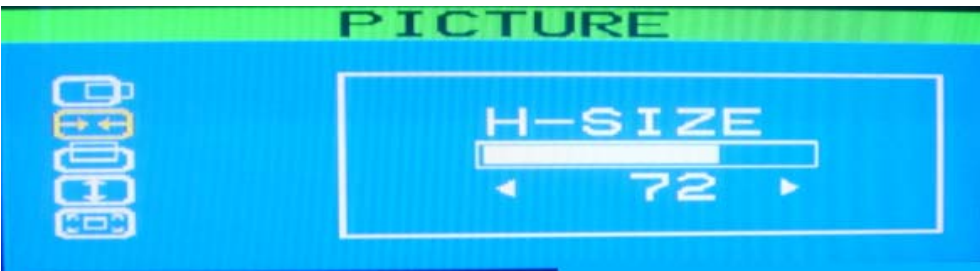


Fig. 5 Vertical position adjustment

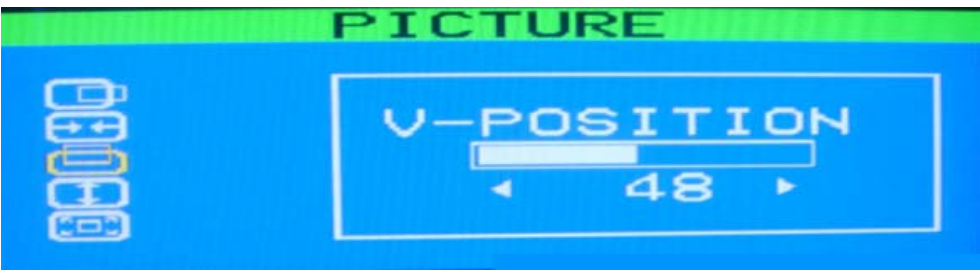


Fig. 6 Vertical size adjustment

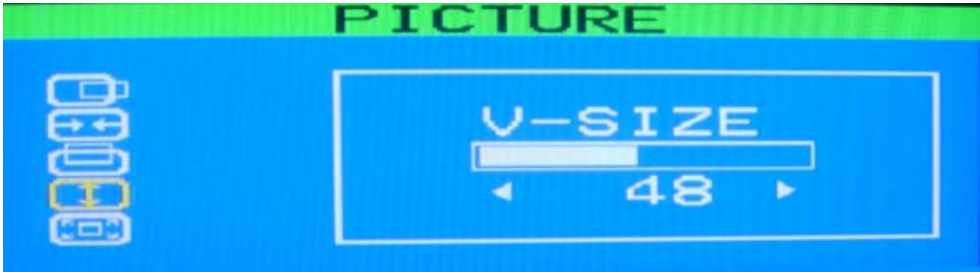


Fig.7 Zoom adjustment

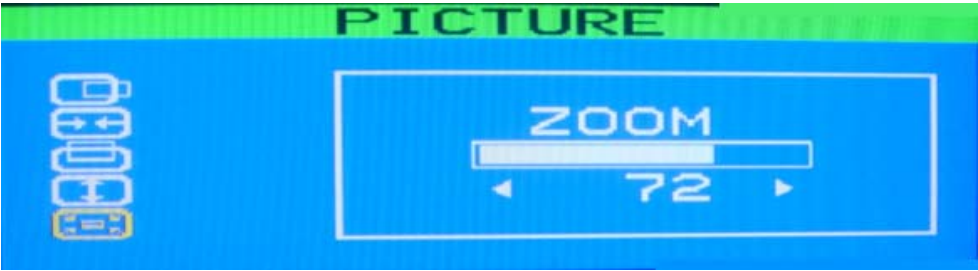


Fig. 8 Pincushion adjustment

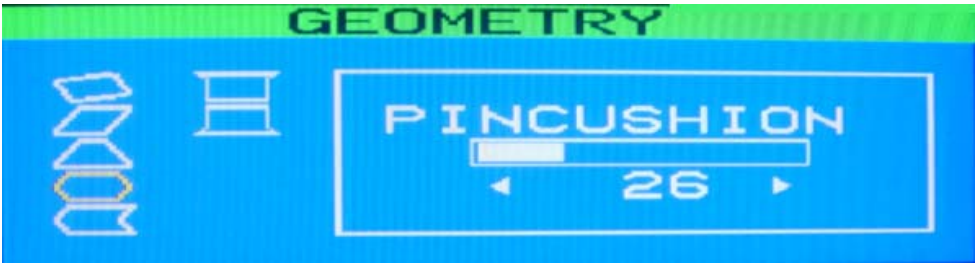


Fig. 9 Pin balance adjustment

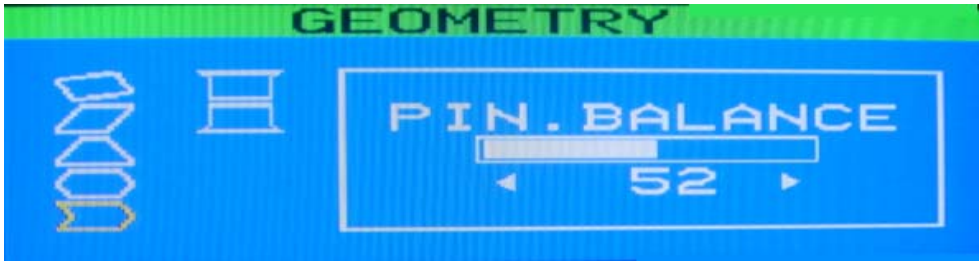


Fig. 10 Trapezoid adjustment



Fig. 11 Parallelogram adjustment



Fig. 12 Tilt adjustment

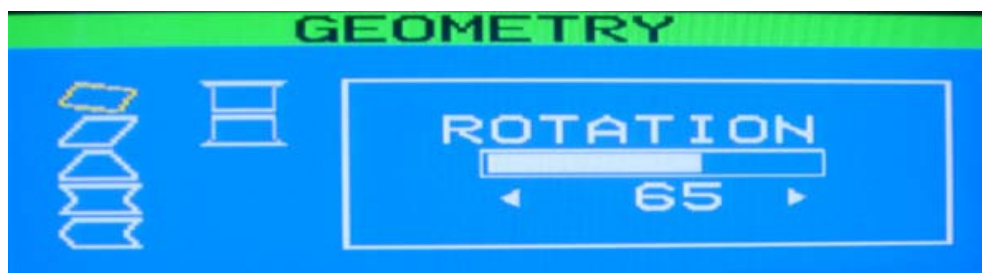


Fig. 13 Degauss screen



Fig. 14 Color adjustment



Fig. 15 Color adjustment

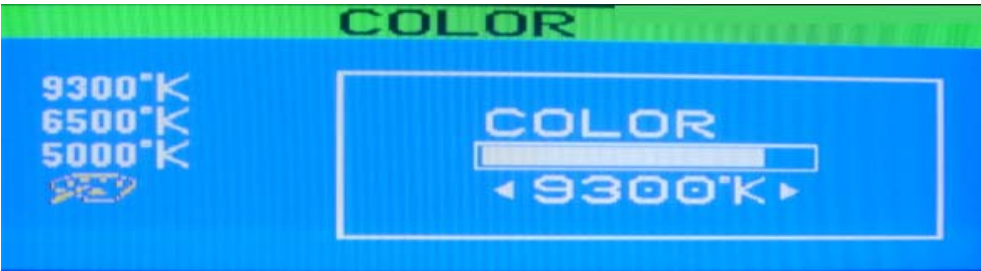


Fig. 16 Horizontal moiré reduction adjustment

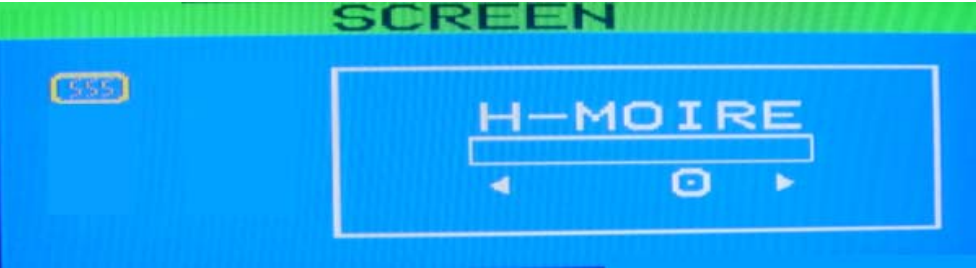


Fig.17 Language select



Fig. 18 Top Hooking adjustment



Fig. 19 Bottom Hooking adjustment



Fig. 20 Memory recall

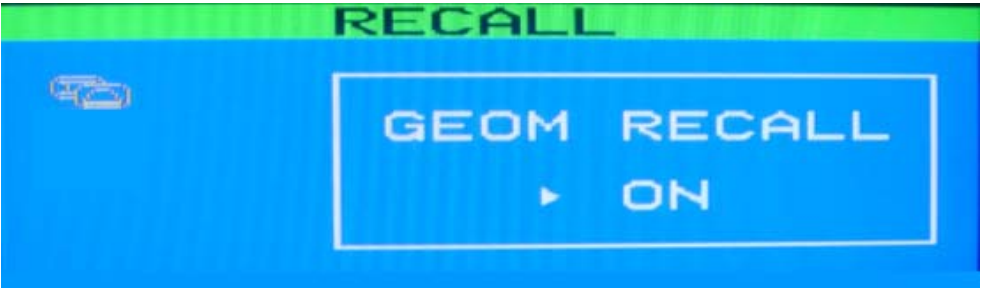


Fig.21 HI-BRITE



Fig.22 KEYLOCK



4.0 Other

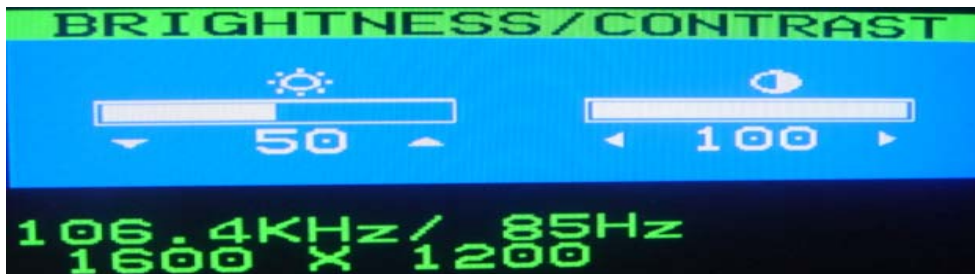
1、KEYLOCK PRESS: “LEFT” KEY AND “UP” KEY WAIT 10 second



2、KEY UNLOCK

PRESS: “LEFT” KEY AND “UP” KEY WAIT 10 second

3、PRESS: “UP” KEY or “DOWN” KEY or “LEFT” KEY or “RIGHT” KEY



4、RECALL Brightness and Contrast

PRESS: “UP” KEY AND “RIGHT” KEY Wait 10 Seconds

4. ADJUSTMENT PROCEDURE / DDC DATA

1.0 Original setting:

1. Brightness ----- 50
2. Contrast ----- 100
3. H-phase ----- CENTER
4. V-center ----- CENTER
5. V-size ----- 265mm
6. H-size ----- 353mm
7. Moire ----- 0
8. OSD off time ----- 15sec
9. Color temperature ----- Mode 1⇒ 9300°K
10. Language ----- English (follow to OEM customer requirement)
11. H-CONV----- 50
12. V-CONV----- 50
13. LANDING----- Adjusted accordance to magnetic field that customer's location.








