Sony STR-GX10ES AM/FM Audio-Video Receiver

Though it is small in comparison with the industrial supergiants of the electronic home-entertainment business, Sony has performed wonders in its 40-year history. From the transistor radio and the Walkman to the Compact Disc and the videocassette, the company has often called the tunes to which its elephantine competitors have danced. Although the STR-GX10ES may not be as preemptive as Sony's finest inspirations, it is nonetheless the flagship receiver of the premium ES Series and most certainly continues the Sony tradition of creativity.

TONY PETTINATO

Dimensions: 18¼ by 6¼ inches (front), 15 inches deep plus clearance for controls and connections.

AC Convenience Outlets: One switched, one unswitched (100 watts max. each).

Price: $1,200.

Warranty: "Limited," three years parts and labor.

Manufacturer: Sony Corp., Japan.

U.S. Distributor: Sony Corporation of America, Sony Dr., Park Ridge, N.J. 07656.

When we say "audio-video receiver," we always mean a model that will accept and route composite-video signals as well as audio signals. (A model that also tunes television signals would probably be called an AM/FM/TV audio-video receiver.) The GX10ES is the first audio-video component we've tested to offer S-video fittings that, in common with all Super VHS (and ED Beta) hardware and a growing number of monitor/receivers, maintain luminance (detail) and chrominance (color) components as separate, noninterfering signals.

On the back panel, each set of video connections consists of a composite-video pin jack, an S-video jack, and a pair of pin jacks to carry stereo audio. VIDEO 1 and 2 each have full sets of inputs and outputs for recording and playback with VCRs. VIDEO 3 (subtitled CD-V, even though it's equally appropriate for a regular Laserdisc-only player or a play-only tape deck) has only input connections. In addition, a set of composite- and S-video outputs are supplied to feed a monitor.

If "S" stands for Super (as in S-VHS), it also stands for System, as in Control System (two back-panel connections) or System Commander (the supplied RM-P103 wireless remote control, which runs on four AA cells). The receiver can be used as the central control unit in an all-Sony system and, for this purpose, has two Control-S outputs: a four-pin male connector for running audio components and a coaxial jack for video units.

Most owners will probably find the infrared remote control more useful because it can run the basic functions of a VCR, TV set, CD player, audio tape deck, and the receiver itself. It has three operating modes: Sony codes for compatible Sony components; "user standard," which can be programmed to the codes for components of other brands; and the "learning" mode by which such codes can be memorized. To accommodate all this, the remote has 54 push-buttons, two LEDs, and a three-position switch, all on a panel measuring nearly 4 by 7 inches.

At first glance, the remote's only important omission appears to be a recording selector like the one on the GX10ES's front panel. But with the remote, you can control recording from multiple sources by setting the front-panel recording selector to SOURCE and switching the source via the remote. With this setup, the source selected for listening (and viewing) will be fed to all of the recording outputs.

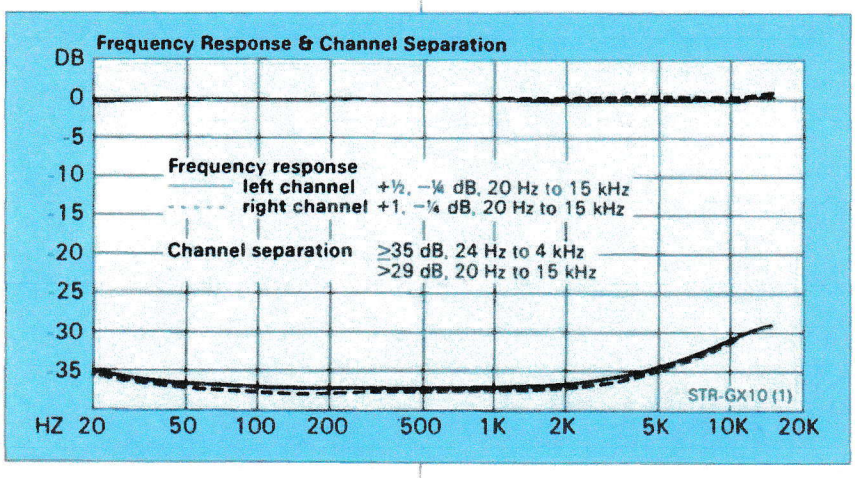
In addition to OFF (which prevents unused decks from loading down the signal feed), the front-panel recording selector has four dubbing options: TAPE (intended for an audio deck), DAT, VIDEO 1, and VIDEO 2. In each case, the deck used as the dubbing source receives no dubbing feed, so you won't experience feedback from a careless setup. In order to monitor the dubbed-to deck's output, you can choose it at the main source selectors.

