marantz®

Stereo Receivers
2500 & 2385

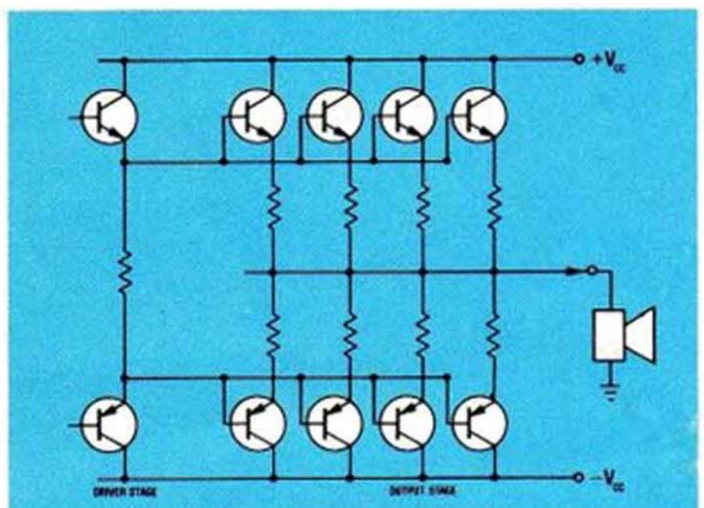
We sound better.
1977


Model 2500
VERT
CENTERING
HORIZ
TOROIDAL DUAL POWER S
TAPE COPY
1→2
2→1
TAPE MONITOR
1
2
REVERSE
FM25μS
FM
AM
1—PHONO
2
IN
OUT
selector

POWER AMPLIFIER SECTION

High-Power Full Complementary Symmetry Output

The mammoth power of these Marantz receivers is generated by the most sophisticated full complementary output stages in use today. Transistor array is quadruple-paralleled in the Model 2500; triple-paralleled in the 2385—designs occasionally used in separate components, but never before in receivers. They help provide long life, high power operation and exceptionally low total harmonic distortion. As low, in fact, as that of the Marantz 510M professional power amplifier.



FULL COMPLEMENTARY QUADRUPLE PARALLEL OUTPUT CONFIGURATION

Also like the 510M, the Marantz 2500 and 2385 are engineered to produce an extremely wide safe operating area—that range where voltage, current and temperature conditions permit reliable output stage operation. The amplifier sections are so stable, they will drive a load at virtually any frequency or level without breaking down.

In addition, the output stages of both receivers are biased for Class AB operation, a measure that prevents crossover distortion and ensures uncompromised performance to well below 1/1000 of full rated power.

Output devices and speakers are guarded by a professional-calibre energy-sensing circuit that doesn't limit the low energy, high amplitude short term transients essential to accurate music reproduction. As a result, output signals are free of the distortions and instabilities caused by conventional volt/amp limiting circuitry used in most receivers.

