Sony TA-E9000ES Home Page

by Espen Braathen

January 2003 breaking news:
The service manuals for the TA-N9000ES and TA-P9000ES are now available for download. I have also added all the TA-E9000ES service bulletins as well as a detailed overview of common faults with can occur with this unit.

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Description:

The Sony TA-E9000Es is a high performance AV Control Amplifier. This page has been made to discuss the features and the

technical details of this product. The information is sourced from the users manual, a nice brochure made by Sony and other sources.

> *The TA-E9000ES features 2 of Sony's newly developed 32-bit DSP LSIs designed especially for Digital Cinema Processing, allowing you to experience the full impact of 3 of Hollywood's leading dubbing theatres with as few as 2 speakers. A separate 32-bit DSP enables exceptionally accurate decoding of three of the most advanced multi-channel formats available - Dolby Digital, dts and MPEG Multichannel.*

As of this writing the TA-E9000ES has been more or less discontinued by Sony. A replacement named TA-E10ES have been rumored to be in the works, but the launch of the new control amplifier has been indefinitely delayed. Don't expect any news on the TA-E10ES until 2003, if ever... Also, the model name may very well be changed if Sony ever decides to release a new surround pre amplifier. At the moment it looks like Sony is concentrating on making integrated home theater amplifiers instead. Personally I have now switched my surround processing duties to the Denon AVR-5803 (aka AVC-A1SR in Europe) THX Ultra2 A/V surround amplifier.


Spesifications and features

- Dolby Digital decoding
- Dolby Pro Logic Surround decoding
- dts Digital Surround decoding
- MPEG Multichannel decoding
- Sony Digital Cinema Sound processing
- Analog Devices SHARC 32-bit DSP processor
- 96/24 Crystal DIR (Digital Input Receiver)
- Advanced Puse Conversion DACs with digital volume control
- 1 MB Flash Memory for easy firmware upgrades

Rear panel

The Sony TA-E9000Es supports 5 audio source products and 6 video source products. The control amplifier supports both composite and s-video switching on all video product inputs.

- Audio products: Phono, Tuner, CD, MD/DAT, Tape
- Video products: Tv, DVD, LD, Video 1, Video 2, Video 3
- Digital audio inputs: CD (optical/coax), MD/DAT (optical), TV (optical), DVD (optical/coax), LD (optical coax)
- Digital audio outputs: MD/DAT (optical)
- AC-3/RF input for Dolby Digital from LD
- Analyzer/Mic input (not supported yet)
- RS-232C connector for firmware upgrades
- Video Processor in/out loop
- Pre out: Front (left/right), Rear (left/right), center (2x) and subwoofer (2x)
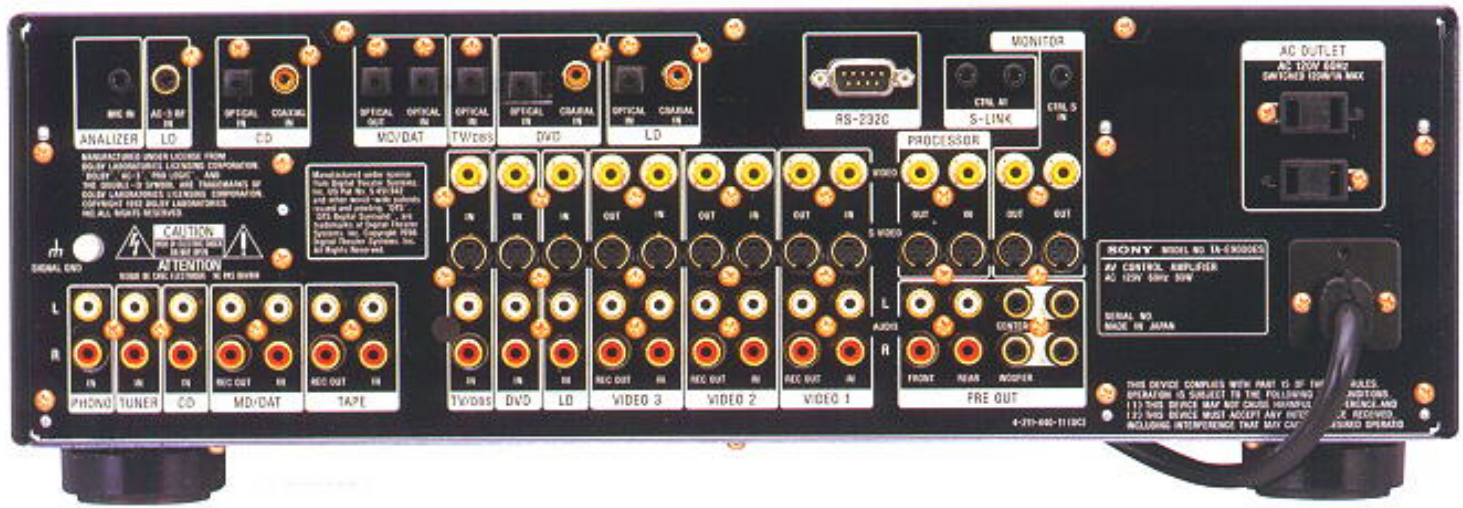
Firmware upgrades

