INSTRUCTION MANUAL

INSERT

Serial Number _____

This insert has been written to supplement the Instruction Manual furnished with this instrument. The information given in this insert will supersede that given in the manual.

TYPE

L-SERIES
NARROW BAND

SPECTRUM ANALYZER
PLUG-IN UNITS

Tektronix, Inc.
S.W. Millikan Way ● P. O. Box 500 ● Beaverton, Oregon 97005 ● Phone 644-0161 ● Cables: Tektronix

070-0602-00

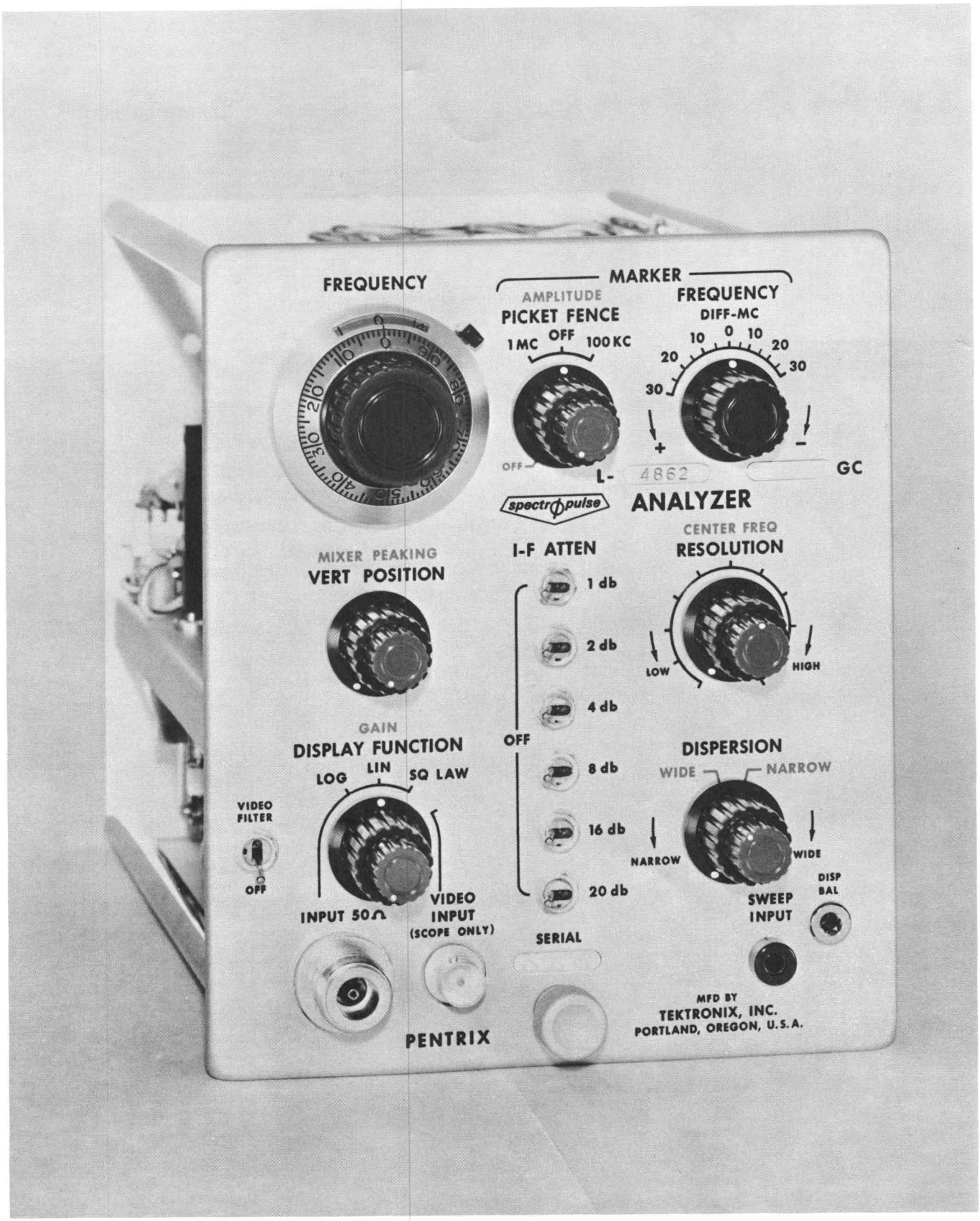


Fig. 1-1. Typical L-Series SPECTRO PULSE Spectrum Analyzer.

SECTION 1
CHARACTERISTICS

Introduction

Replace the first two paragraphs and Table 1-1 with the following:

This instruction manual and insert applies to the Tektronix L-Series Narrow Band Spectrum Analyzers. These Spectrum Analyzers are designed for use in all Tektronix Type 530-, 540- and *580-Series Oscilloscopes.

The Type L-Series Narrow Band Spectrum Analyzers differ primarily in their tunable frequency ranges (see Table 1-1.)

TABLE 1-1

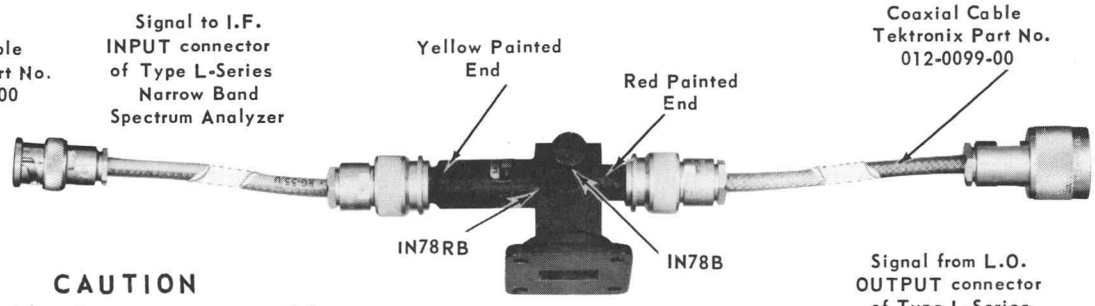
Type	Sensitivity	Oscillator Fundamental or Harmonic		Frequency Coverage (MC)	
L-1927	-105 DBM	Fundamental	Lower Conversion	1950–	2300
			Upper Conversion	2350–	2700
	-100 DBM	2nd Harmonic	Lower Conversion	4100–	4800
			Upper Conversion	4500–	5200
L-2434	-105 DBM	Fundamental	Lower Conversion	2400–	3000
			Upper Conversion	2800–	3400
	-100 DBM	2nd Harmonic	Lower Conversion	5000–	6200
			Upper Conversion	5400–	6600
L-3042	-105 DBM	Fundamental	Lower Conversion	3000–	3800
			Upper Conversion	3400–	4200
	-100 DBM	2nd Harmonic	Lower Conversion	6200–	7800
			Upper Conversion	6600–	8200
L-3852	-105 DBM	Fundamental	Lower Conversion	3800–	4800
			Upper Conversion	4200–	5200
	-100 DBM	2nd Harmonic	Lower Conversion	7800–	9800
			Upper Conversion	8200–	10200
[1] L-3852/3	- 90 DBM	3rd Harmonic	Lower Conversion	11800–	14800
			Upper Conversion	12200–	15200
L-4862	-105 DBM	Fundamental	Lower Conversion	4800–	5800
			Upper Conversion	5200–	6200
	-100 DBM	2nd Harmonic	Lower Conversion	9800–	11800
			Upper Conversion	10200–	12200
[1] L-4862/3	- 90 DBM	3rd Harmonic	Lower Conversion	14800–	17800
			Upper Conversion	15200–	18200

[1] Has no internal mixer. An external wave guide mixer is furnished. External mixers are available to permit the instrument to be use on its fundamental and 2nd harmonic frequencies.

Specifications

Replace the Frequency Accuracy characteristic with the following:

Frequency Accuracy	2mc, ±0.1% of rf input frequency.