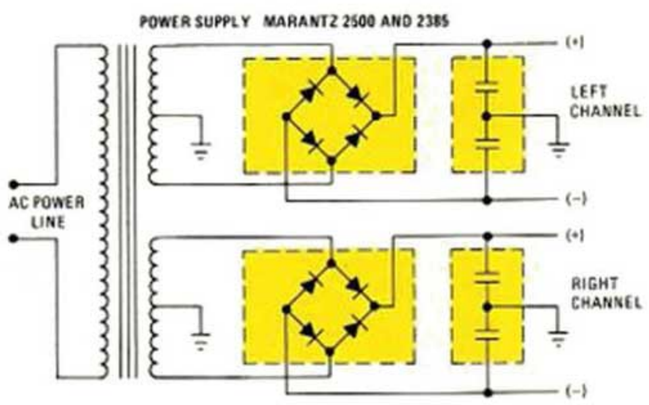
Direct Coupled Power Output

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

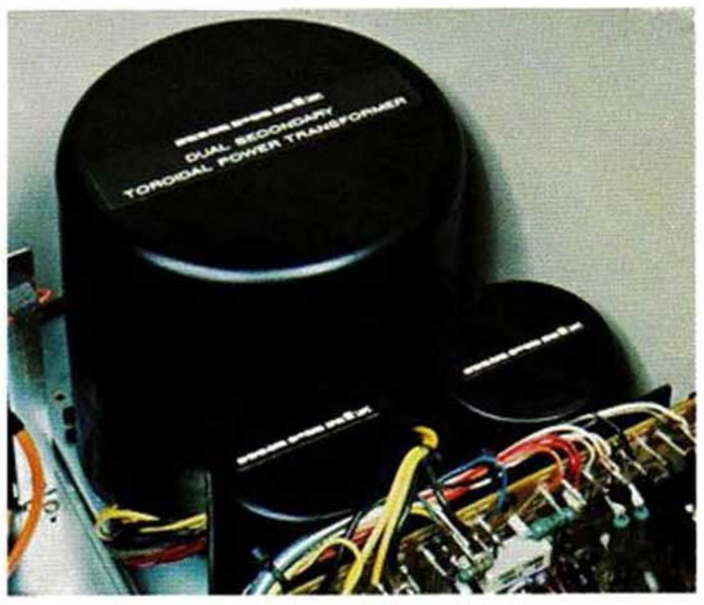
A number of high-power transistorized amplifiers still use capacitor- or transformer-coupled output stages to ensure reliability. However essential this design was in the past, it tended to limit low frequency power response or cause degrading phase shift. Moreover, today's technology has made compromise unnecessary.

The Marantz 2500 and 2385 achieve their high degree of stability without the need for coupling transformers and capacitors and the sound inaccuracies they can cause. The benefits are extremely high damping factors at low frequencies and excellent low frequency response.

Toroidal Dual Power Supply



A specially designed toroidal-core power transformer with dual secondaries gives you two independent power supply sections. Each channel can perform at its best, at all frequencies and levels, without affecting the other channel. In fact, even when one channel is driven by a high level dynamic signal demanding considerable power output, the other can still maintain exceptionally low distortion.



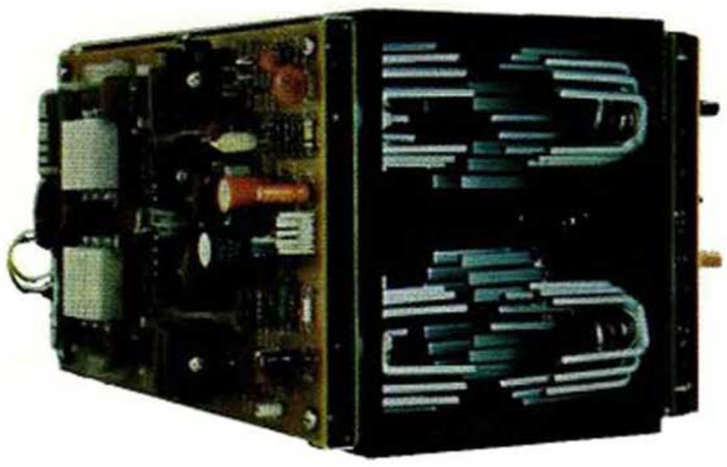
Complementing the transformer are high-capacity dual section electrolytic capacitors. This combination provides high power reserves, reliability and low distortion, while keeping heat and weight to a minimum.

Space-Age Heat Dissipators in Model 2500

Built into the Marantz 2500 is the same sophisticated method of heat dissipation used in the Marantz 510M professional power amplifier.

Most receivers use massive heat sinks with extruded cooling fins, which rely on convection currents slowly, evenly passing the fins and carrying away heat. However, a static boundary of air forms on the surface of the heat sink, acting as an insulator and sacrificing efficiency. As power- and heat-generating capacity increases, the problem becomes more and more acute. The Model 2500 would require conventional heat sinks of an all but impractical size and weight.

Instead, Marantz used the approach to heat dissipation developed by aerospace engineers, the highly efficient "pin fin" design. Output devices are mounted on the inside of a tunnel; attached to each transistor is a small, lightweight heat dissipator with twelve finger-like projections, "the pin fins."



A built-in fan draws air through the tunnel and around the fins, creating turbulence that breaks up the insulating layer of warm air. The fan is thermostatically controlled to rotate slowly, quietly at low volume levels, and more rapidly at high volumes, when maximum airflow is needed.

