

ECLIPSE

by FUJITSU TEN

*How to get there the right way.
And enjoy yourself on the way.*



AVN
AUDIO VISUAL NAVIGATION

Mobile entertainment and enhanced functionality create the ideal co

Driving always takes paramount importance in ECLIPSE product development. Any other function has to be performed without distracting the driver from the primary task at hand. With this in mind, ECLIPSE developed its integrated Audio, Visual and Navigation concept — AVN. Fundamental to the goal of combining entertainment and navigation was the requirement that AVN would become an integral part of the entire driving experience. That meant packaging every one of the numerous AVN functions into one stylish double-DIN size space which was quite a technological feat in itself. An innovative graphical user interface (GUI) eliminates any operation-caused stress. ECLIPSE engineers committed to achieving a genuine contribution to driving in terms of functionality as well as superlative entertainment value.



'04 Product of the Year



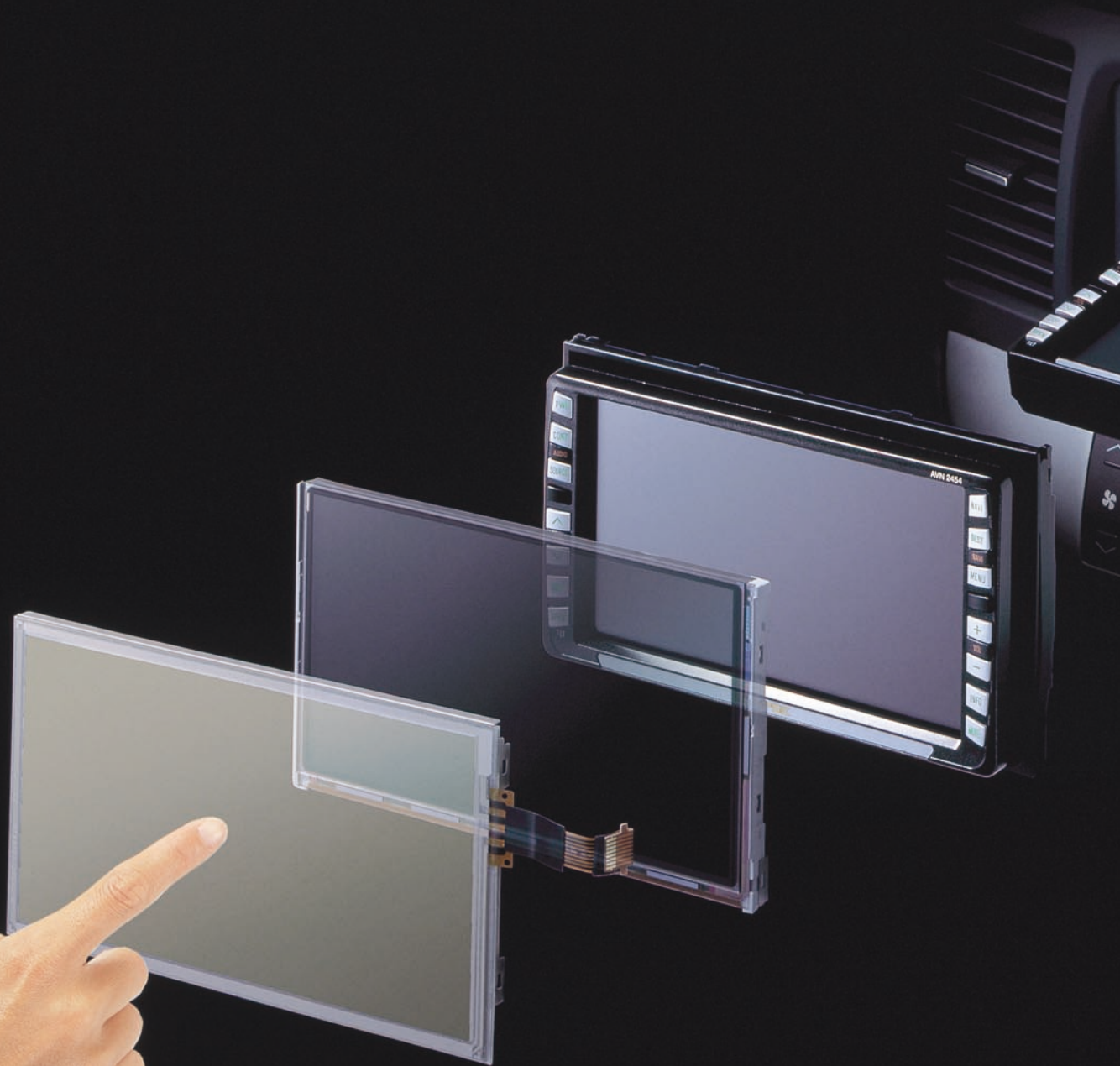
AVN2454

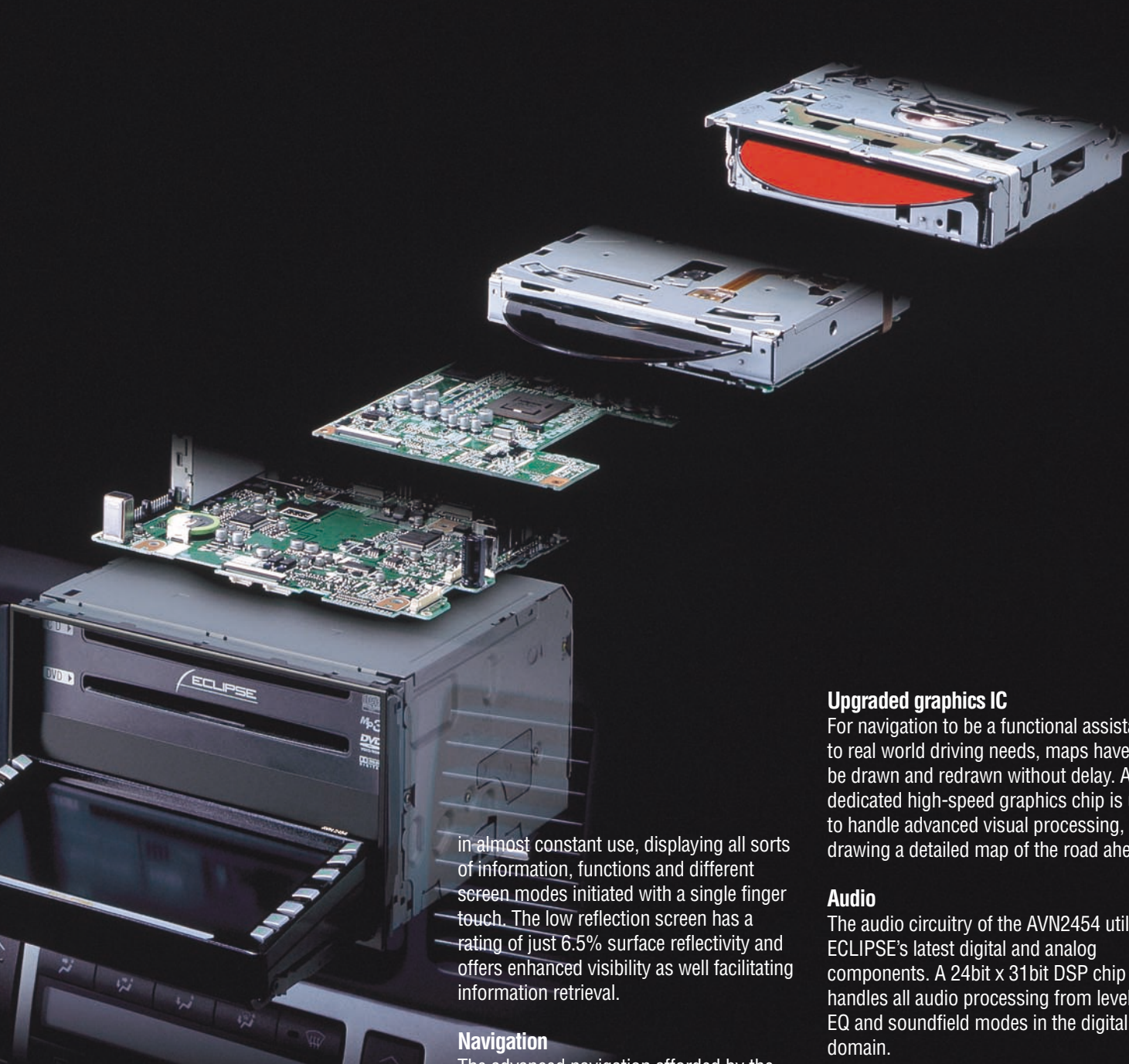
6.5" Wide TFT Touch-Panel Display CD/DVD Multi-Source Receiver
with DVD NAVIGATION