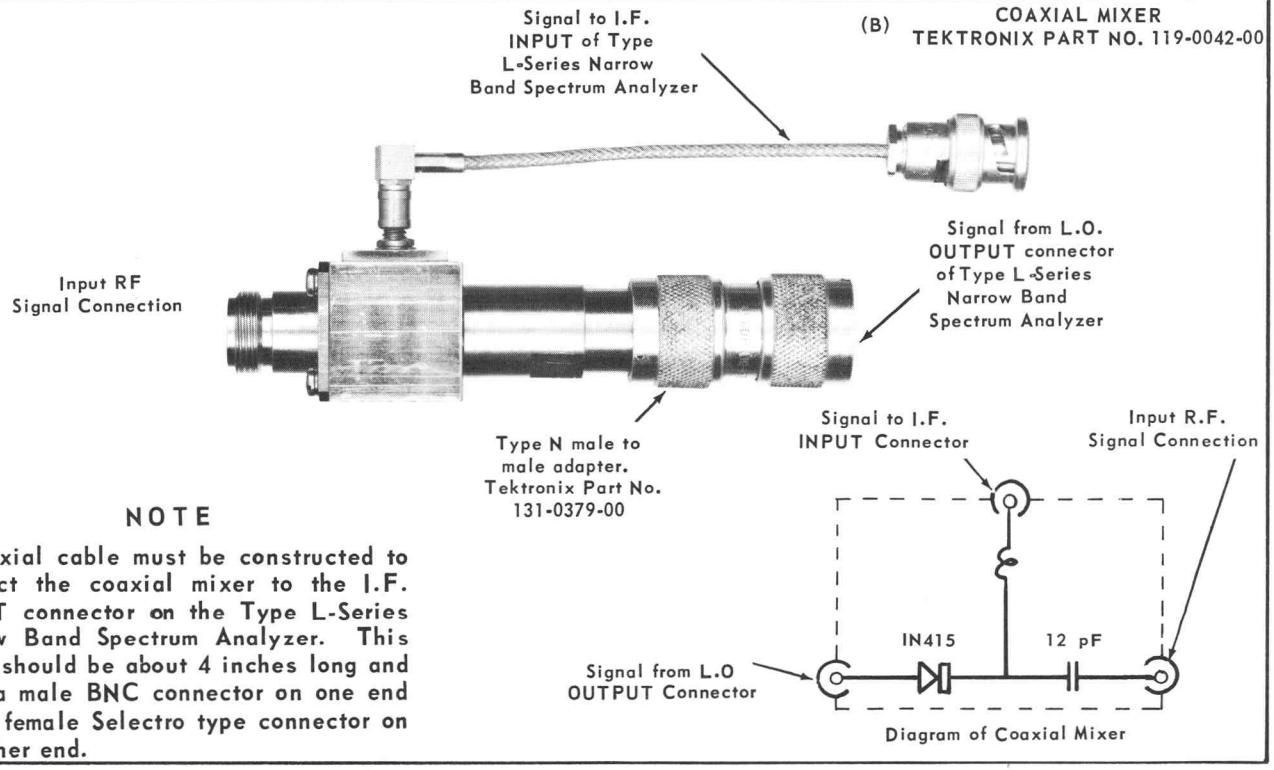


CAUTION

All waveguide mixers are susceptible to burnout under conditions of high ambient electromagnetic energy. This occurs because the waveguide input acts as an antenna and receives a peak or average power level sufficient to damage the diodes. It is suggested, in order to reduce the possibility of this failure, the waveguide input to the mixer be covered with aluminum foil when not in use.

(A) WAVEGUIDE MIXER
TEKTRONIX PART NO. 119-0049-00

(B) COAXIAL MIXER
TEKTRONIX PART NO. 119-0042-00



NOTE

A coaxial cable must be constructed to connect the coaxial mixer to the I.F. INPUT connector on the Type L-Series Narrow Band Spectrum Analyzer. This cable should be about 4 inches long and have a male BNC connector on one end and a female Selectro type connector on the other end.

Fig. 1-2. External mixers available for the Type L-Series Narrow Band Spectrum Analyzer which use them. Part (A) shows the external waveguide mixer which is supplied with the L-3852/3 and L-4862/3 Spectrum Analyzers. Part (B) shows an external coaxial mixer which can be used with the L-3852/3 and L-4862/3 Spectrum Analyzers to permit these instruments to be used on their fundamental and 2nd harmonic frequencies.

SECTION 2

OPERATING INSTRUCTIONS

FUNCTION OF FRONT-PANEL CONTROLS AND CONNECTORS

Add the following descriptions.

I-F INPUT[1] Connector for applying the output of the external waveguide mixer to the wideband I.F. Amplifier of the Spectrum Analyzer.

L.O. OUTPUT[1] Connector for applying the output of the local oscillator to the external waveguide mixer.

[1]The above descriptions are applicable only to the L-3852/3 and L-4862/3 Spectrum Analyzers.

Harmonic and Image Frequency Displays

Replace the present information with the following.

Before making any measurements of a displayed signal (or signals), it must be determined whether the signal is the fundamental, 2nd harmonic, or 3rd harmonic and whether it is upper or lower conversion. To determine the nature of the displayed signal proceed as follows:

1. With the signal in question displayed on the screen, set the DISPERSION switch to WIDE and adjust the variable DISPERSION control so that the frequency width of the display is greater than 50 megacycles. (The frequency width of the display can be determined with the marker signal using the FREQUENCY DIFF-MC control. Move the maker signal to each end of the display with the FREQUENCY DIFF-MC control and note the reading at the two extremes- the difference between the two readings must exceed 50 megacycles.)

2. Turn the FREQUENCY dial clockwise (decreasing frequency). The signal will move from left to right if the signal is an upper conversion frequency, (LO+IF=RF, 2(LO)+IF=RF, or 3(LO)+IF=RF). The signal will move from right to left if the signal is a lower conversion frequency, (LO)-IF=RF, 2(LO)-IF=RF, or 3(LO)-IF=RF).

3. To determine if the displayed signal is a harmonic, move the FREQUENCY dial so that the displayed signal is on the first graticule line on the left-hand side of the screen and note the reading of the FREQUENCY dial. Set the FREQUENCY dial to a frequency exactly 50 megacycles above the noted setting. With the marker signal (FREQUENCY DIFF-MC control) check to see if the displayed signal moved 50 mc on the screen. If the signal moved 50 mc on the screen, the display is of the fundamental frequency. If the signal moved about 25 mc, the display is of the 2nd harmonic. If the signal moved about 16.6 mc, the display is of the 3rd harmonic.

ADDED INFORMATION

Calibration Curve Pull-Out Page

These curves, which are constructed during the calibration of the instrument, indicate the RF frequency to which the Spectrum Analyzer is tuned to at any dial setting.

Transferring the data from the loose calibration curves sheet which was received with the instrument to this pull-out sheet will provide readily available calibration curves in a known location

The upper curve is used with upper conversion formulas and information on the graph. The lower curve is used with the lower conversion formulas and information on the graph.

Conversion Chart Pull-Out Page

This chart, which can be constructed during the calibration of the instrument, indicates the dial setting to use for the indicated RF frequencies.

It might prove to be easier during calibration to fill out that portion of the chart which covers your instrument, then construct the curves from the information recorded in the chart.

SECTION 3
THEORY OF OPERATION

General Description

Reference to paragraph two — Use L-30 diagram information and disregard L-20 diagram information.

R.F. Front-End Sections

Reference to paragraph one — Use L-30 information and disregard L-20 information.

FIG. 3-1 (RF Front End L-30 Analyzer)

The microwave mixer for the L3852/3 and L4862/3 is an external waveguide mixer. The front-panel connector for the input to the wideband IF is labeled IF INPUT while the front-panel connector for the output signal from the microwave L.O. is labeled L.O. OUTPUT.

SECTION 5
CALIBRATION

Check of Mixer and R.F. Section

When separate information is shown for the L-20 and L-30, use the L-30 information and disregard the L-20 information.

R.F. Section Oscillator or Tube Replacement

Replace the present information with the following.

NOTE

In the event of a failure of the R.F. Section Oscillator of a L-Series Narrow Band Spectrum Analyzer, it is recommended that the entire plug-in unit be sent to the nearest Tektronix maintenance center. If this is not possible, use the following procedure for replacing the defective local oscillator tube.

1. Rotate the FREQUENCY dial to its fully clockwise position.

2. Remove the FREQUENCY knob with a hexagonal wrench, being careful not to disturb the setting of the helidial.

3. Gently rotate the oscillator tuning shaft clockwise the necessary amount until it hits its stop, noting the amount of rotation necessary to do this.

4. Unsolder the leads from the terminals and disconnect the cable on the RF Section Oscillator.

5. Remove the nut holding the RF Section Oscillator to the front-panel and remove the unit from the instrument.

6. Insert a spanner wrench or small needle nose pliers into the two spanner holes in the oscillator unit. These holes are located at the opposite end from the tuning shaft.

7. Unscrew the tube assembly by rotating the spanner wrench or needle nose pliers in a counterclockwise direction until the threads on the tube assembly completely disengage from the threads on the oscillator unit.

8. Remove the tube assembly from the oscillator unit by pulling it straight out. Discard the complete tube assembly.

9. Install the new tube assembly by engaging the anode extension with the fingered plate line in the oscillator unit. The anode extension is the smaller diameter end of the tube assembly. The plate line is the rod which runs down the center of the oscillator unit.