The result is a receiver capable of reliable long-term operation, even under full power output conditions. It is, moreover, a receiver that's remarkably compact and lightweight for the amount of power it can deliver.

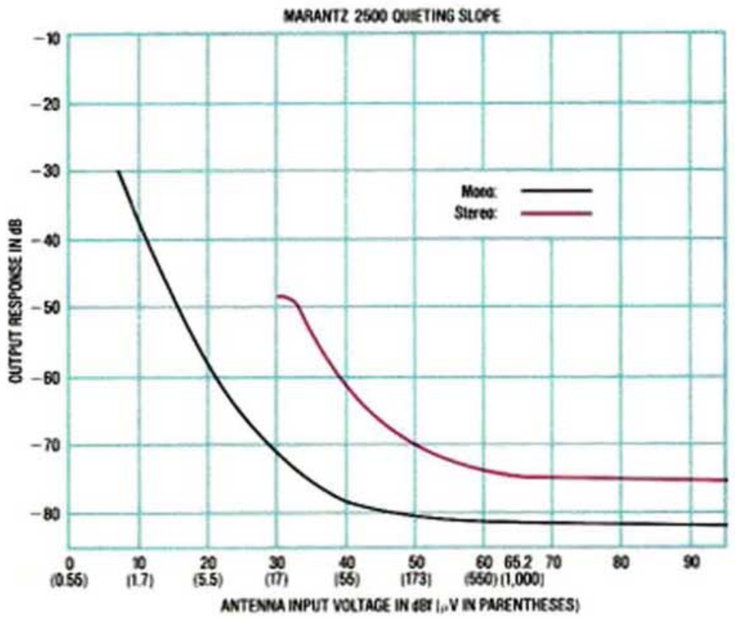
Peak Indicators

Both receivers use the same type of sophisticated peak LED display featured in the Marantz Model 510M power amplifier. Rather than simply sense the amp's output voltage as in most LED displays, the unique Marantz circuit tracks variations in the power supply. You get an accurate indication of maximum amplifier output regardless of low or high AC line conditions.

Peak indicators, unlike VU meters, react instantaneously to audio transients or excessively high input signals that cause clipping.

TUNER SECTION
Steep Quieting Slope

The quieting slope specification measures a tuner's ability to provide good signal-to-noise performance



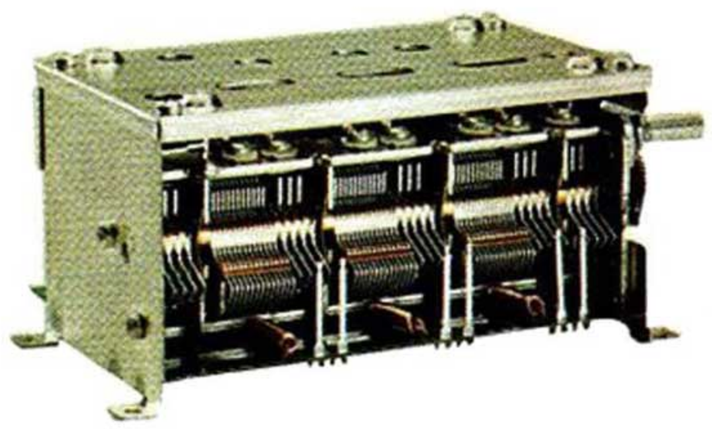
under actual operating conditions. It's a far more reliable indication of quality than the IHF sensitivity figure often quoted as the prime specification to consider when evaluating an FM tuner.

The graph shows the complete stereo and mono quieting specifications of Model 2500. Note too that stereo quieting at 50 dB is specified a low 33.2 dBf (25μV), dramatically superior to ordinary tuner designs. The result is a cleaner, quieter signal, in even the most remote areas.

Highly Sensitive Dual-Gate MOSFET FM Front End

The superior quieting sensitivity of Models 2500 and 2385 is largely due to the use of a dual-gate MOSFET RF amplifier and mixer stage. Moreover, MOSFET devices deliver extremely linear operation, providing low RF intermodulation distortion and excellent rejection of spurious signals.

An outstanding selectivity specification is ensured by a five-gang tuning capacitor, while a dual-tuned RF interstage provides improved image and spurious signal rejection.



