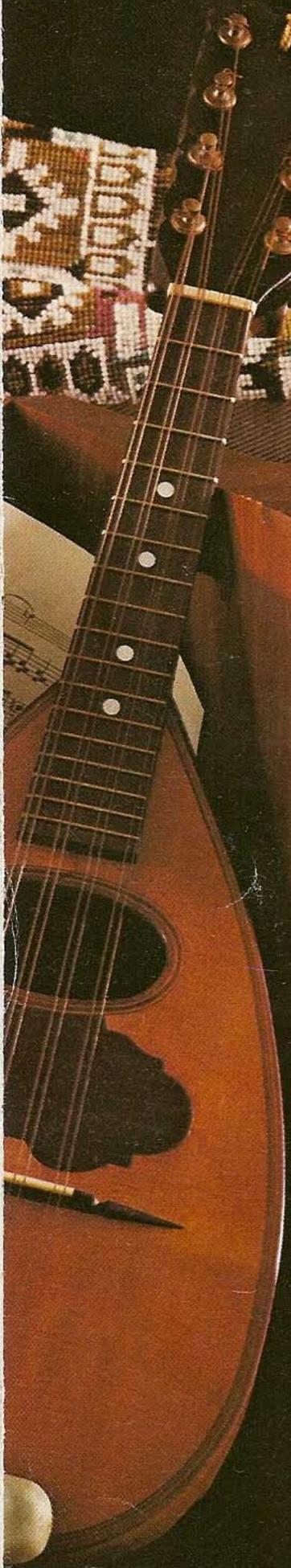
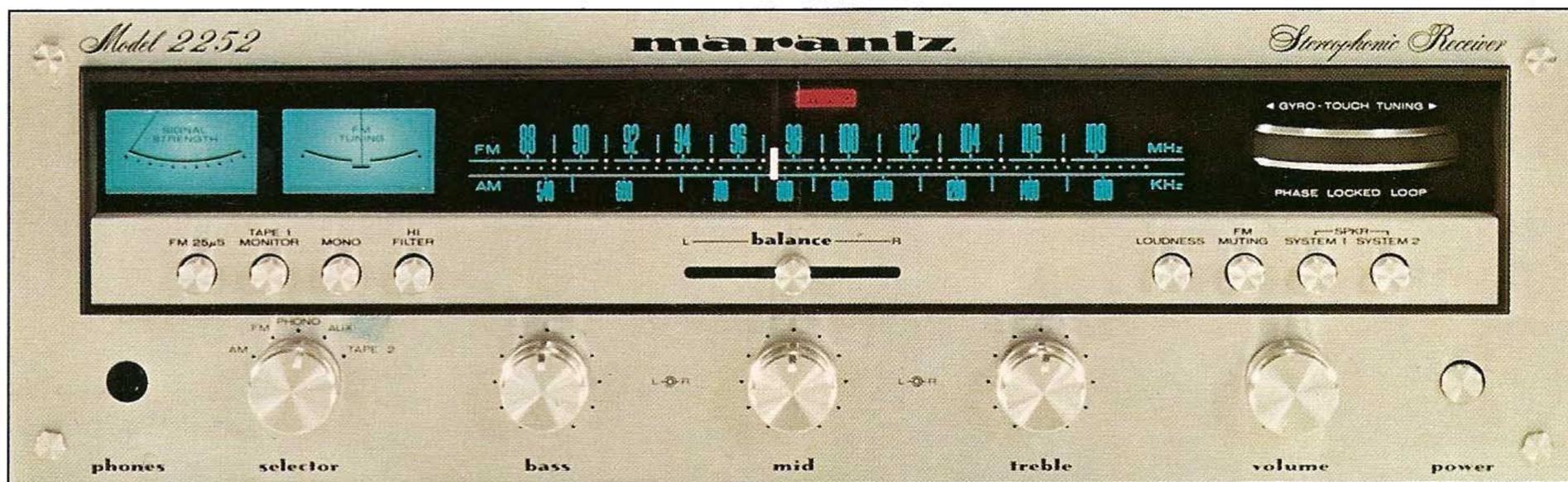


# marantz®

## STEREO RECEIVERS MODELS 2252, 2238 2226, 2216



# MORE POWER, MORE FEATURES THAN EVER



## Introducing Marantz Models 2252, 2238, 2226 and 2216 - four of the exciting new Marantz receivers for 1977.

Never until now has a line of stereo receivers packed so much muscle and so little distortion.