10. After the anode extension is engaged with the fingered plate line, push the new tube assembly straight into the oscillator unit, avoiding any rocking motion or forces in any direction which would produce a bending moment on the anode extension.

11. After the threads on the tube assembly have been engaged with those in the oscillator unit, the tube assembly can be screwed in tightly.

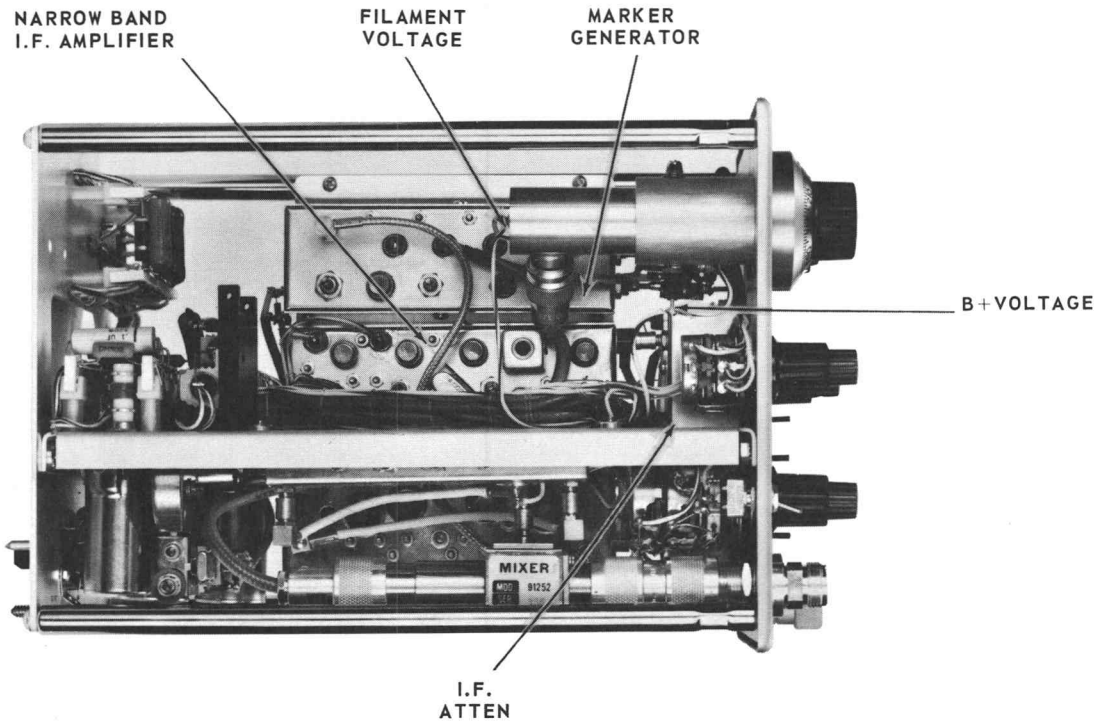
12. Install the RF Section Oscillator into the instrument and attach it to the front panel with the nut.

13. Solder the leads to the terminals and reconnect the cable to the RF Section Oscillator.

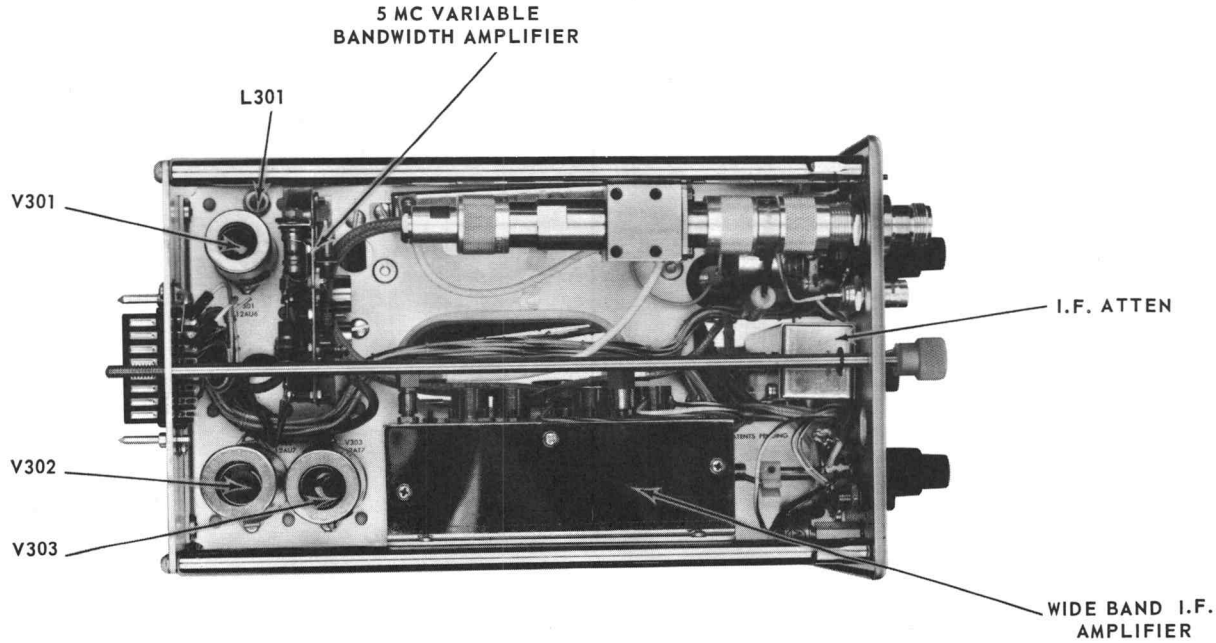
14. Rotate the oscillator turning shaft counterclockwise the amount of rotation that was noted in step 3.

15. Attach the FREQUENCY knob to the oscillator knob, being careful not to disturb the helidial setting.

16. Calibrate the RF Section of the instrument as per the information found in this insert under Calibration of RF Section.



LEFT SIDE VIEW



BOTTOM VIEW

Fig. 5-1. Replace the present manual Figs. 5-1, 5-4, and 5-5 with the above pictures.

Calibration of R.F. Section

Replace the present information with the following.

Additional calibration equipment required for calibrating the R.F. section of the Type L-Series Narrow Band Spectrum Analyzers.

1. Heterodyne frequency meter capable of covering bandwidth of the particular Type L-Series Narrow Band Spectrum Analyzer which is to be calibrated. A PRD Model 504 or equivalent is recommended.

Procedure

1. Set the front-panel controls of the Type L-Series Narrow Band Spectrum Analyzer as follows:

FREQUENCY	0.0
PEAKING	Fully clockwise
POSITION	Midrange
DISPLAY FUNCTION	LIN
GAIN	Counterclockwise
VID FIL	OFF
IF ATTEN	All off
PICKET FENCE	OFF
MARKER AMPLITUDE	Fully clockwise
FREQUENCY DIFF-MC	0
CENTER FREQ	Midrange
RESOLUTION	HIGH
Variable DISPERSION	Midrange
DISPERSION	WIDE

2. Connect the SAWTOOTH or SWEEP output of the oscilloscope to the SWEEP INPUT connector of the plug-in unit. Turn on the oscilloscope and allow approximately 30 minutes for warm up.

3. Disconnect the local oscillator end of the coaxial cable running from the local oscillator to the mixer, then connect a coaxial cable from the frequency meter through a 6dB attenuator to the local oscillator output connector. Turn on the frequency meter and allow ample time for it to warm up.

4. Check the frequency meter at its calibration points which are in the frequency range(s) to be used and adjust the frequency meter for zero error.

5. Set the frequency dial of the frequency meter to the highest local oscillator frequency written on the calibration curve pull-out page (highest local oscillator frequency for which spectrum analyzer was designed).

6. Rotate the frequency dial of the Type L-Series Narrow Band Spectrum Analyzer clockwise until a null or zero beat is noted on the readout of the frequency meter. Record the dial setting opposite the local oscillator frequency being checked, on the conversion chart pull-out page.

7. Set the frequency dial of the frequency meter to the next lowest local oscillator freqency listed on the conversion chart pull-out page.

8. Repeat parts 6 and 7 until the lowest local oscillator frequency for which the spectrum analyzer was designed has been checked.

9. Transfer the data from the conversion chart pull out page, using the LO+200 Mc=RF Frequency In Mc column for the local oscillator frequency, to points on the calibration curve pull out page.

10. Construct the upper conversion curve on the calibration curve pull-out page by connecting the points marked in part 9.

11. Transfer the data from the conversion chart pull-out page, using the LO-200 Mc =

RF Frequency In Mc column for the local oscillator frequency, to points on the calibration curve pull-out page.

12. Construct the lower conversion curve on the calibration curve pull-out page by connecting the points marked in part 11.