2.0 Preset timing:










	<i>Primary Mode #1</i>	<i>Primary Mode #2</i>	<i>Standard Modes</i>		
Format	1600X1200@ 85HZ	1280X1024@ 85HZ	1600X1200@ 75HZ	1280X1024@ 75HZ	1024X768@85Hz
Pixel Clock (MHz)	232.750	157.500	202.500	135.000	94.500
	VESA	VESA	VESA	VESA	VESA
Horizontal:					
Sync Polarity	+	+	+	+	+
Frequency (KHz)	106.962	91.146	93.750	79.976	68.677
Total Time (us)	9.349	10.971	10.667	12.504	14.561
Display Time (us)	6.874	8.127	7.901	9.481	10.836
Sync Width (us)	0.962	1.016	0.948	1.067	1.016
Back Porch (us)	1.237	1.422	1.501	1.837	2.201
Front Porch (us)	0.275	0.406	0.316	0.119	0.508
Vertical:					
Sync Polarity	+	+	+	+	+
Frequency (Hz)	85.026	85.026	75.000	75.000	84.997
Total Time (ms)	11.761	11.761	13.333	13.329	11.765
Display Time (ms)	11.219	11.219	12.800	12.804	11.183
Sync Width (ms)	0.028	0.028	0.032	0.038	0.044
Back Porch (ms)	0.505	0.505	0.491	0.475	0.524
Front Porch (ms)	0.009	0.009	0.011	0.012	0.014



	Standard Modes				
Format	1024x768@75Hz	800x600@85Hz	720X400@70HZ	640X480@60HZ	1152X870@75HZ
Pixel Clock (MHz)	78.751	56.250	28.322	25.175	100.000
	VESA	VESA	IBM STD	VESA	VESA
Horizontal:					
Sync Polarity	+	+	-	-	Off_low
Frequency (KHz)	60.024	53.674	31.469	31.469	68.681
Total Time (us)	16.660	18.631	31.778	31.778	14.560
Display Time (us)	13.003	14.222	25.422	25.422	11.520
Sync Width (us)	1.219	1.138	3.813	3.813	1.280
Back Porch (us)	2.235	2.702	1.907	1.907	1.440
Front Porch (us)	0.203	0.569	0.636	0.636	0.320
Vertical:					
Sync Polarity	+	+	+	-	Off_low
Frequency (Hz)	75.030	85.062	70.087	59.94	75.620
Total Time (ms)	13.328	11.756	14.268	16.683	13.322
Display Time (ms)	12.795	11.179	12.711	15.253	12.667
Sync Width (ms)	0.050	0.056	0.064	0.064	0.044
Back Porch (ms)	0.466	0.503	1.112	1.049	0.568
Front Porch (ms)	0.017	0.018	0.381	0.318	0.044

	Other Modes			
Format	2048X1536@60HZ			
Pixel Clock (MHz)	267			
	VESA			
Horizontal:				
Sync Polarity	+			
Frequency (KHz)	95.357			
Total Time (us)	10.487			
Display Time (us)	7.670			
Sync Width (us)	0.839			
Back Porch (us)	1.408			
Front Porch (us)	0.569			
Vertical:				
Sync Polarity (Hz)	+			
Frequency (ms)	60.011			
Total Time (ms)	16.664			
Display Time (ms)	16.108			
Sync Width (ms)	0.031461			
Back Porch (ms)	0.513858			
Front Porch (ms)	0.010681			

3.0 P97f+-1 Adjustment guideline

Item	Subject	Content	Location	Test point	Spec	Equip. / Tool	Signal	Remark
1	Voltage adjust & confirm	(1) 210V	VR101	R153 and L405 connected point	210±0.5V	Multi-meter	1600X1200/85Hz Crosshatch	1. Crosshatch / full white pattern are generated from Chroma signal generator
		(2) High voltage	VR402	HV CAP	26.00±0.5KV	Multi-meter HV stick	1600X1200/85HZ Crosshatch	
2	Focus	(1) Adjust focus VR, make sure 1/4 of upper is the most clear to read "me" (Using green pattern)	Focus VR1	Vertical line	The best point		1600X1200/85HZ “me” pattern	2. Using ▼ , ▲ for selecting and adjustment 3. Using  for confirmation or escape 4. Press and hold “  “ key first, then power on the monitor. After 5 seconds release  button, you will get picture and factory main menu will appear.
		(2) Adjust focus VR, make sure 1/4 of left corner is the most clear to read "me"(Using green pattern)	Focus VR2	Horizontal line			1600X1200/85HZ “me” pattern	
3	V-line	(1) Adjust V-position, make sure display on CRT center	▼ , ▲		Display centering	Soft ruler	1600X1200/85NZ crosshatch	
		(2) V-line adjustment	▼ , ▲	VC	Same size of grille	Soft ruler	“	
			▼ , ▲	VS				
4	V-size	Adjust V-gain	▼ , ▲	VG	DAC=220	Soft ruler	"	
		Adjust V-size			265±4mm			
5	Raster	Set raster on center	VR302		Display centering	Soft ruler	“	
6	H-phase	Set display on center	▼ , ▲		Display centering	Soft ruler	"	
7	H-width	Adjust H-size within spec.	▼ , ▲		353mm±4mm	Soft ruler	All timing Crosshatch	

Item	Subject	Content	Location	Test point	Spec	Equip. / Tool	Signal	Remark
8	Hold down	Monitor hold down	P402	P402 short	Hold down	Visual check	1600X1200 / 85Hz Full white	
9	Top corner	Hold ▼ or ▲ to adjust top corner	▼ , ▲		The best point and within specification	Visual check	All timing Full white	
10	Bottom corner	Hold ▼ or ▲ to adjust bottom corner	▼ , ▲			Visual check	All timing Full white	
11	Pincushion	Hold ▼ or ▲ to adjust pincushion	▼ , ▲			Visual check	All timing Full white	
12	Trapezoid	Hold ▼ or ▲ to adjust trapezoid	▼ , ▲			Visual check	All timing Full white	
13	Parallel	Hold ▼ or ▲ to adjust parallel	▼ , ▲			Visual check	All timing Full white	
14	Pin balance	Hold ▼ or ▲ to adjust pin balance	▼ , ▲			Visual check	All timing Full white	
15	H linear	Hold ▼ or ▲ to adjust H linear	▼ , ▲	HL	Same size of grille	Soft ruler	All timing Crosshatch	
16	White balance (Raster & Video)	<p>Pre-adjust white balance and brightness (must be degaussed before adjustment)</p> <p>a. setting 1600X1200 / 85Hz 77mmx77mm block pattern and closed video, connect color analyzer and set brightness as 255 value of CPU's Dac</p> <p>b. Make sure G2=680V and set G bias value are same as 128, then adjust VR400 to get 0.6~0.8FL of raster. Adjust R.B BIAS to get $x=0.278\pm0.005$, $y=0.297\pm0.005$, $Y\leq 0.8FL$.</p> <p>c. 77mmx77mm block pattern, set brightness Dac at 128 and Contrast at 255, fix G gain=190, adjust 9300°K R. B gain to get $x=0.278\pm0.005$, $y=0.297\pm0.005$, $Y=34+4(-2)FL$</p> <p>fix G gain=187, adjust 6500°K R. B gain to get $x=0.313\pm0.010$, $y=0.329\pm0.010$,</p>				<ol style="list-style-type: none"> 1. Press and hold “1” key first, then power on the monitor. After 5 seconds release 1 button, you will get picture and factory main menu will appear. 2. Using ▼ , ▲ for selecting and adjustment , 1 for confirmation or escape. 3. Using  icon to go into color adjustment 4. Using  icon to go into brightness adjustment 5. Using  icon to go into SUB-contrast adjustment 6. Using GS icon to go into high brightness adjustment 		

Item	Subject	Content	Location
16	White balance (Raster & Video)	<p>fix G gain=184, adjust 5000°K R. B driver to get $x=0.346\pm0.010$, $y=0.359\pm0.010$,</p> <p>d. full white pattern,setting colour temperature to 9300°k, selection “ABL” icon to go into ABL adjustment, adjust ABL value to get $Y=28+4(-2)FL$</p> <p>e. 77mmx77mm block pattern,colour temperature 9300°k,set GS icon to get Dac value about 50.Then turn off power and restart power to make sure high brightness up to $Y=75\pm7 FL$.</p> <p>Adjust 6500°K GS to get $Y=70\pm7FL$ for high brightness</p> <p>Adjust 5000°K GS to get $Y=65\pm7FL$ for high brightness</p> <p>(adjust method see note)</p> <p>User mode same as 9300°K adjust procedure</p>	<p>NOTE:</p> <p>If you want to set high brightness, please follow as below:</p> <ol style="list-style-type: none"> remember  icon Dac value setting  icon Dac value to get 184 setting SUB-contrast value to get $Y=75\pm7FL$ and remember that value(H),then adjust back to original value(I) GS Dac value=H - I adjust brightness value to get 128 turn off power and restar power again to make sure $Y=75\pm7FL$ 9300°K 6500°K 5000°K all same method
17	Make sure brightness	<p>(1). Setting raster (Brightness=255, Contrast=255, 9300°K)</p> <p>(2). Make sure $Y \leq 0.8FL$</p> <p>(3). Brightness=128, Contrast=255</p> <p>(4). Setting 77mmx77mm(3" block, 106K / 85Hz) brightness output is $34+4(-2)FL$</p> <p>(5).Setting 77mmx77mm(1600X1200 106K/85HZ)push high brightness hot key to make sure $Y=75\pm7FL$</p> <p>(6). Setting full white pattern(106K/85HZ) brightness output is $28+4(-2)FL$</p>	

4.0 EDID Code

Time: 16:41:19

Date: Wed Jun 02, 2004

IIYAMA CORPORATION

EDID Version # 1, Revision # 3

DDCTest For: Iiyama P97f+

128 BYTES OF EDID CODE:

	0	1	2	3	4	5	6	7	8	9
0		00	FF	FF	FF	FF	FF	FF	00	5A 63
10		1A	28	01	01	01	01	01	0E	01 03
20		1D	24	1B	C8	2A	AE	98	9F	56 47
30		9A	26	12	48	4C	FF	FF	80	81 99
40		E1	40	C1	4F	A9	59	A9	4F	71 4F
50		61	59	45	59	86	3D	00	C0	51 00
60		30	40	40	A0	13	00	61	09	11 00
70		00	1E	00	00	00	FF	00	50	39 39
80		30	34	30	31	30	30	30	30	31 0A
90		00	00	00	FD	00	32	A0	1E	6E FF
100		00	0A	20	20	20	20	20	20	00 00
110		00	FC	00	50	39	37	66	2B	0A 20
120		20	20	20	20	20	20	00	33	

(08-09)	ID Manufacturer Name		= IYA
(11-10)	Product ID Code		= 281A
(12-15)	Last 5 Digits of Serial Number		= Not Used
(16)	Week of Manufacture		= 01
(17)	Year of Manufacture		= 2004
(10-17)	Complete Serial Number		= See Descriptor Block
(18)	EDID Version Number		= 1
(19)	EDID Revision Number		= 3
(20)	VIDEO INPUT DEFINITION:		
	Analog Signal		
	0.700, 0.300 (1.000 Vp-p)		
	Blank-to-Black Setup, Separate Syncs, Composite Sync,		
	Serration of the Vsync		
(21)	Maximum Horizontal Image Size		= 360 mm
(22)	Maximum Vertical Image Size		= 270 mm
(23)	Display Gamma		= 3.00

- (24) **Power Management and Supported Feature(s):**
Active Off/Very Low Power, Preferred Timing Mode
Display Type = R/G/B Color
- (25-34) **CHROMA INFO:**
Red X - 0.623 Green X - 0.280 Blue X - 0.150 White X - 0.283
Red Y - 0.338 Green Y - 0.604 Blue Y - 0.071 White Y - 0.297
- (35) **ESTABLISHED TIMING I:**
720 X 400 @ 70Hz (IBM,VGA)
720 X 400 @ 88Hz (IBM,XGA2)
640 X 480 @ 60Hz (IBM,VGA)
640 X 480 @ 67Hz (Apple,Mac II)
640 X 480 @ 72Hz (VESA)
640 X 480 @ 75Hz (VESA)
800 X 600 @ 56Hz (VESA)
800 X 600 @ 60Hz (VESA)
- (36) **ESTABLISHED TIMING II:**
800 X 600 @ 72Hz (VESA)
800 X 600 @ 75Hz (VESA)
832 X 624 @ 75Hz (Apple,Mac II)
1024 X 768 @ 87Hz(Interlaced 8514a, IBM)
1024 X 768 @ 60Hz (VESA)
1024 X 768 @ 70Hz (VESA)
1024 X 768 @ 75Hz (VESA)
1280 X 1024 @ 75Hz (VESA)
- (37) **Manufacturer's Reserved Timing:**
1152 X 870 @ 75Hz (Apple,Mac II)
- (38-53) **Standard Timing Identification:**
1280 X 1024 @85Hz
2048 X 1536 @60Hz
1792 X 1344 @75Hz
1600 X 1200 @85Hz
1600 X 1200 @75Hz
1152 X 864 @75Hz
1024 X 768 @85Hz
800 X 600 @85Hz

(54-71) Detailed Timing / Descriptor Block 1:
1280x1024 Pixel Clock: 157.50 MHz

Horizontal Image Size: 353 mm	Vertical Image Size: 265 mm
Refreshed Mode: Non-Interlaced	Normal Display - No Stereo

Horizontal:

Active Time: 1280 pixels	Blanking Time: 448 pixels
--------------------------	---------------------------

Sync Offset: 64 pixels

Border: 0 pixels

Sync Pulse Width: 160 pixels

Frequency: 91.15 KHz

Vertical:

Active Time: 1024 lines

Sync Offset: 1 lines

Border: 0 lines

Blanking Time: 48 lines

Sync Pulse Width: 3 lines

Frequency: 85.02 Hz

Digital Separate, Horizontal Polarity (+) Vertical Polarity (+)

(72-89) Detailed Timing / Descriptor Block 2:

Monitor Serial Number:

P99040100001

(90-107) Detailed Timing / Descriptor Block 3:

Monitor Range Limits:

Min Vertical Freq - 50 Hz

Max Vertical Freq - 160 Hz

Min Horiz. Freq - 30 KHz

Max Horiz. Freq - 110 KHz

Pixel Clock - Not Specified

Secondary GTF - Not Supported

(108-125) Detailed Timing / Descriptor Block 4:

Monitor Name:

P97f+

(126) No Extension EDID Block(s)

(127) CheckSum OK

5. FACTORY OSD MAIN MENU INSTRUCTION

Caution:

Please do not adjust specific items which were described on below

Fig. 1 Factory OSD Main Menu

1. How to enter the factory OSD main menu:

Press and hold “**1**” key first, then power on the monitor. After 5 seconds release **1** button, you will get picture and factory main menu will appear.

