PSA-37XP

Portable Spectrum Analyzer for:

Owner's Manual

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AVCOM Publication No. PSA37XP
Revision 5
April 2007

PSA-37XP (owners manual)

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PLEASE READ CAREFULLY BEFORE USING THE PSA-37XP

GENERAL SAFETY

IF ONE OR MORE COMPONENTS OF YOUR EARTH STATION IS CONNECTED TO 120 VOLT AC LINE CURRENT. IT IS IMPORTANT THAT YOU GROUND ALL COMPONENTS OF YOUR SYSTEM, PARTICULARLY THE ANTENNA, TO REDUCE THE POSSIBILITY OF DANGEROUS ELECTRICAL SHOCK.

WHEN USING INSTRUMENTS SUCH AS THE PSA-37XP, POWER HAND TOOLS, AND ANY OTHER APPLIANCE CONNECTED TO AN ELECTRICAL OUTLET, EXERCISE GREAT CARE TO ENSURE THAT THE DEVICE IS GROUNDED EFFECTIVELY TO AVOID ELECTRICAL SHOCK. DO NOT USE WHILE STANDING IN WATER, ON DAMP EARTH, OR WHILE IN PERSONAL CONTACT WITH A CONDUCTING SURFACE SUCH AS A METAL LADDER OR CHAIR.

ALSO:

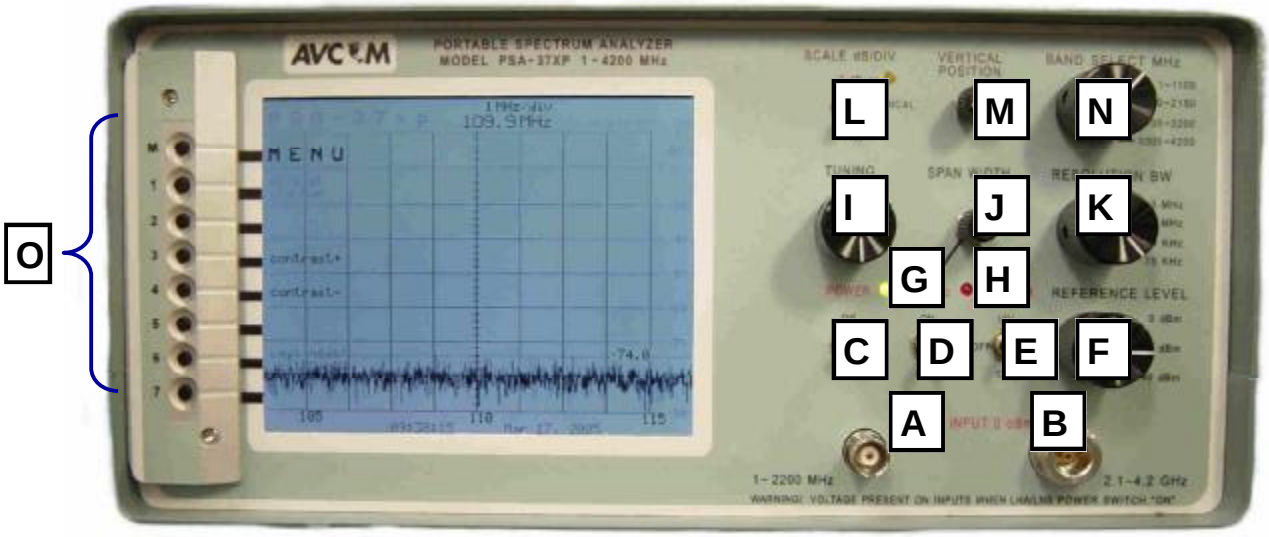
- USE PROPERLY GROUNDED ELECTRICAL OUTLET OR EXTENSION CORD
- DO NOT CUT GROUNDING PIN FROM LINE CORD PLUG
- USE FUSES OF CORRECT AMPERAGE
- DISCONNECT LINE CORDS WHEN WORKING INSIDE RECEIVER OR ON ANTENNA
- ENSURE THE ANTENNA AND OTHER COMPONENTS OF YOUR EARTH STATION ARE PROPERLY
- GROUNDED
- DO NOT SERVICE EQUIPMENT ALONE—WORK WITH SOMEONE WHO CAN ADMINISTER HELP AND FIRST AID
- PERSONS WORKING WITH LINE VOLTAGES SHOULD BE TRAINED IN AND CAPABLE OF PERFORMING FIRST AID AND RESUSCITATION TECHNIQUES

IMPORTANT CAUTIONS

1. The PSA-37XP supplies +13/+18 VDC on the RF connectors to power most LNA's. It is the customers' responsibility to ensure that the components being powered by the PSA-37XP are compatible with +13/+18 VDC. If in doubt, consult the manufacturer of the component.

2. Do not couple the input of the PSA-37XP to high power RF sources such as walkie-talkies, CB radios, transmitters, etc. Signal levels in excess of 0 dBm can damage the sensitive mixers in the instrument resulting in otherwise unnecessary expense and repairs. External DC voltage not to exceed 50 VDC.

3. HANDLE WITH CARE- The PSA-37XP Spectrum Analyzer is a precision instrument designed for normal operating and handling conditions. It should be protected from abuse such as dropping, throwing, and other rough handling. When being transported in a vehicle, or shipped, the PSA-37XP must be cushioned and protected against shock and vibration.



INPUTS, OUTPUTS, AND CONTROLS

Front Panel

A. BNC Jack (1—2200 MHz)

The BNC jack is used to receive signals using a whip antenna, cable, or a probe. This jack is the RF Input jack used in conjunction with Band 1 (1—1100 MHz) and Band 2 (950—2150 MHz) of the spectrum analyzer.

WARNING! Voltage is present on this jack when the LNA/LNB power switch is in either the 13V or 18V position.

B. N-Type Jack (2.1—4.2 GHz)

The N-Type jack is used for receiving signals when operating in either Band 3 (2100—3200 MHz) or Band 4 (3200—4200 MHz) of the spectrum analyzer.

WARNING! Voltage is present on this jack when the LNA/LNB power switch is in either the 13V or 18V position.

C. POWER Switch

Use this button to turn the PSA-37XP ON or OFF

D. 22KHz Switch

This switch puts a 22KHz signal on connectors when the LNA/LNB Power is applied

E. LNA/LNB Power Switch

This switch can be placed in either the 13V or 18V position which will then provide the correct voltage to power an external LNA/LNB.

F. REFERENCE Level

The Reference Level control establishes the amplitude calibration for the display. This switch can

be positioned in either 0dBm, -20dBm or -40dBm. The –40dBm position is the most sensitive position and signals as weak as -90 dBm can be seen.

G. POWER (CHARGE) Light

- SERIAL 1005XXXX AND BEFORE : This light will be lit, and steady, when the unit is operational. The light will blink when the analyzer is turned off, but charging. When the battery charge is low, this light will blink rapidly.
- SERIAL 1105XXXX TO PRESENT: This light will be lit only when the battery needs charge.

H. LNA/LNB Power Light

This light will be on when the LNA/LNB Switch is either in the 13V or 18V position. It will be off when the switch is in the off position.

I. TUNING Knob

Tunes the PSA-37XP through the selected band and centers signals of interest on the display while their frequency is shown at the top center of the display.

J. SPAN WIDTH Knob

Controls the sweep width of the Spectrum Analyzer. When fully clockwise, signals in the entire bandwidth of the selected band are displayed. Then, if a smaller area of that spectrum is to be examined, the area is centered over the vertical centerline with the TUNING Knob and the SPAN control turned counterclockwise to see the signal more closely.

K. RESOLUTION BANDWIDTH Knob

This knob is used to control the resolution bandwidth of the spectrum analyzer. The PSA-37XP has the following Resolution Bandwidth selections:

3 MHz
1 MHz
300 kHz
75 kHz

L. SCALE dB/Div

Used to select amplitude sensitivity of either 10 dB/DIV or 2 dB/DIV. The 2 dB position is particularly helpful for peaking the antenna and feed horn and is not calibrated.

M. VERTICLE POSITION Knob

Controls the vertical position of the trace.

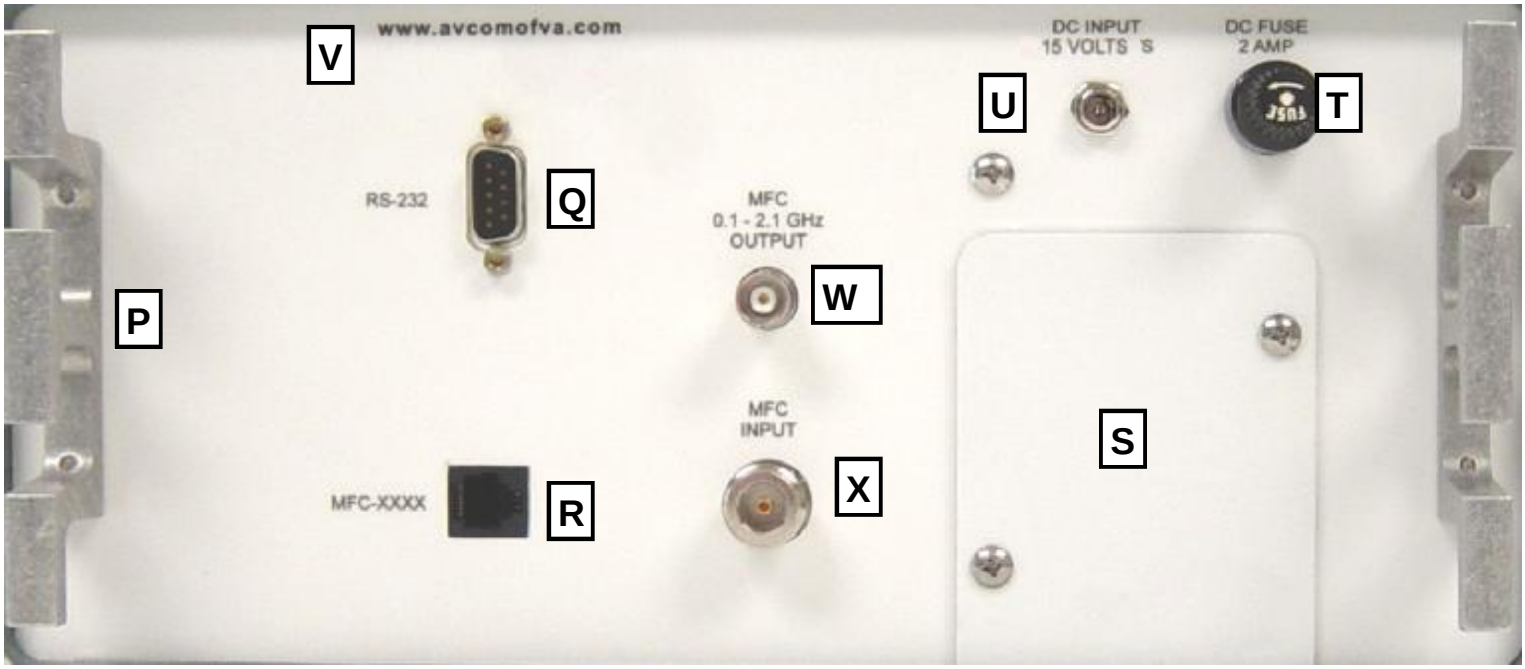
N. BAND SELECT Knob

Selects the frequency range of interest to be displayed on the Spectrum Analyzer. The PSA-37XP has the following bands to choose from:

BAND 1: 1 — 1100 MHz
BAND 2: 950 — 2150 MHz
BAND 3: 2100 — 3200 MHz
BAND 4: 3200 — 4200 MHz

O. MENU Buttons

These buttons are used to control the menu structure of the PSA-37XP.
(Refer to MENU Structure Reference Section)



Back Panel

P. METAL Foot

This metal foot can be used to stand the unit on a firm surface with the LCD Display facing up toward the technician. It is also used as a cord wrap for the AC/DC power cables.

Q. RS-232

The RS-232 jack is provided for remote control of the PSA-37XP and also firmware updates. The standard baud rate for communications is 115Kbps. See USER OPTIONS - Serial Port Options.

R. MFC-XXXX

This port is used to connect a Frequency Converter for use in higher frequency ranges. See ACCESSORIES

S. BATTERY PANEL

Two thumbscrews are provided for easy removal and attachment of the rear battery panel to access the Lithium Ion batteries.

T. DC FUSE

Fuse for circuit protection. The 2Amp 250V fuse must be in place to operate while plugged in to the AC/DC Converter, or on battery power.