ABBREVIATIONS AND SYMBOLS

A or amp	amperes
AC or ac	alternating current
AF	audio frequency
α	alpha—common-base current amplification factor
AM	amplitude modulation
$\approx$	approximately equal to
β	beta—common-emitter current amplification factor
BHB	binding head brass
BHS	binding head steel
BNC	baby series "N" connector
$\times$	by or times
C	carbon
C	capacitance
cap.	capacitor
cer	ceramic
cm	centimeter
comp	composition
conn	connector
$\sim$	cycle
c/s or cps	cycles per second
CRT	cathode-ray tube
csk	countersunk
dB	decibel
dBm	decibel referred to one milliwatt
DC or dc	direct current
DE	double end
°	degrees
°C	degrees Celsius (degrees centigrade)
°F	degrees Fahrenheit
°K	degrees Kelvin
dia	diameter
$\div$	divide by
div	division
EHF	extremely high frequency
EMC	electrolytic, metal cased
EMT	electrolytic, metal tubular
ε	epsilon—2.71828 or % of error
$\geq$	equal to or greater than
$\leq$	equal to or less than
ext	external
F or f	farad
F & I	focus and intensity
FHB	flat head brass
FHS	flat head steel
Fil HB	fillister head brass
Fil HS	fillister head steel
FM	frequency modulation
ft	feet or foot
G	giga or 10^9
g	acceleration due to gravity
Ge	germanium
GMV	guaranteed minimum value
GR	General Radio
$>$	greater than
H or h	henry
h	height or high
hex.	hexagonal
HF	high frequency
HHB	hex head brass
HHS	hex head steel
HSB	hex socket brass
HSS	hex socket steel
HV	high voltage
Hz	hertz (cycles per second)
ID	inside diameter
IF	intermediate frequency
in.	inch or inches
incd	incandescent
∞	infinity
int	internal
$\int$	integral
k	kilohms or kilo (10^3)
k Ω	kilohm
kc	kilocycle
λ	lambda—wavelength
$<$	less than
LF	low frequency
lg	length or long
LV	low voltage
M	mega or 10^6
m	milli or 10^{-3}
MΩ or meg	megohm
μ	micro or 10^{-6}
mc	megacycle
met.	metal
mm	millimeter
ms	millisecond
—	minus
mtg hdw	mounting hardware
n	nano or 10^{-9}
no. or #	number
ns	nanosecond
OD	outside diameter
OHB	oval head brass
OHS	oval head steel
Ω	omega—ohms
ω	omega—angular frequency
p	pico or 10^{-12}
/	per
%	percent
PHB	pan head brass
ϕ	phi—phase angle
π	pi—3.1416
PHS	pan head steel
+	plus
$\pm$	plus or minus
PIV	peak inverse voltage
plstc	plastic
PMC	paper, metal cased
poly	polystyrene
prec	precision
PT	paper, tubular
PTM	paper or plastic, tubular, molded
pwr	power
RC	resistance capacitance
RF	radio frequency
RFI	radio frequency interference
RHB	round head brass
ρ	rho—resistivity
RHS	round head steel
r/min or rpm	revolutions per minute
RMS	root mean square
s or sec.	second
SE	single end
Si	silicon
SN or S/N	serial number
T	tera or 10^{12}
TC	temperature compensated
TD	tunnel diode
THB	truss head brass
Θ	theta—angular phase displacement
thk	thick
THS	truss head steel
tub.	tubular
UHF	ultra high frequency
V	volt
VAC	volts, alternating current
var	variable
VDC	volts, direct current
VHF	very high frequency
VSWR	voltage standing wave ratio
W	watt
w	wide or width
w/	with
w/o	without
WW	wire-wound
xmfr	transformer

SECTION 6
PARTS LIST and DIAGRAMS

Parts List

Reference to mechanical and electrical parts lists — Use data in the insert common parts list along with data in the particular insert parts list which refers to the instrument in question[1]. Electrical parts lists in the L-20-L-30 Instruction Manual should be disregarded.

Most of the mechanical parts in the Type L-Series Narrow Band Spectrum Analyzers can be located in the Type L-30 mechanical parts list. If a part can not be located, contact your local Tektronix Field Engineer or Representative for help in obtaining a replacement part.

Diagram

R.F. Front End Circuits ◇1◇ diagram

Reference to L-30 local oscillator block. Note: Use L-30 section of diagram only.

Change the local oscillator frequency range as per the following table.

Spectrum Analyzer Type	Oscillator Fundamental or Harmonic	Local Oscillator Frequency Coverage (Mc)
L-1927	Fundamental 2nd Harmonic 3rd Harmonic	2150 - 2500 4300 - 5000 6450 - 7500
L-2434	Fundamental 2nd Harmonic 3rd Harmonic	2600 - 3200 5200 - 6400 7800 - 9600
L-3042	Fundamental 2nd Harmonic 3rd Harmonic	3200 - 4000 6400 - 8000 9600 - 12,000
L-3852	Fundamental 2nd Harmonic	4000 - 5000 8000 - 10,000
L-3852/3	3rd Harmonic	12,000 - 15,000
L-4862	Fundamental 2nd Harmonic	5000 - 6000 10,000 - 12,000
L-4862/3	3rd Harmonic	15,000 - 18,000
L-	Fundamental 2nd Harmonic 3rd Harmonic	

[1] NOTE: If the particular parts list which refers to the instrument in question contains circuit numbers, which also appear in common parts list, the values in the particular insert parts list supersedes the values in common parts list.

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial or model number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

COMMON
ELECTRICAL PARTS

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Description				
		Capacitors				
Tolerance ±20% unless otherwise indicated.						
C101	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C102	281-0613-00	10 pF	Cer		200 V	10%
C103	281-0628-00	15 pF	Cer		600 V	5%
C104	283-0060-00	100 pF	Cer		200 V	5%
C105	283-0067-00	0.001 µF	Cer		200 V	10%
C106	283-0060-00	100 pF	Cer		200 V	5%
C107	283-0060-00	100 pF	Cer		200 V	5%
C108	283-0060-00	100 pF	Cer		200 V	5%
C109	281-0613-00	10 pF	Cer		200 V	10%
C110	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C111	283-0060-00	100 pF	Cer		200 V	5%
C112	283-0067-00	0.001 µF	Cer		200 V	10%
C113	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C114	281-0627-00	1 pF	Cer		600 V	
C115	281-0627-00	1 pF	Cer		600 V	
C116	283-0067-00	0.001 µF	Cer		200 V	10%
C117	283-0067-00	0.001 µF	Cer		200 V	10%
C118	283-0039-00	0.001 µF	Cer		500 V	
C119	283-0067-00	0.001 µF	Cer		200 V	10%
C120	283-0060-00	100 pF	Cer		200 V	5%

Capacitors (Cont'd)

C121	283-0039-00	0.001 µF	Cer		500 V	
C122	283-0039-00	0.001 µF	Cer		500 V	
C123	283-0039-00	0.001 µF	Cer		500 V	
C124	283-0067-00	0.001 µF	Cer		200 V	10%
C125	283-0039-00	0.001 µF	Cer		500 V	
C126	283-0060-00	100 pF	Cer		200 V	5%
C127	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C128	281-0613-00	10 pF	Cer		200 V	10%
C129	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C130	281-0628-00	15 pF	Cer		600 V	5%
C132	281-0628-00	15 pF	Cer		600 V	5%
C133	281-0572-00	6.8 pF	Cer		500 V	10%
C201 †	283-0067-00	0.001 µF	Cer		200 V	10%
C201 ††	283-0000-00	0.001 µF	Cer		500 V	
C203 †	283-0067-00	0.001 µF	Cer		200 V	10%
C203 ††	283-0000-00	0.001 µF	Cer		500 V	
C204	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C206 †	283-0067-00	0.001 µF	Cer		200 V	10%
C206 ††	283-0000-00	0.001 µF	Cer		500 V	
C207	283-0039-00	0.001 µF	Cer		500 V	
C208	283-0039-00	0.001 µF	Cer		500 V	
C209 †	283-0067-00	0.001 µF	Cer		200 V	10%
C209 ††	283-0000-00	0.001 µF	Cer		500 V	

† Used in early instruments.
†† Used in late instruments.