The Marantz 2252 produces a minimum continuous power output of 52 watts per channel, with no more than 0.1% total harmonic distortion, from 20 Hz to 20 kHz, both channels driven into 8 ohms.

Under the same conditions, the 2238 delivers 38 watts per channel, with no more than 0.1% total harmonic distortion. The 2226 delivers 26 watts per channel, with no more than 0.3% THD. And the 2216 delivers 16 watts per channel, with no more than 0.5% THD.

Whichever Marantz receiver you choose, you get the same technical expertise and uncompromising standards of excellence that made Marantz the world's most respected name in high fidelity.

A Marantz may cost more than an ordinary stereo receiver. But that's because we put more quality into a Marantz. And it's because a Marantz is designed to continue to meet its specifications through years of steady performance.

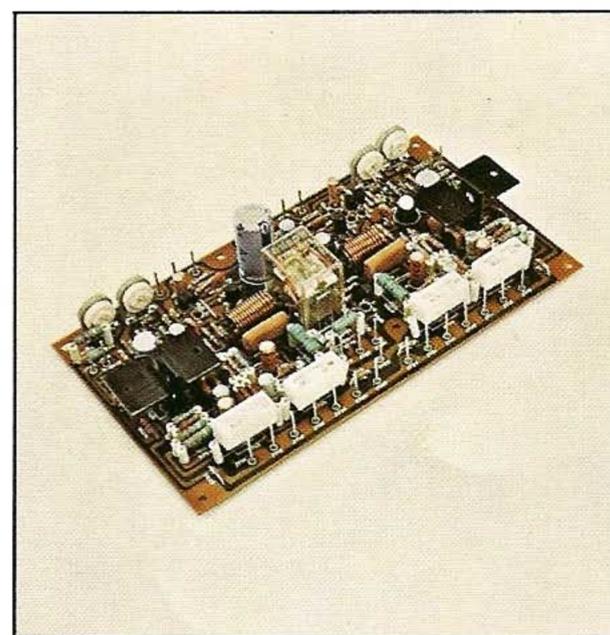
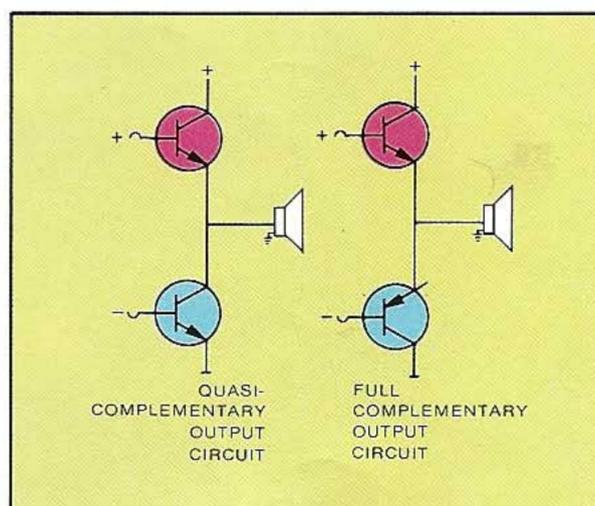
You don't just buy a Marantz, you invest in it.

### POWER AMPLIFIER SECTION Full Complementary Symmetry Output

Every Marantz receiver features a full complementary symmetry output stage — the same design used extensively in Marantz professional components. It's more costly than the quasi-complementary outputs of many receivers. But it assures significant performance improvements in linearity and harmonic and intermodulation distortion over other types of output stage circuitry.

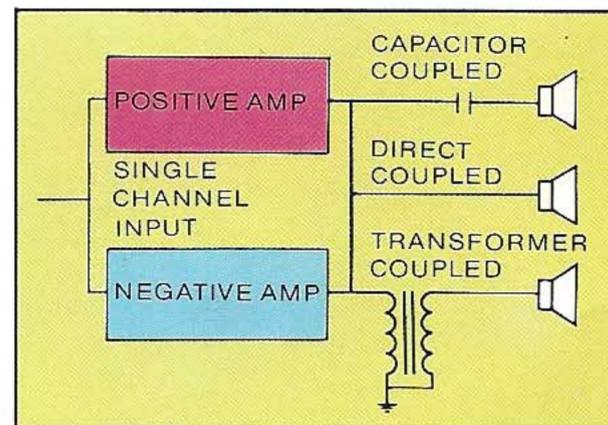
The Marantz output stage design also produces an exceptionally wide Safe Operating Area — that range where voltage, current and temperature conditions permit reliable output stage operation. The result is an amplifier section so stable, it will drive a load at virtually any frequency or level without breaking down.