**anced
mbination.**



A fusion of specialized technologies creates a mobile comfort zone for driving.





For the first time a single platform that delivers music, movies and navigation to fulfill all in-car requirements

The display

High resolution, high clarity LCD. Graphics-dedicated IC for instant map displaying. Setting the direction for car navigation.

The centerpiece is the custom LCD with a pressure-sensitive touch-panel interface. Because the display is key to the entire system, it has to be able to withstand hard use consistently to deliver optimum performance day in and day out. It will be

in almost constant use, displaying all sorts of information, functions and different screen modes initiated with a single finger touch. The low reflection screen has a rating of just 6.5% surface reflectivity and offers enhanced visibility as well facilitating information retrieval.

Navigation

The advanced navigation afforded by the AVN 2454 is realized by utilizing a powerful ASIC (64 bit BUS RISC CPU) for information processing. This CPU provides parallel processing for faster operation. Coupled with a boosted clock rate, the result is significant high-speed processing power for performing navigation tasks without any latency, therefore assisting driving in real time and providing responsive, stress-free navigational operation.



Upgraded graphics IC

For navigation to be a functional assistant to real world driving needs, maps have to be drawn and redrawn without delay. A dedicated high-speed graphics chip is used to handle advanced visual processing, drawing a detailed map of the road ahead.

Audio

The audio circuitry of the AVN2454 utilizes ECLIPSE's latest digital and analog components. A 24bit x 31bit DSP chip handles all audio processing from level, EQ and soundfield modes in the digital domain.

CD Transport

The high-performance CD-R/RW transport mechanism assures stable transport for any optical disc and minimizes any discrepancies resulting from CD-R/RW media's individual variations using smart digital technology. A high level of stability in the transport mechanism helps achieve ideal disc tracking and the laser pickup to read data with great precision.

DVD Transport

A special high performance DVD drive that provides instant access to the DVD database on 8.5 gigabit double layer DVD. It reads data at a high speed so there is no data latency. In addition, an MPEG2 decoder is incorporated to provide DVD movie enjoyment.

User-friendly vehicle navigation that changes the driving experience.

Navigation with the AVN2454 means much more than informing you of exactly where you are, where you're headed and what facilities and landmarks are around you as you travel. It'll also automatically reroute you and take you home. The AVN2454 represents an invaluable navigator that assists every driver to make every drive more enjoyable.



Advanced technologies that make precise and accurate navigation possible.

Constant map matching

GPS Navigation constantly updates the car's present position as well as velocity. This is determined through Global Positioning System navigation which uses radio waves from 24 GPS satellites to achieve pinpoint navigation.

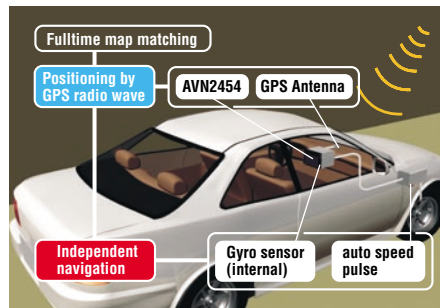
Gyro sensor and auto speed pulse enables positioning the car as well as independent navigation

The AVN2454 makes good use of a gyro sensor and auto speed pulse working in tandem. This means that you will continue to have full navigational support even when the car travels through tunnels or on roads under high rise buildings that may not allow the GPS satellites-generated radio signals to pass through. ECLIPSE makes best use of digital technologies to deliver all the potential that the navigation system has.