2. How to quit the factory OSD main menu:

Press power switch off and on again, will quit the factory main menu.

Once you quite from this menu, any changed value will be saved automatically.

3. How to adjust value:

Enter the main menu first, use “up”, “down” and “2” buttons to choose the subject you want.

Press **1** button then the value color will be changed from blue to red.

Use “up”, “down” and “2” buttons to set new value. The “down” and “2” buttons are same function within the OSD main menu.

Press **1** button again, you save new value and the color changed to blue.



Fig. 2: H.POSITION



Fig.3: H.SIZE



Fig. 4: V.POSITION



Fig. 5: V.SIZE



Fig.6: TOP CORNER



Fig.7: BOTTOM CORNER



Fig. 8: PINCUSION



Fig. 9: TRAPEZOID



Fig. 10: PARALLEL



Fig. 11: PIN BALANCE



Fig. 12: H-LINEAR

HL

Recommend not to re-adjustment

Fig. 13: V-LINEAR (default value =218)

VS

Recommend not to re-adjustment

Fig. 14: V-LINEAR BAL (default value =105)

VC

Recommend not to re-adjustment

Fig. 15: V-GAIN (default value =220)

VG

Recommend not to re-adjustment

Fig. 16: SUB-H.SIZE (Not available)



Fig. 17: TILT



Fig.18: DEGAUSS



Fig. 19: H.OSD POSITION



Fig. 20: V.OSD POSITION



Fig.21: CONTRAST (default value =255)



Fig.22: BRIGHTNESS (default value =128)



Fig.23: COLOR ADJUST



Fig.24: SUB - CONTRAST



Fig.25: ABL



Recommend not to re-adjustment

Fig.26: V - FOCUS (default value = 200)



Recommend not to re-adjustment

Fig.27: H - FOCUS (default value=190)



Recommend not to re-adjustment

Fig.28: H - FOCAD (default value= 0)



Fig.29: H - CONV (default value= 128)



Fig.30: V - CONV (default value= 128)



Fig.31: EV – SUB - CONT

ES

ULTRABRITE BRIGHTNESS SETTING

Recommend not to re-adjustment

Fig.32 Change default frequency

FREQ

Recommend not to re-adjustment

Fig.33: DEFLECTION IC (You have to choose TDA4856)

DEFO

Fig.34: GRAP SUB CONT

GS

2 ULTRABRITE BRIGHTNESS SETTING

Recommend not to re-adjustment

Fig.35: BURN-IN ENABLE / DISABLE (must be disable)

B I

Fig.36: TIME (SEC.)(default value=15)



- Set the OSD off time.

Fig.37: EXIT

EX

The F/W version will also be showed on this window.

Fig.38: N-S LANDING (default value= 128)

NS

Fig.39: T-L LANDING (default value= 146)

TL

Fig.40: B-L LANDING (default value= 146)

BL

Fig.41: T-R LANDING (default value= 110)

TR

Fig.42: B-R LANDING (default value= 110)

BR

Fig.43: MOIRE (default value=0)



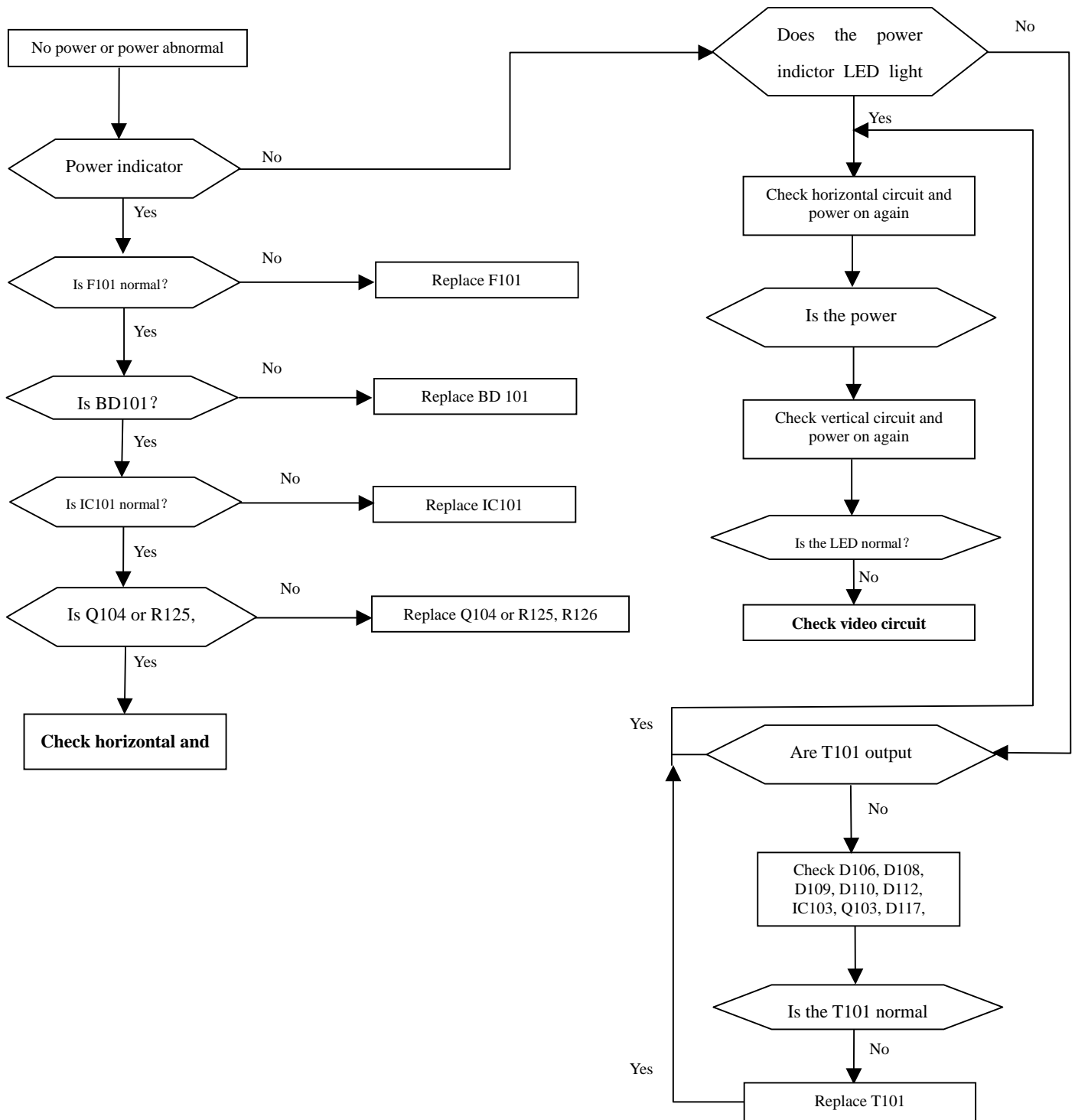
Recommend not to re-adjustment

Fig.44: V.MOIRE (not available on this model)