The firmware in the Sony TA-E9000ES can be upgraded by connecting the RS-232C port on the back panel to a serial port on a PC with a suitable inter-link cable. The binary firmware data is then downloaded to the TA-E9000ES by a supplied FLASH overwriting program (included in the zip file below). The firmware for the display, control and decoding sections can be upgraded separately, however they are usually upgraded at the same time. The upgrade takes about 5 minutes at a baude rate of 56700 kbps.

Checking method of the firmware version:

Please follow this procedure to check the firmware version.

- Press power switch to power on.
- Press AUTO FORMAT button.
- Turn knob counterclockwise.
- The display will be scrolled.
- If "TA-E9000ES Vn.nn*" is appeared as the last item, the Vn.nn* is the version number. If "(scroll end)" is appeared as the last item, the version is Ver1.01A.

Contents of the modification (Ver 1.01A to Ver 1.10C):

1. Decode delay (Lip sync. Malfunction) at playing Dolby Digital (AC-3) has been modified.
2. The problem of no sound from Rch of the rear speaker at Dolby Digital (AC-3) [2/1], [3/1] mode has been improved.
3. The problem with no sound from sub woofer when setting Pro Logic against the signal with LFE at [2/0] of Dolby Digital (AC-3) has been improved.
4. The clipping problem in case of entering full-scale signal to LFE during dts play has been improved.
5. The malfunction with incorrect information display when playing special source of dts [2/0] has been improved.
6. A function for version display when scrolled to the end of the stream information display has been added.
7. The display malfunction of incorrect PCM bit number at the stream information display has been modified.
8. Modified as the vocal sound comes from the front when playing Karaoke DVD.
9. The malfunction that turns muting on when operation LEVEL menu with the remote controller after released MUTING by rotating the volume knob while MUTING is set has been modified.
10. Digital filter dither value has been modified for sound improvement.
11. New setting menu for using "one way remote commander" in CUSTOMIZE menu has been added. (One way remote

commander: RM-PP402 on sale in Jul/99 , etc)

12. The malfunction of no sound from the rear when playing 3/1 or 2/1 mode has been modified.

Download [firmware version 1.10c](#)!

Contents of the modification (Ver 1.10C to Ver 1.18C):

1. Details is unknown at this time.

Download [firmware version 1.18c](#)!

Contents of the modification (Ver 2.01):

Additional Functions in Version 2.0 for the TA-E9000ES

1. Digital Cinema Sound Function additions (7 modes)

   - CINEMA STUDIO EX A (*1)
   - CINEMA STUDIO EX B (*1)
   - CINEMA STUDIO EX C (*1)
   - VIRTUAL MATRIX 6.1 (*2)
   - SEMI C.STUDIO EX A (*1)
   - SEMI C.STUDIO EX B (*1)
   - SEMI C.STUDIO EX C (*1)

   *1: When this mode is selected, the EQ Bank function is not operative. Within the set parameters of this mode, the surround equalizer settings (bass, mid, treble) are the same as the following modes:

   - CINEMA STUDIO EX A == VIRTUAL THEATER A
   - CINEMA STUDIO EX B == VIRTUAL THEATER B
   - CINEMA STUDIO EX C == VIRTUAL THEATER C
   - SEMI C.STUDIO EX A == V.SEMI THEATER A
   - SEMI C.STUDIO EX B == V.SEMI THEATER B
   - SEMI C.STUDIO EX C == V.SEMI THEATER C

   *2: In Virtual Matrix 6.1 mode, the surround equalizer function is not operative.

