



**Sound Quality
Challenge
Competition
Rules**





1 - GOAL

The competitor's goal is to build and tune a sound system to reproduce the source material, so that it gives an accurate and realistic reproduction of the original music from a technical standpoint. To create the illusion of listening to the live performance being played.

2 - INTENT

The intent of IASCA's Sound Quality Challenge format and its rules is to provide a fair, fun and unbiased sound judging format , evaluating automotive sound systems in seven critical areas of sound reproduction; *System Safety, Tonal Accuracy, Sound Stage, Imaging, Linearity, Noise and System Control Operation*. The main premise of evaluation is to Judge the system as it would be used in a real world application (the user driving down the road listening to the music). Certain classes are designed for vehicles that are not intended for

3 - PURPOSE

The purpose of IASCA SQC is to determine which competing system in each class best reproduces a live performance in the intended conditions, using the official source material in an objective manner, without bias or consideration towards brand, vehicle or installation technique.

4 - CLASSES

Classes in IASCA SQC are based on vehicle modifications and competitor status within the industry. The reason for basing classes on industry status (dealers, distributors, manufacturers) is because industry members typically have a better understanding of sound quality and would have an unfair advantage over those not affiliated with the industry.

CLASSES	ROOKIE	NOVICE	AMATEUR	PRO/AM	PRO 1	PRO 2	EXPERT
JUDGING POSITION	1 seat	1 seat	1 seat	1 seat	1 seat	2 seat	1 & 2 seat
SPEAKER LOCATION	OEM only	OEM only	Optional	Optional	Optional	Optional	Optional
TWEETERS IN NON OEM LOCATION	Yes - 1.5" max.	Yes	N/R	N/R	N/R	N/R	N/R
A PILLAR/DASH MODS ALLOWED	No	No	Yes	Yes	Yes	Yes	Yes
MAX SPKR SIZE A PILLAR/DASH MOD	N/A	N/A	5.25"	Unltd.	Unltd.	Unltd.	Unltd.
KICK PANELS/ DOOR BUILD OUTS ALLOWED	No	Yes	Yes	Yes	Yes	Yes	Yes
INTERIOR MODS ALLOWED	Cosmetic only	Door/Kick panels	All panels	All panels	All panels	All panels	All panels
SAFETY EQUIPMENT MODS ALLOWED	No	No	Spare tire/jack	Spare tire/jack	Yes	Yes	Yes
SEAT/SEAT RAIL MODS	No	No	No	Yes	Yes	Yes	Yes
SUBWOOFER & ENCLOSURE LOCATION	Cargo area	Cargo area	Optional	Optional	Optional	Optional	Optional
DASH PAD	No	Yes	Yes	Yes	Yes	Yes	Yes
SEATING POSITIONS RETAINED	All	All	All	All	Fit 2 seats	Fit 2 seats	Fit 2 seats
VEHICLE FUNCTIONS OPERATIONAL?	Yes	Yes	Yes	Yes	Opt.	Opt.	Opt.
INDUSTRY AFFILIATION?	No	No	No	Yes	Yes	Yes	Yes
SPONSORSHIP/SUPPORT ALLOWED	No	No	Yes	Yes	Yes	Yes	Yes
TRIPLE CROWN ELIGIBLE?	No	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*

FOR REFERENCE ONLY - FOR COMPLETE DETAILS OF THE RULES, REFER TO THE IASCA SQC RULE BOOK

**Must also compete in Pro 2 class*

**Must also compete in Pro 2 class*

**Must also compete in Pro 2 class*

**If competing in BOTH Pro 1 and Pro 2 classes*

**If competing in BOTH Pro 1 and Pro 2 classes*

5 - SQC JUDGING CRITERIA

SQC judging is performed in two methods, one (1) seat (single seat) and two (2) seat. There are variations of each method, dependent on the class being Judged. The following outlines the general criteria used by Judges when evaluating a vehicle's sound system:

- Judges will evaluate the sound system by the order of the criteria as they appear on the score sheet; *1st-System Safety, 2nd-Tonal Accuracy & Spectral Balance, 3rd-Sound Stage, 4th-Imaging, 5th-Sound Linearity, 6th-Noise, 7th-System Control Operation.*
- Sound judging for Tonal Accuracy, Sound Stage and Imaging will be performed at a system volume level between 80 and 90 dB. If the noise floor at an event is too high to properly Judge at 90 dB, the volume level will be adjusted up in 5dB increments to compensate. The volume level for judging will be set by the Judge using a portable SPL meter and the Pink Noise track from the CD, establishing a consistent volume level of evaluation for each vehicle at an event. **Judges will record the decibel level used on each score sheet.** All vehicles in a class will be evaluated at the same level.
- All sound judging will be performed from the forward most front seats in the vehicle. One seat judging evaluations will be performed from the driver's side seat only. Two seat judging evaluations will be performed from both front seats with two Judges (one in each front seat, driver's and passenger's) simultaneously.
- Sound judging criteria is the same for all classes. Judging will be performed using the Official IASCA Sound Quality Reference CD, utilizing the specified tracks listed for each judging section of the sound rules.
- For systems without a CD player, an alternate source unit such as an iPod, MP3 player, memory card or flash drive may be used. It is the competitor's responsibility to provide the Judge with the unit to be used; the Judge will upload the music from the IASCA Sound Quality Reference CD to the unit for judging, then delete the files once judging is completed.
- Judges will utilize the stage maps (as found in these rules) and track maps (In the CD liner notes) to determine some of the sound judging criteria, as required.
- Competitors are not allowed to view their score sheet (or any score sheet) until after competition is over and awards have been presented. Any competitor attempting to view their score sheet will receive a 10 point deduction from the total score.

6 - SQC CLASSES

Here are the available classes in SQC competition along with a general description of classifications. The classes are broken down in more detail in the following pages:

- **ROOKIE** - Minor modifications to vehicle interior allowed, no connection to industry. One (1) seat judging
- **NOVICE** - Higher level of modifications allowed over Rookie Class, no connection to industry. One (1) seat judging
- **AMATEUR** - Higher level of modifications to vehicle interior allowed, no connection to industry. One (1) seat judging
- **PRO/AM** - Higher level of modifications to vehicle allowed (over Amateur). Open to all industry and non-industry related competitors. One (1) seat judging
- **PRO 1** - Open to all industry and non-industry related competitors whose vehicles meet the requirements for the class. Higher level of modifications to vehicle allowed (over Pro/Am). One (1) seat judging
- **PRO 2** - Same as Pro 1, but two (2) seat judging
- **EXPERT** - Open to all competitors, higher level of modifications to vehicle allowed. One (1) and two (2) seat judging.

SQC CLASSES (pages 4 –8)

6.1 - ROOKIE CLASS

6.1.1 - Intent

The intent of the Rookie Class is to provide a place for newcomers to compete in a fair, fun and unbiased format against other competitors of the same experience level. Minimal modifications to vehicle are allowed (see Vehicle/System Requirements). Systems are evaluated by one Judge from the vehicle's driver seat.

6.1.2 - Competitor Requirements/Rules for Rookie Class

- Non-Industry Members only; competitors cannot be affiliated with or employed in the mobile electronics industry in any way.
- Competitors in this Division are limited to two (2) competition seasons, after which the competitor must choose a higher class to compete in. Should a Rookie competitor wish to enter one of the higher Classes during their Rookie term, they may do so. If for any reason a Rookie cannot compete in at least one (1) IASCA sanctioned event in their first season, they may petition **IASCA** Worldwide for an extension of their Rookie competition term. It will be the competitor's responsibility to notify the proper **IASCA** affiliate office either in writing or by e-mail.
- Rookie Class competitors are not eligible to compete at the IASCA North American Championships (INAC).