Phase Locked Loop FM Stereo Demodulator

The phase locked loop (PLL) design 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 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 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.

Multi-Stage IF Section

Built into both receivers is a comprehensive six-stage IF amplifier section incorporating five dual-element ceramic filters. The characteristics of these filters produce a 200 kHz passband which is linear in phase, consequently eliminating a major source of high frequency distortion and loss of stereo separation. Sharp cut-off slopes improve tuner selectivity, assuring superior reception even when stations are closely spaced.

A multi-stage limiter comprised of two integrated circuits provides superb AM rejection and an excellent capture ratio—specified at 1.0 dB. Distortion (at 1 kHz) is kept at a minimal 0.1% in mono, and 0.2% in stereo.

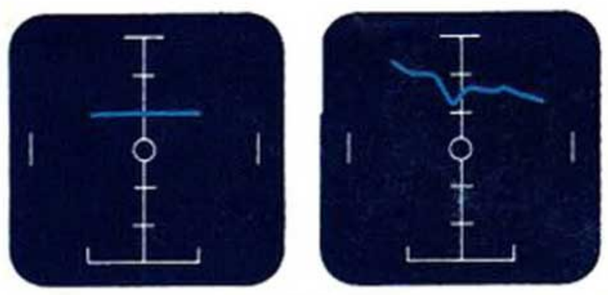
Plug-in Dolby* FM Capability

On the back panel of Models 2500 and 2385 is a convenient receptacle that accepts the optional plug-in Marantz DLB-1 Dolby FM Decoder. Inside the receivers is a 25-microsecond Dolby FM equalization circuit. In tandem, they can cut the noise from a Dolbyized FM broadcast by as much as 12 dB. That's the equivalent of reducing the noise power of a received FM signal sixteen times below normal.

Oscilloscope Display on Model 2500

There are no tuning meters on the Marantz 2500. Instead we've equipped it with a built-in oscilloscope, the most precise means for ensuring optimum reception, even from distant or weak stations. It indicates AM and FM signal strength and exact center channel tuning, as do tuning meters. But a scope can tell you much more. Among its other displays:

Multipath reception. Shows the shape of the IF bandpass curve, enabling you actually to see the cancellations caused by unwanted multipath signals. For optimum reception from each station, you need simply rotate your antenna to the direction giving the smoothest, most horizontal trace. No more trial and error. The multipath display also shows the instantaneous modulation level. (NOTE: The Marantz 2385 also helps reduce guesswork with a multipath/signal strength meter that indicates the *amount* of multipath interference.)



Stereo separation. Shows whether a lack of separation is the fault of the station transmitter, or a malfunction in your stereo system. Invaluable for troubleshooting.

Phase relationships. Indicates, for example, if your phono cartridge is wired incorrectly, or if an FM station is broadcasting out of phase.

Turntable rumble or feedback. Provides a visual readout of inaudible low frequency vibration, caused by an inadequately isolated turntable, that can produce listening fatigue.

*TM Dolby Labs, Inc.

Additional Features

Both receivers have a multiplex noise filter that reduces the background noise of weak FM stereo signals, while maintaining full frequency response. And they feature adjustable FM muting, a pivoting AM antenna and an "F" connector for simple connection of coaxial FM antenna cable.