Capacitors (Cont'd)

C210†	283-0067-00	0.001 µF	Cer		200 V	10%
C210††	283-0000-00	0.001 µF	Cer		500 V	
C212†	283-0067-00	0.001 µF	Cer		200 V	10%
C212††	283-0000-00	0.001 µF	Cer		500 V	
C213	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C214	283-0039-00	0.001 µF	Cer		500 V	
C215†	283-0067-00	0.001 µF	Cer		200 V	10%
C215††	283-0000-00	0.001 µF	Cer		500 V	
C216	283-0110-00	0.005 µF	Cer		150 V	
C218	283-0110-00	0.005 µF	Cer		150 V	
C219	283-0609-00	100 pF	Mica		500 V	
C220	283-0110-00	0.005 µF	Cer		150 V	
C221	281-0613-00	10 pF	Cer		200 V	10%
C222	283-0608-00	68 pF	Mica		500 V	
C223	283-0610-00	220 pF	Mica		500 V	
C224	283-0110-00	0.005 µF	Cer		150 V	
C225	283-0110-00	0.005 µF	Cer		150 V	
C226 †	283-0067-00	0.001 µF	Cer		200 V	10%
C226 ††	283-0000-00	0.001 µF	Cer		500 V	
C227	283-0110-00	0.005 µF	Cer		150 V	
C228	283-0609-00	100 pF	Mica		500 V	
C229	283-0110-00	0.005 µF	Cer		150 V	
C231	283-0039-00	0.001 µF	Cer		500 V	

† Used in early instruments.
†† Used in late instruments.

Capacitors (Cont'd)

C235†	283-0067-00	0.001 µF	Cer	200 V	10%
C235††	283-0000-00	0.001 µF	Cer	500 V	
C301	283-0110-00	0.005 µF	Cer	150 V	
C302	283-0110-00	0.005 µF	Cer	150 V	
C303	283-0110-00	0.005 µF	Cer	150 V	
C304	283-0612-00	82 pF	Mica	500 V	
C305	283-0609-00	100 pF	Mica	500 V	
C306	283-0613-00	470 pF	Mica	500 V	
C307	285-0572-00	0.1 µF	PTM	200 V	
C308	281-0629-00	33 pF	Cer	600 V	5%
C309	283-0610-00	220 pF	Mica	500 V	
C310	281-0629-00	33 pF	Cer	600 V	5%
C311	281-0629-00	33 pF	Cer	600 V	5%
C312	283-0110-00	0.005 µF	Cer	150 V	
C313	283-0614-00	47 pF	Mica	500 V	
C315	285-0572-00	0.1 µF	PTM	200 V	
C316	285-0673-00	5 µF	PTM	50 V	
C401	283-0110-00	0.005 µF	Cer	150 V	
C402	285-0674-00	0.01 µF	PTM	100 V	
C403	285-0627-00	0.0033 µF	PTM	100 V	5%
C404	283-0611-00	1200 pF	Mica	500 V	
C405	283-0067-00	0.001 µF	Cer	200 V	10%
C407	283-0039-00	0.001 µF	Cer	500 V	

†Used in early instruments.
††Used in late instruments.

Capacitors (Cont'd)

C409	283-0111-00	0.1 µF	Cer		50 V	
C410	281-0106-00	2.7 - 19.6 pF	Air	Var		
C411	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C412	281-0627-00	1 pF	Cer		600 V	
C413	283-0039-00	0.001 µF	Cer		500 V	
C414	283-0039-00	0.001 µF	Cer		500 V	
C415	283-0039-00	0.001 µF	Cer		500 V	
C420	281-0572-00	6.8 pF	Cer		500 V	10%
C601	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C602	281-0105-00	0.8 - 8.5 pF	Cer	Var		
C603	283-0110-00	0.005 µF	Cer		150 V	
C604	283-0110-00	0.005 µF	Cer		150 V	
C605	283-0067-00	0.001 µF	Cer		200 V	10%
C606	283-0067-00	0.001 µF	Cer		200 V	10%
C607	283-0110-00	0.005 µF	Cer		150 V	
C608	283-0110-00	0.005 µF	Cer		150 V	

Diodes

D101	152-0187-00	Varicap	PC-115
D102	152-0186-00	Germanium	1N198
D201	152-0186-00	Germanium	1N198
D301	152-0188-00	Germanium	1N64
D302	152-0186-00	Germanium	1N198
D303	152-0141-00	Silicon	1N3605
D304	152-0188-00	Germanium	1N64
D305	152-0141-00	Silicon	1N3605
D306	152-0141-00	Silicon	1N3605

Diodes (Cont'd)

D307	152-0141-00	Silicon	1N3605	
D401	152-0169-00	Tunnel	1N3712	1 mA
D402	152-0188-00	Germanium	1N64	
D403	152-0188-00	Germanium	1N64	
D404	152-0188-00	Germanium	1N64	
D602	152-0062-00	Silicon	1N914	

Filter

FL301	*610-0137-00	L.P. Wide Band Filter Chassis (includes J801 and J802)

Connectors

P11	131-0017-00	16 contact, male
J101	131-0372-00	Coaxial
J102	131-0372-00	Coaxial
J103	131-0372-00	Coaxial
J201	131-0372-00	Coaxial
J301	131-0106-00	BNC, 1 contact, female
J302†	131-0106-00	BNC, 1 contact, female
J303†	131-0106-00	BNC, 1 contact, female
J303††	*136-0140-00	Socket, Banana Jack Assembly
J401	131-0372-00	Coaxial
J501	131-0372-00	Coaxial
J502	131-0372-00	Coaxial

† Used in early instruments.
†† Used in late instruments.

Connectors (Cont'd)

J801†				
J802†				

Inductors

L101	*108-0319-00	0.08 µH		
L102	*108-0312-00	0.058 µH		
L103	108-0315-00	0.22 µH		
L104	108-0315-00	0.22 µH		
L105	*108-0310-00	0.09 µH		
L106	*108-0311-00	0.18 µH		
L107	*120-0353-00	Toroid, 8 turns		
L108	*108-0303-00	0.04 µH		
L109	108-0316-00	0.68 µH		
L110	*108-0314-00	Bare wire		
L111	*108-0313-00	0.05 µH		
L201	276-0507-00	Core, Ferramic Suppressor		
L202	276-0507-00	Core, Ferramic Suppressor		
L210	*114-0165-00	0.12 - 0.17 µH	Var	Core not available separately
L301	*114-0169-00	24 - 45 µH	Var	Core not available separately
L302	108-0317-00	15 µH		
L303	108-0318-00	100 µH		
L311	276-0507-00	Core, Ferramic Suppressor		
L312	276-0507-00	Core, Ferramic Suppressor		
L401	*114-0166-00	8 - 15 µH	Var	Core not available separately

† Furnished as a unit with FL301 (*610-0137-00)

Inductors (Cont'd)

L402	114-0168-00	850 - 1200 µH	Var	Core not available separately	
L403	*114-0167-00	0.04 - 0.044 µH	Var	Core not available separately	

Transistors

Q101	151-0143-00	Germanium	2N2996
Q102	151-0143-00	Germanium	2N2996
Q103	151-0144-00	Germanium	2N1743
Q104	151-0145-00	Germanium	2N1744
Q201	151-0146-00	Germanium	2N1745
Q202	151-0146-00	Germanium	2N1745
Q203	151-0146-00	Germanium	2N1745
Q204	151-0146-00	Germanium	2N1745
Q205	151-0147-00	Germanium	2N1747
Q401	151-0146-00	Germanium	2N1745
Q601	151-0143-00	Germanium	2N2996
Q602	151-0143-00	Germanium	2N2996

Resistors

Resistors are fixed, composition, ±10% unless otherwise indicated.

R101	316-0221-00	220 Ω	1/4 W		
R102	316-0102-00	1 kΩ	1/4 W		
R103	316-0222-00	2.2 kΩ	1/4 W		
R104	310-0147-00	4.7 kΩ	1 W	Prec	5%
R105	316-0222-00	2.2 kΩ	1/4 W		
R106	316-0102-00	1 kΩ	1/4 W		
R107	316-0102-00	1 kΩ	1/4 W		
R108	316-0221-00	220 Ω	1/4 W		

Resistors (Cont'd)

R109	316-0102-00	1 kΩ	1/4 W	
R110	316-0222-00	2.2 kΩ	1/4 W	
R111	316-0102-00	1 kΩ	1/4 W	
R112	316-0153-00	15 kΩ	1/4 W	
R113	316-0222-00	2.2 kΩ	1/4 W	
R114	316-0102-00	1 kΩ	1/4 W	
R115	316-0102-00	1 kΩ	1/4 W	
R116	316-0102-00	1 kΩ	1/4 W	
R117	316-0221-00	220 Ω	1/4 W	
R118	316-0470-00	47 Ω	1/4 W	
R119	304-0183-00	18 kΩ	1 W	
R121	316-0470-00	47 Ω	1/4 W	
R122	316-0332-00	3.3 kΩ	1/4 W	
R123	316-0682-00	6.8 kΩ	1/4 W	
R124	316-0471-00	470 Ω	1/4 W	
R125	316-0471-00	470 Ω	1/4 W	
R201	316-0331-00	330 Ω	1/4 W	
R202	316-0331-00	330 Ω	1/4 W	
R203	316-0180-00	18 Ω	1/4 W	
R204	316-0683-00	68 kΩ	1/4 W	
R205	316-0222-00	2.2 kΩ	1/4 W	
R206	316-0102-00	1 kΩ	1/4 W	
R207 †	311-0500-00	10 kΩ		Var

†Furnished as a unit with R311 and SW301.