Fulltime precision map referencing

The AVN2454 is constantly taking all the information coming into it from GPS, gyro and auto speed pulse and matching it to the most relevant map data contained in the navigation software. This comprehensive fulltime positioning processing makes it possible to accurately display the car's current position no matter how complex the route being taken,

enabling an up-to-the-second confirmation of where you are on the map that is displayed.



Auto Screen

The display will automatically revert to navigation screen mode after completing another operation so there is no need to manually switch sources. For instance, while you are in navigation mode, you can call up the CD control screen. After you've completed your CD menu choices, the display automatically reverts to the navigation display. The sophisticated interface of the AVN2454 ensures you can be entertained as well as navigate with interruptions kept to a bare minimum.

Advanced touch control

One finger does it all. No complex operation setup to learn. Nothing can be more intuitive than touching what you want right on the screen.

Just touch a map in the general direction you want to see and the map will scroll automatically until you lift your finger off. Even for other non-navigational settings such as EQ, all you need to do is touch the level you want to boost or cut a frequency band.

Navigation voice guidance interrupt and audio mute

The smart AVN2454 will automatically mute the music and generate a voice message when required. At any such time, the AVN2454 will mute the left front speaker and speak a message even if a CD or a radio broadcast is being listened to. ECLIPSE's AVN2454 intelligently combines the Navigation and entertainment sections in one unit so there is never a need to adjust separate volume levels. This prevents the annoying volume level discrepancies often encountered with conventional dedicated audio and navigation units.



Audio playing
Approaching waypoint while listening to music



"Turn" Audio muted
Music cuts off at the front left speaker and the navigation voice message is heard.

How to find what you're looking for.

Define Search Area

Select the button that corresponds to the area you want the navigation features and functions to cover.



Rapid, comprehensive search functions

Address search

With the direct address input function a destination's location can be narrowed down to street name and number level.



By Point of Interest (POI) name

Just by inputting a POI's name or address using the keyboard display shown on the touch-control panel, a selectable list of POI locations will be called displayed.



Map Search

Pushing the Map button will take you directly to the map navigation screen.

Memory search

Store up to 100 locations in memory for instant recall when you want. You can also assign up to 46 symbols (plus 7 with expanded memory) as location names for easier selecting. In addition, you can assign sound tags to locations. When you're in the vicinity of a sound tag-enabled location, the AVN2454 will activate the sound to notify you. You can even assign a sound tag to a location with directivity, that is specifying the direction you'll be approaching the location in. So only when you near a location traveling in a specific direction will you be alerted.

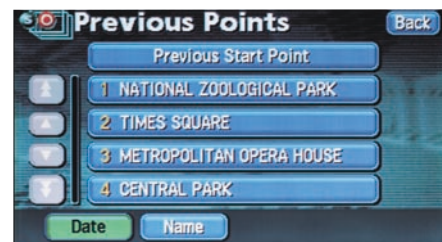


Emergency

Selecting Emergency from the Destination screen will call up a screen that will indicate your present position and allow you to call up police and hospital information* pertaining to your position.

Last visited location memory

To quickly recall places you've already visited, the AVN2454's memory will hold up to 20 of the last visited locations just as in your telephone's "recall" function.



Home search

Register your home in the AVN2454 and it'll guide you back no matter where you may be. The way home is shown instantly on the display.

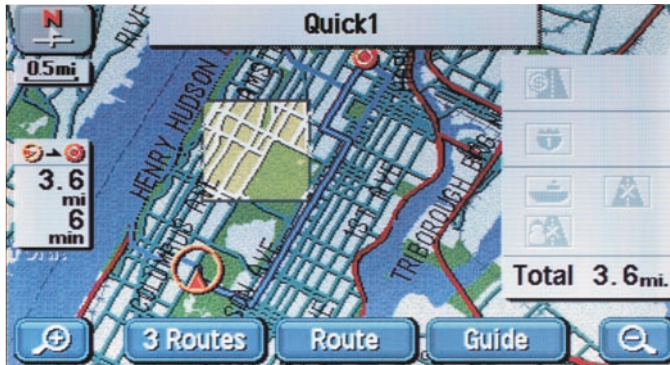


* Please do keep in mind however that since emergency service providers sometimes change locations and services, a phone call should be made first to verify current availability before proceeding to the destination.