Output devices and speakers are guarded by a sophisticated energy-sensing protection circuit, which eliminates distortion caused by the traditional protection circuitry used in ordinary receivers.



### Direct Coupled Power Output

Provides wide power bandwidth, excellent low frequency transient response and improved damping factors.



Early transistorized power amplifiers incorporated either a transformer or a capacitor between output stage and speaker terminals. However necessary this was for adequate output-to-speaker coupling, it tended to limit low fre-

# PERFORMANCE, MORE BEFORE. MARANTZ.

quency power response or cause degrading phase shift.

Today's more advanced technology has eliminated the need for coupling transformers and capacitors and the sound inaccuracies they can cause. As a result, Marantz direct-coupled receivers assure you of extremely high damping factors at low frequencies and the best possible low frequency response.

## Heavy-Duty Power Supply

High reserve power supply sections and power output circuitry ensure that Marantz receivers will continue to meet specifications through years of steady performance.

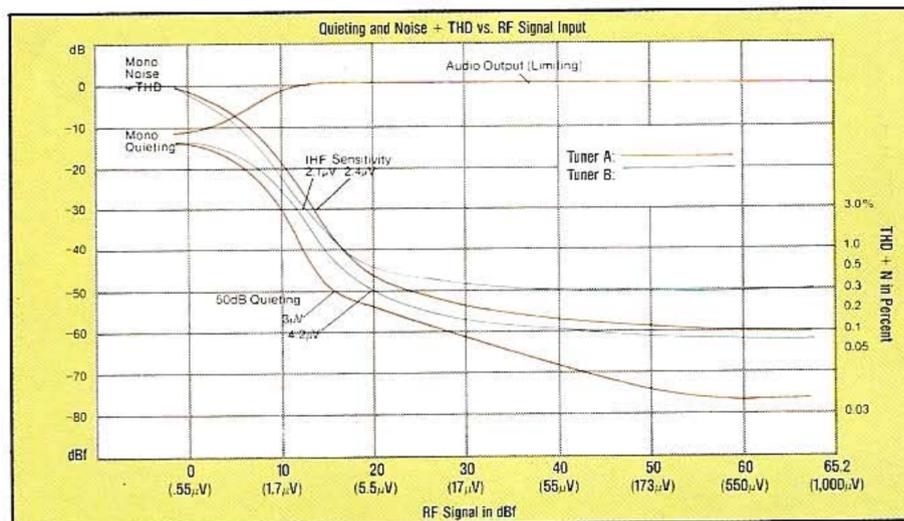
An oversized power transformer forms the heart of a dual-balanced positive and negative power supply that symmetrically powers the amplifier stages. Large-capacity electrolytic capacitors assure high energy power reserves, while massive heat sinks promote highly reliable, long-term operation even under full power output conditions.

## TUNER SECTION Steep Quieting Slope

The quieting slope specification measures a tuner's ability to provide good signal-to-noise performance under actual operating conditions. It's a far more reliable indication of quality than the IHF sensitivity figure often quoted as the prime specification to consider when evaluating an FM tuner.

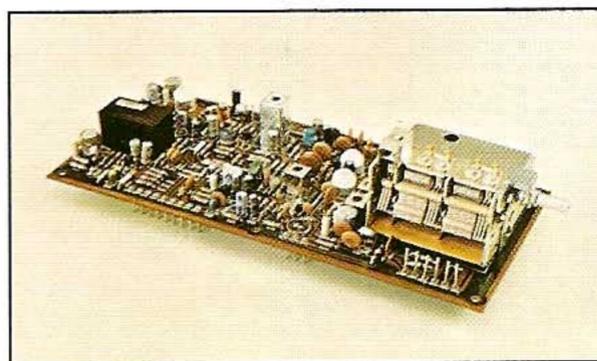
The IHF figure gives only the number of microvolts necessary for minimum quality reception: a signal with 3% distortion and noise (30 dB quieting) hardly qualifies as high fidelity. A signal-to-noise ratio in excess of 50 dB (the revised 1975 IHF specification) is generally recognized to be necessary for high quality listening. It is most important, then, to examine a receiver's ability to quiet quickly beyond the 30 dB quieting point.

Quieting slope sensitivity figures measure the signal-to-noise ratio in the crucial five to 500 microvolt range, where the majority of usable broadcast signals fall. The steeper the slope, the quieter, and therefore the more listenable, the station.