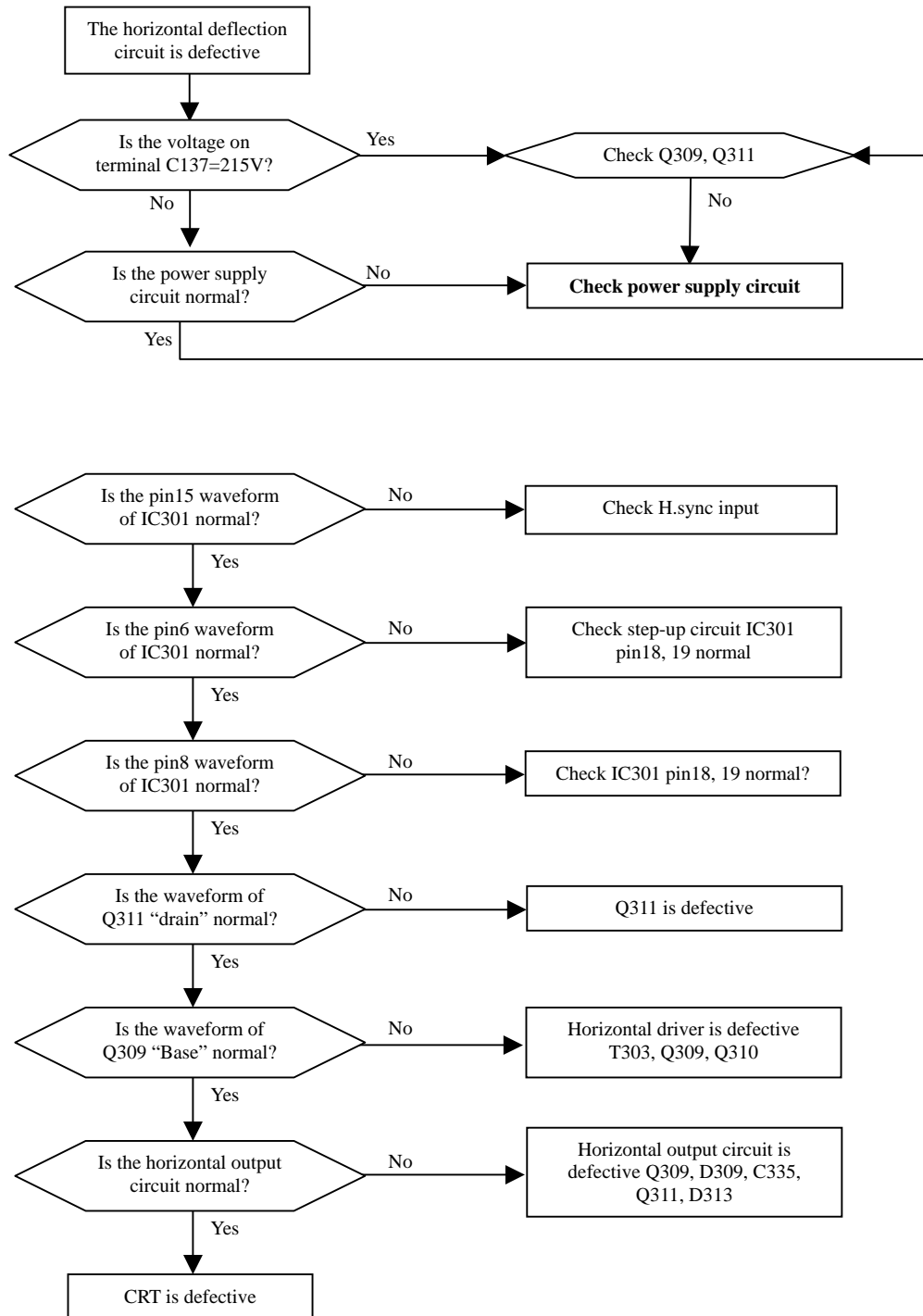


6. TROUBLE SHOOTING FLOW CHART

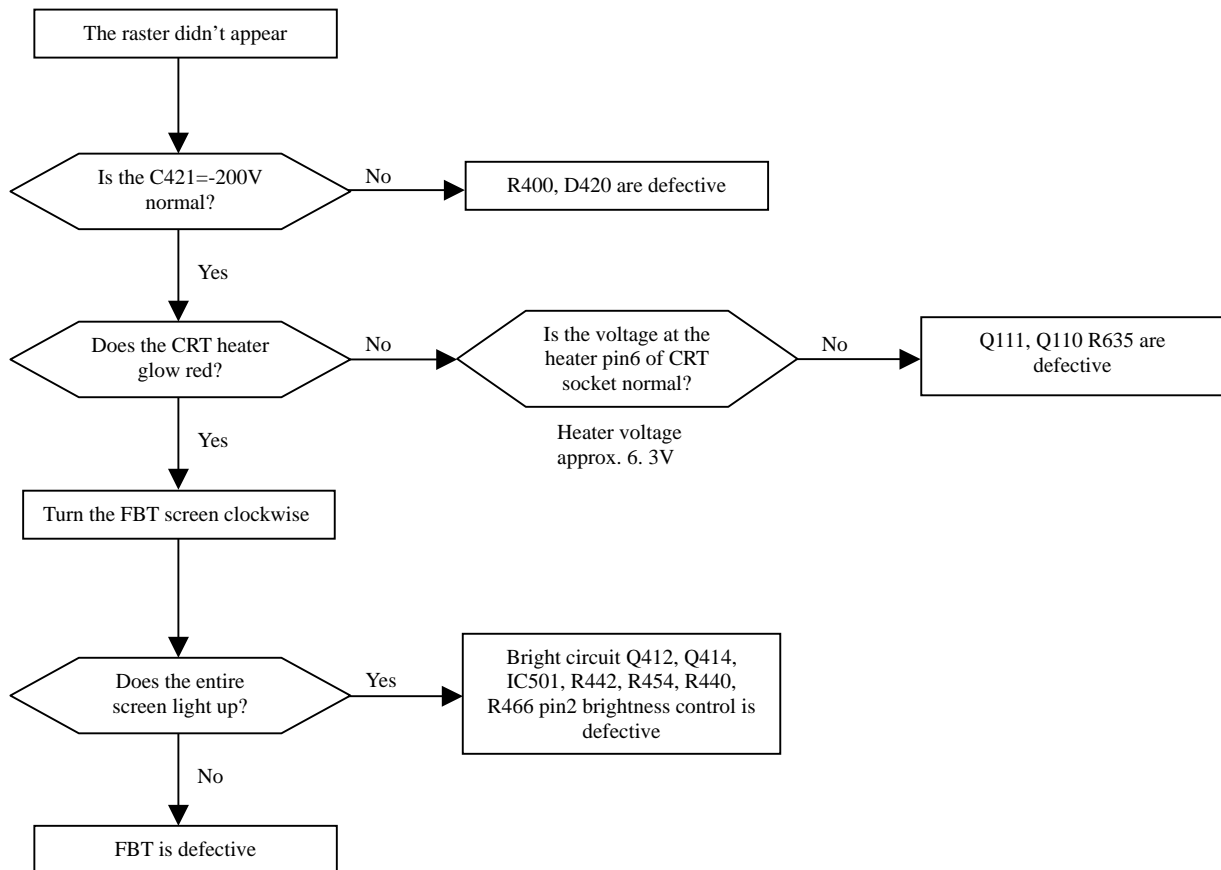
1. Power supply is defective.



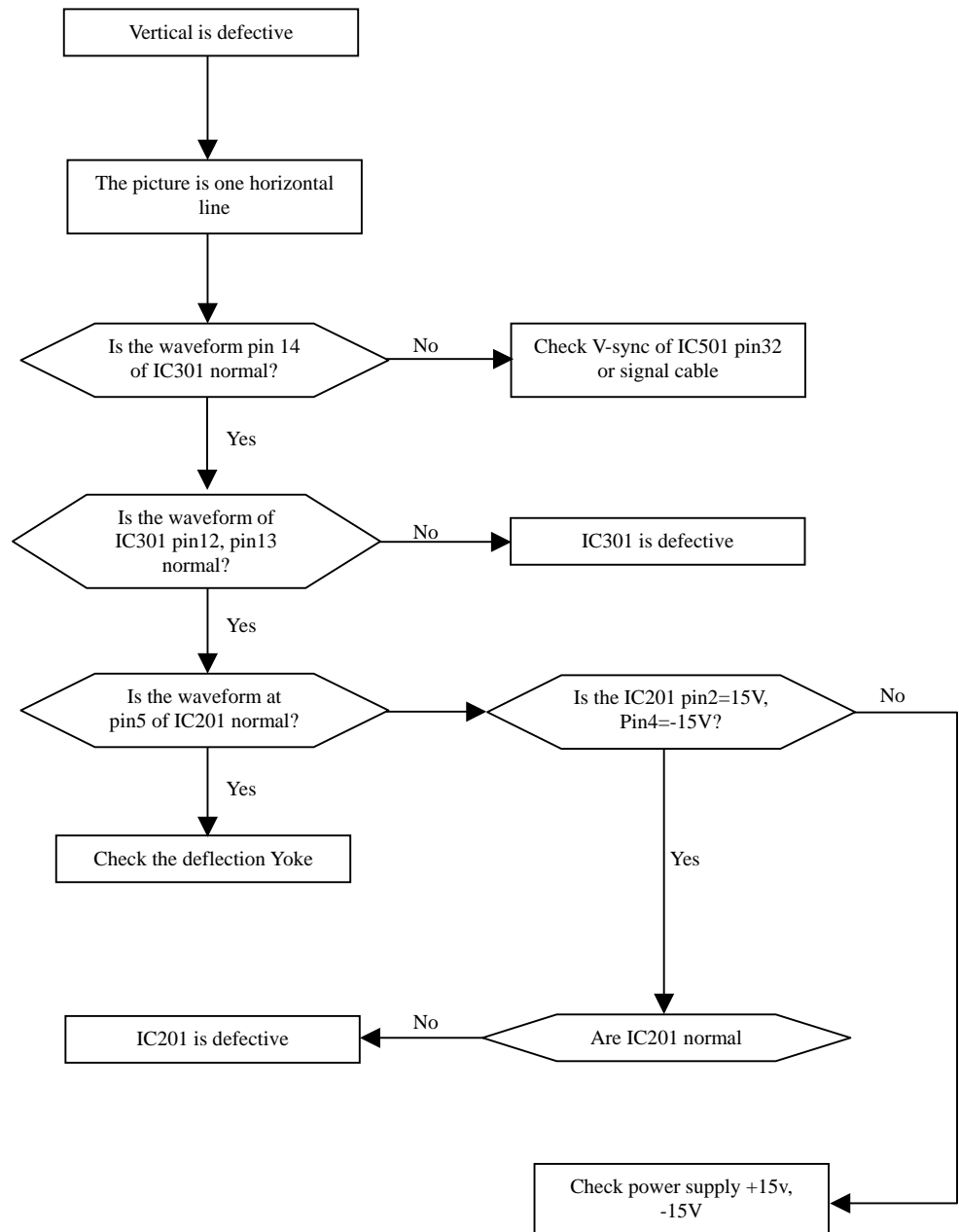
2. Horizontal deflection circuit is defective.



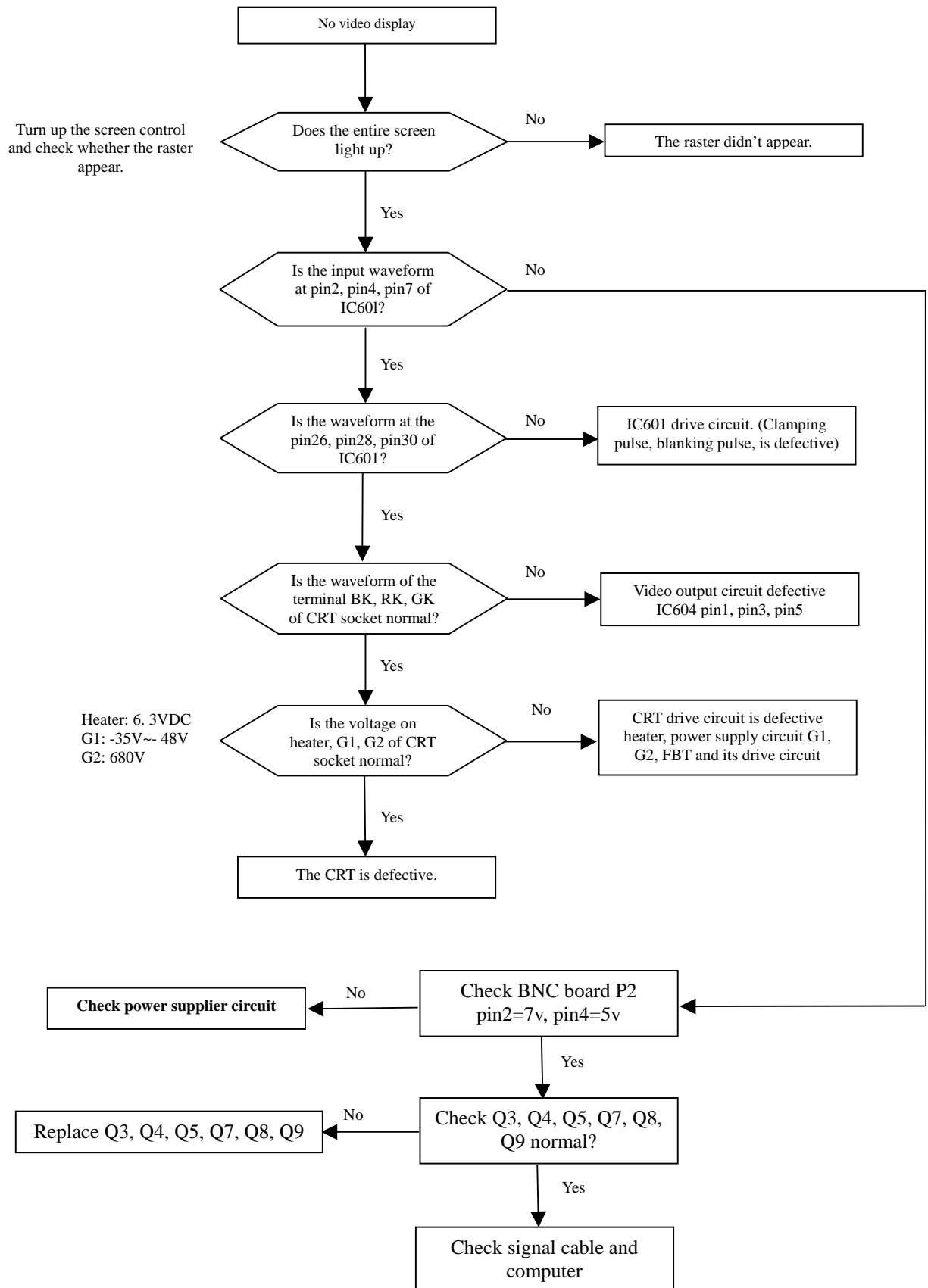
3. The raster don't appear.



4. Vertical deflection is defective.



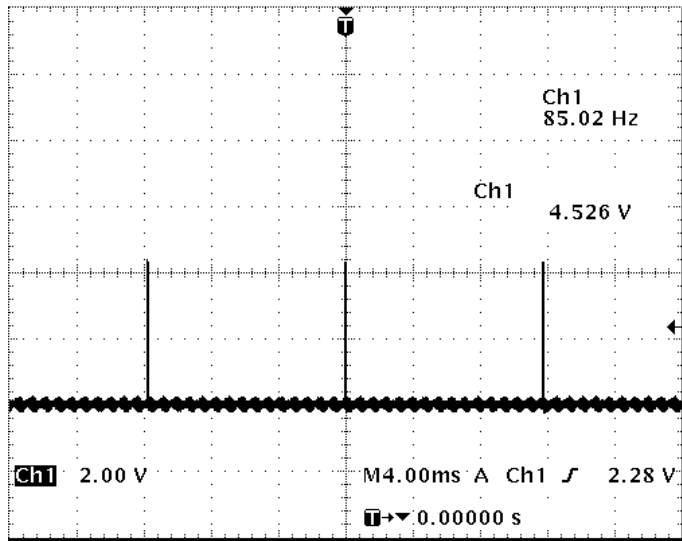
5. Video is defective.