PREAMPLIFIER SECTION
Flexible Tone Controls

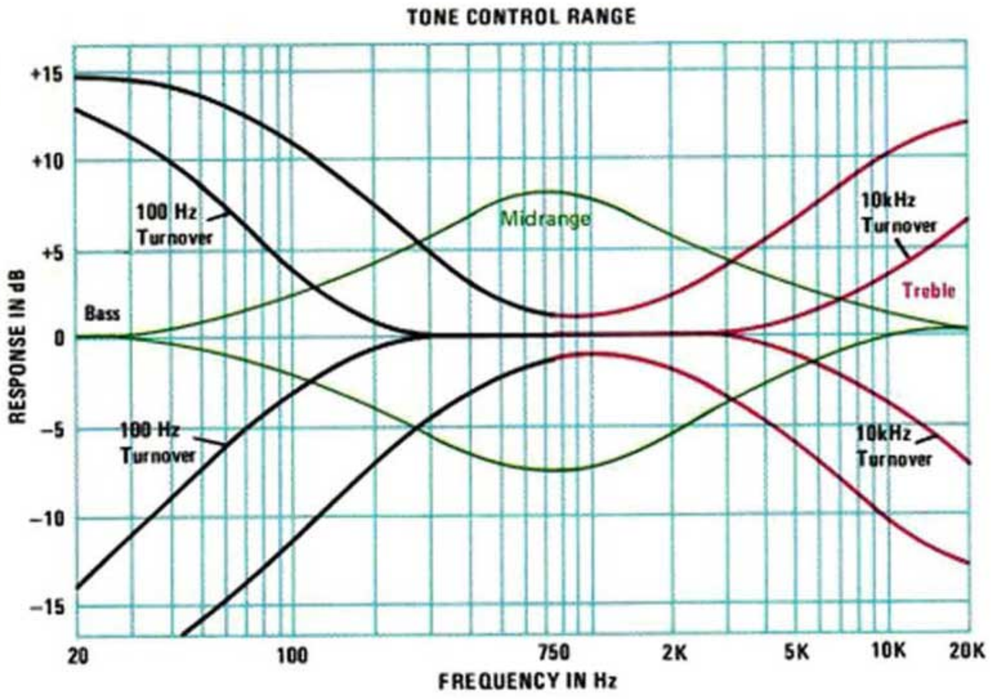
The more flexible the tone controls, the more accurately you can adjust for non-linearities caused by speakers, speaker placement, room acoustics or the program material itself.

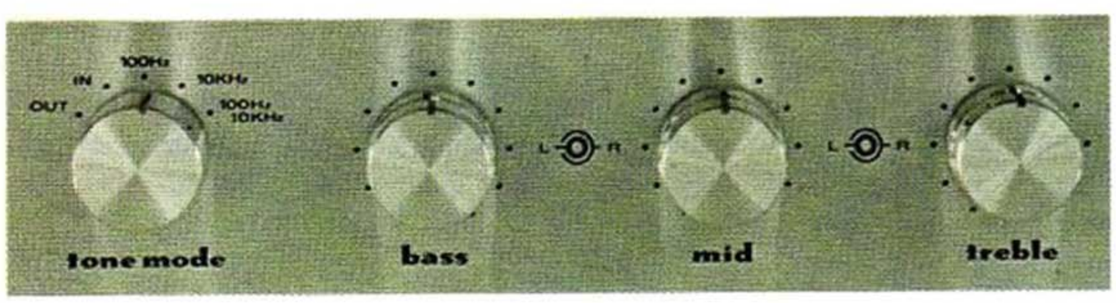
The tone control system in Marantz Models 2500 and 2385 features a sophisticated five-position tone turnover/mode switch for versatile bass, midrange and treble control. This eliminates a major shortcoming of conventional tone controls—their tendency to affect too wide a band of frequencies. Optional frequency turnover points limit the bass and treble controls to just the desired range.

The advantages can be illustrated by a practical example: boosting the low bass (under 100 Hz) to compensate for a deficiency in room acoustics. Most conventional tone controls, even if capable of supplying the boost, will also increase the output in the 300 Hz to 1,000 Hz region.

With the turnover point set at 100 Hz on a Marantz receiver, the bass control can provide the desired bass boost up to the frequency point of 100 Hz and leave the frequency range above the point essentially flat and unaffected.

This flexible, easy-to-set system permits a virtually unlimited number of repeatable settings, enabling you to adjust for the desired tonal balance in any listening environment.