U. DC INPUT JACK

15V DC Jack for power input. This unit will run on either a AC-DC Converter at 15VDC, or on a 12VDC car power adapter. Running the unit with a 12VDC source will not be sufficient to charge the batteries. Charging of the batteries should be accomplished by plugging the PSA-37XP into the converter at 15VDC

V. WEB PAGE

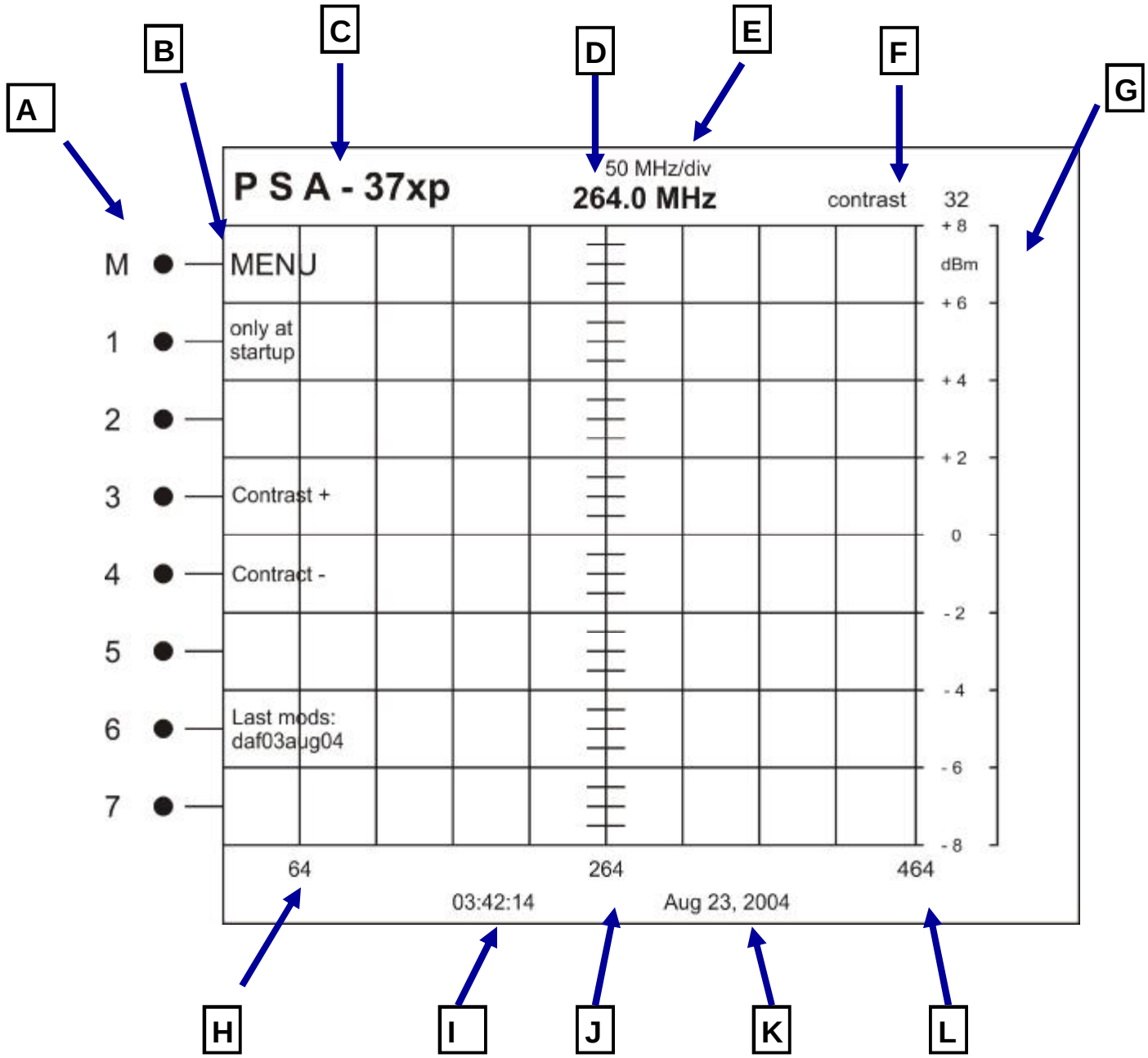
You can access more information on the AVCOM products on the internet. Please visit www.avcomofva.com.

W. MFC .1-2.1 GHZ OUTPUT

The BNC jack is used for output frequency from 0.1 to 2.1 GHz in high frequency ranges.

X. MFC INPUT

This N-type jack is used for receiving signals in higher frequency ranges.



A. MENU Buttons

These buttons are used to control the menu structure of the PSA-37XP.

B. MENU Structure

This is the actual menu structure used in configuring the unit. As the MENU Buttons are pressed, the value, or menu structure will change accordingly.

C. MODEL Number

The value show in this position is the MODEL Number of the spectrum analyzer.

D. CENTER Frequency

This value is controlled by the TUNING Knob and represents the frequency at the center division of the screen.

E. SPAN Width

The value of this is determined by the SPAN WIDTH Knob and shows the MHz/div chosen.

F. MENU SELECTION Value

This shows the value of the chosen menu selection. In the above reference, it shows the value of the screen contrast. As the CONTRAST + menu button is pressed, the value will increase.

G. AMPLITUDE

The numbers on the right side of the screen depict the amplitude value in dB.

H. MINIMUM FREQUENCY Value

A value in this position shows the lower frequency value from the center line. It is derived from the Center Frequency — (Span Width/div X 4 Div)

I. TIME

This is the current time.

J. CENTER Frequency

Center Frequency as determined by the TUNING Knob.

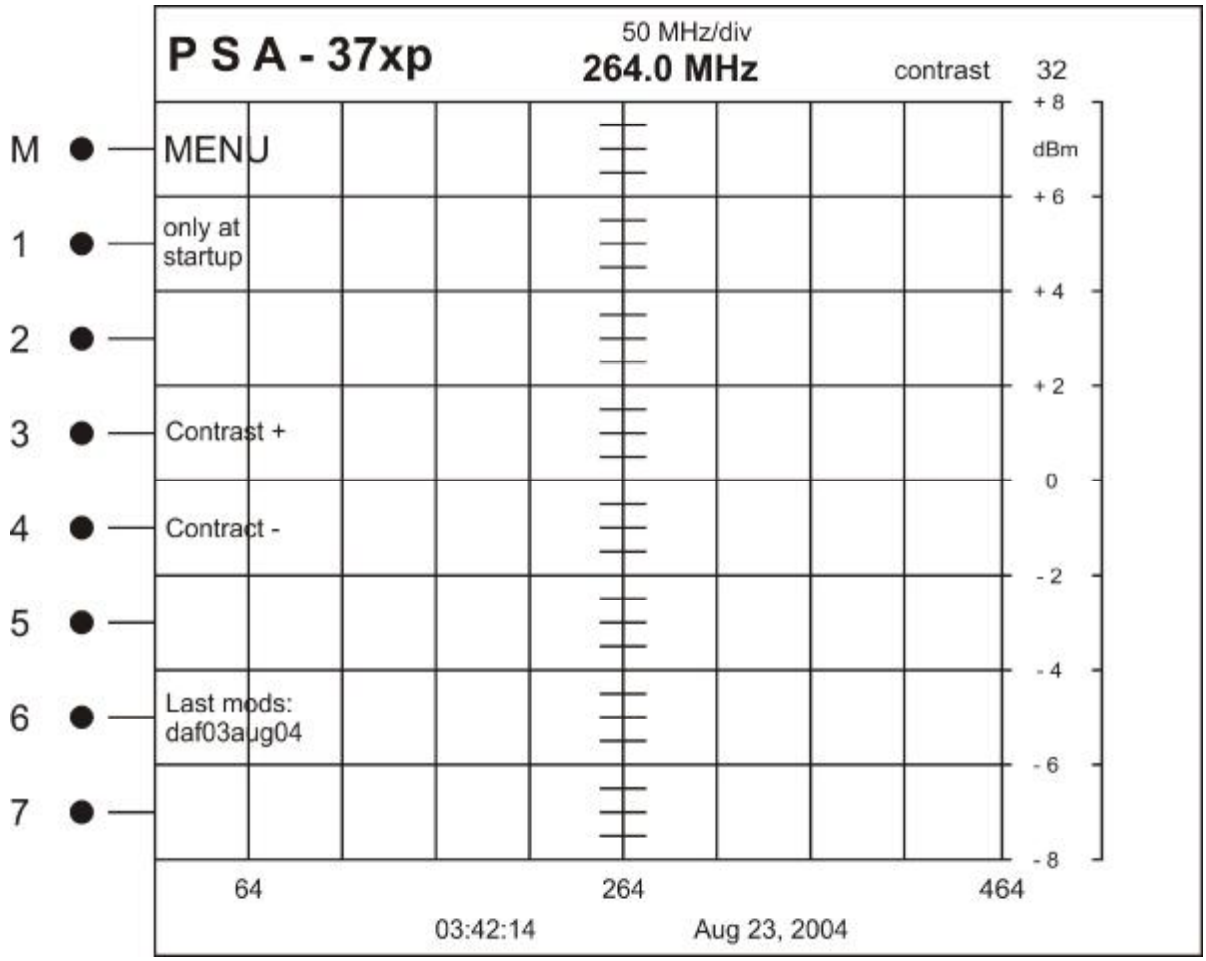
K. DATE

This is the current date as set in the analyzer.

L. MAXIMUM Frequency

A value in this position shows the upper frequency value from the center line. It is derived from the Center Frequency + (Span Width/div X 4 Div)

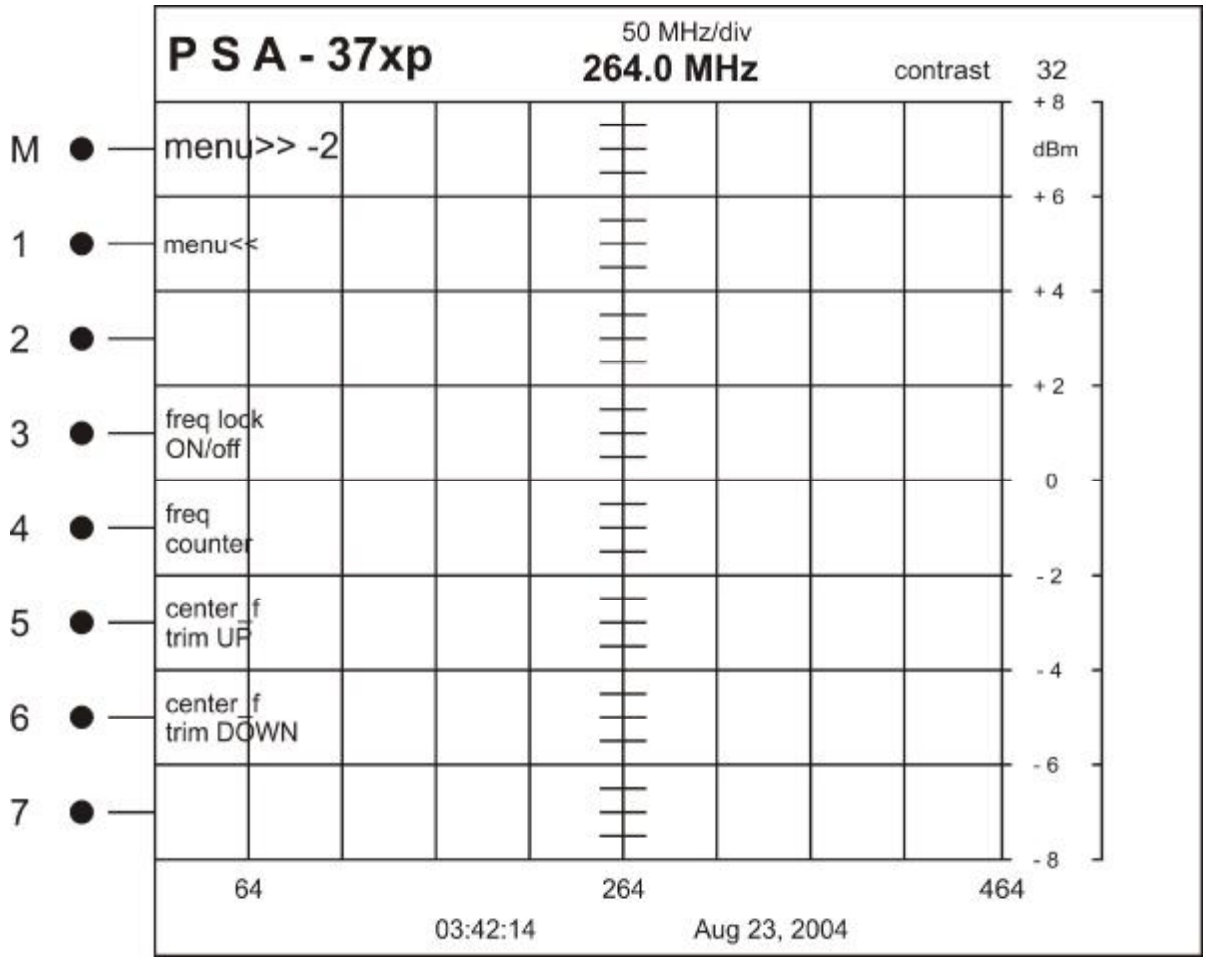
MENU STRUCTURE REFERENCE



INITIAL MENU: This menu is only seen on the initial boot of the spectrum analyzer