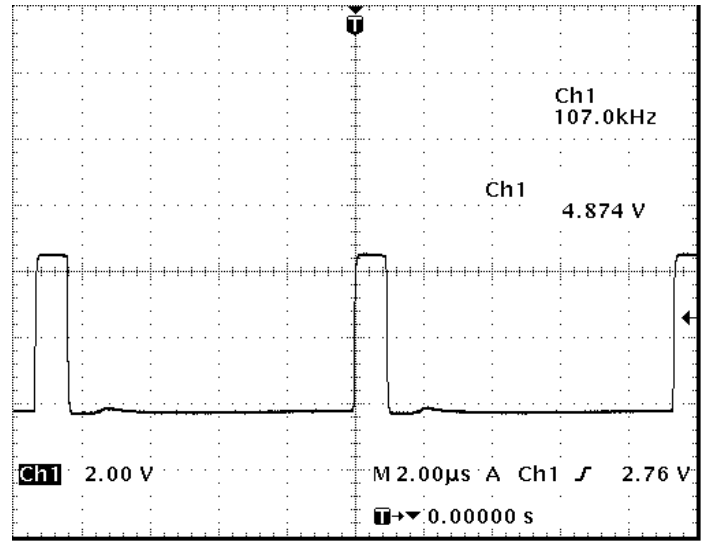
7. WAVE FORMS

1.0 MAIN Board (P1)

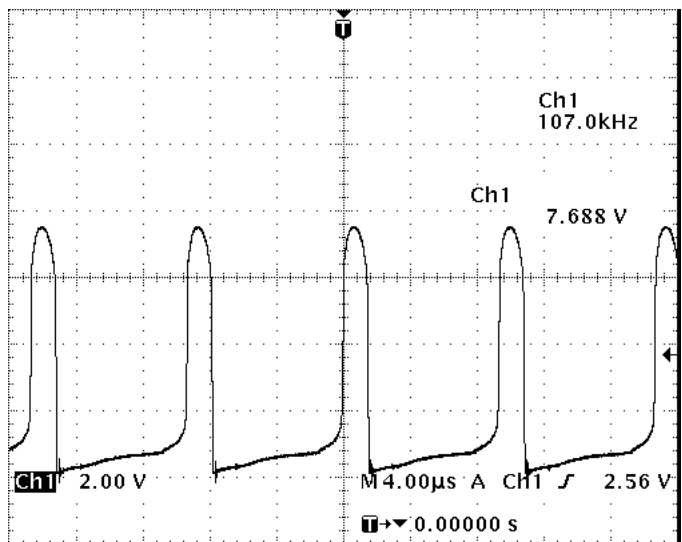
(0)



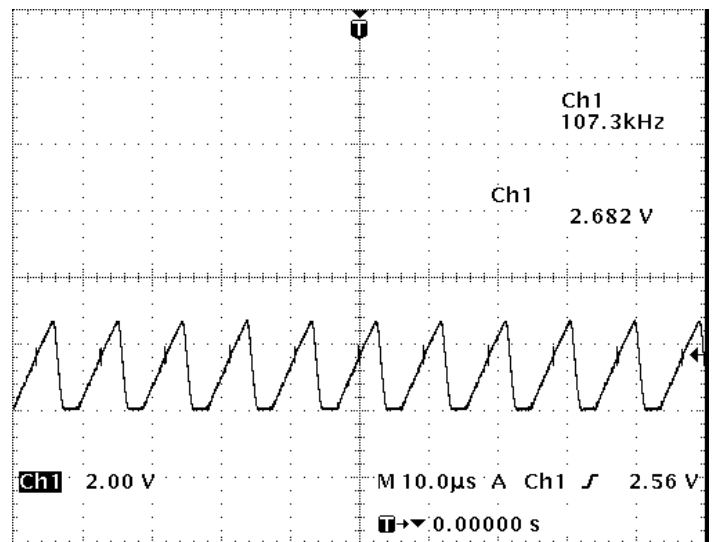
(1)



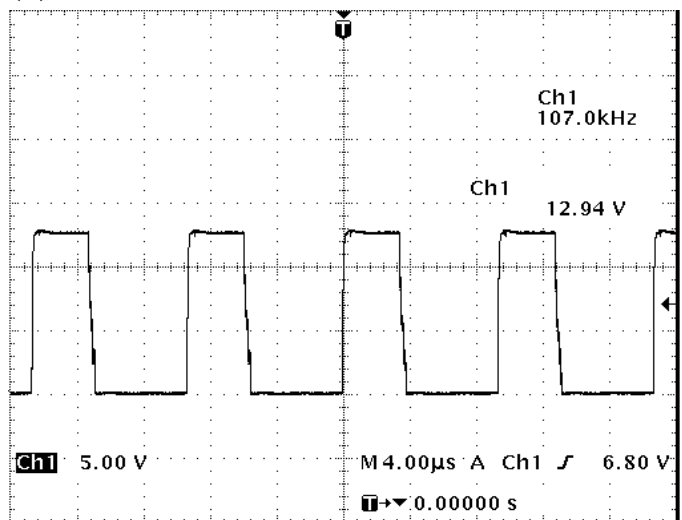
(2)



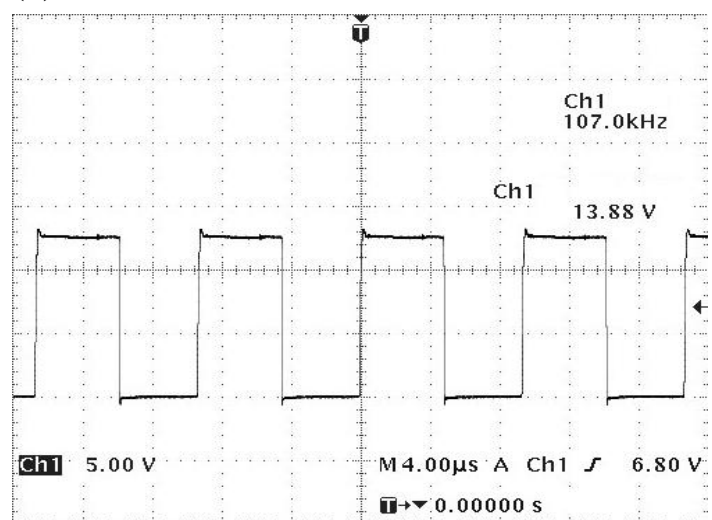
(3)



(4)

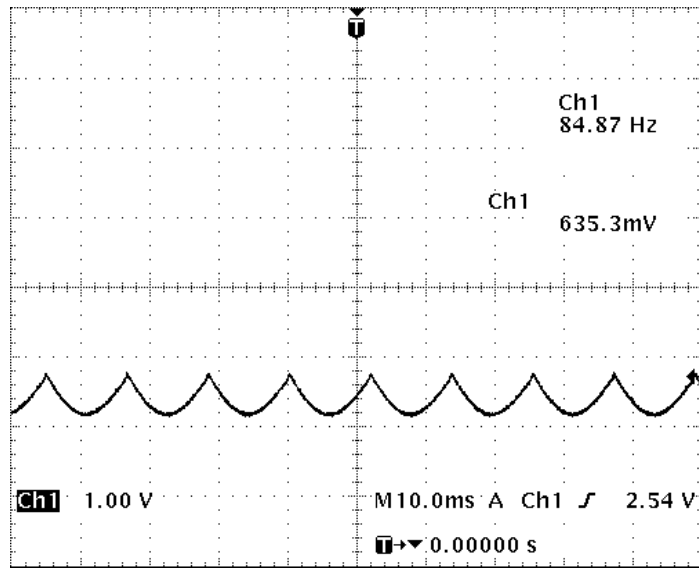


(5)

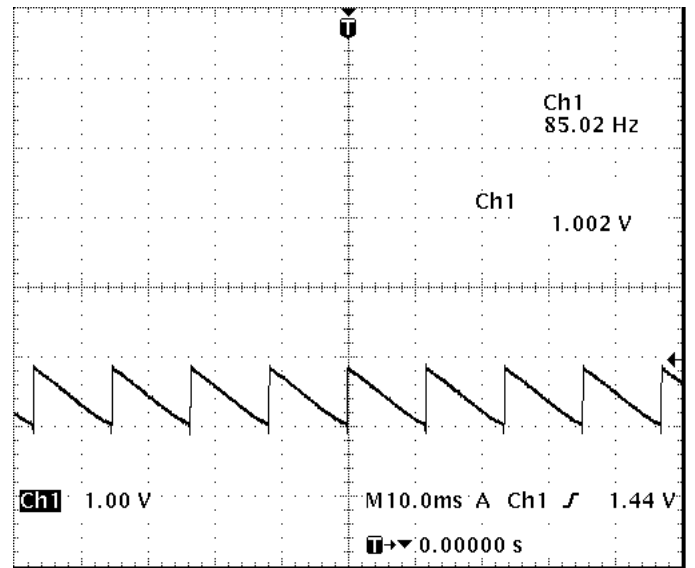


2.0 MAIN Board (P2)

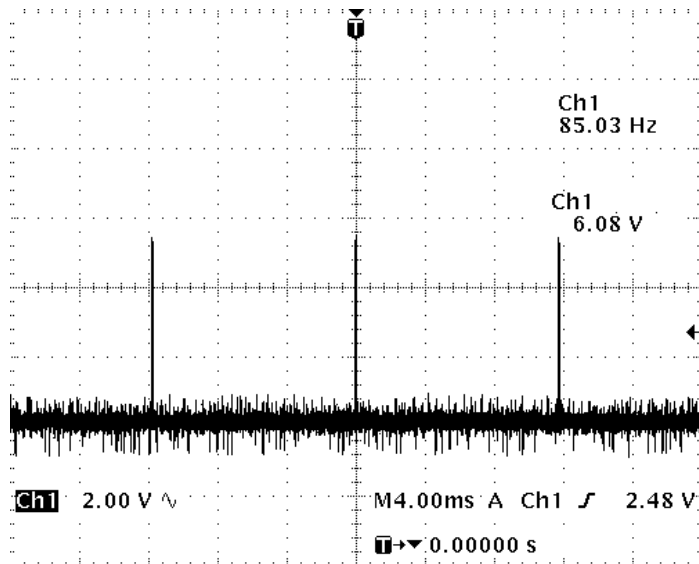
(6)



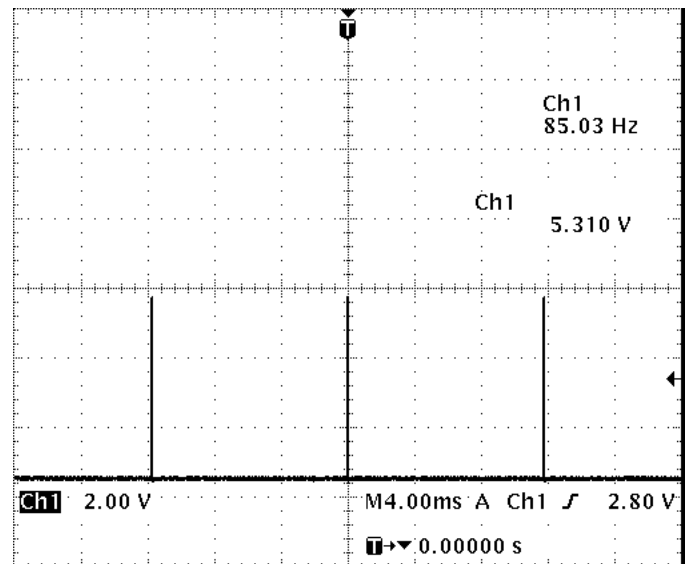
(7)



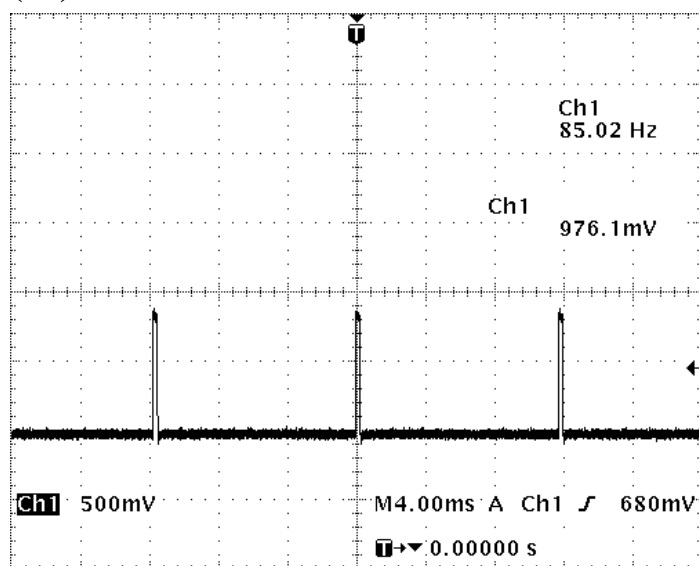
(8)