Two tuners with comparable weak signal sensitivities, but significantly different quieting slopes. Tuner A, with an IHF sensitivity of  $2.4\mu\text{V}$ , appears to deliver slightly less performance than tuner B, with an IHF sensitivity of  $2.1\mu\text{V}$ . However, tuner A's steeper quieting slope (red line) indicates that it gets quieter, faster than tuner B — a significant advantage under actual performance conditions.

## Highly Sensitive Dual-Gate MOSFET FM Front End



The superior quieting sensitivity of Marantz receivers is largely due to the use of dual-gate MOSFET RF amplifier and mixer stages. Moreover, MOSFET devices deliver extremely linear operation, providing low intermodulation distortion and excellent rejection of spurious signals.

Outstanding selectivity is provided by a three-gang tuning capacitor, while a dual-tuned RF interstage improves image and spurious signal rejection.

## Phase Locked Loop FM Stereo Demodulator

The Phase locked loop (PLL) design

locks to the stereo pilot signal broadcast by an FM station. This positive "phase lock" enables the multiplex demodulator to separate the stereo channel information from the FM multiplex signal with more accuracy and less distortion than multiplex demodulators using other designs.

PLL is dependent on pilot phase and not on pilot amplitude, making it less susceptible to false triggering from various types of noise interference.

## Ceramic IF Filters and IC Amplifier System

The performance of an FM tuner is determined to a great extent by the performance of its intermediate frequency (IF) amplifier. Marantz receivers utilize a comprehensive IC system, comprising IF amplifier, limiters and quadrature detector.

The amplifier stage consists of three dual-stage ceramic filters, plus one external discrete stage. The ceramic filters produce a 200 kHz passband which is linear in phase, eliminating a major source of high frequency distortion and loss of stereo separation. Sharp cut-off slopes improve the tuner's rejection and selectivity characteristics, permitting clear reception even when stations are closely spaced.

## FM Dolby\* De-emphasis Network

All three receivers have a built-in 25 microsecond FM equalization circuit to help you receive the clean, quiet reception promised by Dolbyized FM broadcasts. When used in tandem with a Dolby Noise Reduction System, the network can cut noise by as much as 12 dB. That's the equivalent of reduc-

was developed by the space industry to provide a state-of-the-art communication system. Today the same technology is used in all Marantz receivers and tuners to assure low distortion, superior noise rejection and excellent stereo separation.

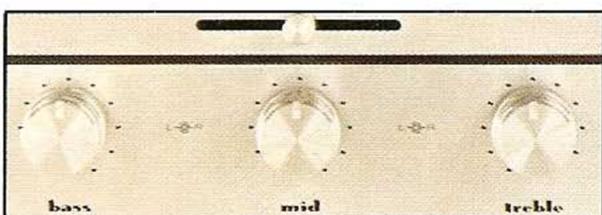
PLL circuitry

ing the noise power of a received FM broadcast sixteen times below normal.

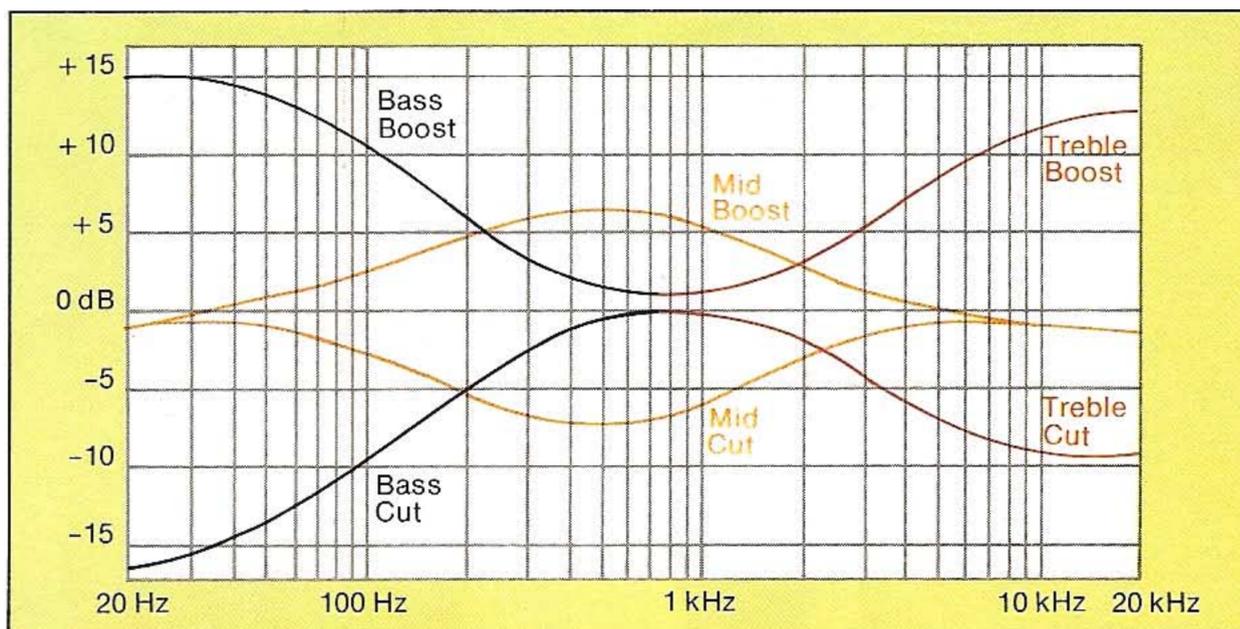
## PREAMPLIFIER SECTION Flexible Tone Controls