Button	Label	Description
M	MENU	Takes you to the standard menu structure of the analyzer
1	only at startup	Enters into a menu structure that is only available at the first boot of the spectrum analyzer.
2		Not Used
3	Contrast +	Increases the value of screen contrast. Adjust for user preference.
4	Contrast —	decreases the value of screen contrast. Adjust for user preference.
5		Not Used
6	Display of last software modifications date	View only
7		Not Used

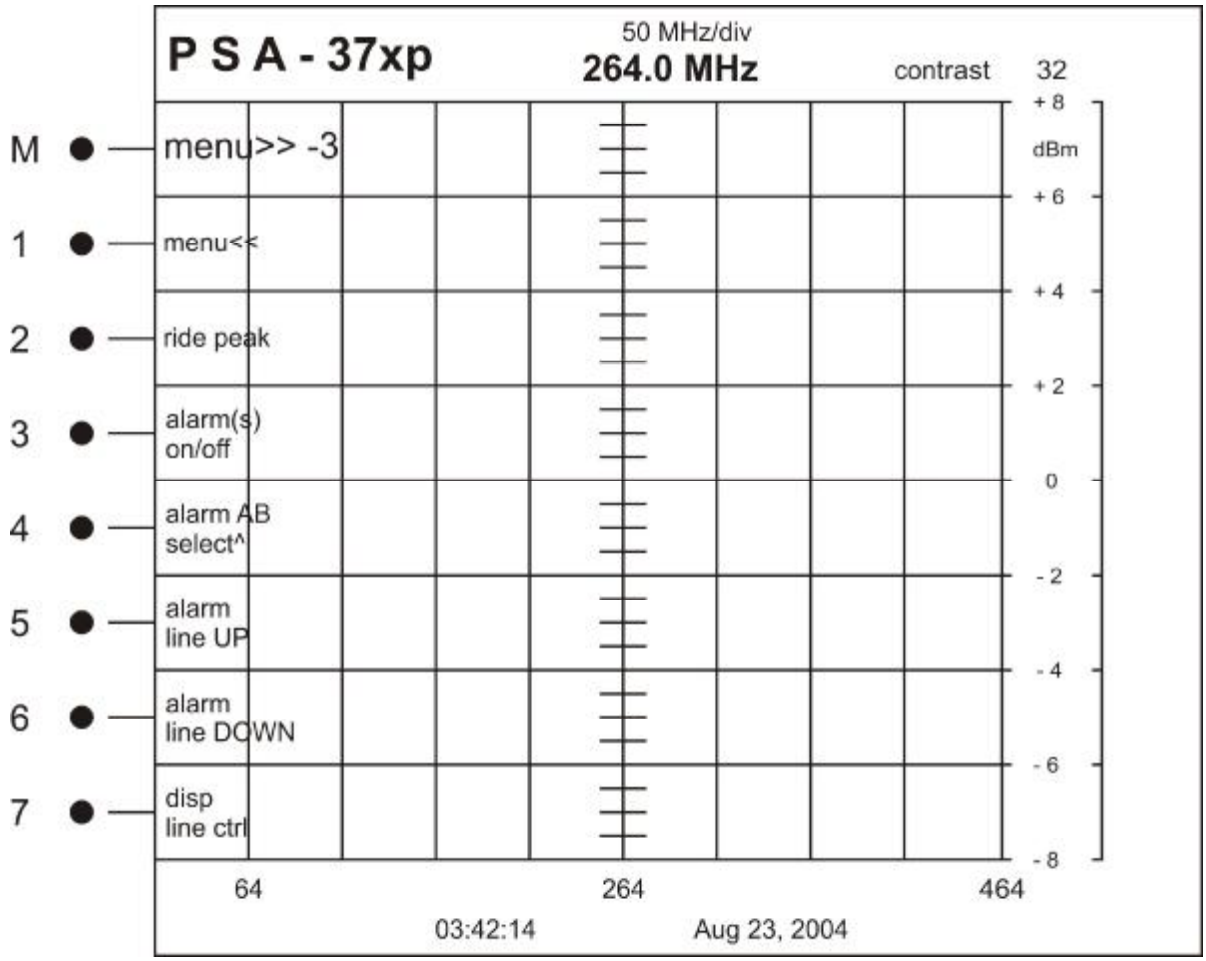
MENU STRUCTURE REFERENCE



STARUP MENU: 2

Button	Label	Description
M	MENU>> -2	Changes to the next higher menu in the structure
1	MENU<<	Changes to the next lower menu in the structure
2		Not Used
3	Freq lock ON/off	Turns the Frequency lock is on or off
4	freq counter	Toggles Frequency Counter Display On or Off This affects the Frequency Counter display on the top and bottom of the analyzer screen
5	center_f trim_UP	User calibration of the center frequency
6	center_f trim_DOWN	User calibration of the center frequency
7	mode	Used only in conjunction with an AVCOM MFC See Frequency Extender Operation Section

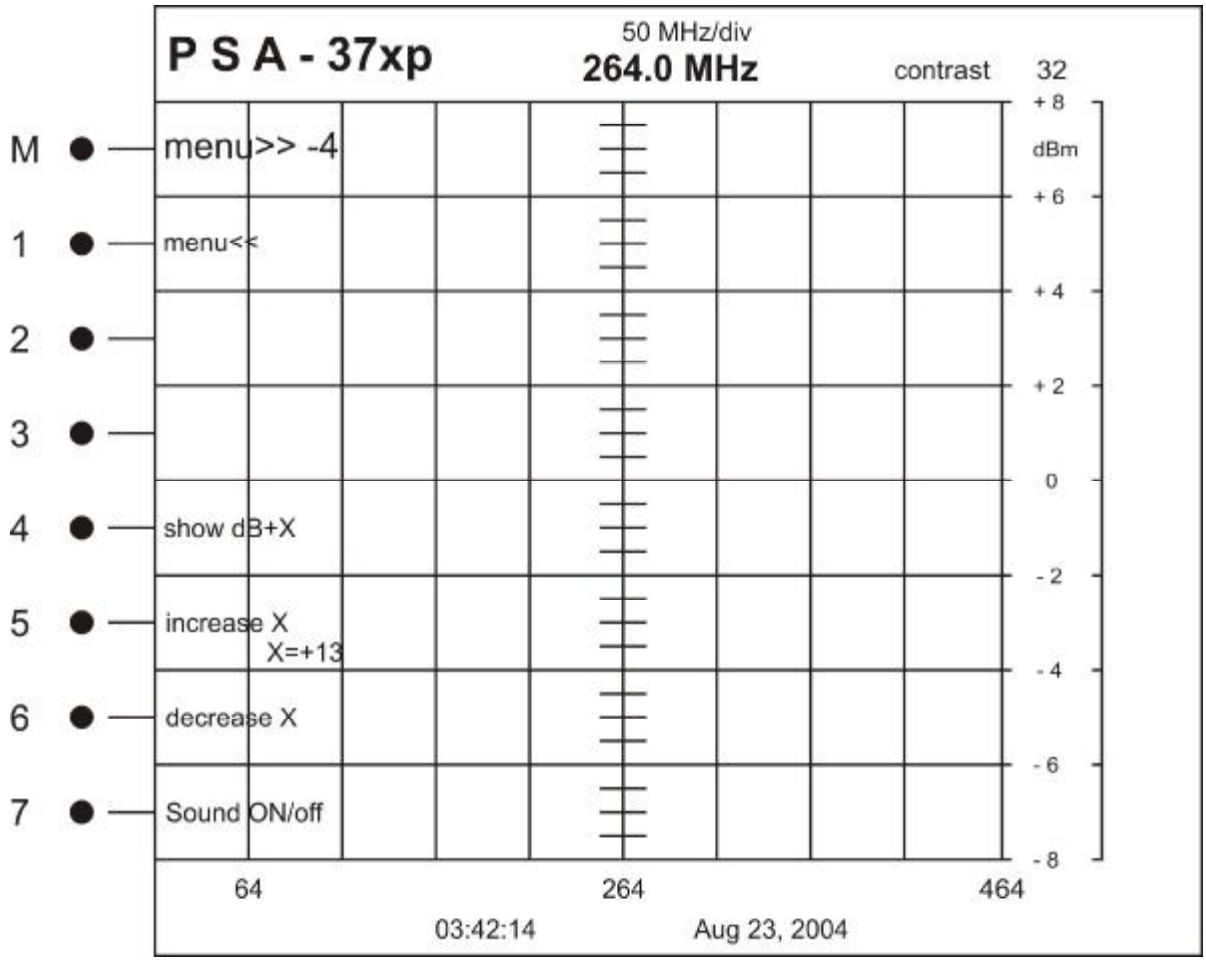
MENU STRUCTURE REFERENCE



STARUP MENU: 3

Button	Label	Description
M	MENU>> -3	Changes to the next higher menu in the structure
1	MENU<<	Changes to the next lower menu in the structure
2	ride peak	Continually finds the peak value and updates the display to reflect the new trace
3	alarm(s) on/off	Turns on the ability to set alarms
4	alarm AB select^	Selects between the two available alarms
5	alarm line UP	Adjusts the alarm line UP
6	alarm line DOWN	Adjusts the alarm line DOWN
7	disp line ctrl	Display line OFF Course—Adjusts the display line by 2 dB steps Fine—Adjusts the display line by 1 dB steps

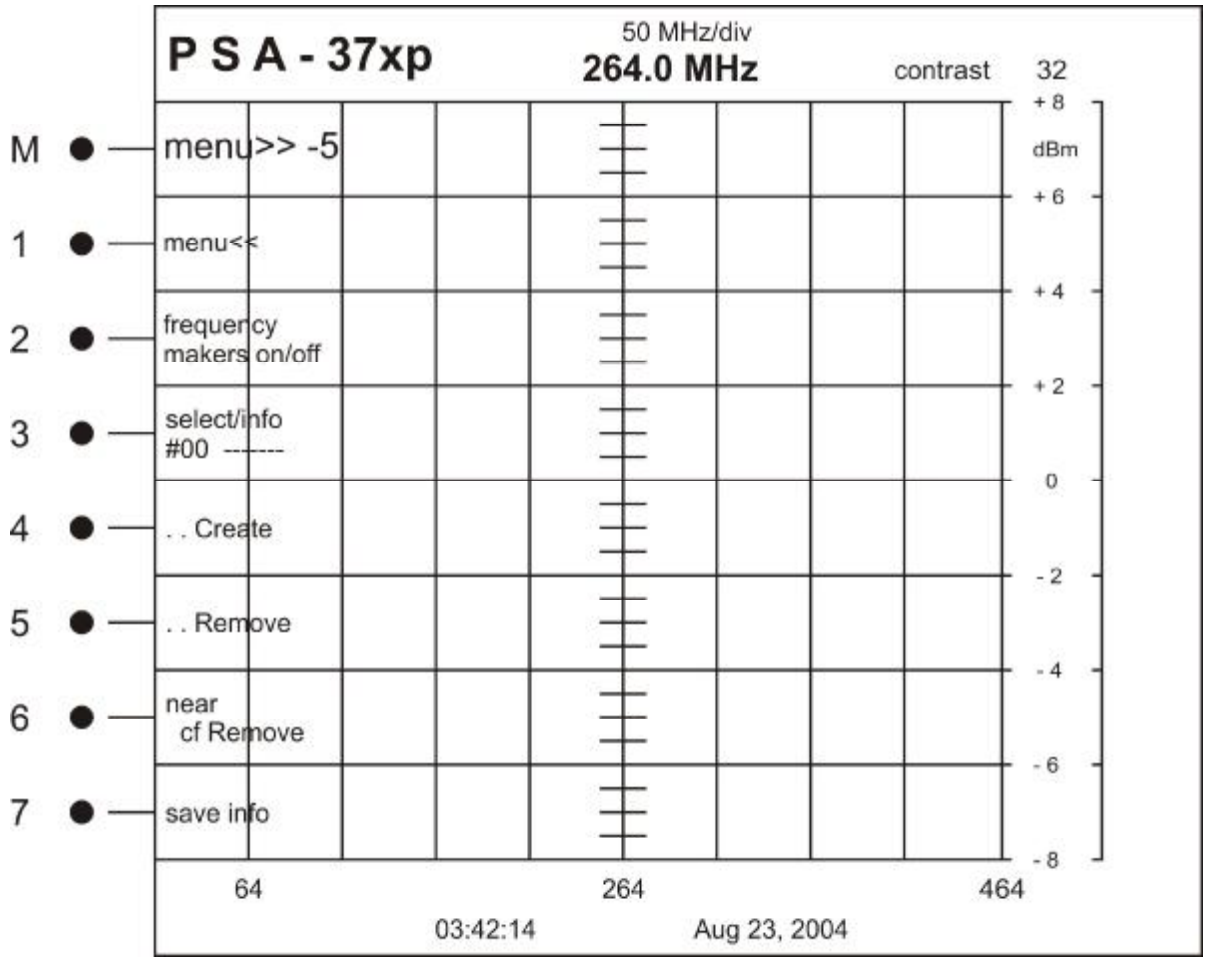
MENU STRUCTURE REFERENCE



STARUP MENU: 4

Button	Label	Description
M	MENU>> -4	Changes to the next higher menu in the structure
1	MENU<<	Changes to the next lower menu in the structure
2		Not Used
3		Not Used
4	show dB+X	dB Offset — used to enter a known offset for cable length attenuation. Non-volatile setting
5	increase X	Increases dB Offset by 1dB
6	decrease X	Decrease dB Offset by 1 dB
7	Sound ON/off	Turns sound On (Default) or Off