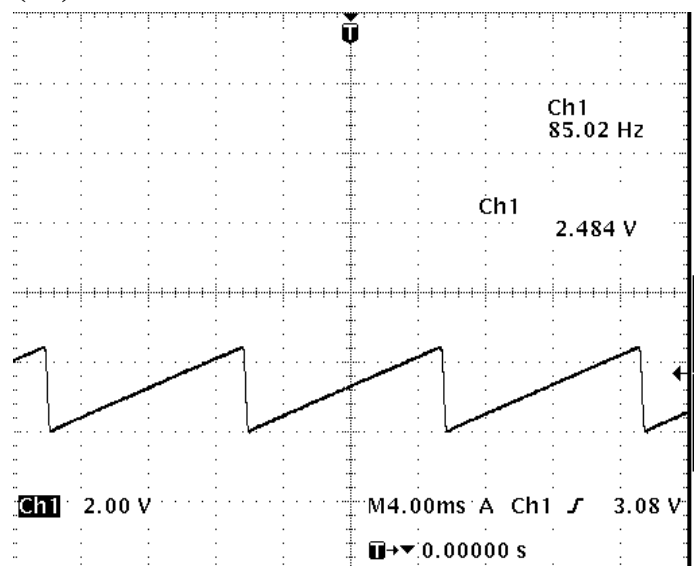
(9)



(10)

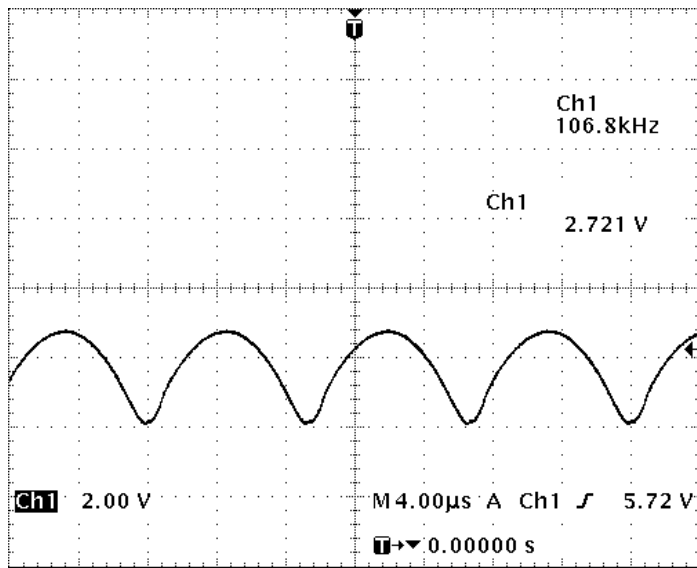


(11)

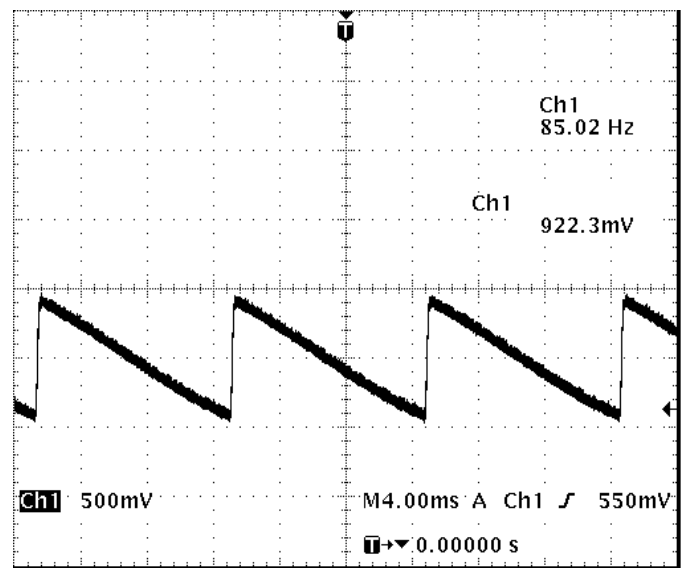


3.0 MAIN Board (P3)

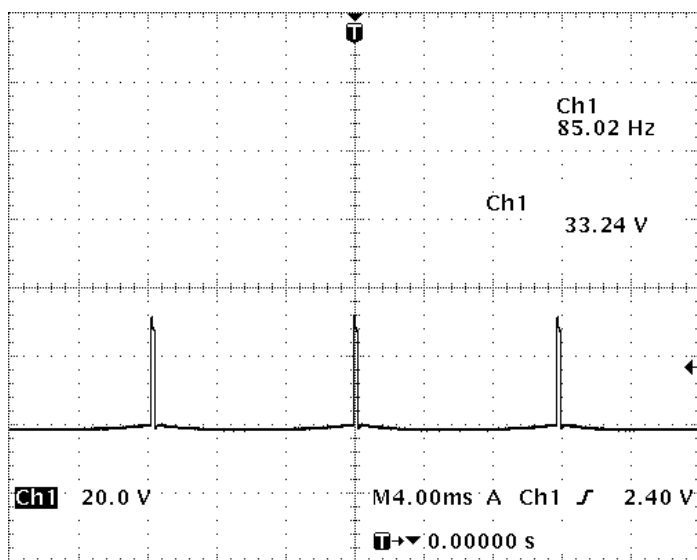
(12)



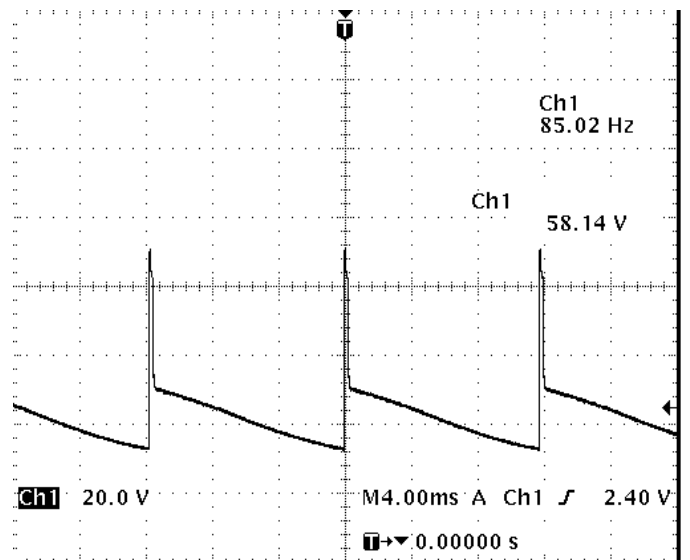
(13)



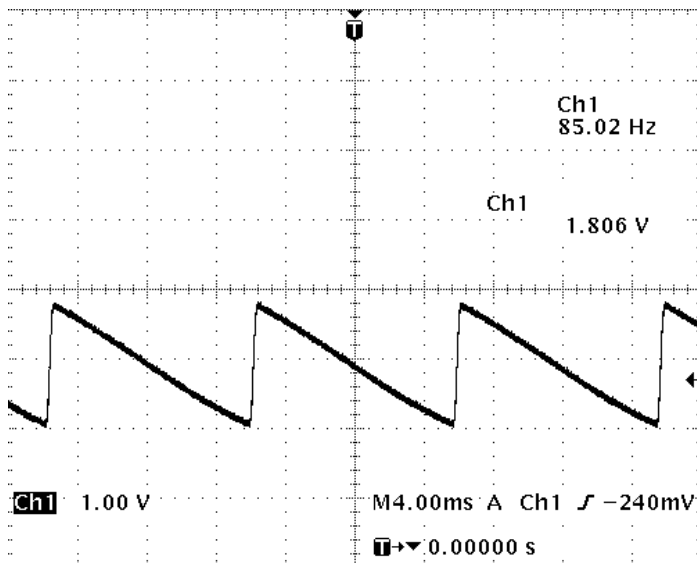
(14)



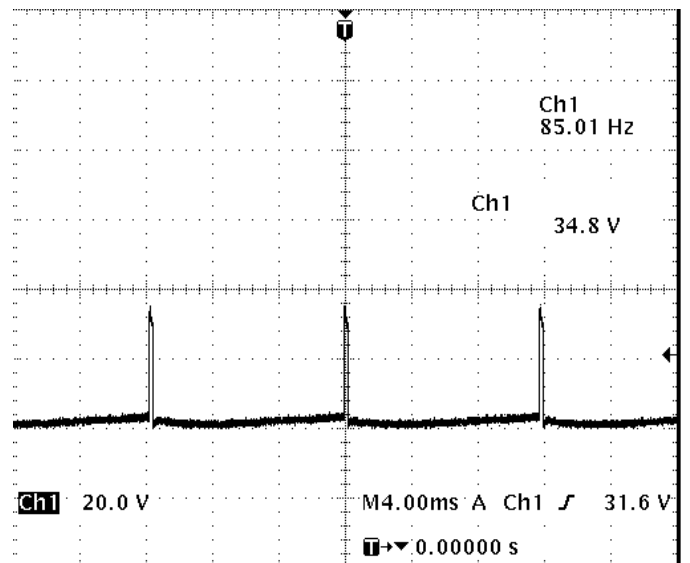
(15)



(16)

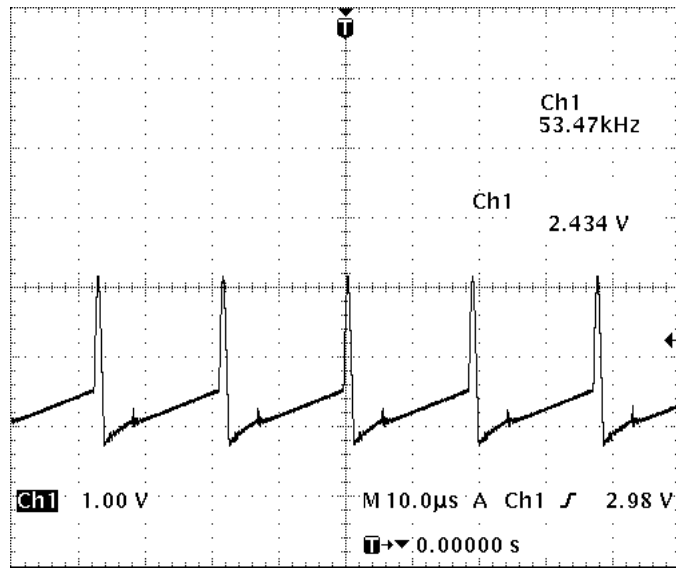


(17)

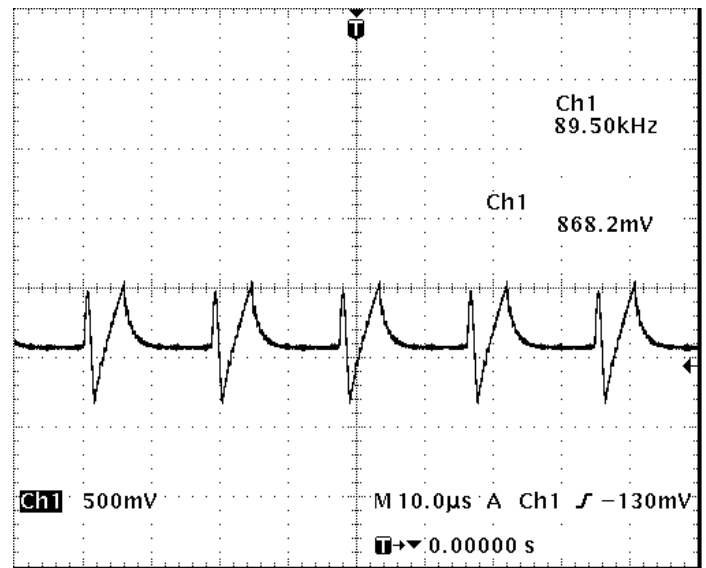


4.0 MAIN Board (P4)

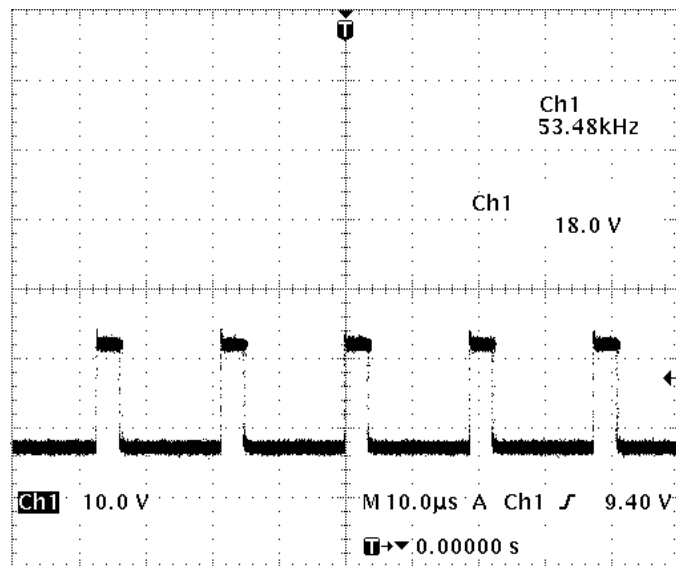
(18)