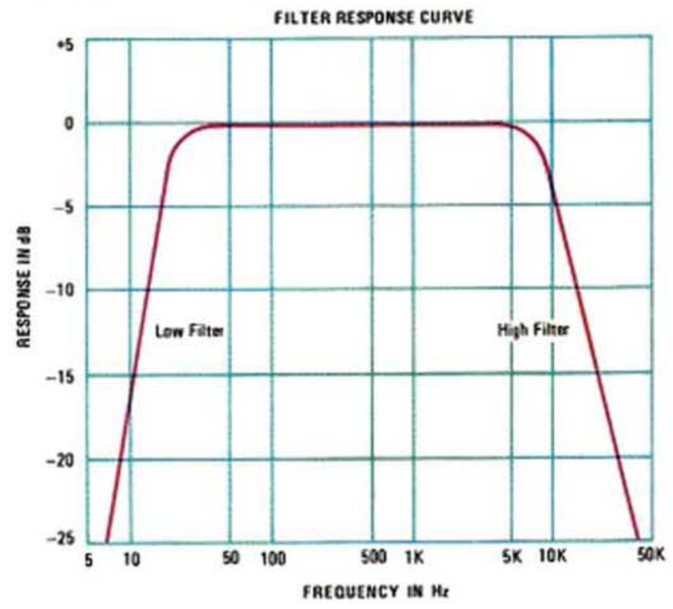


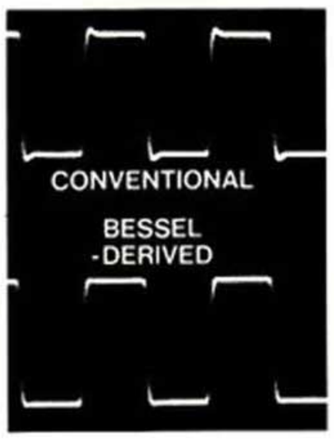
Precision Four-Gang Volume Control

Models 2500 and 2385 feature a precision-calibrated, stepped volume control. Its superb tracking accuracy of ±0.5 dB between left and right channels enables you to repeat volume settings with total accuracy.

The four-gang design helps produce exceptional signal-to-noise performance—typically greater than 10 dB over conventional volume control designs.

Superior Filter Design





9 kHz square wave response shows complete absence of overshoot in the Bessel high filter design. Result: greatly reduced audible ringing and coloration.

Both receivers feature an 18 dB per octave Bessel-derived high filter—the most advanced filter design in audio. It reduces high frequency noise—and produces a more natural, less colored sound because it eliminates the overshoot and "ringing" common to other filters. Results are linear phase response and greatly reduced phase and transient distortion.

An 18dB per octave 15 Hz subsonic Butterworth low filter cuts turntable rumble and subsonic transients that prevent accurate reproduction of low frequency signals.

Never before has such advanced filter technology been applied to any audio components, separates or receivers. 18 dB per octave filters provide positive filtering action with little coloration of sound by concentrating their effect only at the specified frequencies. Filters with slower roll-off characteristics, on the other hand, must start acting toward the midpoint of the frequency range in order to perform adequately at the extreme high or low end of the audio spectrum.

Radical New Phono Preamp in Model 2500

The phono circuit of Model 2500 has two complementary input differential amplifiers, coupled with dual complementary drive to the second voltage gain stage. This totally complementary topology ensures low open loop distortion, drastically lowering the need for negative feedback to correct for inherent device non-linearities.

The input stage has been carefully designed using low-noise transistors to provide superior low noise performance—only about 0.4μV equivalent input noise ("A" weighted) at tape output, with input shorted.

Open loop gain and compensation have been set to follow RIAA response as closely as possible within the crucial constraints of slew rate, interstage loading and transistor parameter variations. As a result, loop gain is constant; output and input impedances due to feedback remain constant, and closed loop stability and square wave response both are improved.

The phono circuit's complementary emitter-follower output stage isolates gain stages from RIAA network and supplies the necessary charging current to the feedback capacitors to ensure that the amplifier will respond instantaneously to changing musical waveforms.

In sum, the Model 2500 phono circuit represents a significant improvement over conventional design: circuitry optimized for sound quality instead of a "paper" specification. It's one more way Marantz builds for the music and not just the specs.

Flexible Tape-Copy Functions

In addition to the standard phono and auxiliary inputs, two sets of tape inputs and outputs are provided to facilitate dubbing between a pair of tape decks. A built-in tape copy facility can function independently of program selector and tape monitor circuitry, enabling you to dub from one deck to another while listening to a different program source.

Also featured are front-panel dubbing jacks that allow you to add a third tape deck without disturbing any rear panel connections.

Rear panel facilities include connections for two sets of speaker systems, main in/pre out jacks, a Quadradial® output jack and two convenience AC outlets.

For lack of a better name, we still call them receivers.