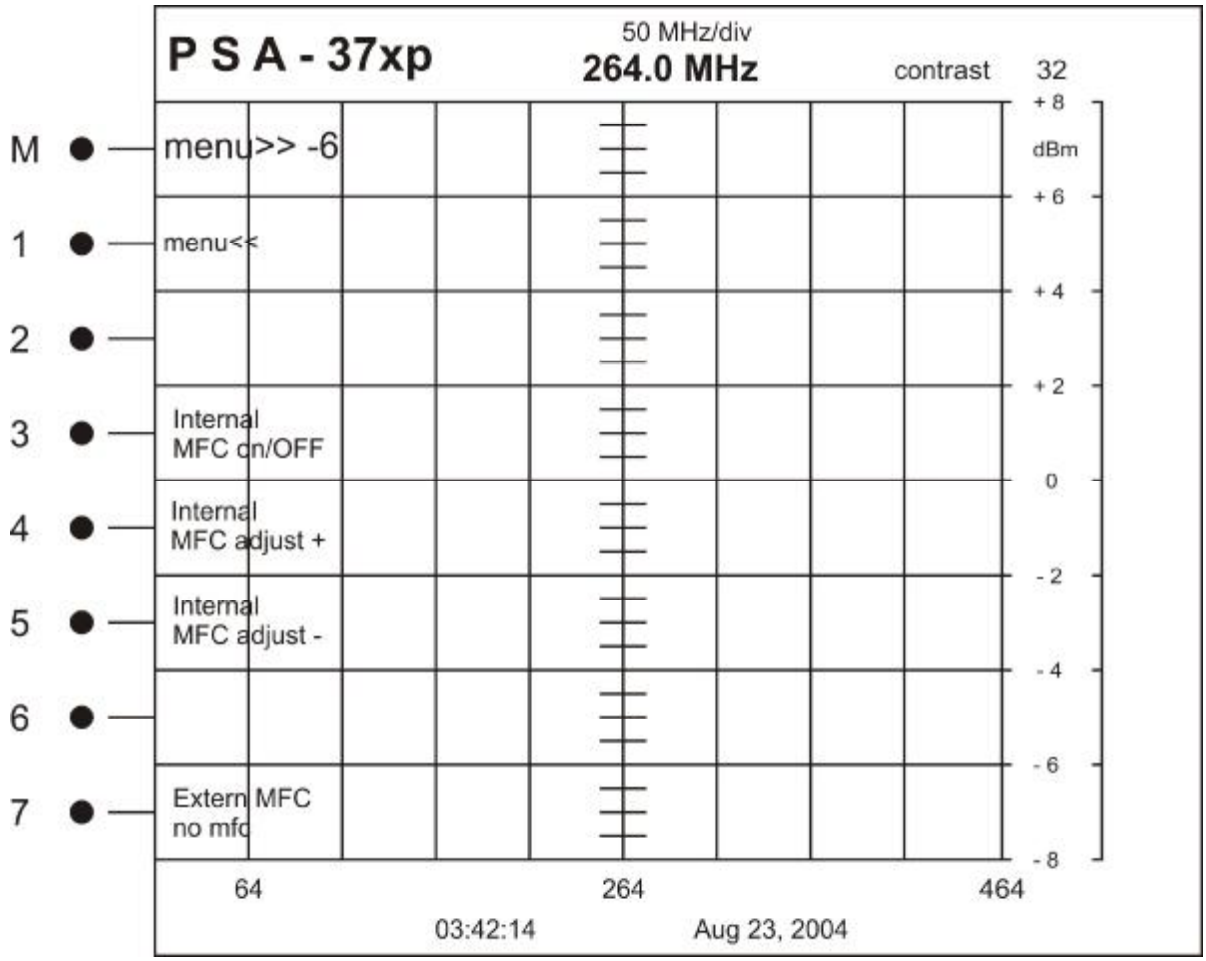
MENU STRUCTURE REFERENCE



STARUP MENU: 5

Button	Label	Description
M	MENU>> -5	Changes to the next higher menu in the structure
1	MENU<<	Changes to the next lower menu in the structure
2	frequency markers on/OFF	Displays a vertical marker created at the current center frequency setting.
3	select/info	User selectable markers from 0—15 for a total of 16 markers
4	. . Create	Creates a marker in the selected marker location
5	. . Remove	Removes the marker from the selected marker location
6	near cf remove	Removes all markers in within the first division on either side of the center frequency line
7	Save info	Saves the frequency marker information

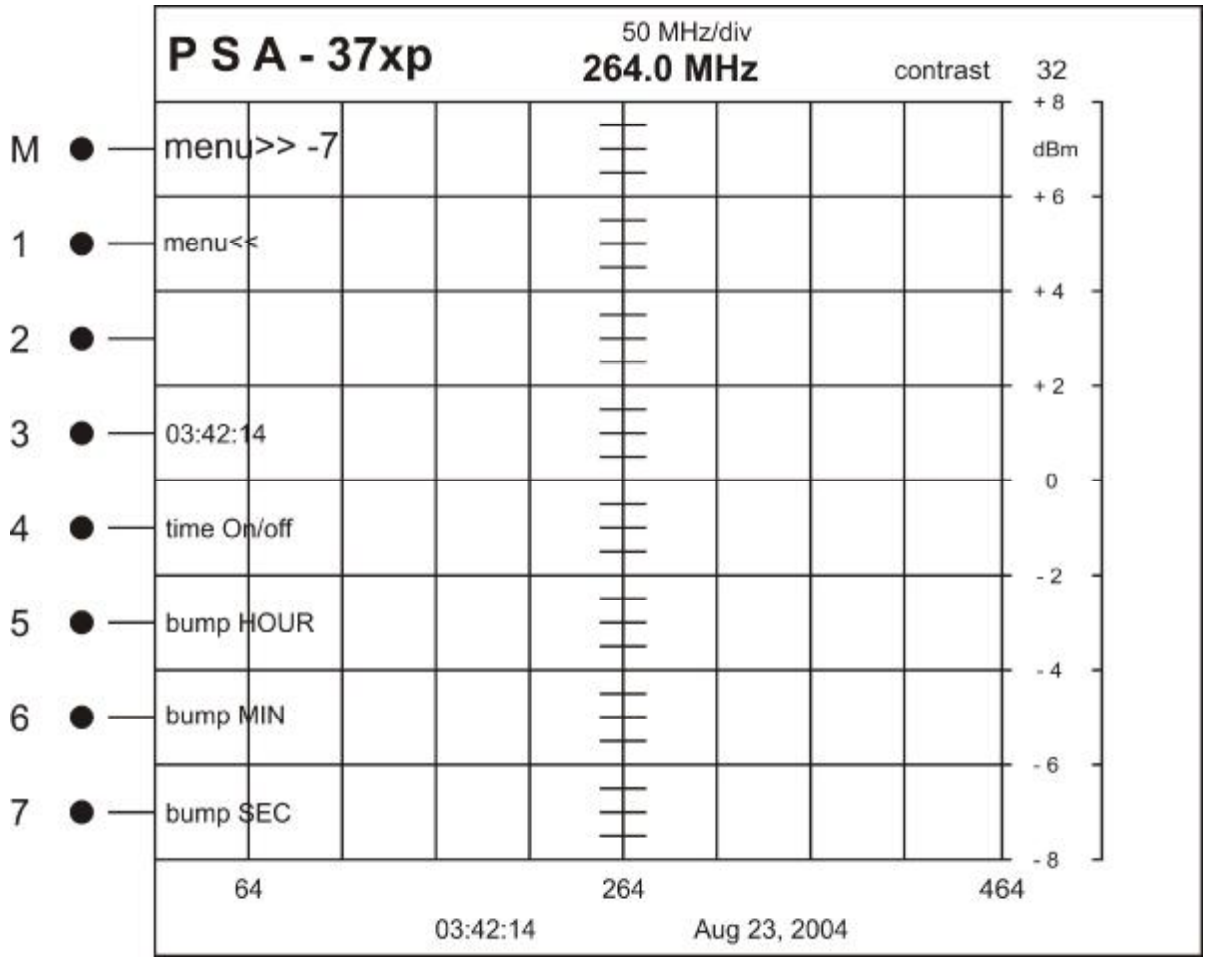
MENU STRUCTURE REFERENCE



STARUP MENU: 6

Button	Label	Description
M	MENU>> -6	Changes to the next higher menu in the structure
1	MENU<<	Changes to the next lower menu in the structure
2		Not Used
3	Internal MFC on/OFF	To turn ON or Off the internal MFC
4	Internal MFC adjust +	For internal MFC adjust, this screen shows up Only when the internal MFC is ON position
5	Internal MFC adjust -	For internal MFC adjust, this screen shows up Only when the internal MFC is ON position
6		Not Used
7	Extern MFC No mfc	To reset external MFC to factory default

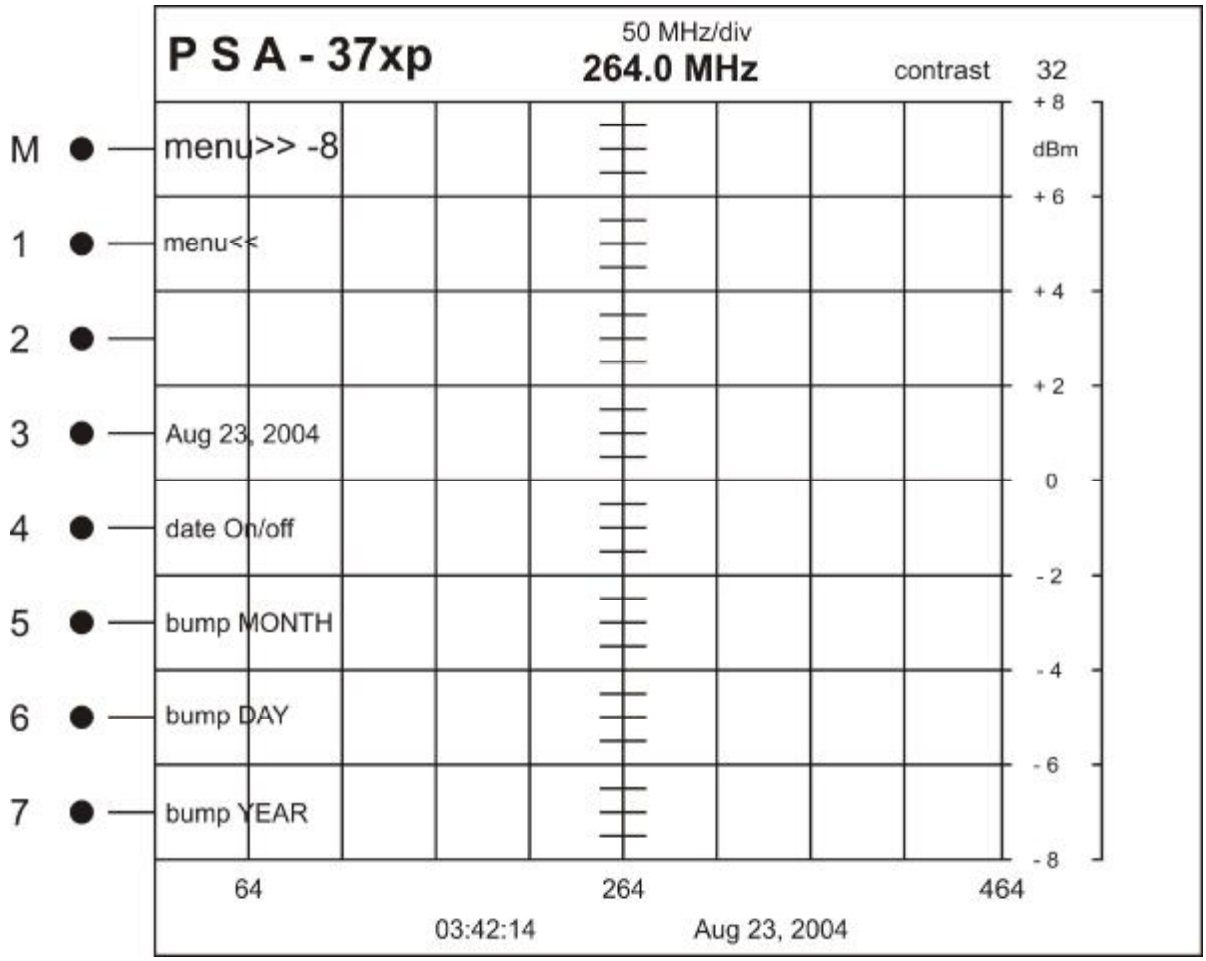
MENU STRUCTURE REFERENCE



STARUP MENU: 7

Button	Label	Description
M	MENU>> -7	Changes to the next higher menu in the structure
1	MENU<<	Changes to the next lower menu in the structure
2		Not Used
3	03:42:14	Display of actual time
4	time ON/off	Turns the time display on the screen either ON or OFF
5	bump HOUR	Increases the value of the HOUR position
6	bump MIN	Increases the value of the MINUTE position
7	bump SEC	Increases the value of the SECOND position