Resistors (Cont'd)

R208	316-0102-00	1 kΩ	1/4 W		
R209	316-0222-00	2.2 kΩ	1/4 W		
R210	316-0222-00	2.2 kΩ	1/4 W		
R211	316-0222-00	2.2 kΩ	1/4 W		
R212	316-0102-00	1 kΩ	1/4 W		
R213	316-0102-00	1 kΩ	1/4 W		
R214	316-0102-00	1 kΩ	1/4 W		
R215	316-0102-00	1 kΩ	1/4 W		
R216	316-0471-00	470 Ω	1/4 W		
R218	316-0470-00	47 Ω	1/4 W		
R219	316-0472-00	4.7 kΩ	1/4 W		
R221	316-0222-00	2.2 kΩ	1/4 W		
R222	310-0146-00	8.2 kΩ	1 W	Prec	5%
R223	302-0102-00	1 kΩ	1/2 W		
R301	316-0471-00	470 Ω	1/4 W		
R302	316-0102-00	1 kΩ	1/4 W		
R303	316-0102-00	1 kΩ	1/4 W		
R304	316-0470-00	47 Ω	1/4 W		
R305	316-0680-00	68 Ω	1/4 W		
R306	316-0470-00	47 Ω	1/4 W		
R307	316-0333-00	33 kΩ	1/4 W		
R308	316-0332-00	3.3 kΩ	1/4 W		
R309†	316-0223-00	22 kΩ	1/4 W		

†Used in early instruments.

Resistors (Cont'd)

R309††	316-0124-00	120 kΩ	1/4 W		
R310	316-0104-00	100 kΩ	1/4 W		
R311†††	311-0500-00	100 Ω		Var	
R312†	304-0103-00	10 kΩ	1 W		
R313	316-0102-00	1 kΩ	1/4 W		
R314	316-0102-00	1 kΩ	1/4 W		
R315	304-0472-00	4.7 kΩ	1 W		
R316	302-0103-00	10 kΩ	1/2 W		
R317	316-0101-00	100 Ω	1/4 W		
R318††	301-0512-00	5.1 kΩ	1/2 W		5%
R319†	305-0303-00	30 kΩ	2 W		5%
R319††	311-0448-00	20 kΩ		Var	
R320††††	311-0502-00	10 kΩ		Var	
R321	316-0104-00	100 kΩ	1/4 W		
R322	316-0104-00	100 kΩ	1/4 W		
R323	316-0104-00	100 kΩ	1/4 W		
R324	316-0682-00	6.8 kΩ	1/4 W		
R325	316-0105-00	1 MΩ	1/4 W		
R326	316-0105-00	1 MΩ	1/4 W		
R327	316-0105-00	1 MΩ	1/4 W		
R328	304-0154-00	150 kΩ	1 W		
R329†	305-0363-00	36 kΩ	2 W		5%

†Used in early instruments.
††Used in late instruments.
†††Furnished as a unit with R207 and SW301.
††††Concentric with SW101.

Resistors (Cont'd)

R329††	303-0243-00	24 kΩ	1 W		5%
R330	306-0273-00	27 kΩ	2 W		
R331	316-0105-00	1 MΩ	1/4 W		
R332	304-0333-00	33 kΩ	1 W		
R333	316-0823-00	82 kΩ	1/4 W		
R334	308-0211-00	12 kΩ	5 W	WW	5%
R335†	316-0103-00	10 kΩ	1/4 W	(Selected)	
R335††		10 kΩ	1/4 W	(Selected part, 5% or 10%)	
R336	316-0333-00	33 kΩ	1/4 W	(Selected)	
R337	316-0823-00	82 kΩ	1/4 W	(Selected)	
R338	316-0682-00	6.8 kΩ	1/4 W		
R339	323-0385-00	100 kΩ	1/2 W	Prec	1%
R340	316-0471-00	470 Ω	1/4 W	(Selected)	
R341	308-0334-00	7 kΩ	3 W	WW	3%
R342	308-0335-00	7 kΩ	7 W	WW	5%
R343 †††	311-0504-00	5 kΩ	Var		
R344	316-0104-00	100 kΩ	1/4 W		
R345	304-0472-00	4.7 kΩ	1 W		
R346 †	304-0153-00	15 kΩ	1 W		
R346 ††	303-0103-00	10 kΩ	1 W		5%
R347	316-0472-00	4.7 kΩ	1/4 W		
R348	316-0682-00	6.8 kΩ	1/4 W		
R349	308-0333-00	3.5 kΩ	3 W	WW	5%

†Used in early instruments.
††Used in late instruments.
†††Furnished as a unit with R611.

Resistors (Cont'd)

R350	316-0472-00	4.7 kΩ	1/4 W		(Selected)	
R352†††	311-0501-00††	10 kΩ		Var		
R360	308-0304-00	1.5 kΩ	3 W		WW	1%
R372†††	311-0501-00††	1 kΩ		Var		
R372†	311-0501-00	1 kΩ (X 10 kΩ)		Var		
R401	316-0223-00	22 kΩ	1/4 W			
R402	316-0472-00	4.7 kΩ	1/4 W			
R403	316-0102-00	1 kΩ	1/4 W			
R404†	316-0180-00	18 Ω	1/4 W			
R404††	Selected part ranging from 16 Ω to 27 Ω		1/4 W			5%
R405	316-0102-00	1 kΩ	1/4 W			
R406	308-0336-00	7 kΩ	5 W		WW	5%
R407	302-0683-00	68 kΩ	1/2 W			
R408	316-0222-00	2.2 kΩ	1/4 W			
R409	316-0221-00	220 Ω	1/4 W			
R410	316-0221-00	220 Ω	1/4 W			
R411	316-0221-00	220 Ω	1/4 W			
R412	316-0221-00	220 Ω	1/4 W			
R413	316-0680-00	68 Ω	1/4 W			
R414††††	311-0499-00	10 kΩ		Var		
R415	304-0223-00	22 kΩ	1 W			
R416	316-0152-00	1.5 kΩ	1/4 W			

†Used in early instruments.
††Used in late instruments.
†††R352 and R372 furnished as a unit.
††††Furnished as a unit with SW402.

Resistors (Cont'd)

R417	316-0101-00	100 Ω	1/4 W	
R418	316-0101-00	100 Ω	1/4 W	
R500††	315-0470-00	47 Ω	1/4 W	5%
R501	315-0620-00	62 Ω	1/4 W	5%
R502	315-0241-00	240 Ω	1/4 W	5%
R503	315-0620-00	62 Ω	1/4 W	5%
R504	315-0680-00	68 Ω	1/4 W	5%
R505	315-0151-00	150 Ω	1/4 W	5%
R506	315-0680-00	68 Ω	1/4 W	5%
R507	315-0121-00	120 Ω	1/4 W	5%
R508	315-0510-00	51 Ω	1/4 W	5%
R509	315-0121-00	120 Ω	1/4 W	5%
R510	315-0221-00	220 Ω	1/4 W	5%
R511	315-0240-00	24 Ω	1/4 W	5%
R512	315-0221-00	220 Ω	1/4 W	5%
R513	315-0431-00	430 Ω	1/4 W	5%
R514	315-0120-00	12 Ω	1/4 W	5%
R515	315-0431-00	430 Ω	1/4 W	5%
R516	315-0911-00	910 Ω	1/4 W	5%
R517	307-0107-00	5.6 Ω	1/4 W	5%
R518	315-0911-00	910 Ω	1/4 W	5%
R519	315-0100-00	10 Ω	1/4 W	
R520†	315-0470-00	47 Ω	1/4 W	5%

†Used in early instruments.
††Used in late instruments.