The more flexible the tone controls, the more accurately you can adjust for non-linearities in frequency response caused by speakers, speaker placement, room acoustics or the program source itself.

These Marantz receivers feature Baxandall-type negative feedback tone control circuitry that virtually eliminates a major problem with many conventional tone controls — their tendency to affect too wide a band of frequencies. The Baxandall design concentrates the



boost or cut in the lowest bass and highest treble ranges without undue effect on the midrange frequencies. The midrange control can then be used to adjust mid-frequencies without af-



fecting bass and treble.

It's an exceptionally versatile tone control system that provides superior compensation for the wide variety of loudspeakers and accessories that can be used with Marantz receivers.

## High-Performance Phono Preamp

Low distortion and a wide dynamic range are paramount in the circuit design of a phono section.

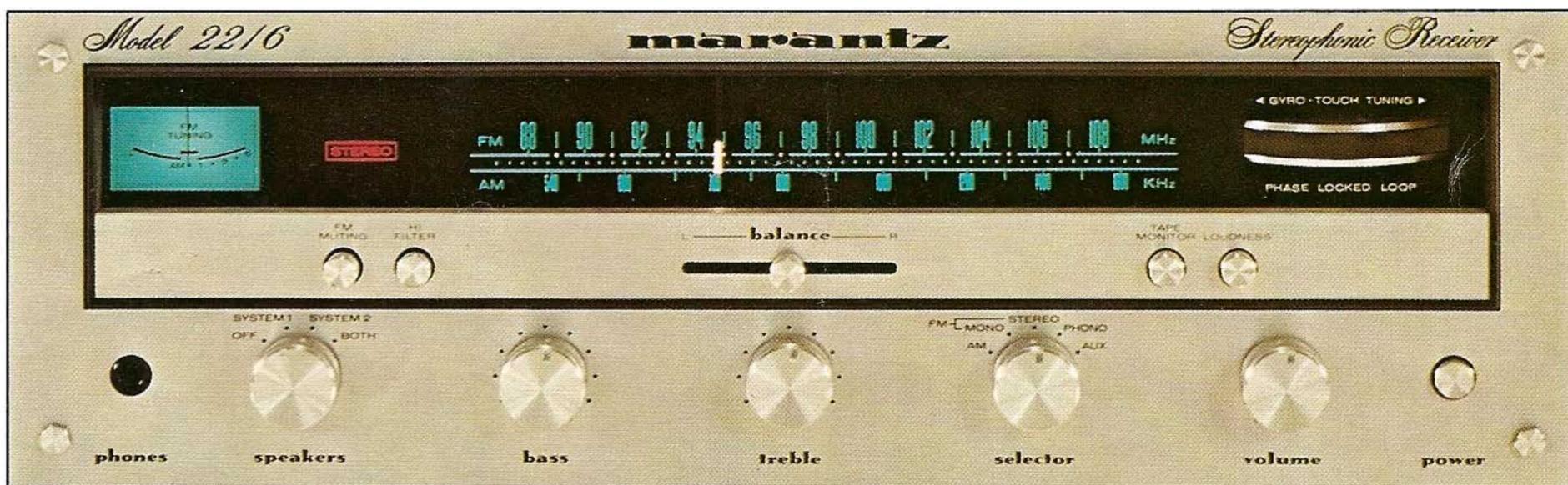
The three-stage, 40 dB gain amplifier built into these Marantz receivers

utilizes feedback-equalized circuitry to keep distortion at a negligible level.