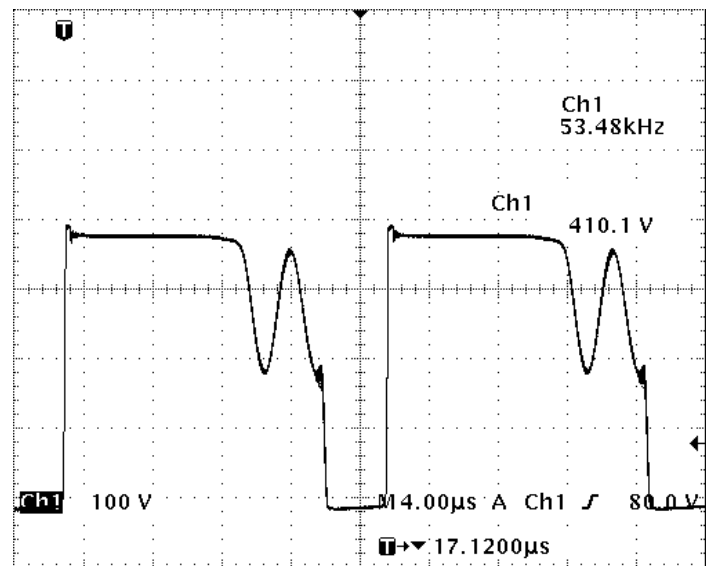
(19)



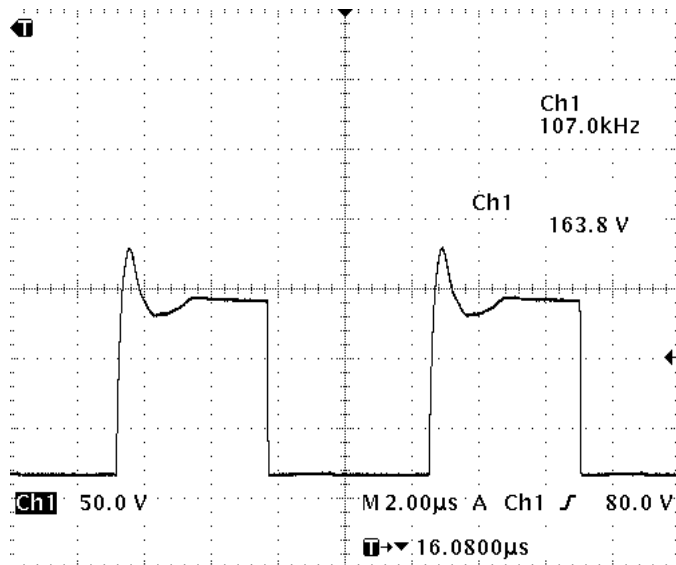
(20)



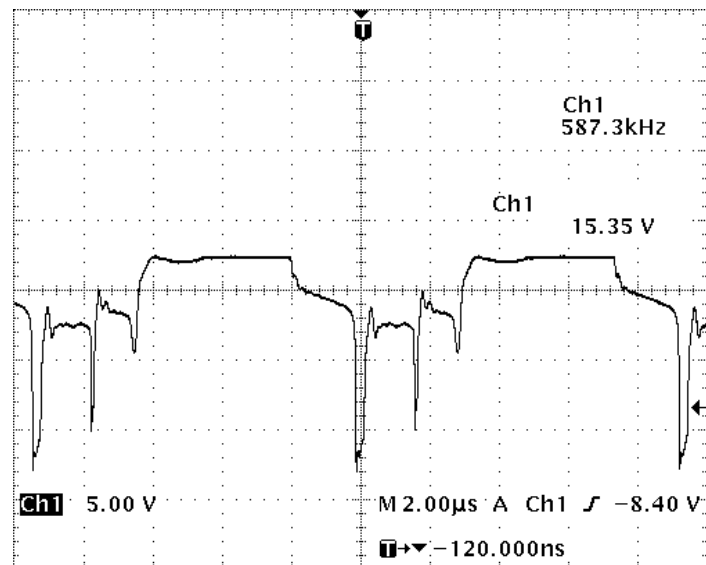
(21)



(22)

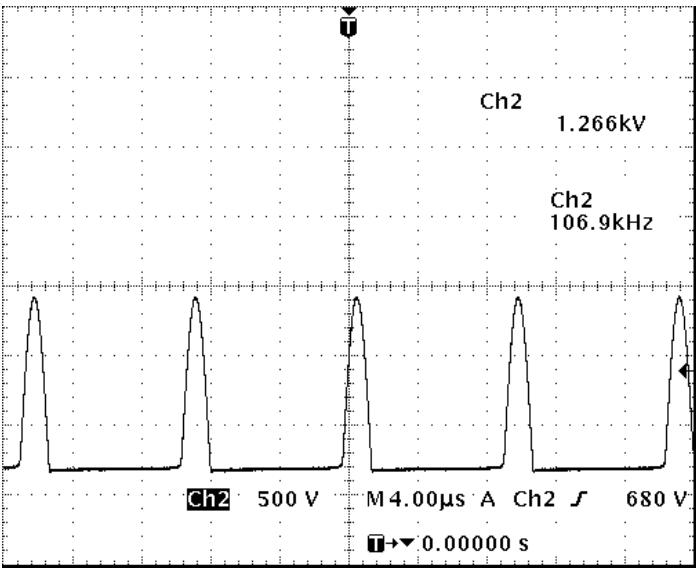


(23)

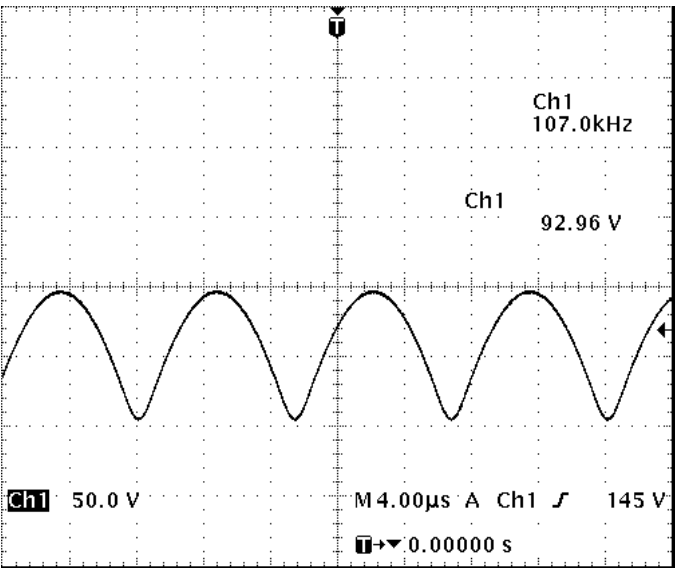


5.0 MAIN Board (P5)

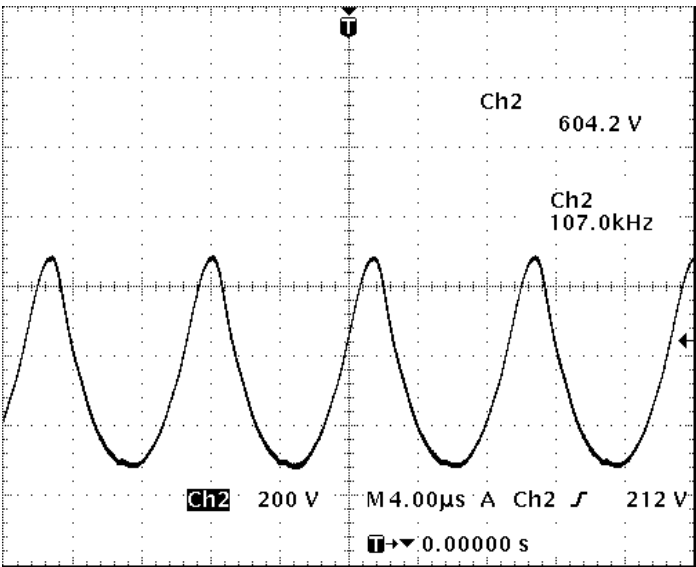
(24)



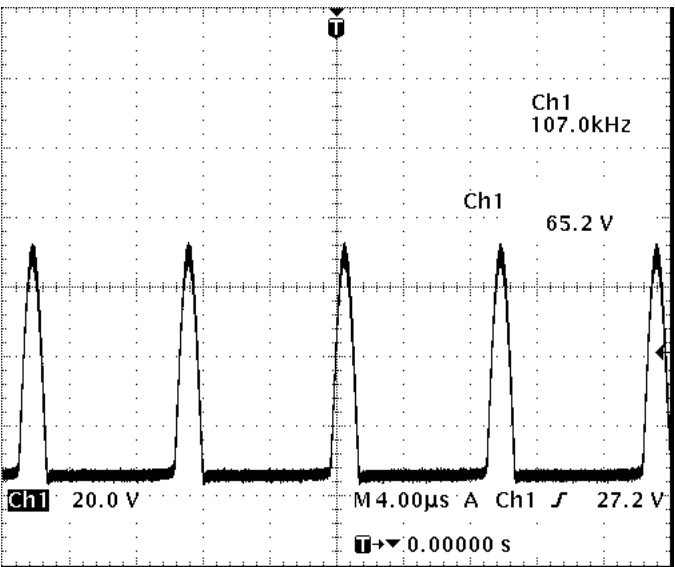
(25)



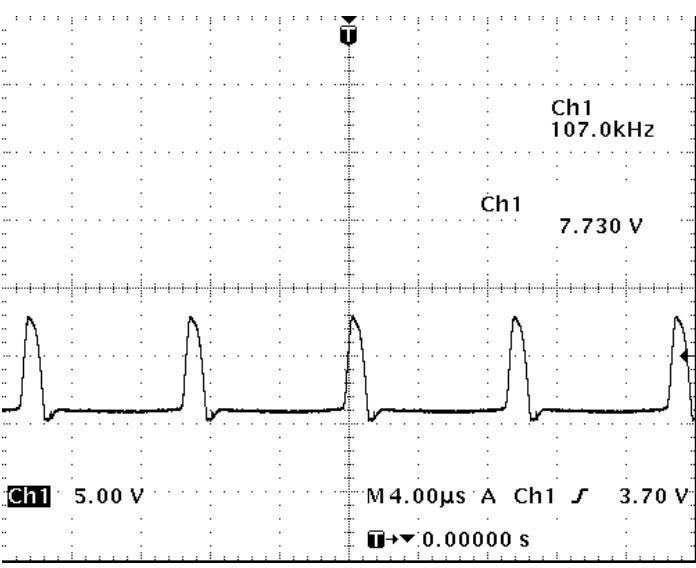
(26)