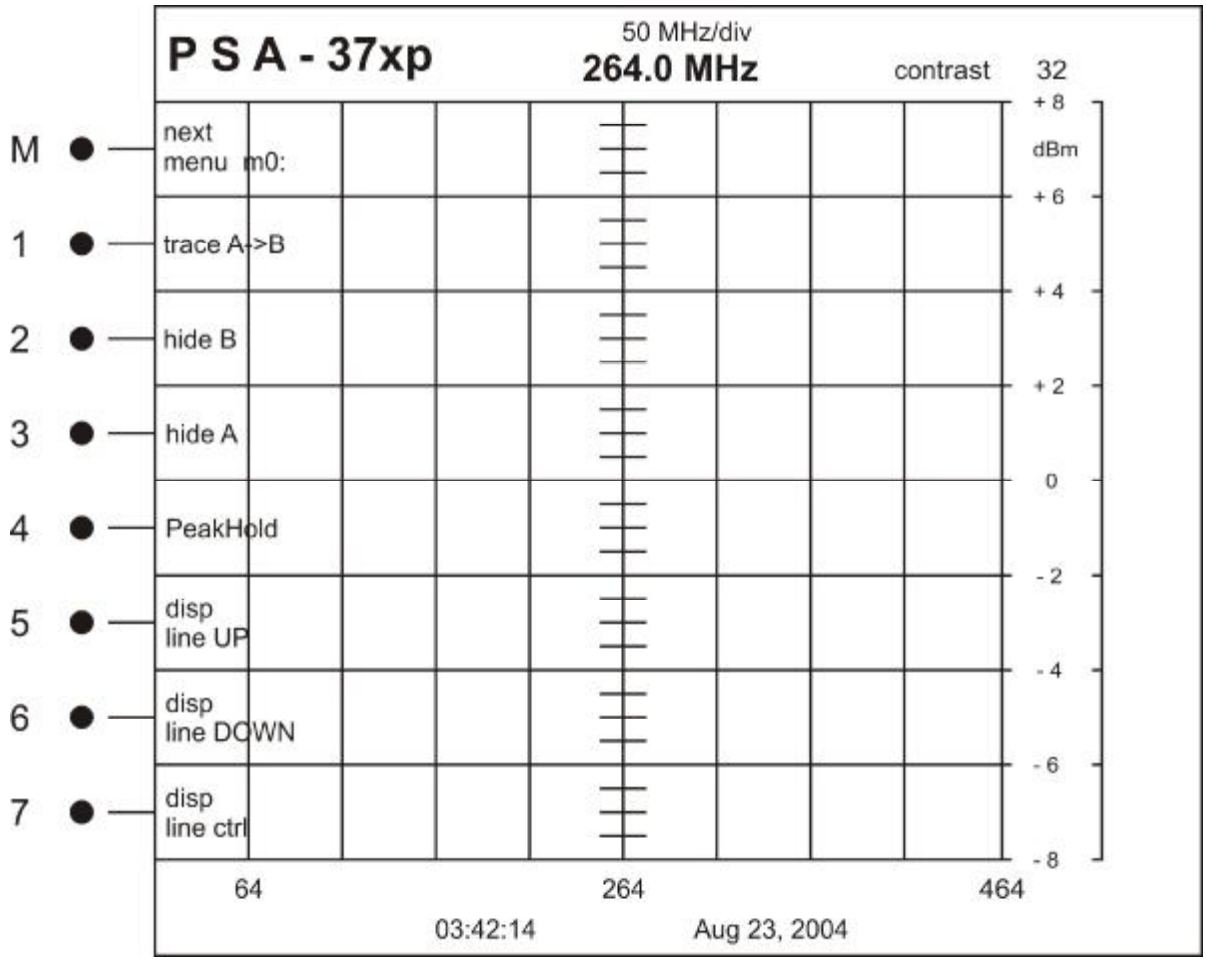
MENU STRUCTURE REFERENCE



STARUP MENU: 8

Button	Label	Description
M	MENU>> -8	Changes to the next higher menu in the structure
1	MENU<<	Changes to the next lower menu in the structure
2		Not Used
3	Aug 23, 2004	Display of actual date
4	date ON/off	Turns the date display on the screen either ON or OFF
5	bump MONTH	Increases the value of the MONTH position
6	bump DAY	Increases the value of the DAY position
7	bump YEAR	Increases the value of the YEAR position

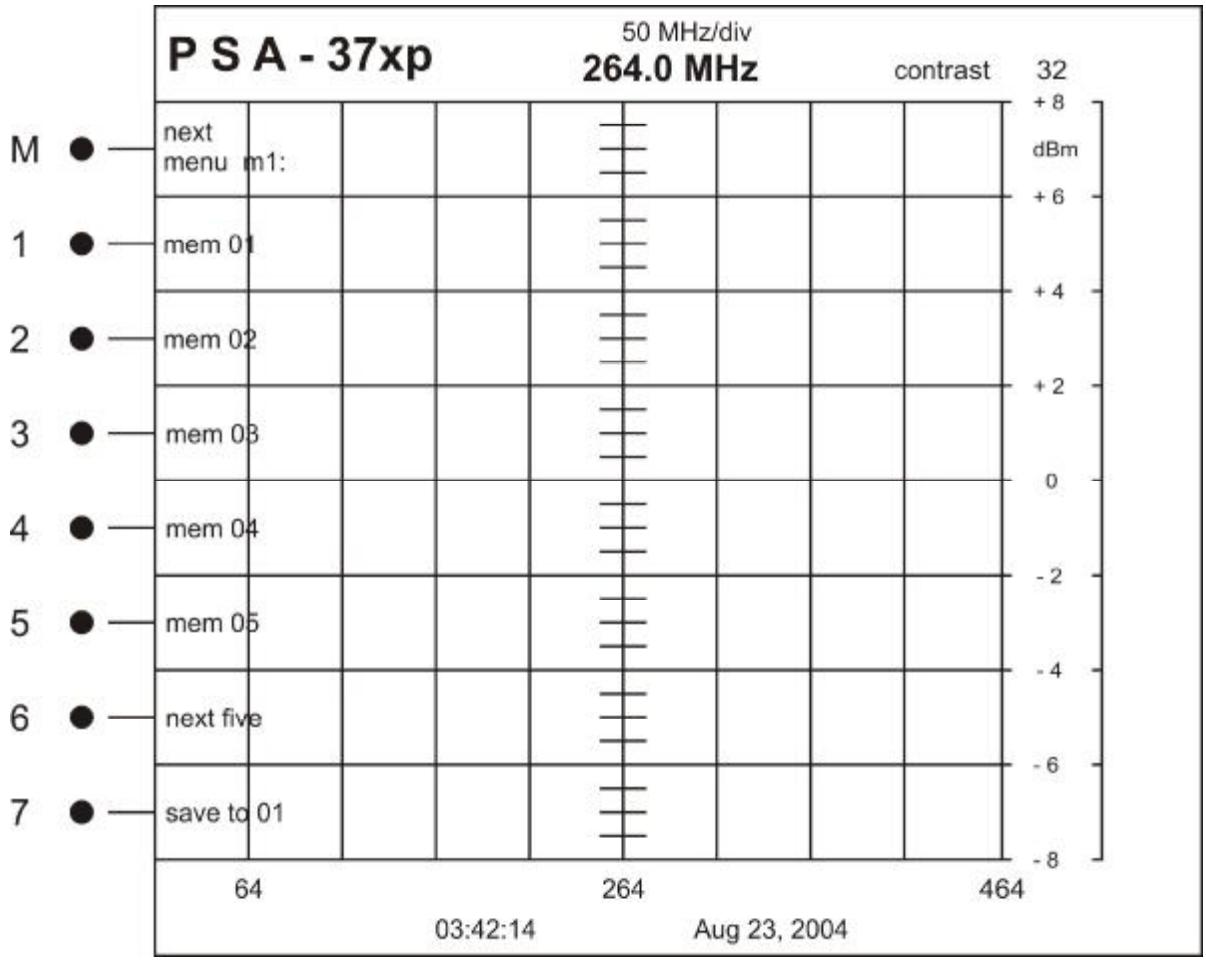
MENU STRUCTURE REFERENCE



OPERATION MENU: 0

Button	Label	Description
M	next menu m0:	Changes to menu 1
1	traceA->B	Freezes the current trace to the background
2	hide B / view B	Removes background trace / Displays last background trace.
3	hide A / view A	Removes active trace from the display / Shows the active trace on the display.
4	PeakHold persistent—unlimited—short—until f3 hit	Causes the active display to hold the peak of the trace for a set amount of time.
5	disp line UP	Adjusts the user controlled marker for dB level UP 2dB
6	disp line DOWN	Adjusts the user controlled marker for dB level DOWN 2dB
7	disp line ctrl off—course—fine	Display line OFF Course—Adjusts the display line by 2 dB steps Fine—Adjusts the display line by 1 dB steps

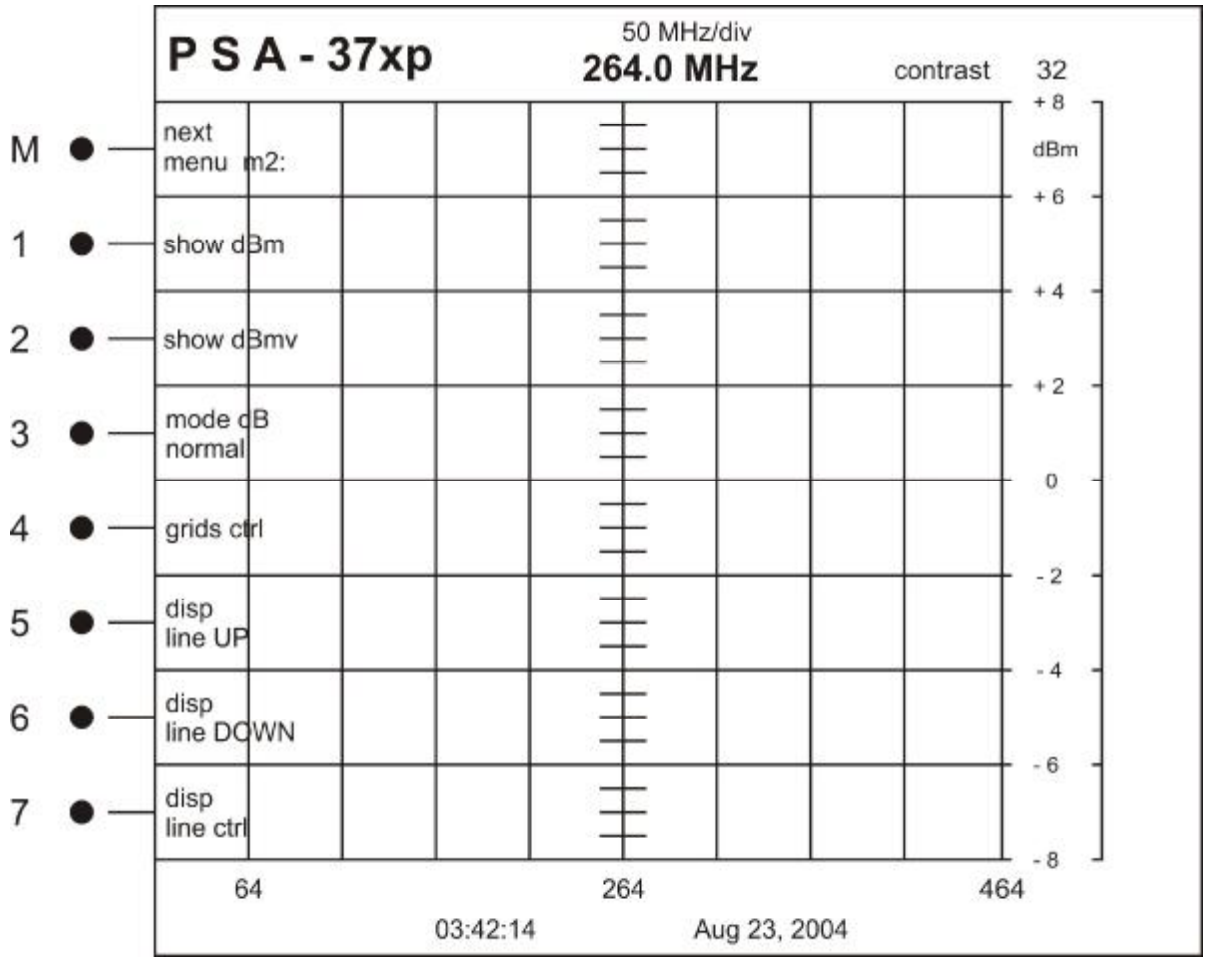
MENU STRUCTURE REFERENCE



OPERATION MENU: 1

Button	Label	Description
M	next menu m1:	Changes to menu 2
1	mem 01	Non-Volatile memory locations to save trace information. Used to Recall or Save active screen traces.
2	mem 02	
3	mem 03	
4	mem 04	
5	mem 05	
6	next five	Up to 50 memory locations
7	save to 01	Saves trace to current location