How to get to where you want to — in the easiest way.

Simple, effective assistance provided whenever you need it.

Detour memory



Up to 10 areas you may wish to avoid driving in can be selected. AVN will then automatically offer a detour. For example, if there's a chronically congested area when you're driving home from work, just input it into the AVN2454 as a trouble zone and request a detour. From then on, the AVN2454 will always set a route that avoids this area. No matter how distracted you may be, you'll never find yourself in traffic hell.

"Must travel" routing



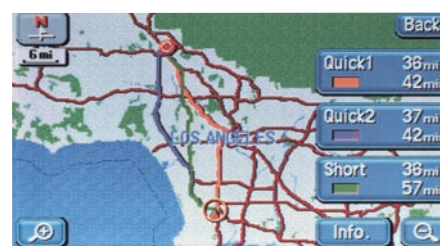
You can assign up to 2 roads as "must use sections" of a route so they will always be included when a route is requested. If you're traveling in a scenic area, you can set these 2 sections into your complete travel routing as a "must travel" portion or mandatory detour. This will be reflected then in any route suggestion the AVN2454 will make.

On-the-way stopping points



Up to 5 on-the-way locations can be specified as stopping points in a complete route suggestion.

3 Routes Information



3 Routes Information		
Quick1	Quick2	Short
42min 36 mile	42min 37 mile	57min 36 mile
34 mile	33 mile	8.8 mile

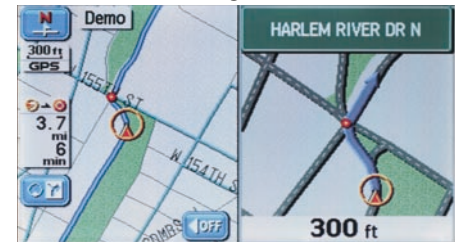
Once a destination is selected, a choice of routes is displayed. In addition to the Quick1 route, the display will also show 2 other recommended routes.

Voice announcements that keep you well informed

The AVN will announce the names of major intersections located all across the country*. These can be regarded as cues for making turns to the left or right, an example being "turn right at the intersection in about 8/10ths of a mile". Other announcements are made in advance for curves, it also notifies you when you've arrived at a destination railroad crossings and highways to enhance driving safety.

Driving lane directions help making the correct turnoff from the freeway by displaying all the driving lanes all the way through. All lanes up to exits ahead of the intended exit are shown when the car approaches it within a half mile. As the car approaches a quarter mile of the exit, the recommended lane is displayed. No matter if you're traveling in a totally unfamiliar city, you can be assured of always making the correct turn.

Intersection zooming

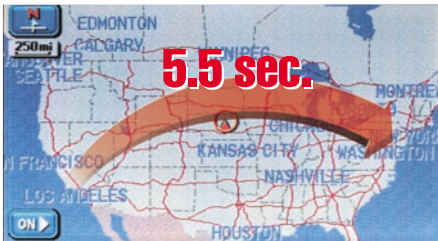


As you approach an intersection* where you'll have to make a turn, the display automatically zooms into the map to make things easier. And as you approach intersections on a recommended route, the AVN2454 will show related landmarks and other cues. The added confidence that comes from the AVN2454's support enhances driving safety and reduces stress even if you're traveling where you've never been.

* Intersections not included in the DVD database will not be announced by the navigator.

The accurate display is worth a thousand words.

Automatic rerouting



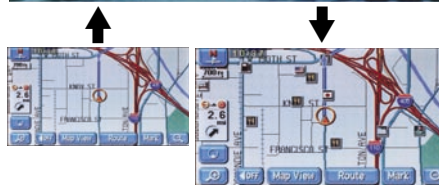
When you happen to divert from a recommended route like missing an intersection or unexpected road work or an accident, the AVN2454 goes right to work, displaying a new alternate route in just 2.5 seconds. Or even display a new crosscountry route from LA to New York in a mere 5.5 seconds.