Such off-the-tape monitoring isn't possible with the recording selector set to SOURCE and with the deck operating from any of the regular tape connections. But the GX10ES also supplies a set of "adapter" inputs and outputs that are switched at both the front panel and the remote. Patch your monitoring deck to these jacks, and you can monitor from the tape at will. Unlike many signal-processor loops and all pre-out/main-in connections, the adapter loop comes ahead of the volume control; hence, lev-

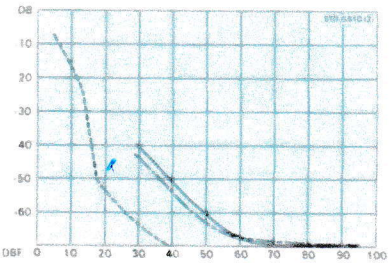
Test Reports

FM Tuner Section

Except as indicated, data shown with sensing feature off



Sensitivity & Quieting



stereo quieting (noise)
mono quieting (noise)
stereo quieting (noise) with sensing on

Stereo sensitivity (for 50-dB noise suppression)	39 ¼ dBf at 98 MHz, with 0.37% THD+N (40 ½ dBf at 90 MHz, 38 ¼ dBf at 106 MHz)
Mono sensitivity (for 50-dB noise suppression)	17 ¾ dBf at 98 MHz
Muting threshold	31 or 41 dBf
Scan threshold	33 ¼ or 43 ¼ dBf
Stereo threshold	30 or 39 ½ dBf
Stereo S/N ratio (at 65 dBf)	69 dB
Mono S/N ratio (at 65 dBf)	77 ¾ dB
Capture Ratio	2.1 dB
Selectivity	
alternate-channel	68 ¼ dB
adjacent-channel	12 dB
Harmonic Distortion (THD+N)	
	stereo / mono
at 100 Hz	0.26% / 0.11%
at 1 kHz	0.18% / 0.06%
at 6 kHz	0.30% / 0.08%
Stereo Pilot Intermodulation	0.06%
Intermodulation Distortion (mono)	0.03%
AM Suppression	64 dB
Pilot (19 kHz) Suppression	72 ½ dB
Subcarrier (38 kHz) Suppression	85 ¾ dB

els fed to the deck will be comparable to those at the regular tape-out jacks and be unaffected by the volume setting. (Back-panel pre-out jacks are also included, in case you want to run, say, a separately amplified subwoofer system.) Simulcasts are handled by the now-standard means of first switching the video source and then overriding its audio by choosing an audio-only source (in this case, the built-in FM tuner), which leaves the video unaffected.

The tuner offers four tuning-mode switches. The first switch selects either manual tuning (by 0.1-MHz half-channel steps on FM or 10-kHz full-channel steps on AM) or automatic tuning (to seek the nearest strong station). The second switch chooses between two threshold levels for automatic tuning, muting, and the stereo reception mode—adding about 10 dB to each in the high setting, as documented in the data. The third switch, marked SENSE, invokes a channel blend designed to increase as signal strength drops, thereby reducing noise on weak stations. The last tuning-mode switch selects either automatic mono/stereo FM switching and muting or mono-only reception with no interstation muting. In these features, Sony has included as much as ±2 dB of "hysteresis" (in a sense, electronic stiction) so that a minor change in signal level won't trip the threshold. This minimizes the amount of automatic switching during borderline reception.