2. Speaker Setup Menu Function additions

   - LFE High-Cut 40 Hz - 200 Hz

3. Surround Setup Menu Function additions

   - VIRTUAL SP ON/OFF (*3)
   - SCREEN DEPTH OFF/MID/DEEP (*3)
   - SCREEN DEPTH OFF/ON (*4)
   - REAR ENHANCER ON/OFF (*3)
   - 6.1 MATRIX ON/OFF (*4)

   *3: Operative for Cinema Studio EX A, B, C, and Semi-Cinema Studio EX A, B, C

*4: Operative for Virtual Matrix 6.1.

4. Level Setting Menu Function additions

   ❍ HP Level +/-10dB function addition
   ❍ The upper limit for the LFE-MIX setting range has been extended from 0dB to +6 dB

5. Customize Setting Menu Function additions

   ❍ ABS.PHASE NORMAL/REVERSE functions added
   ❍ NOISE BAND STD/WIDE/NARROW functions added
   ❍ Input function for function names added (possible to load into remote controller, up to 8 lines).

6. When the power is turned on, the new version number is displayed.

NOTE: The new functions which have been added cannot be operated with the two-way remote controller originally supplied with the TA-9000ES. (Please use the remote controller supplied with the VUCD-E9000A Upgrade Kit for the operation of the new functions or the TA-E9000ES front panel controls.)

Download firmware version 2.01c!
Download VUCD-E9000A Upgrade Kit User Manual

To install the new firmware you need a proper CD-key; this is only available by contacting me directly by e-mail at this address: espen-b@online.no. Please use "E9000A" as the subject. You will usually receive the CD-key within 24 hrs. Please read the VUCD-E9000A user manual before you begin to update the firmware! The upgrade takes 4 min 44 sec 907 ms if you use the maximal baud rate.

Contents of the modification (Ver 2.50):

This firmware adds decoding of MPEG-AAC audio as used by digital satellite broadcasting in Japan. This is the only real upgrade offered in this firmware version. Details on possible bug fixes from version 2.01 are unknown.

WARNING: In order to get all the features you must install both ver 2.01 and ver 2.50 of the firmware!

Download firmware version 2.50! (812 KB)

Send me a mail at espen-b@online.no to receive the CD-keys. Please use "E9000B" as the subject (automatically selected if you use the link above). If you don't use this subject the mail might get lost in my inboxes! You will usually receive the CD-keys within a couple of days if you observe this simple rule. As before the VUCD-E9000A user manual will give you the details on how to perform the upgrade in a safe manner.

Official Upgrade Kits for the TA-E9000ES

VUCD-E9000A

The VUCD-E9000A kit consists of a CD-ROM disc with the version 2.01c firmware, a RS-232C cable and a new remote control (RM-SU1). Retail price in Japan is 15 000 yen. In my opinion the kit is not worth the asking price just to get the new

remote. The RM-SU1 is a rather simple remote and it's a shame Sony could not come up with something more serious for the high price they charge for this kit (100 to 150 USD).

The RM-SU1 remote can apparently be ordered separately as a spare part using the sony part number: 1-476-402-11. Warning: I have aquired this information from a third party source and can not make any warranty on this claim.

VUCD-E9000B

The VUCD-E9000B kit consists of a CD-ROM disc with the version 2.5 firmware. This adds the capability to decode MPEG-2 Advanced Audio Coding (AAC). This is important in Japan as the local digital satellite brodcasting uses AAC as its audio CODEC. More details on AAC can be found at the official AAC web site: www.aac-audio.com The retail price for the "B" kit in Japan is 15 000 yen.

AAC - Store Less, Hear More

User Manuals Download

The following user manuals are downloadable as Adobe Acrobat PDF-files:

Sony TA-E9000ES AV Control Amplifier User Manual (1254 KB)
Sony VUCD-E9000A Upgrade Kit User Manual (2.01c firmware details) (157 KB)
Sony TA-N9000ES 5 Channel Power Amplifier User Manual (650 KB)
Sony TA-P9000ES Multichannel Pre Amplifier User Manual (496 KB)

Sony TA-P9000ES Multichannel Pre Amplifier User Manual Supplement (190 KB)

To download the desired user manual press the right mouse button on the corresponding link above and activate the "Save Target As" option.