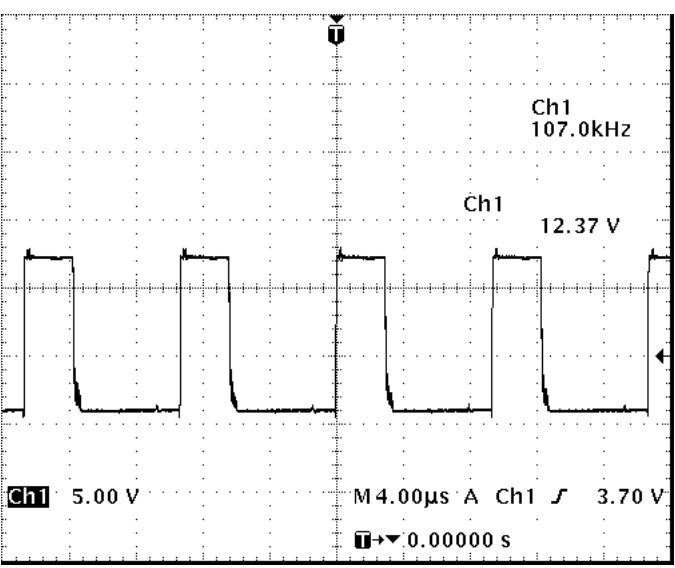
(27)



(28)

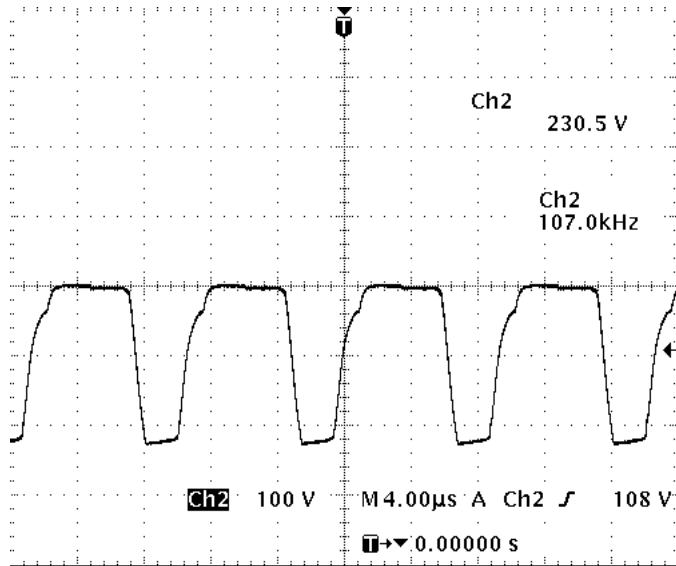


(29)

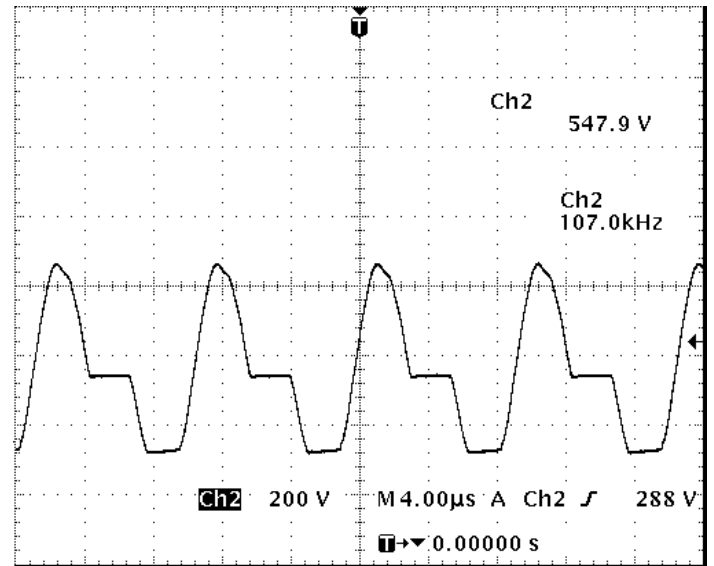


6.0 MAIN Board (P6)

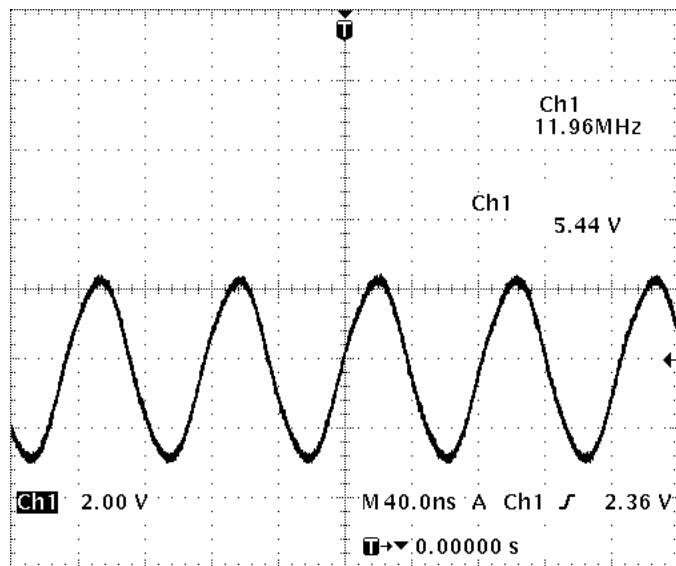
(30)



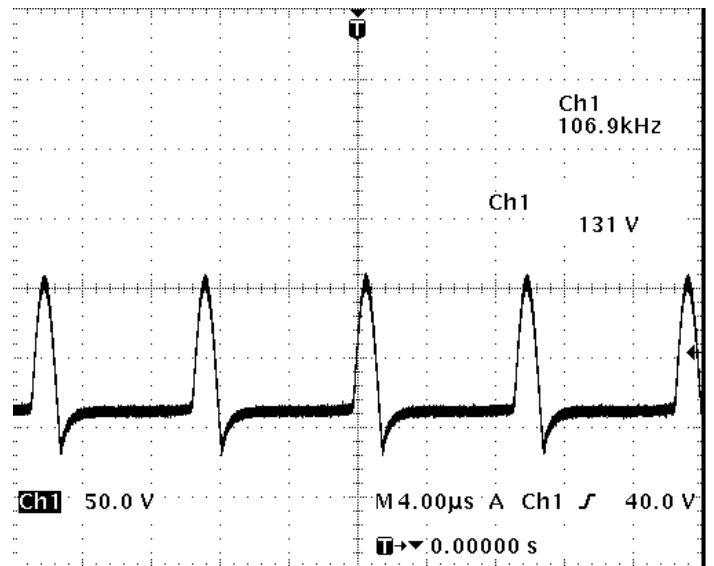
(31)



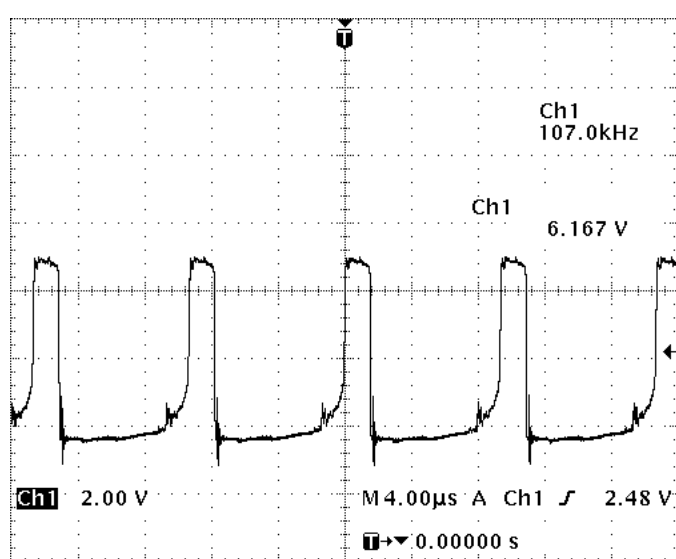
(32)



(33)

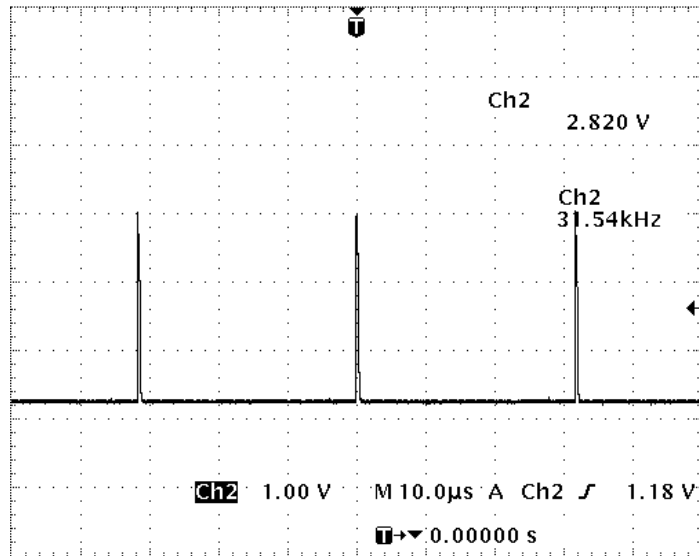


(34)

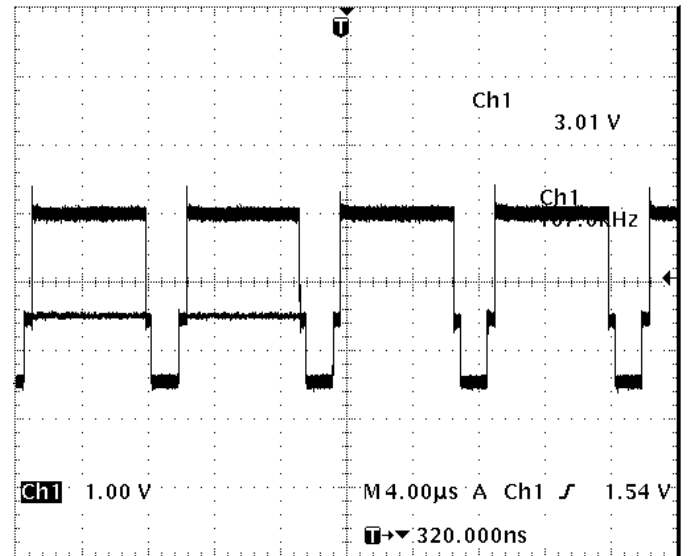


8.0 CRT BOARD

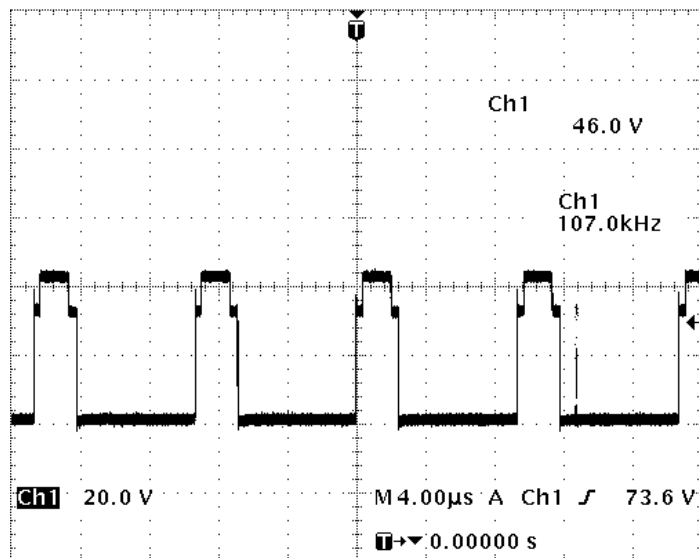
(1)



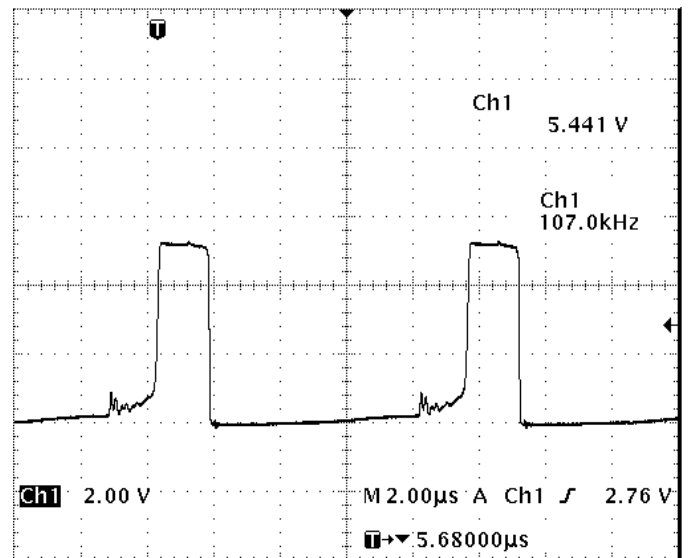
(2)



(3)



(4)



(5)