The tuner's station presets, which can hold a total of 20 stations in any AM/FM mix, retain not only the frequency of the programmed stations but their tuning parameters as well. An aid to understanding and using these parameters—and a significant one if you use an antenna rotator—is the multisegment signal-strength indicator in the display area. The thresholds of its elements, as measured by Diversified Science Laboratories, are at 14½, 33, 40, 46½, and 62 dBf.

Measured performance of the tuner section is mostly very good. Since Sony claims a number of circuit refinements that address precision in tuning and filtration in addition to avoiding distortion and noise in the decoding circuitry, the excellent THD+N figures are to be expected. On the other hand, ultimate-quieting and capture-ratio figures are a little disappointing for this class of equipment. Selectivity splits the difference by being exceptional in the adjacent-channel figure but merely good in that for the alternate channel.

The data, however, do not appear to be as representative as we would like. When we began testing, we found that Sony had supplied a preproduction engineering sample without an instruction manual, a remote control (which arrived later), or an AM antenna. For some time, we struggled to understand what SENSE was supposed to do. From the lab data, it appeared to be little more than a fixed channel-blend control, except for an unusual increase in FM noise at signal strengths of 65 dBf and above when activated. Sony now suggests that if this feature had been working correctly, the GX10ES's quieting curve would have responded to signal strength more noticeably and rationally. I can only hope, therefore, that the measured sample is truly anomalous in its behavior and is not representative of a store-bought unit. (One obvious last-minute change in the test sample is the FM input on the back panel: a threaded F connector to mate with the antenna-downlead and cable-system standard in this country.)

The phono-preamp section has MM/MC options for fixed- or moving-coil cartridges, respectively; both are switched on the front panel. The latter introduces a small but very broad rise throughout the bass and midbass; the former rolls off slightly in the deep bass. Otherwise, their responses are very flat. There is little infrasonic rolloff (almost none for the MM option) to help control warp-frequency output. The switchable infrasonic filter helps, but it isn't very sharp. And its influence is visible almost up to 1 kHz in DSL's response trace; the curve is down 1 dB in the region around 60 Hz.

Of the three tone controls—treble, midrange, and bass—the first and last both have switchable inflection points. At its 6-kHz setting, the treble influences only the top of the range (with maxima of about 7 or 8 dB at 15 kHz); the 3-kHz setting moves the action down an octave

and delivers maxima of 11 to 12 dB at 15 kHz. The midrange control is firmly centered on 1 kHz, where its range is about ±14 dB, though it has some influence throughout the audio range down to 30 Hz. At its 400-Hz setting, the bass control shelves at about ±8 dB below 200

The GX10 supplies S-video connections.

Hz or so, with minor influence above 1 kHz; when set to 200 Hz, the range is slightly less and the frequency band affected not quite an octave lower. Otherwise, behavior is unusually predictable, with evenly spaced changes in response to each calibrated rotation point.

The loudness compensation is not level-dependent: It introduces a fixed boost of almost 10 dB (relative to response in the region around 1 to 2 kHz) below 100 Hz and another of almost 5 dB above 15 kHz or so. Sony has chosen to make loudness compensation available even when you switch the receiver to its source-direct operating mode—a setting intended to provide the most direct possible signal paths for the purest possible reproduction. Also available in the source-direct path is the infrasonic filter. Unavailable in source-direct, however, are the tone controls, the balance adjustment, and the mono/stereo switch needed to feed both speakers from mono-sound video sources. From the viewpoint of our test procedures, the only problem with these design choices is that balance couldn't be trimmed for measurements in the source-direct mode. The channel disparity at the volume setting required for the distortion test measured a hair less than 1 dB.

The "Spontaneous Twin Drive" imprinted on the front panel refers to the GX10ES's power-supply design. The feature includes separate rectification and voltage regulation for the voltage-amplification stages (the majority of those in such a receiver) and for the final, current-output stage. The purpose is to prevent voltage sags created by heavy current drains at the speaker outputs from distorting waveforms passing through earlier stages. To further prevent undesirable cross-influences, voltage regulation for the control circuitry is independent of that for the audio.

