

Equipment Profiles

- Lafayette LR-1500T AM/FM Stereo Receiver
- Knight-Kit KG-687 Sweep-Marker Generator
- Elac STS-444E Stereo Phono Cartridge
- Klipsch Cornwall II Speaker System

Lafayette LR-1500T Solid State AM/FM Stereo Receiver

MANUFACTURER'S SPECIFICATIONS:

Amplifier Section. Power Output: Music Power (IHF), 175 W at 4 ohms, 125 W at 8 ohms; RMS Power, 140 W at 4 ohms, 100 W at 8 ohms. Harmonic Distortion: < 1% at rated output; < 0.15% at 1 W. Power Bandwidth (IHF): 20-35,000 Hz. Frequency Response: 20-20,000 Hz ± 0.75 dB. Hum & Noise: high-level inputs, -75 dB; low-level inputs, -57 dB. Tone Control Action: ± 12 dB at 50 Hz; ± 12 dB at 10,000 Hz.

Tuner Section. (FM) Usable Sensitivity (IHF) 1.5 μ V. Selectivity, 40 dB. Capture

Ratio: 1.25 dB. S/N: 68 dB. Harmonic Distortion: 0.3%. Spurious Response Rejection: 95 dB. AM Suppression: 50 dB. Stereo Separation: 40 dB at 400 Hz. (AM): Sensitivity: 15 μ V. Image Rejection: 50 dB at 1 MHz. S/N: 45 dB.

General. Dimensions: 16 $\frac{3}{4}$ " W x 5" H x 14 $\frac{1}{4}$ " D. Weight: 30 lbs. Price: \$279.95.

The Lafayette LR-1500T is the "top-of-the-line" stereo receiver marketed by this well-known mail-order and retail company under its own name. All of the units in this line have been completely re-styled and re-designed to provide an outward appearance that belies their reasonable prices.

The LR-1500T's heavy brushed gold and brown charcoal panel is gracefully complemented by turned metal knobs for main functions and matching charcoal-brown rocker switches for secondary functions. Dial illumination is soft, but adequate, as is the subdued

tuning-meter illumination. Just a hint of light green is evident.

If you relish an abundance of controls, this receiver will delight you. Besides the usual ones there are some unexpected controls that bear mentioning. The mode switch has the anticipated MONO and STEREO positions, but it also has such positions as BALANCE R, BALANCE L (a pair of positions which enables you to hear a mono mix first out of the left speaker and then out of the right—a supposed aid in achieving level balance), STEREO REVERSE (a feature that went out of most designs years ago, in view of recording and tape standardization as to which was left and which was right) and, finally, L INPUT and R INPUT—a feeding of either of the input channels to both speakers.

The tape-monitor switch, normally a simple on-off affair, is here given the status of a major control having four positions: off, stereo, left, and right. The "off" position is the normal one to use



Fig. 1—Lafayette LR-1500T AM/FM stereo receiver.

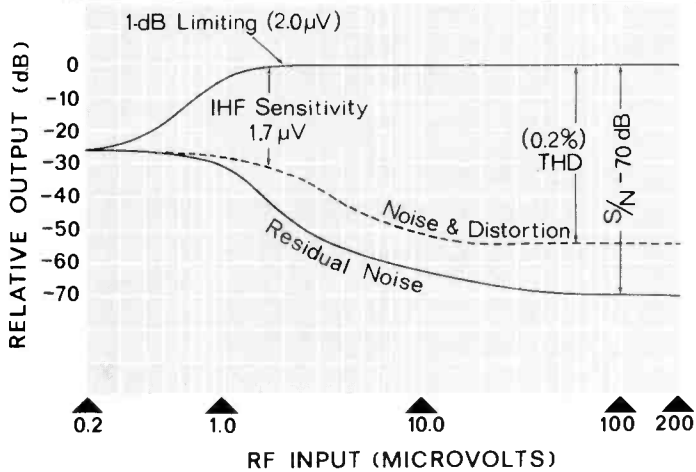


Fig. 2—FM characteristics.

