1. INTRODUCTION

The LBO-522-LBO-523 Oscilloscopes are portable ones with the functions of 5 mV/div. (20[35] MHz), 500 µV/div. (5 MHz), maximum sweep rate 40[20] ns/div. (MAG x 5[10]), equipped with a 6-inch rectangular [metal-back] CRT with high brightness, internal graticule and the vertical sensitivity magnifier.

The LBO-522, 523 have a wide range of application in production and service areas for measurements and testings of TV set, VTRs and computer peripheral equipments, since the TV synchronization separator, variable hold off and V-AXIS magnifier functions are provided.

2. SPECIFICATIONS

CRT Display
Type

Accelerating Potential
Effective display area
Beam Rotator
Graticule Illumination
Intensity Modulation

Vertical Amplifiers (CH-1 and 2)
Sensitivity

Calibration Accuracy
Bandwidth (−3 dB, 8 div.)
DC coupled
AC coupled
Rise Time
Input Impedance
Input Coupling
Maximum Input
Display Modes
Polarity Invert
CH-1 Output

Horizontal Amplifier
Sweep Method
Sweep Time

Calibration Accuracy
Hold-off variable
Magnifier
Max. Sweep Time

150 mm Rectangular, Internal-graticule Scale, [Aluminized Screen] and Flat Face with illumination lamps and Percentage scale.
2kV. [7kV/2kV] regulated
8 x 10 div. (1 div. = 10 mm)
Adjustment on front panel
Continuously variable
Blanked by TTL Level Signal

5 mV/div. to 5V/div. (all bandwidth), 0.5 mV/div. to 2 mV/div. (5 MHz: MAG x 10) with variable in 10 steps, 1-2-5 sequence, continuously variable between steps.
±3% (±5%: MAG x 10)

DC to 20[35] MHz
(DC to 5 MHz: MAG x 10)
10 Hz to 20 [35] MHz
17.5[10] ns (70 ns; MAG x 10)
1 MΩ ± 1.5%, 30 pF within ± 5 pF (Tolerance: within ± 2 pF)
AC, GND, DC
600V (DC + ACp-p)
CH-1, CH-2, CHOP, ALT, ADD
CH-2 INVERT
Approx. 0.1V/div. in to 50Ω (DC to 20[35] MHz,−3 dB)

Trigger sweep and Automatic trigger sweep.
0.2 µs/div. to 0.2 s/div., 1-2-5 sequence 19 steps with continuous adjuster.

±3%
One sweep or more
5[10] times ±5%

TV Synchronization

**X-Y Mode (X=CH-1, Y=CH-2)**

- **Sensitivity**
- **X axis Bandwidth**
- **X-Y phase**

**Calibrator**

- **Output Voltage**
- **Frequency**

**Power Requirements**

- **Line Voltage**
- **Power Consumption**

**Size and Weight**

- **160(H) x 290(W) x 375(D) mm, 8.5 kg**

**Supplied Accessories**

- Direct/Low capacitance probe LP-16 AX
- BNC terminal adapter
- Time lag fuse
- Instruction manual

**Optional Accessories**

- Protective front cover
- Accessories pouch

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### Bandwidth Table

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<tr>
<th></th>
<th>Bandwidth</th>
<th>INT.</th>
<th>EXT.</th>
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<tbody>
<tr>
<td><strong>NORM</strong></td>
<td>30 Hz – 10 MHz</td>
<td>0.5 div.</td>
<td>0.2V p-p</td>
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<tr>
<td></td>
<td>2 Hz – 20[36] MHz</td>
<td>1.5 div.</td>
<td>0.6V p-p</td>
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<tr>
<td><strong>AUTO</strong></td>
<td>30 Hz – 10 MHz</td>
<td>0.5 div.</td>
<td>0.2V p-p</td>
</tr>
<tr>
<td></td>
<td>30 Hz – 20[35] MHz</td>
<td>1.5 div.</td>
<td>0.6V p-p</td>
</tr>
</tbody>
</table>

Extracts the synchronizing signal from composite video signal and provides stable synchronization. Slope switch is selected according to polarity of video signals.

- X axis: 5 mV/div. to 5V/div.
- Y axis: 5 mV/div. to 5V/div.
- DC or 10 Hz to 1 MHz (−3 dB, ref. 8 div.)
- Less than 3° at 100 kHz

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<tr>
<td></td>
<td>0.5V p-p ±2%</td>
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<tr>
<td></td>
<td>Approx. 1 kHz, square wave</td>
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</tbody>
</table>

**Power Requirements**

- AC 100, 120, 200, 220, 240V 50/60 Hz
- 50W