Perhaps we *should* have created a new product classification for the Marantz 2500 and 2385 stereo receivers. Because they're unlike any other receivers you've ever seen. Or heard.

Consider power, for example.

The 2500 delivers 250 minimum continuous watts per channel, with no more than 0.05% total harmonic distortion, from 20 Hz to 20 kHz, both channels driven into 8 ohms. It's by far the most powerful "receiver" in the world.

And the Marantz 2385, our No. 2, is still more powerful than anybody else's No. 1: 185 watts per channel, with the same incredibly low THD, under the same conditions.

And power is just part of the story. We've built in virtually every technological advance that can improve performance quality. Many never used in a receiver until now.

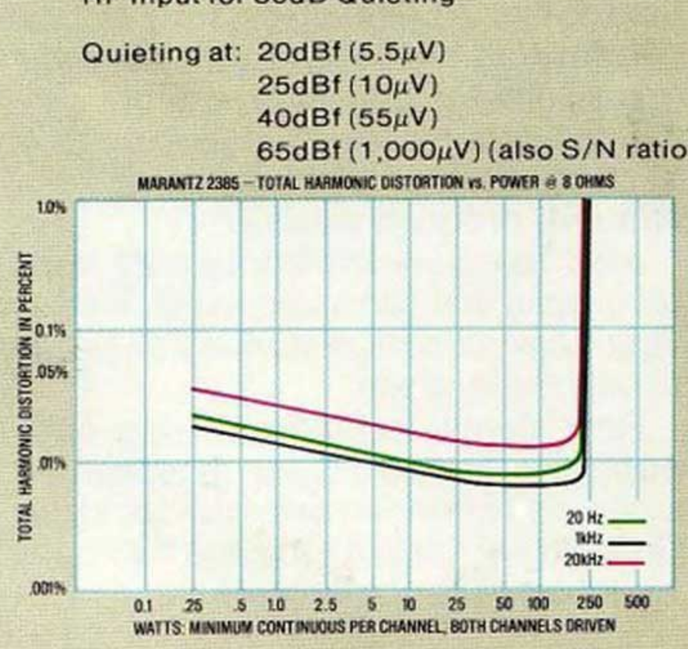
When you buy a Marantz 2500 or 2385, you're getting a stereo receiver that's really three separate components on one chassis. A receiver that surpasses—in power, in features, in specifications—the majority of separate components on the market today. All in a remarkably manageable size—lighter and more compact than many receivers that don't deliver nearly as much power or performance.

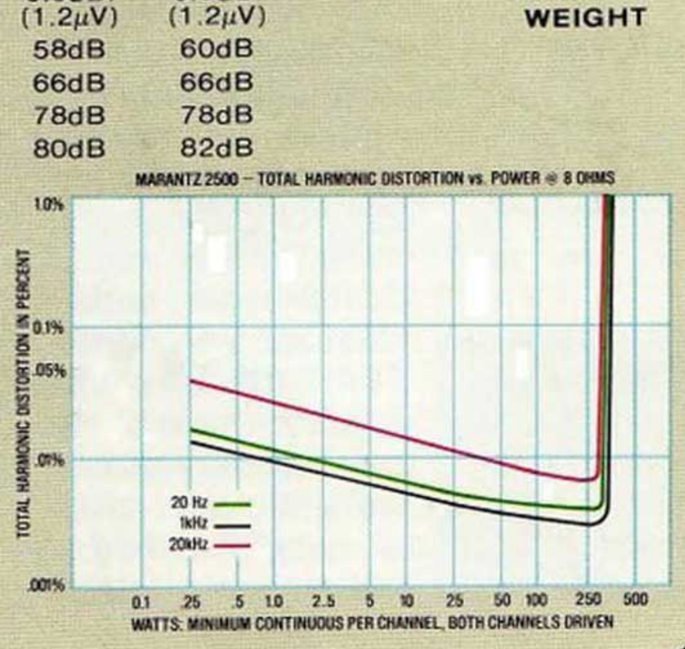
Models 2500 and 2385. Single-chassis components from Marantz.