Resistors (Cont'd)

R601	316-0471-00	470 Ω	1/4 W	
R602	304-0473-00	47 kΩ	1 W	
R603	316-0681-00	680 Ω	1/4 W	
R604	316-0223-00	22 kΩ	1/4 W	
R605	316-0103-00	10 kΩ	1/4 W	
R606	316-0103-00	10 kΩ	1/4 W	
R607	304-0223-00	22 kΩ	1 W	
R608	316-0102-00	1 kΩ	1/4 W	
R609	316-0102-00	1 kΩ	1/4 W	
R611†	311-0504-00	1 kΩ		Var

Switches

	Unwired	Wired		
SW101††	260-0642-00		Toggle	WIDE-NARROW (Dispersion)
SW301†††		*262-0682-00	Rotary	DISPLAY FUNCTION
SW305	260-0643-00		Toggle	VIDEO FILTER
SW320	260-0583-00		Slide	100 V, 150 V SAWTOOTH
SW401		*262-0681-00	Rotary	PICKET FENCE
SW402††††	311-0499-00		SPST	AMPLITUDE
SW501	260-0642-00		Toggle	20 DB
SW502	260-0642-00		Toggle	16 DB
SW503	260-0642-00		Toggle	8 DB
SW504	260-0642-00		Toggle	4 DB
SW505	260-0642-00		Toggle	2 DB

†Furnished as a unit with R343.
††Concentric with R320.
†††Furnished as a unit with R207 and R311.
††††Furnished as a unit with R414.

Switches (Cont'd)

	Unwired	Wired		
SW506	260-0642-00		Toggle	1 DB

Transformers

T101	*120-0352-00	Toroid, 13 turns
T201	*120-0354-00	Toroid, 2 windings
T202	*120-0354-00	Toroid, 2 windings
T203	120-0356-00	3.45 MHz
T204	120-0356-00	3.45 MHz
T601	*120-0358-00	Toroid, 3 windings
T602	120-0357-00	Toroid, 1 winding

Electron Tubes

V301	154-0040-00	12AU6
V302	154-0041-00	12AU7
V303	154-0039-00	12AT7

Cable Assemblies

W312	*175-0308-00	2 inch
W313	*175-0309-00	5 inch
W314	*175-0310-00	6 inch

Crystals

Y202	158-0018-00	54 MHz
Y601	158-0019-00	5 MHz

ELECTRICAL PARTS

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Description			
		Connector			
J301	131-0378-00	Coaxial			
		Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.					
R318	308-0337-00	200 Ω	7 W	WW	5%
R336	316-0333-00	33 kΩ	1/4 W	(Selected)	
R340	316-0471-00	470 Ω	1/4 W	(Selected)	
R350	316-0472-00	4.7 kΩ	1/4 W	(Selected)	
R356	308-0341-00	4 kΩ	3 W	WW	3%
R357	308-0340-00	4.2 kΩ	25 W	WW	3%
R358	308-0339-00	15 kΩ	10 W	WW	3%
R361	308-0287-00	17.5 kΩ	10 W	WW	5%
		Crystal			
Y301	119-0042-00	Mixer w/crystal			
		Oscillator			
	119-0051-00	2.1 - 2.6 GHz			
		Cable Assemblies			
W301	*175-0313-00	3 inch			
W302	*175-0314-00	4 inch			
W305	*175-0320-00	9 inch			

ELECTRICAL PARTS

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Description			
		Connector			
J301	131-0378-00	Coaxial			
		Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.					
R318	308-0337-00	200 Ω	7 W	WW	5%
R336	316-0333-00	33 kΩ	1/4 W	(Selected)	
R340	316-0471-00	470 Ω	1/4 W	(Selected)	
R350	316-0472-00	4.7 kΩ	1/4 W	(Selected)	
R356	308-0341-00	4 kΩ	3 W	WW	3%
R357	308-0340-00	4.2 kΩ	25 W	WW	3%
R358	308-0339-00	15 kΩ	10 W	WW	3%
R361	308-0206-00	7.5 kΩ	5 W	WW	5%
		Crystal			
Y301	119-0042-00	Mixer w/crystal			
		Oscillator			
	119-0046-00	2.6 - 3.2 GHz			
		Cable Assemblies			
W301	*175-0313-00	3 inch			
W302	*175-0314-00	4 inch			
W305	*175-0320-00	9 inch			

ELECTRICAL PARTS

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Description			
		Connector			
J301	131-0378-00	Coaxial			
		Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.					
R318	308-0337-00	200 Ω	7 W	WW	5%
R336	316-0333-00	33 kΩ	1/4 W	(Selected)	
R340	316-0471-00	470 Ω	1/4 W	(Selected)	
R350	316-0472-00	4.7 kΩ	1/4 W	(Selected)	
R356	308-0341-00	4 kΩ	3 W	WW	3%
R357	308-0340-00	4.2 kΩ	25 W	WW	3%
R358	308-0339-00	15 kΩ	10 W	WW	3%
R361	308-0054-00	10 kΩ	5 W	WW	5%
		Crystal			
Y301	119-0042-00	Mixer w/crystal			
		Oscillator			
	119-0044-00	3.2 - 4.0 GHz			
		Cable Assemblies			
W301	*175-0313-00	3 inch			
W305	*175-0320-00	9 inch			
W311	*175-0314-00	4 inch			

ELECTRICAL PARTS

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Description			
		Connector			
J301	131-0378-00	Coaxial			
		Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.					
R318	308-0337-00	200 Ω	7 W	WW	5%
R336	316-0333-00	33 kΩ	1/4 W	(Selected)	
R340	316-0471-00	470 Ω	1/4 W	(Selected)	
R350	316-0472-00	4.7 kΩ	1/4 W	(Selected)	
R356	308-0341-00	4 kΩ	3 W	WW	3%
R357	308-0340-00	4.2 kΩ	25 W	WW	3%
R358	308-0339-00	15 kΩ	10 W	WW	3%
R361	308-0101-00	5.5 kΩ	5 W	WW	5%
		Crystal			
Y301	119-0042-00	Mixer w/crystal			
		Oscillator			
	119-0045-00	4.0 - 5.0 GHz			
		Cable Assemblies			
W301	*175-0313-00	3 inch			
W302	*175-0314-00	4 inch			
W305	*175-0320-00	9 inch			

ELECTRICAL PARTS

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Description			
		Connector			
J301	131-0378-00	Coaxial			
		Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.					
R318	308-0337-00	200 Ω	7 W	WW	5%
R336	316-0333-00	33 kΩ	1/4 W	(Selected)	
R340	316-0471-00	470 Ω	1/4 W	(Selected)	
R350	316-0472-00	4.7 kΩ	1/4 W	(Selected)	
R356	308-0341-00	4 kΩ	3 W	WW	3%
R357	308-0340-00	4.2 kΩ	25 W	WW	3%
R358	308-0339-00	15 kΩ	10 W	WW	3%
R361	308-0101-00	5.5 kΩ	5 W	WW	5%
		Crystal			
Y301	119-0049-00	Mixer w/crystal			
		Oscillator			
	119-0045-00	4.0 - 5.0 GHz			
		Cable Assemblies			
W301	*175-0663-00	6 inch			
W305	*175-0662-00	6 inch			

ELECTRICAL PARTS

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Description			
		Connector			
J301	131-0378-00	Coaxial			
		Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.					
R318	308-0337-00	200 Ω	7 W	WW	5%
R336	316-0333-00	33 kΩ	1/4 W	(Selected)	
R340	316-0471-00	470 Ω	1/4 W	(Selected)	
R350	316-0472-00	4.7 kΩ	1/4 W	(Selected)	
R356	308-0341-00	4 kΩ	3 W	WW	3%
R357	308-0340-00	4.2 kΩ	25 W	WW	3%
R358	308-0339-00	15 kΩ	10 W	WW	3%
R361	308-0172-00	3.5 kΩ	5 W	WW	5%
		Crystal			
Y301	119-0042-00	Mixer w/crystal			
		Oscillator			
	119-0047-00	5.0 - 6.0 GHz			
		Cable Assemblies			
W301	*175-0313-00	3 inch			
W302	*175-0314-00	4 inch			
W305	*175-0320-00	9 inch			

ELECTRICAL PARTS

Values are fixed unless marked Variable.