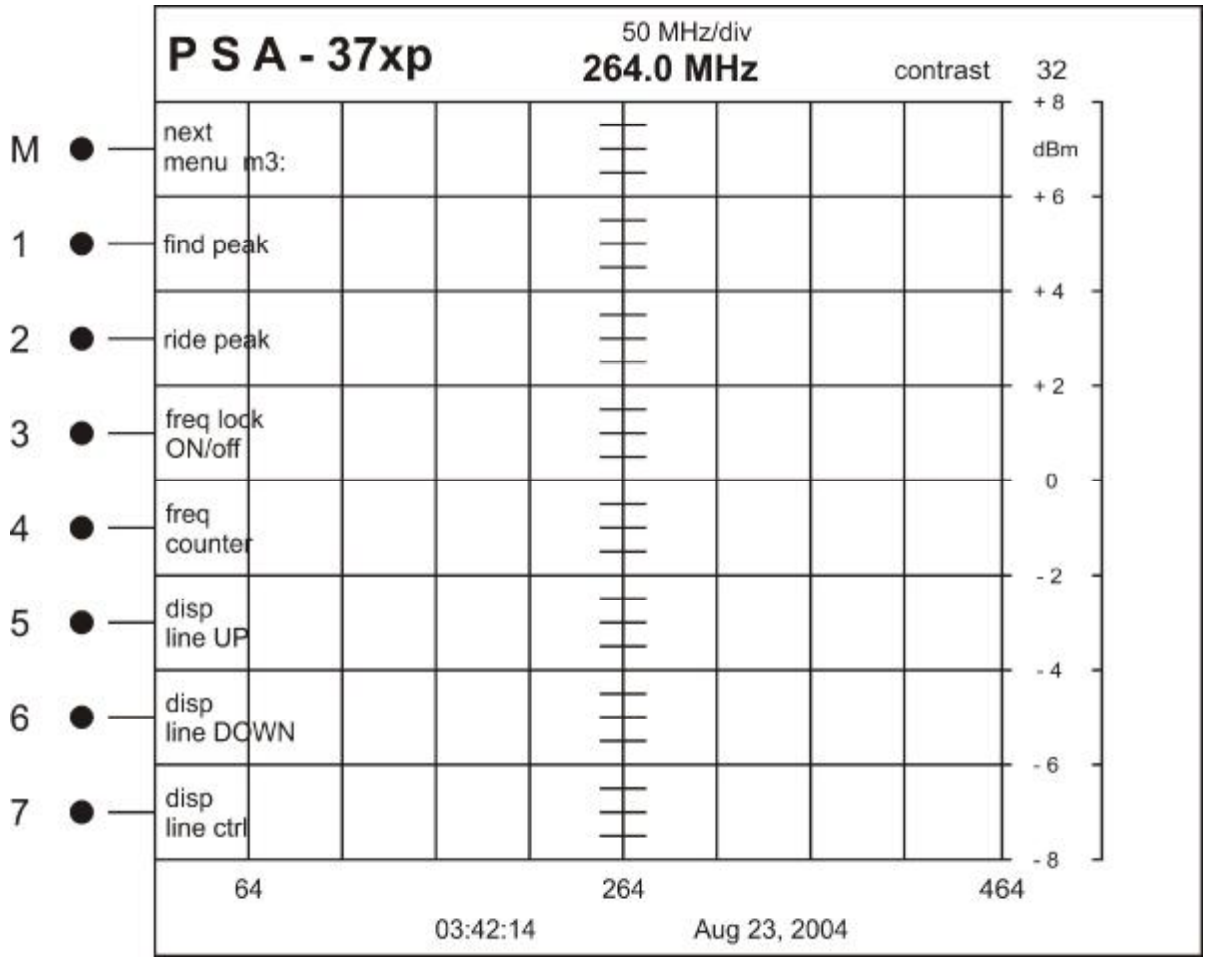
MENU STRUCTURE REFERENCE



OPERATION MENU: 2

Button	Label	Description
M	next menu m2:	Changes to menu 3
1	show dBm	Default display of reading on the right of the analyzer screen
2	show dBmv	Changes right display to dBmv for specific applications
3	mode dB normal / hidden / adding X / hiding +X	Determines display and value displayed in dB on right of analyzer screen Adding X and hiding +X show the values with X Offset as entered in STARTUP MENU:4
4	grids ctrl	Toggles Grid display ON/OFF
5	disp line UP	Adjusts the user controlled marker for dB level UP 2dB
6	disp line DOWN	Adjusts the user controlled marker for dB level DOWN 2dB
7	disp line ctrl	Display line OFF Course—Adjusts the display line by 2 dB steps Fine—Adjusts the display line by 1 dB steps

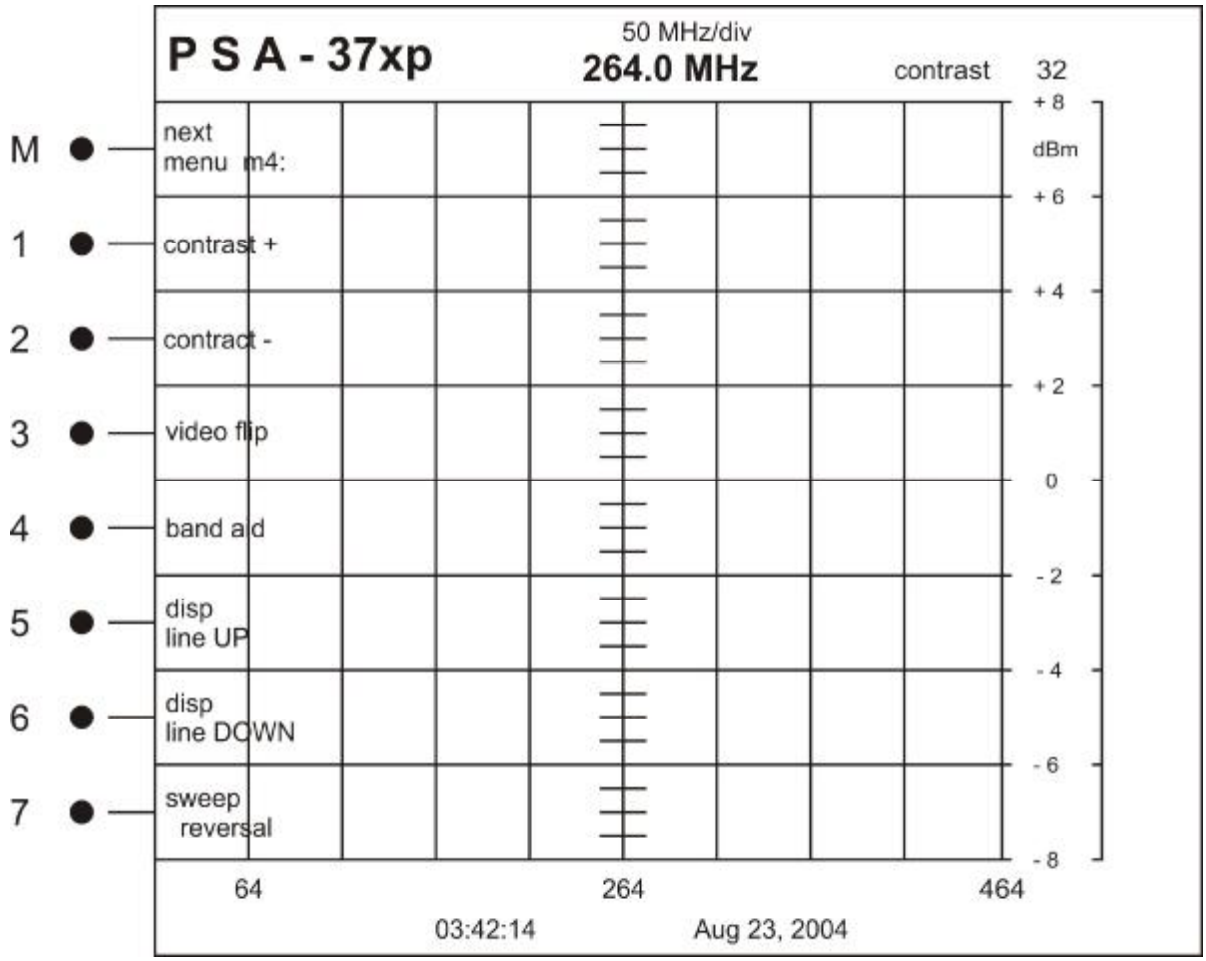
MENU STRUCTURE REFERENCE



OPERATION MENU: 3

Button	Label	Description
M	next menu m3:	Changes to menu 4
1	find peak	Finds and hold the peak trace in the background of the screen
2	ride peak	Continually finds the peak value and updates the display to reflect the new trace
3	freq lock ON/off	Default ON—Gives the user the ability to turn off Frequency Lock for specific applications
4	freq counter	Toggles Frequency Counter Display On or Off This affects the Frequency Counter display on the top and bottom of the analyzer screen
5	disp line UP	Adjusts the user controlled marker for dB level UP 2dB
6	disp line DOWN	Adjusts the user controlled marker for dB level DOWN 2dB
7	disp line ctrl	Display line OFF Course—Adjusts the display line by 2 dB steps Fine—Adjusts the display line by 1 dB steps