Voice announcements in 8 directions



To add accuracy when making turns at complex intersections, the AVN2454 now adds voice announcements that distinguish 8 compass directions.

Landmark displays



Gas stations and other landmarks can be displayed by type. Some landmark types such as Restaurant or ATM can be displayed onscreen simultaneously as you choose.

Split screen display



A very useful split screen function allows displaying a realistic wide map view and other map views at the same time for easier understanding. The city driving mode which only shows vital information can be combined with other views that show current location information, information on the closest towns, route to the destination and others. Maps of different scales can also be displayed together.

Versatile zooming in/out

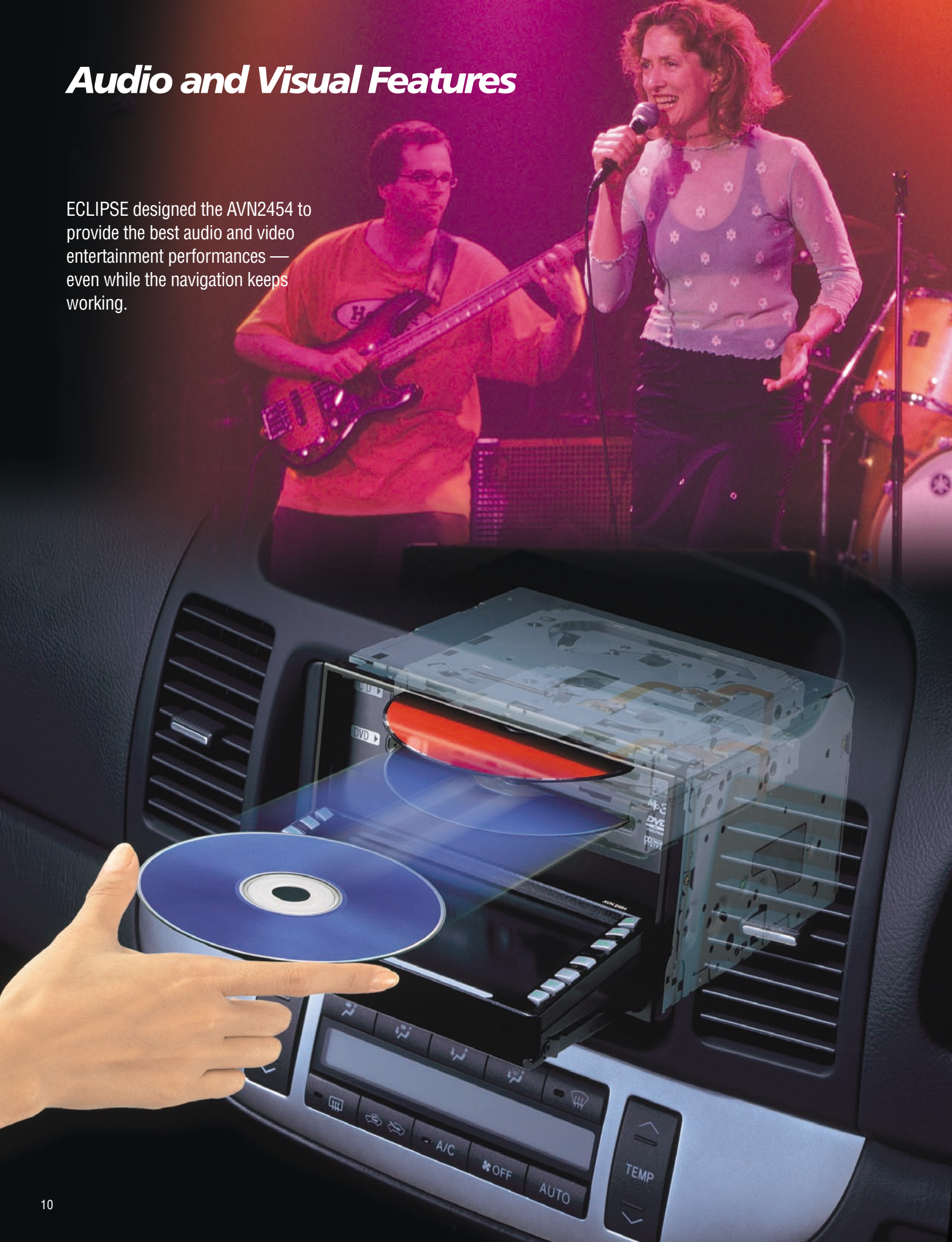


Zoom in/out is simply controlled with a single finger and magnifications can be changed at will. The actual scale of a displayed map is controlled by the "detail" and "wide" icons. Simply touching an icon will shift zoom magnification one scale increment at a time.

Holding both these icons down will provide seamless zooming out/in. Selecting a set magnification/scale on the zoom gauge which goes from 150 feet to 250 miles directly sets the map at that particular zoom value.

Audio and Visual Features

ECLIPSE designed the AVN2454 to provide the best audio and video entertainment performances — even while the navigation keeps working.

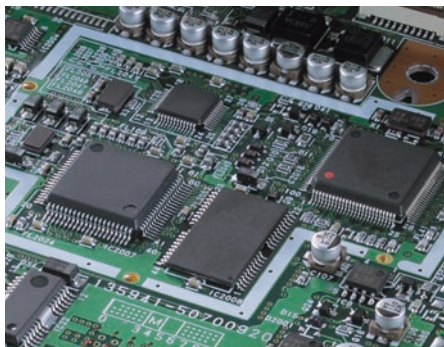


Incorporating the very best of entertainment as well.

Digital advantage.

The advantages of keeping digital signals in the digital domain as long as possible until being converted to analog have long been a part of ECLIPSE technology. Analog circuits such as volume level have now been replaced with purely digital controls. Conversion back to analog uses a high-performance 24-bit Advanced Multibit $\Delta\Sigma$ DAC for minimal distortion and noise.

DSP(Sound Field Control)



The environment of a car is not an ideal acoustic environment. The AVN2454 offers five preset acoustic environments each with differing spatial characteristics to be selected as desired or to suit program material.

9-band EQ