And we ensure superior overall performance by employing only close-tolerance, highly stable components: tantalum input coupling capacitors, low-noise carbon-film resistors, Mylar output coupling and polystyrene-type equalization capacitors.

As a result, RIAA equalization is precise, and under test, the equivalent noise input to the phono sections measures a low 1.5 microvolts.

# Model 2216 The least expensive Marantz receiver is still a Marantz.



And that means the 2216 gives you the same painstaking craftsmanship and quality material that characterize every Marantz component. It's the way we've always done business. The only way we care to do business.

The Marantz 2216 delivers a minimum continuous power output of 16 watts per channel across the full bandwidth from 20 Hz to 20 kHz, with no more than 0.5% total harmonic distortion, both channels driven into 8 ohms. And we've built in an impressive number of the design concepts featured in more expensive Marantz receivers.

Inside and out, the Model 2216 is every inch a Marantz. Even so, we've managed to keep the price down to what you might expect to pay for an ordinary receiver.

The Model 2216. Why settle for just any receiver when you can have a Marantz.

## AMPLIFIER SECTION.

The full complementary symmetry output stage provides low distortion and exceptional linearity. The power supply is fully equal to the Marantz reputation for highly reliable, long-term operation and high power reserves.

## TUNER SECTION.

Phase locked loop FM stereo demodulator, ceramic filters in the IF amplifier section, three-gang tuning capacitor and FET RF amplifiers ensure that the 2216 will deliver an FM signal with minimum noise and distor-

tion, while maintaining excellent sensitivity and selectivity.

## PREAMPLIFIER SECTION.

Baxandall-type negative feedback tone control circuitry allows smooth, precise tone adjustment. The phono section is carefully engineered to produce a wide dynamic range and low distortion.

Other features include defeatable FM muting, main and remote speaker switching, headphone jack, dual-purpose AM signal strength/FM center channel tuning meter, slide-type balance control, Marantz's exclusive Gyro-Touch Tuning and a full range of inputs and outputs.

# SPECIFICATIONS FOR MARANTZ STEREO RECEIVERS

## AMPLIFIER SECTION

Rated Power Output, Minimum Continuous Watts per Channel from 20Hz to 20kHz, both Channels driven into 8 Ohms

Total Harmonic Distortion

IM Distortion (IHF method, 60Hz to 7kHz mixed 4-to-1 at rated power output)

Damping Factor at 20Hz

	2252	2238	2226	2216
Rated Power Output	52	38	26	16
Total Harmonic Distortion	0.1%	0.1%	0.2%	0.5%
IM Distortion	0.1%	0.1%	0.2%	0.5%
Damping Factor	45	45	45	40

## PREAMPLIFIER SECTION

### PHONO

Input Overload at 1kHz  
Equivalent Input Noise  
Dynamic Range (ratio of input overload to equivalent input noise)  
Input Sensitivity (Input Impedance, 47k ohms)  
Signal-to-Noise Ratio (at rated output and 7.75mV input)  
Frequency Response (RIAA, 20Hz to 20kHz)

### HIGH LEVEL INPUTS (Aux & Tape)

Input Sensitivity  
Input Impedance  
Signal-to-Noise Ratio (at rated output and 7.75mV input)

### OUTPUT IMPEDANCE

Tape out  
Pre-out

	2252	2238	2226	2216
Input Overload at 1kHz	100mV	100mV	100mV	100mV
Equivalent Input Noise	1.5 $\mu$ V	1.5 $\mu$ V	1.5 $\mu$ V	2.5 $\mu$ V
Dynamic Range	96dB	96dB	96dB	92dB
Input Sensitivity	1.8mV	1.8mV	1.8mV	2.2mV
Signal-to-Noise Ratio	76dB	76dB	75dB	74dB
Frequency Response	$\pm$ 0.75dB	$\pm$ 1.0dB	$\pm$ 1.0dB	$\pm$ 1.0dB
Input Sensitivity	180mV	180mV	180mV	150mV
Input Impedance	85k ohms	85k ohms	85k ohms	100k ohms
Signal-to-Noise Ratio	88dB	87dB	84dB	84dB
Tape out	600 ohms	600 ohms	600 ohms	600 ohms
Pre-out	900 ohms	900 ohms	900 ohms	900 ohms