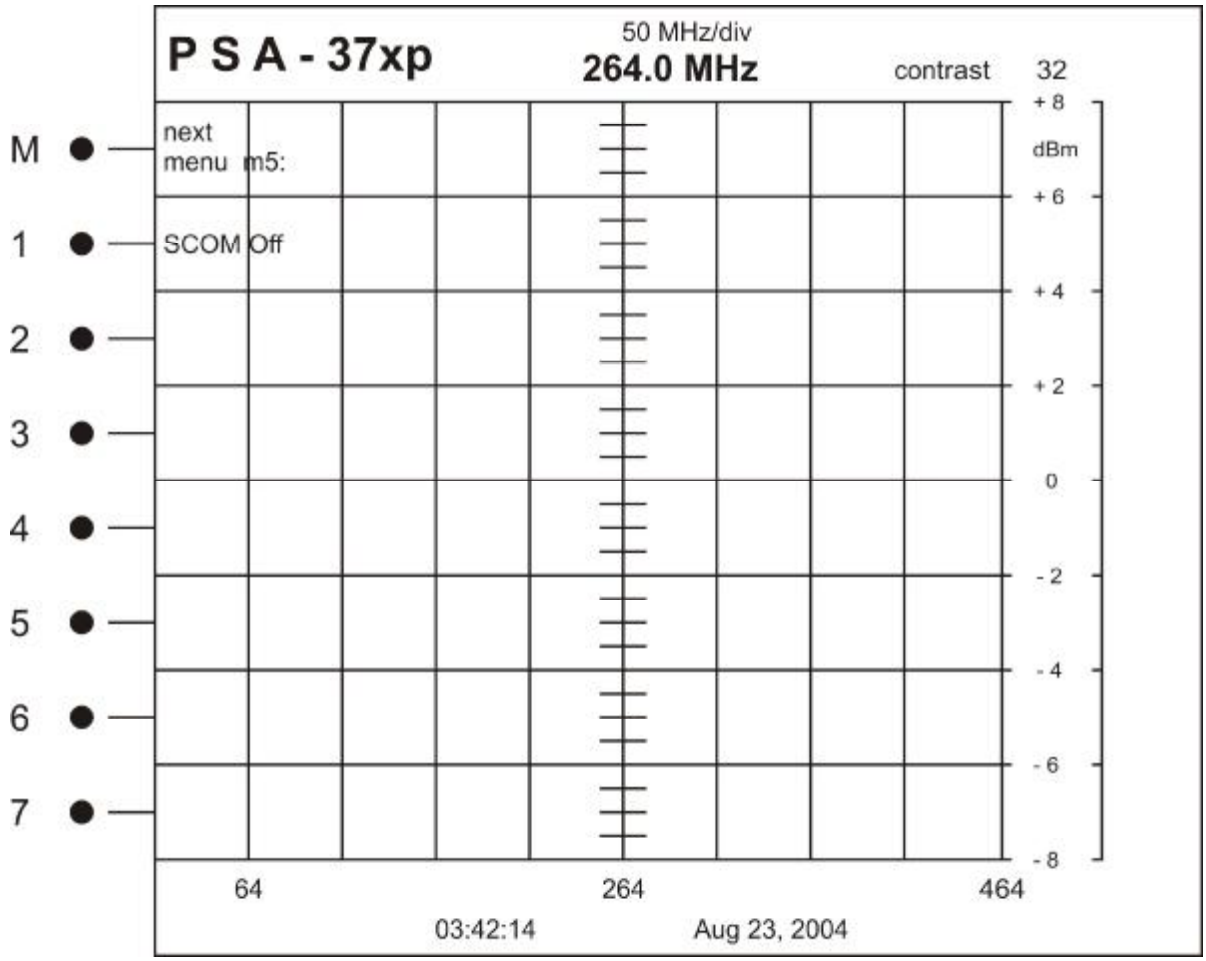
MENU STRUCTURE REFERENCE



OPERATION MENU: 4

Button	Label	Description
M	next menu m4:	Changes to menu 5
1	contrast +	Increases the value of screen contrast. Adjust for user preference.
2	contrast—	Decreases the value of screen contrast. Adjust for user preference.
3	videoFlip	Displays a negative image of the screen
4	band aid	Applies fixed offsets for displayed frequencies. Useful tool for down converted KU-Band signals See Band Aid Operation Section
5	disp line UP	Adjusts the user controlled marker for dB level UP 2dB
6	disp line DOWN	Adjusts the user controlled marker for dB level DOWN 2dB
7	sweep reversal	Projects a mirror image of the trace. The trace appears to sweep from right to left with the minimum frequency value on the right and the maximum value on the left.

MENU STRUCTURE REFERENCE



OPERATION MENU: 5

Button	Label	Description
M	next menu m5:	Changes to menu 0
1	SCOM Off	Turns Serial Communication ON/OFF. Available in units manufactured or upgraded after January 1st, 2005
2		
3		
4		
5		
6		
7		

OPERATION

Preliminary Checkout and User Familiarization

1. Plug DC plug from supplied power brick into the DC jack on the rear of the PSA-37XP.
2. Plug the AC plug from the supplied brick into the outlet.
3. Note that green POWER LED is blinking which indicates the battery charge operation is working.
4. Press the POWER switch.
5. Observe the Power On Self Test on the display quickly followed by the STARTUP MENU Screen
6. Place LNA/LNB PWR switch to the 18V position. Note red LED light indicating that +18 VDC is available on RF connectors.
7. Place LNA/LNB PWR switch to the 13V position. Note red LED light indicating that +13 VDC is available on RF connectors.
8. Place LNA/LNB PWR switch to the OFF position. Note red LED light is off.
9. Set up instrument as follows:

BAND SELECT: 1-1100 MHz Band (first position)
Options: 950-2150 MHz Band
2100-3200 MHz Band
3200-4200 MHz Band

RESOLUTION BW: 3MHz
Options: 1 MHz
300 KHz
75 KHz

REFERENCE LVL: 0 dBm
Options: -20 dBm
-40 dBm

CENTER FREQUENCY: Use TUNING to set frequency at 100 MHz

SPAN: fully clockwise

SCALE: 10 dB/DIV (down position)

10. Adjust VERT control to position trace between the two short "tic" marks in the bottom left graticule square (between -60 and -70).
11. Note that a large signal is visible on left of display. This is normal for all spectrum analyzers and is called ZERO FREQUENCY. Small spurious signals are present around it.
12. Using the TUNING Control, place the Zero Frequency signal in the center of the display.
13. Turn the SPAN control slowly counterclockwise to expand the signal, while keeping it centered with the TUNING control. Expand the large peak significantly and center it.
14. To check that the sensitivity of the instrument can be changed with the REFERENCE Level control, observe the ZERO FREQUENCY peak and turn REFERENCE LEVEL to -20 dBm. The peak should become larger. Then turn REFERENCE LEVEL to -40 dBm. The little peaks to the sides of the main peak should become higher and the main trace should become noticeably noisy.
15. This completes the User Familiarization and Preliminary Checkout procedure.

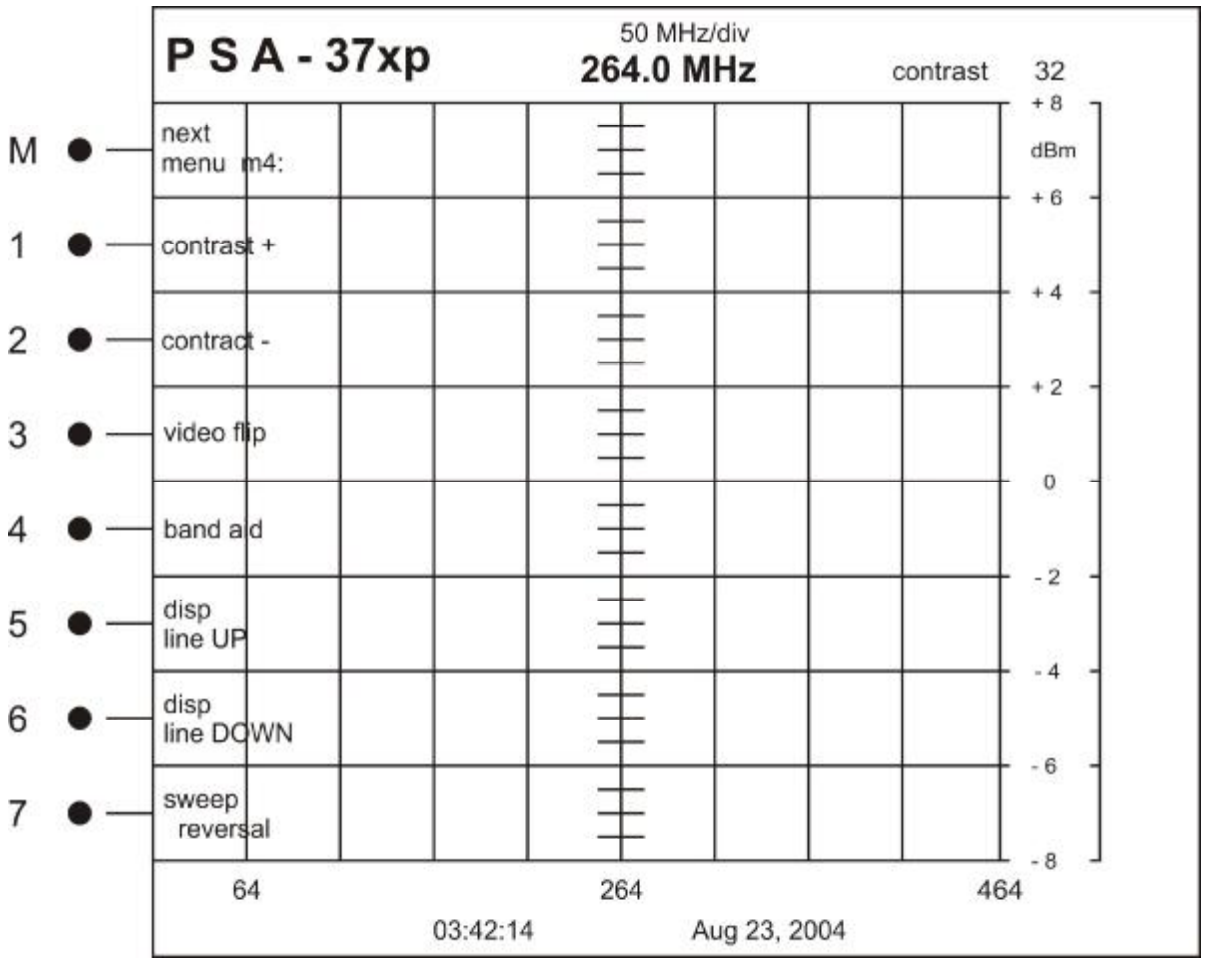
OPERATION

BAND AID INTRODUCTION AND SETUP

The PSA-37XP has a built in feature for viewing down-converted KU-Band. Normally, the KU-Band frequencies are stepped down to L-Band frequencies and displayed on the analyzer. With the BAND AID Function, you will be able to view the frequencies on the frequency counter as they truly are. The PSA-37XP has implemented this feature to aid in the field installation processes utilizing th eAVCOM portable spectrum analyzers.

SETUP PROCEDURE

1. Place the BAND SELECT knob in the BAND 2 position (950—2150MHz). The Band Aid feature is disabled in all other BAND positions.
2. Adjust the VERTICLE POSITION, SPAN WIDTH, RESOLUTION BANDWIDTH, REFERENCE LEVEL, and TUNING KNOBS to view the desired signal.
3. Press the M button and navigate to MENU M4.
4. Press the M4 Button to initialize BAND AID.
   - 4.1 Pressing the M4 Button once adds the 11700 + offset to the shown frequency.
   - 4.2 Pressing the M4 Button again will add the 11300 + offset to the shown frequency.
   - 4.3 Pressing the M4 Button again will add the 10750 + offset to the shown frequency.
   - 4.4 Pressing the M4 Button again will allow you to set a custom offset to the shown frequency.
5. View the changes to the frequency counter with the offset inserted.
6. These values are non-volatile and will be lost when the PSA-37XP is turned off.



OPERATION

EXTERNAL MFC INTRODUCTION AND SETUP

All AVCOM Portable Spectrum Analyzers have the ability to extend their base frequency with the use of an MFC (Microwave Frequency Converter). When using an MFC, the frequency is stepped down to a level that can be viewed by the analyzer, and the frequency readouts are automatically corrected through the communication protocols between the MFC and the analyzer. Each MFC is manufactured for a specific analyzer and can not be interchanged, however, the AVCOM MFC can be developed for any manufacturer model of spectrum analyzers. Please contact AVCOM Customer Care for more information.

SETUP PROCEDURE

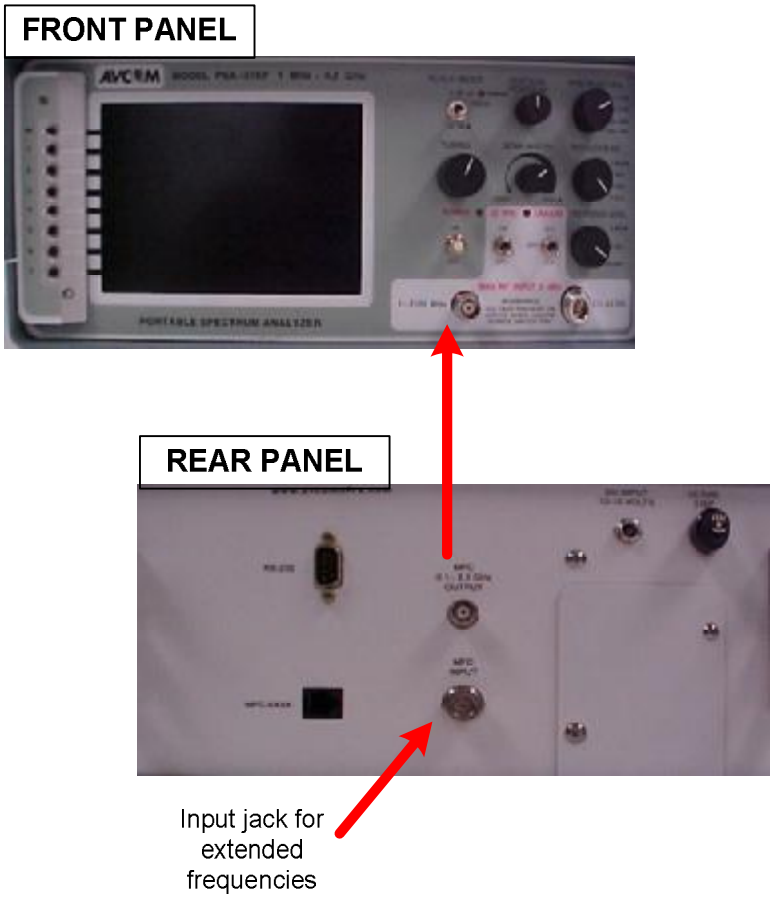
1. Plug the supplied, flat, rollover cable into the back port of the MFC. This cable is made specifically for this application and cannot be substituted.
2. Plug the other end of this cable into the MFC-XXXX port of the spectrum analyzer.
3. Plug the supplied, N-Type Cable into the MFC Output jack.
4. Plug the other end of the N-Type Cable into the input of the spectrum analyzer.
5. The analyzer will recognize the MFC and make all necessary changes to the display.