9 frequency bands allow easy manual adjustment via touch panel to suit user preferences. Simply push up/down a frequency band with your fingertip. In addition, 5 original EQ presets are provided to enhance music material.

Perfect disc playback.

The AVN2454 is equipped with a fast focusing laser pickup that precisely reads digital data from any optical disc (CD, CD-R/RW, and DVD-Video). Performance stays stable with no annoying changes due to the different conditions from the different origins of individual CD-R/RW discs. Because discs vary in



thickness or warping, the pickup automatically compensates for disk-to-pickup distance variations. Audio quality remains high performance no matter the source as the laser pickup's accuracy and precision reading the digitally encoded data helps achieve the highest quality audio signals.

Perfect balance oil damping

Built to resist vibrations that could cause mistracking and skipping, the AVN2454's oil-damped disc transport mechanisms feature a carefully formulated blend of oils to constrain and absorb vibrations which could impact disc reproduction.

No-compromise construction.

The way ECLIPSE builds products has a lot to do with sound quality. High-quality PCBs with thick signal traces to custom capacitors and premium resistors are generously used. Other advanced build techniques are used as well such as the multiple, independently regulated power supplies and independent grounding. Every precaution is taken to cut cross interference between the many circuits as well as overall system noise. Every circuit is evaluated on the basis of sound quality as well as test measurements with repeated listening evaluations.

4-channels of 50W amplification built in.

The AVN2454 incorporates a high performance amplification section that offers 4 channels each rated at 50W. The low distortion and audiophile grade sound is that same acclaimed ECLIPSE audio quality as in its dedicated music products.

DVD Video

Enjoy an instant in-car theater with the AVN2454 as it incorporates a built-in MPEG2 decoder for DVDs. Take a break from driving with your favorite movie or concert. Whether it's visual or audio quality, the AVN2454 offers all the high performance that is associated with the ECLIPSE brand.

MP3-capable

Burn a CD-R/RW with your favorite MP3 files and enjoy them in the AVN2454 as it is fully compatible with this file format.