## AM/FM TUNER SECTION

### SENSITIVITY

IHF Usable (Mono)

IHF 50dB Quieting Mono

Stereo

### QUIETING SLOPE (Mono)

RF Input for 30dB Quieting

Quieting at:

20dBf (5.5 $\mu$ V)

25dBf (10 $\mu$ V)

40dBf (55 $\mu$ V)

65dBf (1,000 $\mu$ V)

### DISTORTION, Mono and (Stereo), at 65dBf

100Hz

1,000Hz

6,000Hz

### HUM AND NOISE at 65dBf (1,000 $\mu$ V)

Mono

### FREQUENCY RESPONSE, 30Hz to 15kHz

Mono

Stereo

### CAPTURE RATIO at 65dBf (1,000 $\mu$ V)

### ALTERNATE CHANNEL SELECTIVITY

### SPURIOUS RESPONSE REJECTION

### IMAGE RESPONSE REJECTION

### IF REJECTION (Balanced)

### AM SUPPRESSION

### STEREO SEPARATION

100Hz

1,000Hz

10,000Hz

### SUBCARRIER REJECTION

### AM USABLE SENSITIVITY (IHF)

### AM DISTORTION (THD) at 30%

Modulation

### SIGNAL-TO-NOISE RATIO (AM)

### DIMENSIONS

Width

Height

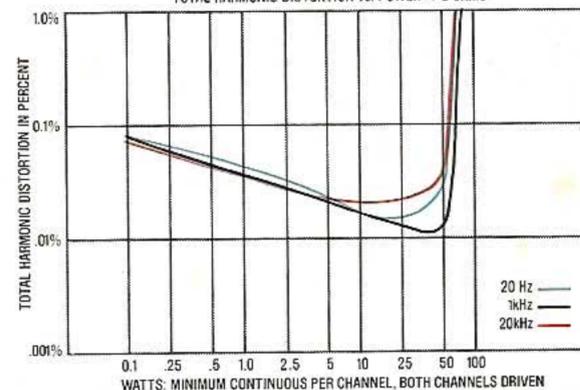
Depth

### WEIGHT

	2252	2238	2226	2216
IHF Usable (Mono)	10.8dBf (1.9 $\mu$ V)	10.8dBf (1.9 $\mu$ V)	10.8dBf (1.9 $\mu$ V)	13.2dBf (2.5 $\mu$ V)
IHF 50dB Quieting Mono	17.3dBf (4.0 $\mu$ V)	17.3dBf (4.0 $\mu$ V)	17.3dBf (4.0 $\mu$ V)	19.2dBf (5.0 $\mu$ V)
Stereo	37.2dBf (40.0 $\mu$ V)	37.2dBf (40.0 $\mu$ V)	37.2dBf (40.0 $\mu$ V)	39.2dBf (50.0 $\mu$ V)
RF Input for 30dB Quieting	9.8dBf (1.7 $\mu$ V)	9.8dBf (1.7 $\mu$ V)	9.8dBf (1.7 $\mu$ V)	12dBf (2.2 $\mu$ V)
Quieting at:				
20dBf (5.5 $\mu$ V)	51dB	51dB	51dB	50dB
25dBf (10 $\mu$ V)	58dB	58dB	58dB	55dB
40dBf (55 $\mu$ V)	65dB	65dB	65dB	63dB
65dBf (1,000 $\mu$ V)	72dB	72dB	72dB	68dB
Distortion (Mono)	0.25% (0.35%)	0.25% (0.35%)	0.25% (0.35%)	0.4% (0.7%)
1,000Hz	0.15% (0.3%)	0.15% (0.3%)	0.15% (0.3%)	
6,000Hz	0.4% (0.5%)	0.4% (0.5%)	0.4% (0.5%)	
Hum and Noise (Mono)	-70dB	-70dB	-70dB	-68dB
Frequency Response (Mono)	+0.2, -2.0dB	+0.2, -2.0dB	+0.2, -2.0dB	$\pm$ 2.0dB
Stereo	$\pm$ 2.0dB	$\pm$ 2.0dB	$\pm$ 2.0dB	$\pm$ 2.0dB
Capture Ratio	1.0dB	1.0dB	1.0dB	3.0dB
Alternate Channel Selectivity	70dB	70dB	70dB	50dB
Spurious Response Rejection	90dB	90dB	90dB	75dB
Image Response Rejection	70dB	60dB	60dB	50dB
IF Rejection	95dB	90dB	90dB	70dB
AM Suppression	50dB	50dB	50dB	45dB
Stereo Separation				
100Hz	42dB	42dB	42dB	35dB
1,000Hz	45dB	45dB	45dB	38dB
10,000Hz	32dB	32dB	32dB	30dB
Subcarrier Rejection	60dB	60dB	60dB	55dB
AM Usable Sensitivity	20 $\mu$ V	20 $\mu$ V	20 $\mu$ V	25 $\mu$ V
AM Distortion	0.6%	0.6%	0.6%	0.7%
Signal-to-Noise Ratio (AM)	49dB	49dB	49dB	49dB
Dimensions				
Width	-	17 $\frac{1}{4}$ in. (440mm)	-	-
Height	-	5 $\frac{3}{8}$ in. (137mm)	-	11 $\frac{1}{2}$ in. (292mm)
Depth	-	14 $\frac{3}{8}$ in. (365mm)	-	-
Weight	30.8 lb. (14 kg)	26.4 lb. (12 kg)	26.4 lb. (12 kg)	20.9 lb. (11.2 kg)