Service Manuals Download

The following service manuals are downloadable as Adobe Acrobat PDF-files:

Sony TA-E9000ES AV Control Amplifier Service Manual (15 MB)
Sony TA-E9000ES AV Control Amplifier Service Manual Supplement (3 MB)
Sony TA-N9000ES 5 Channel Power Amplifier Service Manual (3.41 MB)
Sony TA-P9000ES 5.1 Analogue Pre Amplifier Service Manual (2.78 MB)

Service Bulletins Download

The following service bulletins are downloadable as Adobe Acrobat PDF-files:

Date: August 1999.
Subject: Noise in surround mode.
Fault: SRAM chips IC2007/IC2010/IC2013 are defective.
Service Bulletin No. HIFI1-99-011

Date: November 1999.
Subject: Short battery life.
Fault: Various symptoms with RM-TP501E remote controller.
Service Bulletin No. HIFI1-99-006R1

Date: April 2000.
Subject: No sound.
Fault: Transistor Q108 on the power board may be overdissipated.
Service Bulletin No. 628

Date: September 2000.
Subject: No sound.
Fault: Oscillation may cause Q108, Q109 and R124 on power board to break down.
Service Bulletin No. HIFI1-99-028R1

Date: November 2002.
Subject: No compatibility between new and old DISPLAY board and DIGITAL board.
Cause: Cable and connector has changed from 23 to 25 pin.
Service Bulletin No. HIFI1-02-011

Common faults

Power board:

The power supply is the main culprit for most of the TA-E9000ES failures. Symptoms of this are no sound and a very dim or no display. Apparently the power board has several weaknesses which have caused Sony to supply a modified version in later production units.

The circuit around transistors Q108 and Q109 are prone to oscillation, which will cause one or both transistors to break down, as well as resistor R124. This resistor is originally a surface mounted device capable of 1/10 watts of heat dissipation. The modification suggested by Sony is to replace this 4.7 k ohm resistor with a 1 watt rated version. Also, to prevent further oscillations a 100 pF capacitor is added in parallell with R153.

(Some suggests that also transistor Q110 is a candidate for replacement.)

The US issued service bulletin from Sony suggest that this fault may occur with units having a serial number in the range 800001 - 802746.
Serial numbers 80#### are for the US/Canadian version.
Serial numbers 50#### are for the european version.

Digital board:

I personally have an european version of the TA-E9000ES (serial number 500609). While my unit have been free from the power supply failure, another strange failure was noted after I upgraded to the version 2.01 software with virtual EX. Most of my listening are done using vanilla Pro Logic, Dolby Digital or DTS modes. But with the virtual EX decoding in place I was eager to try it out. However, as soon as I selected any of the Sony proprietary virtual multi dimension modes a lot of static noise could be heard from the speakers after a initial heat up period. As I seldom use these modes I did not bother to get it fixed.

It was not until I read the HIFI1-99-011 service bulletin that I discovered that I was not the only TA-E9000ES owner with such a problem. The service bulletin suggests that all the three S-RAM chips (IC2007, IC2010 and IC2013) used by the two Sony DSP's need to be replaced if this problem occurs.

Unfortunately, the 3.3 volt 128Kx8 Static RAM chip 71V124-15Y from [IDT](#) is no longer available from the manufacturer (however, Sony might have it avilable as replacement part 8-759-482-20).

The [IDT web site](#) suggest that the 71V124SA can be used as a replacement. Apparently this is a eqvivalent SRAM device (which also supports higher speeds).

So if your TA-E9000ES begins to make static noises you will need 3 pcs of IDT71V124SA-15Y (SOY_32_Y package) and the right tools and experience to do the de-/soldering job.