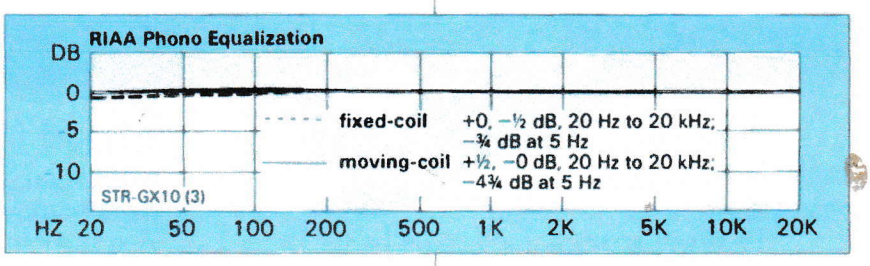
Like most of its Japanese competitors, Sony seems to be concerned with the possible adverse effects of physical vibration on signal purity. Its solution is called the G Chassis. Molded "in a sound-absorbing design" of a resin composite that includes calcium carbonate (marble) and glass fiber, it is claimed by Sony to be 2,000 times stronger than steel.

More practical, at least for some users, is Sony's 2-ohm rating of the power amplifier. Although DSL's dynamic-power measurements fell a little short of the actual ratings (possibly because of a different measurement approach), they confirm the basic premise of Sony's figures: The GX10ES delivers more current, and hence more power, as the load impedance drops to and below the 4 ohms at which so many amps begin to falter. The power provided is certainly substantial, even for a super-receiver, no matter how you slice these figures. Distortion is commendably and quite inaudibly low.

If our frequency-response figures look a little confusing, it's because the GX10ES's behavior is a little out of the ordinary. The tighter characterization, extending only to 43.1 kHz, falls within a spread of +¼, −0 dB. Normally, there is a rolloff beyond the end frequencies of this characterization, so that the positive deviation remains the same for the looser (−3-dB) description. But here, a peak in the receiver's ultrasonic response brings the maximum deviation to +1¾ dB. This behavior, though unimportant to audio quality, is unusual and, again, may be representative only of our test sample.

What we can be sure of is the basic tenor of our findings, which document the STR-GX10ES as an exceptionally powerful, capable, handsome, and well-thought-out audio-video receiver. Furthermore, it is a tribute to the design and organization of the front panel that there was little I couldn't fathom without a manual.

Robert Long



Amplifier Section

Rated Power (8 ohms)	
	21.8 dBW (150 watts)/channel
Output at Clipping (at 1 kHz; both channels driven)	
8-ohm load	22.2 dBW (165 watts)/channel
4-ohm load	23.6 dBW (230 watts)/channel
Dynamic Power (at 1 kHz)	
8-ohm load	23.3 dBW
4-ohm load	25.2 dBW
2-ohm load	26.2 dBW
Dynamic Headroom (re rated power; 8-ohm load)	
	+1.5 dB
Harmonic Distortion (THD; 20 Hz to 20 kHz)	
at 21.8 dBW (150 watts)	<0.010%
at 0 dBW (1 watt)	<0.01%
Frequency Response	
	+¼, −0 dB, <10 Hz to 43.1 kHz
	+1¾, −3 dB, <10 Hz to 195 kHz

Sensitivity & Noise (re 0 dBW; A-weighting)	**sensitivity**	**S/N ratio**
aux input	11.7 mV	75 dB
fixed-coil phono	0.19 mV	72½ dB
moving-coil phono	12.5 µV	67 dB
Phono Overload (1-kHz clipping)		
fixed-coil phono		130 mV
moving-coil phono		8.5 mV
Input Impedance		
aux input	46k ohms	
fixed-coil phono	49k ohms, 425 pF	
moving-coil phono	100 ohms	
Output Impedance (to tape)		
from aux input		1,250 ohms
from phono inputs		1,300 ohms
Damping Factor (at 50 Hz; re 8 ohms)	115	
Channel Separation (at 1 kHz)		62¼ dB
Infrasonic Filter	3 dB at 16 Hz, ≈6 dB/octave	