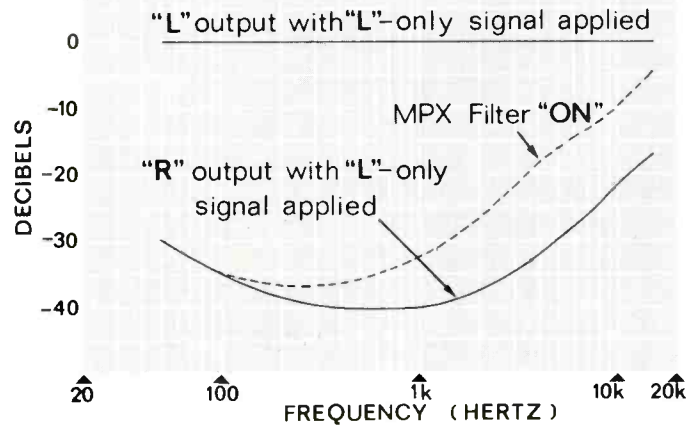


Fig. 3—Stereo FM separation.

Fig. 4—Total harmonic distortion and IM distortion.

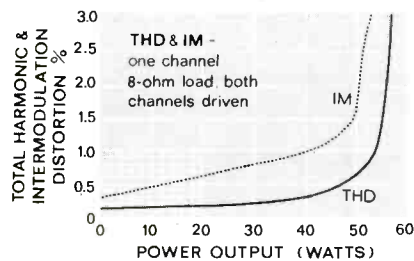


Fig. 5—Power bandwidth.

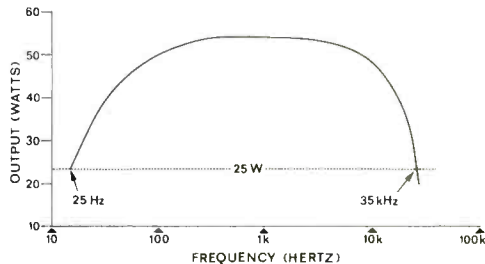
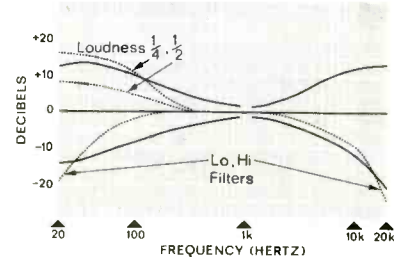


Fig. 6—Tone control, loudness, and filter action.



Equipment Profiles (continued)

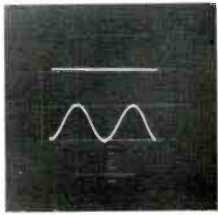


Fig. 7—Forty dB of stereo FM separation on LR-1500T. Upper trace is right-channel output when left only is applied. Lower trace is left output.

when you *don't* want the monitoring function. At first glance this is confusing (though not so when the same word is used on a slide or rocker switch). One tends to think it may be the opposite or, at very least, a power switch. As for the other positions, they indicate what comes out of the tape output jacks. Nomenclature on the dual volume control is misleading. Labelled **BALANCE** and **VOLUME**, the implication is that the inner knob is a regular balance control while the outer controls level of both channels—not so at all! They're really a pair of individual channel-level controls. The word balance, as we later learned to interpret it, simply means, "Set the outer knob for desired level from one speaker and then use the inner knob to raise the level at the other speaker until it is 'balanced' with respect to the first"! In other words, there is no balance control as we have come to know it.

A variable mute control, adjustable by rotating the edge of a knob up or down (see Fig. 1) is located between the tuning and speaker-mode controls. Since really effective muting between stations takes place very near the maximum setting of this control, it might well have been a simple on/off switch instead of a continuously variable control. Interestingly, it works on AM as well as on FM, and the AM of this receiver is worth listening to. Bandwidth is all that's claimed by the manufacturers, which no doubt explains why we felt that the AM fidelity was not *that* much inferior to FM. The tuning meter, too, works as a peak indicating meter for both AM and FM, being most effective on AM. On FM, as is true of so many of these meter circuits, it is useful for tuning in center of channel, but not for gauging signal strength. (Anything over 20 μ V kicks the meter up to practically full scale.)

The minor objections voiced with respect to the logic of the panel layout are more than offset by the measured and listened-to performance of the LR-1500T. Our measured IHF FM sensitivity was 1.7 μ V—a fine figure indeed. Figure 2 tells the rest of the story about quieting (70 dB against claimed 68 dB) and total harmonic distortion (0.2%

against claimed 0.3%). Stereo FM separation does indeed make the 40 dB claimed, as shown in Fig. 3, although it is much less when the MPX filter is introduced. Happily, we did not require the use of this filter on 12 out of the 13 stereo FM stations we received with this sensitive tuner section.