Technology overview

The Sony TA-E9000ES features a Analog Devices 32-bit SHARC DSP for decoding of multichannel audio formats (Dolby Digital, dts, MPEG, Pro Logic) and two Sony 32-bit DSP processors (CXD2712R) for Digital Cinema Sound processing. The volume control operates in the digital domain.
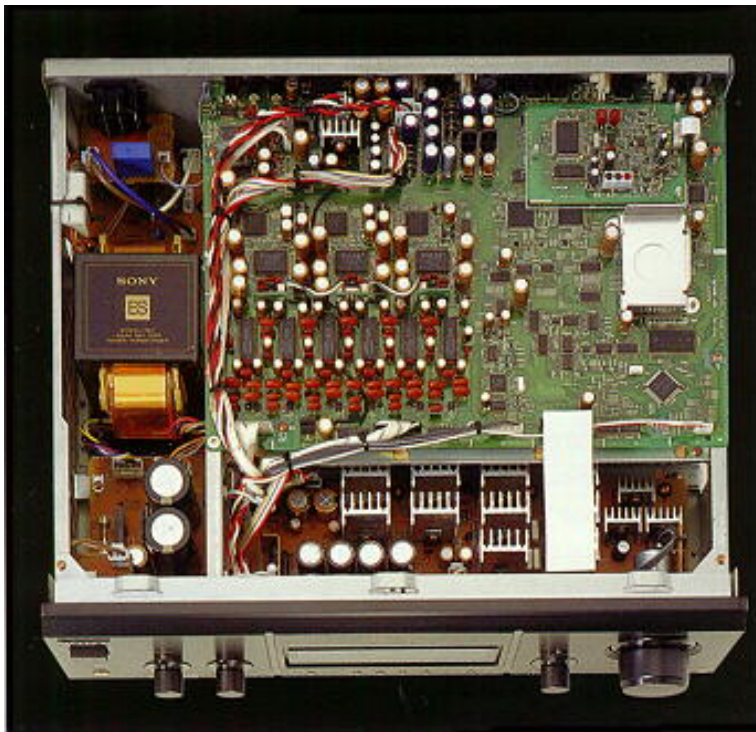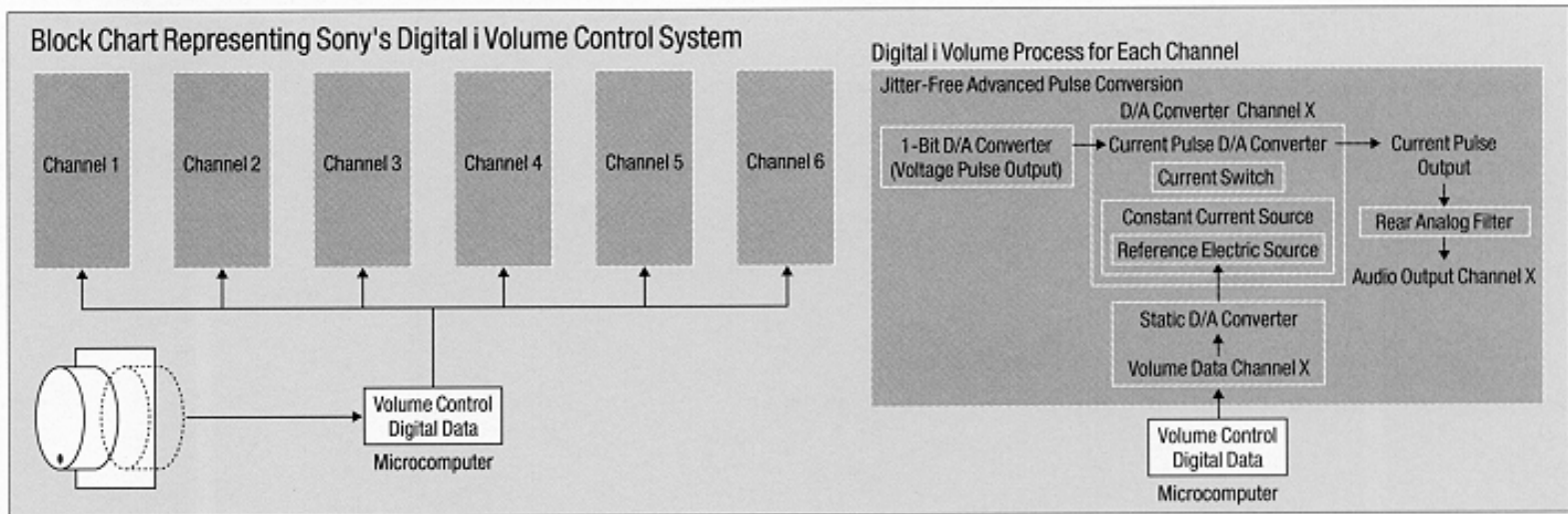
Sony TA-E9000ES internal structure.