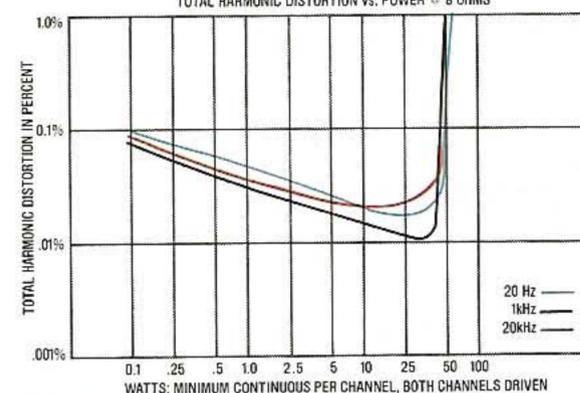
## Marantz 2252

TOTAL HARMONIC DISTORTION vs. POWER @ 8 OHMS



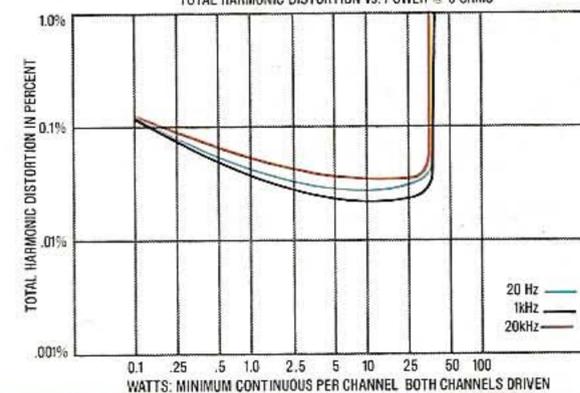
## Marantz 2238

TOTAL HARMONIC DISTORTION vs. POWER @ 8 OHMS



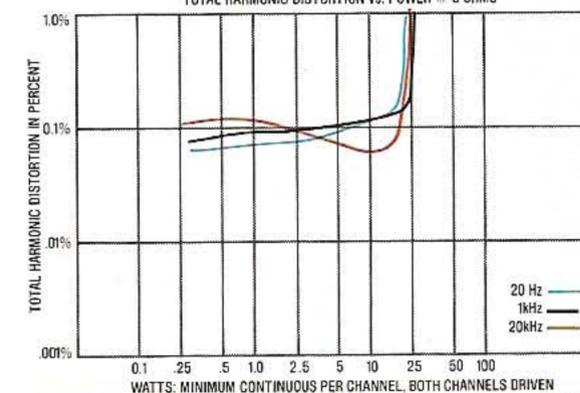
## Marantz 2226

TOTAL HARMONIC DISTORTION vs. POWER @ 8 OHMS



## Marantz 2216

TOTAL HARMONIC DISTORTION vs. POWER @ 8 OHMS



Graphs show left channel; right channel is equal or better.

**marantz**  
We sound better.

© 1977 Marantz Co., Inc., a subsidiary of Superscope, Inc., 20525 Nordhoff St., Chatsworth, CA 91311 • Superscope Europe, S.A., Brussels, Belgium • Superscope Canada, Ltd., Mississauga, Ontario • Marantz Far East, Inc., Tokyo, Japan. Models and specifications subject to change without notice. Consult Yellow Pages for your nearest Marantz dealer. Optional cabinets constructed of wood with genuine walnut wood veneer.