Ckt. No.	Tektronix Part No.	Description			
		Connector			
J301	131-0378-00	Coaxial			
		Resistors			
Resistors are fixed, composition, ±10% unless otherwise indicated.					
R318	308-0337-00	200 Ω	7 W	WW	5%
R336	316-0333-00	33 kΩ	1/4 W	(Selected)	
R340	316-0471-00	470 Ω	1/4 W	(Selected)	
R350	316-0472-00	4.7 kΩ	1/4 W	(Selected)	
R356	308-0341-00	4 kΩ	3 W	WW	3%
R357	308-0340-00	4.2 kΩ	25 W	WW	3%
R358	308-0339-00	15 kΩ	10 W	WW	3%
R361	308-0172-00	3.5 kΩ	5 W	WW	5%
		Crystal			
Y301	119-0049-00	Mixer w/crystal			
		Oscillator			
	119-0047-00	5.0 - 6.0 GHz			
		Cable Assemblies			
W301	*175-0663-00	6 inch			
W305	*175-0662-00	6 inch			

Dial Setting	Local Oscillator Frequency In Megacycles	Upper Conversion LO + 200 MC = RF Frequency In MC	Lower Conversion LO - 200 MC = RF Frequency In MC	Upper Conversion 2(LO) + 200 Mc = RF Frequency In Mc	Lower Conversion 2(LO) - 200 Mc = RF Frequency In Mc	Upper Conversion 3(LO) + 200 Mc = RF Frequency In Mc	Lower Conversion 3(LO) - 200 Mc = RF Frequency In Mc
	6000	6200	5800	12200	11800	18200	17800
	5960	6160	5760	12120	11720	18080	17600
	5920	6120	5720	12040	11640	17960	17560
	5880	6080	5680	11960	11560	17840	17440
	5840	6040	5640	11880	11480	17720	17320
	5800	6000	5600	11800	11400	17600	17200
	5760	5960	5560	11720	11320	17480	17080
	5720	5920	5520	11640	11240	17360	16960
	5680	5880	5480	11560	11160	17240	16840
	5640	5840	5440	11480	11080	17120	16720
	5600	5800	5400	11400	11000	17000	16600
	5560	5760	5360	11320	10920	16880	16480
	5520	5720	5320	11240	10840	16760	16360
	5480	5680	5280	11160	10760	16640	16240
	5440	5640	5240	11080	10680	16520	16120
	5400	5600	5200	11000	10600	16400	16000
	5360	5560	5160	10920	10520	16280	15880
	5320	5520	5120	10840	10440	16160	15760
	5280	5480	5080	10760	10360	16040	15640
	5240	5440	5040	10680	10280	15920	15520
	5200	5400	5000	10600	10200	15800	15400
	5160	5360	4960	10520	10120	15680	15280
	5120	5320	4920	10440	10040	15560	15160
	5080	5280	4880	10360	9960	15440	15040
	5040	5240	4840	10280	9880	15320	14920
	5000	5200	4800	10200	9800	15200	14800
	4960	5160	4760	10120	9720	15080	14680
	4920	5120	4720	10040	9640	14960	14560
	4880	5080	4680	9960	9560	14840	14440
	4840	5040	4640	9880	9480	14720	14320
	4800	5000	4600	9800	9400	14600	14200
	4760	4960	4560	9720	9320	14480	14080
	4720	4920	4520	9640	9240	14360	13960
	4680	4880	4480	9560	9160	14240	13840
	4640	4840	4440	9480	9080	14120	13720
	4600	4800	4400	9400	9000	14000	13600

Dial Setting	Local Oscillator Frequency In Megacycles	Upper Conversion LO + 200 MC = RF Frequency In MC	Lower Conversion LO - 200 MC = RF Frequency In MC	Upper Conversion 2(LO) + 200 Mc = RF Frequency In Mc	Lower Conversion 2(LO) - 200 Mc = RF Frequency In Mc	Upper Conversion 3(LO) + 200 Mc = RF Frequency In Mc	Lower Conversion 3(LO) - 200 Mc = RF Frequency In Mc
	4560	4760	4360	9320	8920	13880	13480
	4520	4720	4320	9240	8840	13760	13360
	4480	4680	4280	9160	8760	13640	13240
	4440	4640	4240	9080	8680	13520	13120
	4400	4600	4200	9000	8600	13400	13000
	4360	4560	4160	8920	8520	13280	12880
	4320	4520	4120	8840	8440	13160	12760
	4280	4480	4080	8760	8360	13040	12640
	4240	4440	4040	8680	8280	12920	12520
	4200	4400	4000	8600	8200	12800	12400
	4160	4360	3960	8520	8120	12680	12280
	4120	4320	3920	8440	8040	12560	12160
	4080	4280	3880	8360	7960	12440	12040
	4040	4240	3840	8280	7880	12320	11920
	4000	4200	3800	8200	7800	12200	11800
	3960	4160	3760	8120	7720	12080	11680
	3920	4120	3720	8040	7640	11960	11560
	3880	4080	3680	7960	7560	11840	11440
	3840	4040	3640	7880	7480	11720	11320
	3800	4000	3600	7800	7400	11600	11200
	3760	3960	3560	7720	7320	11480	11080
	3720	3920	3520	7640	7240	11360	10960
	3680	3880	3480	7560	7160	11240	10840
	3640	3840	3440	7480	7080	11120	10720
	3600	3800	3400	7400	7000	11000	10600
	3560	3760	3360	7320	6920	10880	10480
	3520	3720	3320	7240	6840	10760	10360
	3480	3680	3280	7160	6760	10640	10240
	3440	3640	3240	7080	6680	10520	10120
	3400	3600	3200	7000	6600	10400	10000
	3360	3560	3160	6920	6520	10280	9880
	3320	3520	3120	6840	6440	10160	9760
	3280	3480	3080	6760	6360	10040	9640
	3240	3440	3040	6680	6280	9920	9520
	3200	3400	3000	6600	6200	9800	9400
	3160	3360	2960	6520	6120	9680	9280

Dial Setting	Local Oscillator Frequency In Megacycles	Upper Conversion LO + 200 MC = RF Frequency In MC	Lower Conversion LO - 200 MC = RF Frequency In MC	Upper Conversion 2(LO) + 200 Mc = RF Frequency In Mc	Lower Conversion 2(LO) - 200 Mc = RF Frequency In Mc	Upper Conversion 3(LO) + 200 Mc = RF Frequency In Mc	Lower Conversion 3(LO) - 200 Mc = RF Frequency In Mc
	3120	3320	2920	6440	6040	9560	9160
	3080	3280	2880	6360	5960	9440	9040
	3040	3240	2840	6280	5880	9320	8920
	3000	3200	2800	6200	5800	9200	8800
	2960	3160	2760	6120	5720	9080	8680
	2920	3120	2720	6040	5640	8960	8560
	2880	3080	2680	5960	5560	8840	8440
	2840	3040	2640	5880	5480	8720	8320
	2800	3000	2600	5800	5400	8600	8200
	2760	2960	2560	5720	5320	8480	8080
	2720	2920	2520	5640	5240	8360	7960
	2680	2880	2480	5560	5160	8240	7840
	2640	2840	2440	5480	5080	8120	7720
	2600	2800	2400	5400	5000	8000	7600
	2560	2760	2360	5320	4920	7880	7480
	2520	2720	2320	5240	4840	7760	7360
	2480	2680	2280	5160	4760	7640	7240
	2440	2640	2240	5080	4680	7520	7120
	2400	2600	2200	5000	4600	7400	7000
	2360	2560	2160	4920	4520	7280	6880
	2320	2520	2120	4840	4440	7160	6760
	2280	2480	2080	4760	4360	7040	6640
	2240	2440	2040	4680	4280	6920	6520
	2200	2400	2000	4600	4200	6800	6400
	2160	2360	1960	4520	4120	6680	6280
	2120	2320	1920	4440	4040	6560	6160
	2080	2280	1880	4360	3960	6440	6040
	2040	2240	1840	4280	3880	6320	5920
	2000	2200	1800	4200	3800	6200	5800
	1980	2180	1780	4160	3760	6140	5740

UPPER CONVERSION

LO + 200 Mc = RF Frequency In Mc
2(LO) + 200 Mc = RF Frequency In Mc
3(LO) + 200 Mc = RF Frequency In Mc

True signal moves from **LEFT TO RIGHT** by turning dial clockwise, i.e., decreasing the local oscillator frequency.

INCREASING DIAL SETTING →

10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0

LOWER CONVERSION

LO – 200 Mc = RF Frequency In Mc
2(LO) – 200 Mc = RF Frequency In Mc
3(LO) – 200 Mc = RF Frequency In Mc

True signal moves from **RIGHT TO LEFT** by turning dial clockwise, i.e., decreasing the local oscillator frequency.

Write highest local oscillator frequency of instrument HERE →

DECREASING LOCAL OSCILLATOR FREQUENCY →

UPPER CONVERSION

LO + 200 Mc = RF Frequency In Mc
2(LO) + 200 Mc = RF Frequency In Mc
3(LO) + 200 Mc = RF Frequency In Mc

True signal moves from **LEFT TO RIGHT** by turning dial clockwise, i.e., decreasing the local oscillator frequency.

INCREASING DIAL SETTING →

10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0

LOWER CONVERSION

LO – 200 Mc = RF Frequency In Mc
2(LO) – 200 Mc = RF Frequency In Mc
3(LO) – 200 Mc = RF Frequency In Mc

True signal moves from **RIGHT TO LEFT** by turning dial clockwise, i.e., decreasing the local oscillator frequency.

Write highest local oscillator frequency of instrument HERE →

DECREASING LOCAL OSCILLATOR FREQUENCY →