OPERATION

INTERNAL FREQUENCY EXTENDER INSTRUCTIONS

1. Attach input from extended frequency source to the “MFC INPUT” jack on the rear panel.

2. Attach cable from “MFC 0.1 - 2.1 GHz OUTPUT” jack on the rear panel to the “1 – 2200 MHz” input jack on the front panel (see photo below).



3. To use the Frequency Extender
   A. Select Menu -6 on the front panel.
   B. Select Option 3 to turn extender functionality on.
   C. Select Option 7 to turn extender functionality off.

NOTE 1: In the event that the MFC offsets are altered from their original factory settings, use Options 4 and 5 on Menu -6 to reset the offset to a value equal to 100MHz less than the lower MFC input frequency.

NOTE 2: If the spectrum analyzer is powered off while the frequency extender is on, it will reset to standard mode when powered back on and the steps above will need to be repeat

PSA-37XP Spectrum Analyzer (specifications)

Features:

- **Display:** 5.7" High Contrast 1/4 VGA LCD
- **Memories:** 50 locations of system memory
- **Input Connectors:** Band 1 & 2: BNC
  Band 3 & 4: N
- **Adapters Included:** N—BNC and BNC—F
- **LNA/LNB Power:** 18V or 13V Selectable
- **ReadOut:** KU-Band Offsets
- **Calibrated RSSI Meter:** 80dB of range on receiver side., -40dBm to -120dBm

Frequency:

- **Frequency Range:**

PRODUCT	FREQUENCY RANGE
PSA-37XP	1 MHZ - 4.2 GHz
PSA-37XP - 6.0	1 MHZ - 6.0 GHz
PSA-37XP - 6.5	1 MHZ - 4.2 GHz, 4.5 GHz - 6.5 GHz
PSA-37XP - 7.0	1 MHZ - 4.2 GHz, 5.0 GHz - 7.0 GHz
PSA-37XP - 7.5	1 MHZ - 4.2 GHz, 5.5 GHz - 7.5 GHz

- **Frequency Accuracy:** ±100kHz
- **Display:** On Screen
- **IF Frequency:** Receiver sensitivity. Frequency range limited to bandwidth of current set receive frequency, ±10kHz. 1Hz and 10Hz resolutions

General:

- **Battery life:** 3 hours per battery pack.
- **Controls:** Rotary Tuning
- **RS232 Control:** Future Expansion Plans for Serial interface providing external function control
- **Primary Power:** 100-240 VAC, .6A, 50/60Hz. Built-in 3 hour battery pack (holds 1 additional battery packs for 6 hour battery life)
- **Stand:** Bottom mounted aluminum feet attached
- **Supplied Accessories:** 110 VAC EIA power cord, whip antenna, one BP3010 Li-Ion battery
- **Case color:** AVCOM green wet coat
- **Dimensions:** 11.5"W x 5.5"H x 13.5"D
- **Weight:** 12lbs

Communication:

- **Serial (RS-232):** Available in units manufactured, or upgraded, after January 1st, 2005
- **SCSA:** AVCOM's Graphical User Interface used for serial communications.

Accessories:

- **Battery Pack:** BP3010 additional battery pack to extend battery life (1 pack supplied, 2 max)
- **Carrying Case:** AVPAC custom CORDURA padded travel case with strap

BATTERY INFORMATION

The PSA-37XP ships with a single very-high capacity Lithium Ion battery. A single battery pack has over 2AH of charge capacity at 10.5V to 12.6V. One additional battery can be added to increase the capacity to 4AH total. The PSA-37XP draws about 1.3A continuous on average, so you can figure an approximate time for operation at #AH/1.3. So for a single battery pack, you will get 2AH/1.3A = 1.5Hours. In reality there are other losses so the practical time is about 1.25 Hours.

Lithium Ion batteries while very light for their capacity have their drawbacks. For example they begin to self-discharge at high heats which only compounds the heating issue, so the PSA-37XP will automatically shut down when the temperature reaches 45C inside of the case. The heatsink of the dummy load is close to the power supply, so if you are performing a lot of high power testing, you may find the power on the PSA-37XP will shut off once the unit gets too hot. This is to prevent significant problems with the batteries and the temperature circuit should not be compromised.

Lithium Ion batteries will also not deliver full current capacity at low temperatures, so depending on features used in the PSA-37XP, it may or may not power up below –2C. If you warm the PSA-37XP inside of a vehicle for instance, once powered up the battery will warm itself during the discharge cycle.

Adding Batteries

If you are adding another battery pack to an existing unit, discharge the existing battery fully by leaving the PSA-37XP on until it powers itself off. Then it is safe to add the new battery pack. Otherwise the new battery arrival will be charged too fast by the battery already in the unit and possible damage to the battery could occur. The batteries do have a protection circuit built in to prevent damage of this nature, but it is better to be safe than sorry.

Unfortunately due to the very specific application these batteries are designed for, any run-of-the-mill lithium battery will not work in the PSA-37XP. The batteries used in this design have an unusual voltage per cell specification due to the extended temperature range they can operate in, as the chemical composition was designed for military use at one time. Other lithium batteries used in the PSA-37XP could be overcharged casing damage to the batteries and to the PSA-37XP. Please use ONLY the specified batteries.

Using an external DC power source

Some people may wish to power the PSA-37XP using vehicle power (13.8V) or a larger capacity external power supply. This can be done through the battery input jacks, the connector is a 3.5mm center positive jack. Voltage range must be between 11V and 15.5V, and capable of 1.5A at 11V, and 1.1A at 15.5V. For more information call AVCOM of Virginia, Inc. 804-794-2500

Batteries as Shipped

Your PSA-37XP includes one Li-Ion battery pack, with the option of one additional battery packs. These battery packs have been installed in the rear battery chamber, but have been unplugged for shipping. Upon receipt of your PSA-37XP, please remove the rear battery chamber cover and plug in each battery pack.

Charging

A single battery pack will charge in approximately 2 hours per cell with the power of the PSA-37XP off but plugged in, and 4 hours per cell with the power on. When you first receive the PSA-37XP, the batteries should arrive partially charged. These batteries do not have the “memory” problems that inferior batteries have, and do not need to be charged fully before use, and do not need to be fully discharged before a recharge cycle. In other words, use them, and forget they are there helping you get the job done.

STANDARD FREQUENCY ALLOCATION CHARTS

Band Name	Abbreviation	Frequencies
		Below 2 Hz
Extremely low frequency	ELF	3-300 Hz
Ultra low frequency	ULF	300-3000 Hz
Very low frequency	VLF	3-30 kHz
Low frequency	LF	30-300 kHz
Medium frequency	MF	300-3000 kHz
High frequency	HF	3-30 MHz
Very high frequency	VHF	30-300 MHz
Ultra high frequency	UHF	300-3000 MHz
Super high frequency	SHF	3-30 GHz
Extremely high frequency	EHF	20-300 GHz
		Above 300 GHz

802.11 ISM Band

Format Standard	Frequencies	Data Rates Supported
802.11 legacy	2.4 GHz, IR	1, 2 Mbit/s
802.11b	2.4 GHz	1, 2, 5.5, 11 Mbit/s
“802.11b+” non-standard	2.4 GHz	1, 2, 5.5, 11, 22, 33, 44 Mb/s
802.11a	5.2 GHz, 5.5 GHz	6, 9, 12, 18, 24, 36, 48, 54
802.11g	2.4 GHz	1, 2, 5.5, 11, 6, 9, 12, 18, 24,

Microwave Frequency Bands

Designation	Frequency Range
L band	1-2 GHz
S band	2-4 GHz
C band	4-8 GHz
X band	8-12 GHz
Ku band	12-18 GHz
K band	18-26 GHz
Ka band	26-40 GHz
Q band	30-50 GHz
U band	40-60 GHz
V band	46-56 GHz
W band	56-100 GHz

KEY DEFINITIONS

Extremely low frequency or **ELF** refers to the band of radio frequencies from 3 to 300Hz.

Very low frequency or **VLF** refers to radio frequencies (RF) in the range of 3 to 30 kHz.

Low Frequency or **LF** refers to Radio Frequencies (RF) in the range of 30-300 kHz.

Medium frequency or **MF** refers to radio frequencies (RF) in the range of 300-3000 kHz.

High frequency (HF) radio frequencies are between 3 and 30 MHz.

Very high frequency (VHF) is the radio frequency range from 30 MHz to 300 MHz. Common uses for VHF are FM radio broadcast at 88-108 MHz and television broadcast.

Ultra high frequency (UHF) radio frequencies are those between 300 MHz and 3.0 GHz.

Extremely high frequency is the highest radio frequency band included in the range of frequencies from 30 to 300 gigahertz.

IEEE 802.11 or Wi-Fi is a set of Wireless LAN standards developed by working group 11 of IEEE 802. This includes three separate versions: 802.11a operates at 5.2GHz and 5.5GHz, 802.11B operates at 2.4GHz and 802.11G operates at 2.4GHz.

L band a portion of the microwave band of the electromagnetic spectrum ranging roughly from 950 MHz to 2.5 GHz. It is used by some communications satellites.

S band a part of the microwave band of the electromagnetic spectrum ranging roughly from 1.55 to 5.2 GHz where 2.3 GHz is currently used by Sirius Satellite Radio and XM Satellite Radio.

C band a portion of electromagnetic spectrum in the microwave range of frequencies ranging from 4 to 6 GHz. C band is primarily used for satellite communications, normally downlink 3.7–4.2 GHz horizontal polarization, uplink 5.9–6.4 GHz vertical polarization,

X band in the microwave band of the electromagnetic spectrum roughly ranges from 5.2–10.9 GHz.

K band a portion of the electromagnetic spectrum in the microwave range of frequencies ranging between 12 to 40 GHz.

The **K_a band** a portion of the K band of the microwave band of the electromagnetic spectrum ranging from 18 to 40 GHz.

The **K_u band** a portion of the electromagnetic spectrum in the microwave range of frequencies ranging from 11 to 18 GHz. K_u band is primarily used for satellite communications.

TERMS AND CONDITIONS

Only the following terms and conditions apply to the sale and delivery of the goods reflected herein. The products manufactured by AVCOM OF VIRGINIA INC., (hereafter referred to as AVCOM) are subject to the following conditions and are subject to change without prior written notice at AVCOMS' sole discretion. All implied warranties, if any, terminate 1 year from the date of the original purchase.

LIMITED WARRANTY POLICY

AVCOM warrants to the original purchaser that this product shall be free from defects in materials and workmanship upon delivery. AVCOM additionally warrants that product, used under normal service conditions, shall be free from defects in materials and workmanship for a period of 1 year. The warranty policy includes:

- Labor cost and replacement of original parts and components.
- Shipping charges on units within the first 60 days of purchase.
- Repair cycle time of 7 business days upon return of unit to the factory Customer Service Center.

Dead on Arrival (DOA) units will be given top priority and covered by the above policies with the exception of a 72 hour repair cycle time upon return to the factory Customer Service Center.

THIS WARRANTY DOES NOT INCLUDE batteries, cathode ray tubes or LCD displays. AVCOM cannot control the environment or usage of these components and therefore the customer is solely responsible for any cost of labor or material in conjunction with their maintenance and/or replacement.

AVCOM shall not be liable for cost of repairs or replacement of parts or components due to physical damage, product misuse or abuse and unauthorized modifications or repair.

To receive In-Warranty service, the defective product must be received no later than the specified warranty period by contacting AVCOMS' Customer Service center for a Return Material Authorization (RMA) number. Information needed to process the RMA includes the Model number, Serial number, date and place of purchase. For an RMA number contact AVCOM Service Center at PHONE: (804)-794-2500 or FAX (804) 794-8284. No product will be accepted by AVCOM that does not have an RMA number. Extended warranty information is available at AVCOM Factory Headquarters, 7730 Whitepine Road, Richmond, Virginia 23237 PHONE: (804)-794-2500.

AVCOM

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