SPECIFICATIONS

AMPLIFIER SECTION	**2385**	**2500**
Minimum Continuous Watts per Channel from 20Hz to 20kHz, both Channels driven into 8 Ohms	**185**	**250**
into 4 Ohms	**240**	**330**
Total Harmonic Distortion at 8 Ohms	**0.05%**	**0.05%**
at 4 Ohms	**0.1%**	**0.08%**
IM Distortion (IHF method, 60Hz & 7kHz mixed 4-to-1 at rated power output) at 8 Ohms	**0.05%**	**0.05%**
at 4 Ohms	**0.1%**	**0.08%**
Damping Factor at 20Hz	**60**	**60**
PREAMPLIFIER SECTION		
PHONO		
Input Overload at 1kHz	200mV	200mV
Equivalent Input Noise, "A" weighted	0.48μV	0.48μV
Dynamic Range (ratio of input overload to equivalent input noise)	113dB	113dB
Input Sensitivity (Input Impedance, 47k ohms)	1.8mV	1.8mV
Signal-to-Noise Ratio, "A" weighted (at rated output & 7.75mV input)	83dB	83dB
Frequency Response (RIAA, 20Hz to 20kHz)	±0.25dB	±0.2dB
Input Capacitance	100pF	100pF
HIGH LEVEL INPUTS (Aux & Tape)		
Input Sensitivity	180mV	180mV
Input Impedance	47k	55k
Signal-to-Noise Ratio, "A" weighted (at rated output & 7.75mV input)	98dB	98dB
OUTPUT IMPEDANCE		
Tape out	500 Ohms	500 Ohms
Pre-out	50 Ohms	300 Ohms
AM/FM TUNER SECTION		
SENSITIVITY		
IHF Usable (Mono)	8.75dBf (1.5μV)	8.75dBf (1.5μV)
IHF 50dB Quieting Mono	12.1dBf (2.2μV)	12.1dBf (2.2μV)
Stereo	33.2dBf (25μV)	33.2dBf (25μV)
QUIETING SLOPE (Mono)		
RF Input for 30dB Quieting	6.8dBf (1.2μV)	6.8dBf (1.2μV)
Quieting at: 20dBf (5.5μV)	58dB	60dB
25dBf (10μV)	66dB	66dB
40dBf (55μV)	78dB	78dB
65dBf (1,000μV) (also S/N ratio)	80dB	82dB

	2385	**2500**
QUIETING SLOPE (Stereo)		
Quieting at:		
30dBf (17μV)	49dB	49dB
40dBf (55μV)	62dB	62dB
50dBf (173μV)	70dB	70dB
65dBf (1,000μV) (also S/N ratio)	75dB	75dB
DISTORTION, Mono and (Stereo), at 65dBf		
100Hz	0.15% (0.35%)	0.15% (0.35%)
1,000Hz	0.1% (0.2%)	0.1% (0.2%)
6,000Hz	0.15% (0.3%)	0.15% (0.3%)
HUM AND NOISE at 65dBf (1,000μV) Mono	−80dB	−80dB
FREQUENCY RESPONSE, 30Hz to 15kHz, Mono and Stereo	+0.2dB −1.0dB	+0.2dB −1.0dB
CAPTURE RATIO at 65dBf (1,000μV)	1.0dB	1.0dB
ALTERNATE CHANNEL SELECTIVITY	85dB	85dB
SPURIOUS RESPONSE REJECTION	120dB	120dB
IMAGE RESPONSE REJECTION	120dB	120dB
IF REJECTION (Balanced)	120dB	120dB
AM SUPPRESSION	60dB	60dB
STEREO SEPARATION		
100Hz	45dB	45dB
1,000Hz	50dB	50dB
10,000Hz	42dB	42dB
SUBCARRIER REJECTION	75dB	75dB
AM USABLE SENSITIVITY (IHF)	10μV	10μV
AM DISTORTION (THD) at 30% Modulation	0.4%	0.4%
AM SIGNAL-TO-NOISE RATIO	55dB	55dB
DIMENSIONS		
Width	19¼ in. (491mm)	19¼ in. (491mm)
Height	7 in. (178mm)	7 in. (178mm)
Depth	17⅛ in. (435mm)	17⅛ in. (435mm)
WEIGHT	59.4 lb. (27kg)	60.3 lb. (27.4kg)





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