As for the amplifier, it is really a rugged performer. Because of its exceptionally high power rating, we decided to do our subjective listening with *two* sets of 8-ohm speakers, with both in the same room. Playing the systems for about two hours at "discotheque" level (about 20 dB higher than "Carnegie Hall podium level") could not break up these fine sounding amplifiers. Audible IM was as low as any we've heard. The amplifiers refused to quit, even though driving four, relatively inefficient "acoustic suspension" speaker systems!

The THD and IM curves of Fig. 4 confirm everything we heard, as do the power bandwidth curves of Fig. 5 and the frequency response and tone-control action curves of Fig. 6. Loudness contour action at $\frac{1}{2}$ and $\frac{1}{4}$ volume and Lo & Hi Filter action is also shown in Fig. 6. The dual trace of Fig. 7 shows what 40 dB of stereo FM separation

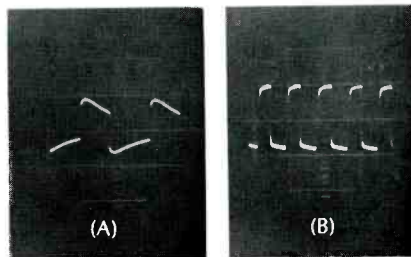


Fig. 8—Square-wave response of LR-1500T at (A) 100 Hz and (B) 10 kHz.

looks like, graphically, while Fig. 8 illustrates square-wave response at 100 Hz and 10,000 Hz.

A real aid in balancing the phono cartridge to match FM and AM levels is the three-position rear-panel phono sensitivity switch. During our tests we shorted the output terminals of one channel and found that the overload protection circuit (dubbed "Computer-Matic"TM) really works—sound is interrupted (and output transistors "saved") until the short is removed.

In summarizing the attributes of the Lafayette LR-1500T AM/FM stereo receiver, it offers outstanding performance (even on AM), many controls (though perhaps too many), attractive styling, and a price that, at \$279.95, appears to be unusually low.

Check No. 52 on Reader Service Card

Knight-Kit Sweep-Marker Generator Model KG-687



MANUFACTURER'S SPECIFICATIONS:

Frequency Coverage: 3 to 220 MHz (center frequencies) in five bands all on fundamentals. Sweep Frequency: 60 Hz. Sweep Width: Continuously variable, 0-18 MHz on Band A; 0-8 MHz at TV i.f. frequencies. Output Voltage: 3 to 50 MHz, 0.3 V rms min.; 50 to 120 MHz, 0.1 V rms min.; 120 MHz to 220 MHz, 50 mV rms. min. Marker Oscillator: 2 MHz to 75 MHz on three fundamental bands; additional harmonic band to 225 MHz. Crystal: 4.5 MHz supplied; 500 kHz to 20 MHz crystals of standard Mil Hc/6U type holder may be used. Output Impedance: 75 ohms. Blanking: r.f. shutoff during retrace. Output Attenuator: 4-step switched. Horizontal Phasing: screwdriver adjust. Dimensions: 14 $\frac{3}{4}$ W x 7 $\frac{3}{4}$ H x 10 $\frac{1}{4}$ D. Weight: 13 pounds. Price, \$120.00.

Occasionally, the audio buff needs a sweep generator to align his or another's FM tuner or receiver, or possibly to perform the usual miracles so that his (or another's) TV set resumes its usual high-quality performance. For this purpose, the sweep generator is practically indispensable.

Since the fundamental requirements of the sweep generator are the same regardless of the basic frequency range, it is readily possible to construct a sweep unit which performs equally well in the TV frequencies and in the FM range. The basic principles of operation is the characteristic of a saturable reactor to be modulated by a variable a.c. voltage so that the oscillator windings on the same core are modulated by the a.c. signal. The oscillator consists of a transistor stage operating as a shunt-fed Colpitts oscillator with the inductive winding wound on the core of the saturable reactor. The output of the oscillator is fed through two cascaded emitter followers to the attenuator and the output, thus minimizing oscillator loading. In order to maintain a constancy of signal output, part of the output from the second emitter follower is rectified and fed back to an automatic level control transistor stage which varies the bias on the oscillator so as to maintain a constant voltage output over the swept range.