High-Precision A/D converter (CX8607).
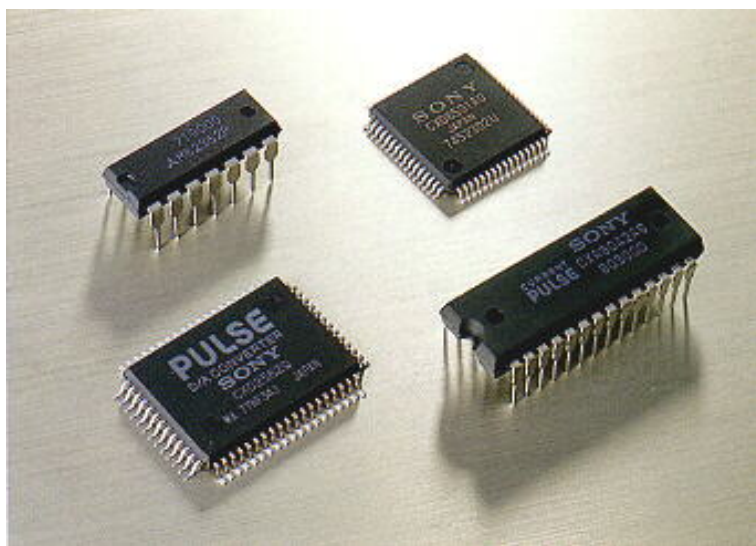
D/A converter system with digital volume control.

Block chart representing Sony's digital volume control system.

IC guide

The following is a guide to the integrated circuits on the DIGITAL board.

IC #:	Type:	What?
IC1001	-	-
IC1002	Analog Devices ADM202EARN	Analog A/D front-end
IC1003	-	-
IC1004	Sony CXD8607n	High-Precision A/D Converter
IC1019	Crystal CS8414-cs	Digital Input Receiver (96 kHz, 24 bit)
IC2004	IDT 71V256	256 kbit High Speed Static RAM (32Kx8)
IC2005 IC2009	Sony CXD2712r	32 bit DSP (120 pin)
IC2007 IC2010 IC2013	IDT 71V125	1 Mbit Asynchronous SRAM (128Kx8)
IC2015	Sony CXD8751q	Interface chip for DSPs
IC2016	Analog Devices SHARC KS-160	32 bit floating point DSP (240 pin)
IC3008	Hitachi H8S/2134	20 MHz 16 bit microcontroller with 128 KB flash memory
IC3009	Fujitsu 29F800BA-90	8 Mbit Flash Memory (1Mx8/512Kx16)
IC4001 IC4004 IC4007	Sony CXD8591aq	Full Feed Foward Digital Filter
IC4002 IC4005 IC4008	Sony CXD2562q	Advanced Pulse D/A Converter (voltage pulse)

IC5001 IC5003 IC5007 IC5010 IC5013 IC5016	Sony CXA8042as	Current Pulse Converter
IC5009 IC5019	Mitsubishi M6236p	Static D/A Converter used in digital volume control
IC5002 IC5004 IC5008 IC5011 IC5014 IC5017	Analog Devices AD712	High speed operational amplifier used in rear analog filter
IC6003	Pioneer PM4007a	AC3RF Demodulator
IC6004	NKK N341256SJ-20	256 kbit SRAM (32Kx8)

Digital Cinema Sound
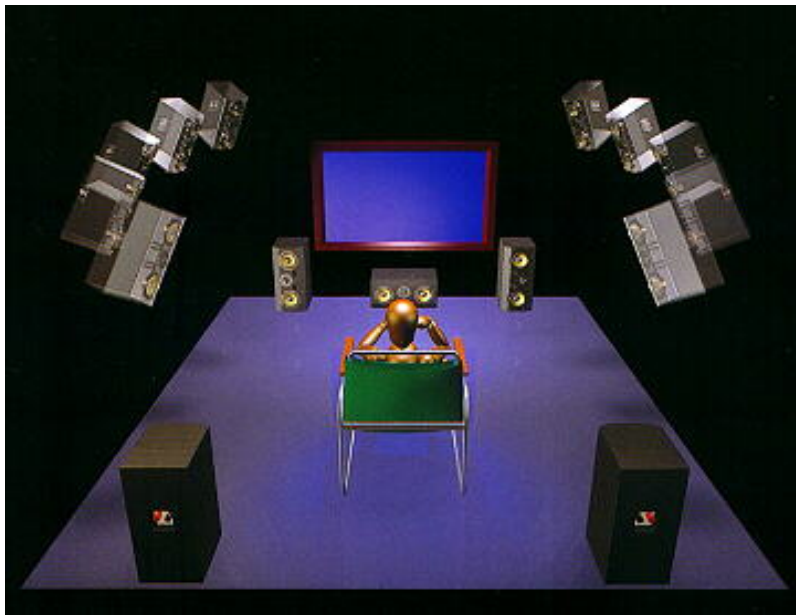
Virtual multi dimension mode.

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