CD text data compatibility

Text data on a compact disc such as song titles can be read and displayed on the screen.

High-performance AM/FM tuner section

6 FM/6 AM broadcasts presets are provided. As you travel, you can choose to have the AVN2454 automatically set the six strongest signals to become the presets.

CD Changer Compatible

Using the E-LAN data link system allows easily connecting the unit to the CH3083 8-Disc CD Changer.

Card type remote control (optional)

The AV2454 comes provided with a remote control for non-navigation system operation features.

Note: DVD-Video is disabled when the vehicle is in motion. Inserting a DVD will only allow the audio to be heard.



Rear view camera-ready (optional)

The AVN2454 also offers the option to see exactly what you're backing into. The separately available BEC104 rear parking camera can be easily connected to show what it views on the monitor screen, making it simple to back into a tight parking space.



Navigation database

The navigation database provided on the supplied DVD contains street data as well as other points of interest in various categories. Database coverage is complete for all 48 contiguous states as well as partial coverage for Canadian areas adjacent to the northern states.



Note: database compiled October 2003.

Specifications

AVN2454	
GENERAL	
Power Output	50W x 4 (MAX)
Lineout Output Level	0.8V (0dB)
Power Supply	13.2V DC (11-16V)
Current Drain	3.5A (0.5W)
Dimensions (W x H x D)	7" x 4" x 6-1/2" (180 x 100 x 165mm)
MASS (Weight)	3.7kg
Display	
Display	6.5" wide (16:9), low-glare panel
Resolution	280,800 dots (400 x 234 x 3)
Display Method	Through - type color filter
Panel Type	Color TFT active matrix
Brightness	150 (cd/m ²)
Drive System	Horizontal - shaped cathode tube
System	NTSC
Screen Aspect Ratio	4 types
FM TUNER	
Frequency Range	87.75 ~ 107.9MHz (200kHz step)
Usable Sensitivity	13dBf
50dB Quieting sensitivity	14dBf
Frequency Response	30 ~ 15,000Hz, ±3dB
Stereo Separation	38dB (1kHz)
AM TUNER	
Frequency Range	530 ~ 1710kHz (10kHz step)
Usable Sensitivity	22µV
CD SECTION	
Frequency Response	20 ~ 20,000Hz, ±1dB
Wow/Flutter	Below measurable limits
Total Harmonic Distortion	0.03dB (0dB, 1kHz)
EQUALIZER SECTION	
Graphic Equalizer	63 ~ 12kHz (1/2oct step) ±10dB

Product safety notice

- To ensure safe operation of products, please read the owner's manuals carefully prior to use.
- ECLIPSE is not responsible for accident or damage due to improper connections or products modified in any way.


Warning

- All products are intended for DC 12-Volt operation in negative grounded vehicles only. Never use them in 24-Volt vehicles such as heavy trucks or diesel cars with cold-region specification.
- Controls cannot be adjusted while driving. To adjust the controls, stop the car in a safe location.
- Do not follow a navigation route if it could place you in an illegal, unsafe, or dangerous situation.
- Verify emergency service provider-related information is current by phoning before proceeding to destination.
- Do not watch moving images on the display while driving. Doing so may lead to an accident resulting in serious injury or death.

Caution

- Installation of products requires experience and knowledge. Ask your ECLIPSE retailer for proper installation.

Others

- It may not be possible to install products in some vehicles. In this event please consult your ECLIPSE retailer.
- Some recent audio discs may resemble conventional music CDs but are technically not Compact Discs (CD Red Book format) because of the copy protection technology employed. ECLIPSE cannot guarantee operation and performance if these discs are used.
- CD-R/RW playback quality may be affected by disc surface condition and disc format initialization process.
- It may be necessary to purchase additional connecting cables for the products.
- Due to the effects of photography and printing processes, the color of the actual product may differ somewhat from that shown here.
- "Dolby", and the double D symbol  are trademarks of Dolby Laboratories Licensing Corporation.
- Screen images simulated.
- Design and specifications are subject to change without prior notice.



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