6.1.3 - Vehicle/System Requirements for Rookie Class

- The vehicle interior must maintain an OEM appearance and retain all standard seating positions.
- Custom made panels, consoles or baffles designed specifically for the purpose of improving the system's sound quality are not allowed within the boundaries of the vehicle's interior. Panels and interior vehicle components not listed here (such as the dashboard, seats, seat rails, headliner, floor carpet) cannot be modified in any way.
- Temporary or permanent non OEM coverings added to the vehicle interior for the specific purpose of increasing sound quality are not allowed (example - dash pads, towels, blankets, window shades, etc.).
- Aftermarket equipment replacing the factory equipment located in the vehicle (head unit, speakers) must be mounted in the vehicle's OEM factory locations. **Exception** - Tweeters **only** (if used) can be mounted in a non OEM location within the vehicle (Example - Vehicle A pillar or door panel). For purposes of cosmetics, competitors may modify tweeter location using standard materials such as body filler, fiberglass and covering materials to make the area cosmetically appealing. Tweeters cannot exceed a maximum diameter of 1.5 inches.
- System subwoofers (if used) must be located in the OEM cargo area (or stowage area) .
- Other aftermarket audio equipment (such as amplifiers, capacitors, processors, etc.) may be mounted in any area within the vehicle's interior, as long as they are not visible and do not compromise the safety of the vehicle, the Judge or impede the proper operation of any of the vehicle's functional or safety features.
- All OEM vehicle functions (such as windows, door locks, sunroof, door handles, etc.) must maintain their functionality. **Example:** windows designed to roll up and down must be able to completely perform that function without interference from any installed aftermarket component.
- Aftermarket items such as cell phone holders, iPod docks and their attachment cables are allowed within the boundaries of the vehicle interior.
- Sound enhancing materials used in the vehicle (such as sound dampening) must not be visible or impede the proper fit of any vehicle panel.
- All OEM vehicle safety and convenience features which include, but are not limited to, spare tires, airbags, emergency brake, seat belts, seat adjusting mechanisms, etc. must be intact, unmodified and fully operational.
- There are no limitations to the type and amount of audio equipment used in Rookie Class.

6.2 - NOVICE CLASS

6.2.1 - Intent

The intent of the Novice Class is to provide a progression from the Rookie Class for competitors with a higher level modifications to their vehicles and systems. Systems are evaluated in the one seat judging style (from the driver's seat).

6.2.2 - Competitor Requirements for Novice Class

- Non-Industry Members only; competitors cannot be affiliated with or employed in the mobile electronics industry in any way.

6.2.3 - Vehicle/System Requirements for Novice Class

- Modifications to certain interior panels and components are allowed, for the purpose of housing sound system equipment. Panels that are allowed to be modified are; door panels, kick panels, rear parcel shelf, console. Speakers (not including subwoofers) can be mounted the allowed panels (Example - speakers in door panels, kick panels). For purposes of cosmetics, competitors may modify the mounting location using standard materials such as body filler, fiberglass and covering materials to make the area cosmetically appealing, but must maintain an OEM Appearance (see Glossary of Terms).
- Panels and interior vehicle components not listed above (including, but not limited to the dashboard, A/B/C pillars, seats, seat rails, headliner, floor carpet) cannot be modified in any way. **Exception - Tweeters *only*** (if used) can be mounted in a vehicle A pillar for vehicles not equipped with OEM tweeters in this location. If the vehicle comes equipped with OEM dashboard or A pillar tweeters, the speaker itself can be upgraded in its OEM location and cannot exceed the size of the OEM speaker. For purposes of cosmetics, competitors may modify tweeter location using standard materials such as body filler, fiberglass and covering materials to make the area cosmetically appealing. Tweeters cannot exceed a maximum diameter of 1.5 inches.
- System subwoofers (if used) must be located in the OEM cargo area (or stowage area) .
- Other aftermarket audio equipment can be mounted in any area within the vehicle's interior, as long as the vehicle interior maintains an OEM appearance and they do not compromise the safety of the vehicle, the Judge or impede the proper operation of any of the vehicle's functions or safety features.
- All OEM vehicle functions (such as windows, door locks, sunroof, door handles, etc.) must maintain their functionality. **Example:** windows designed to roll up and down must be able to completely perform that function without interference from any installed aftermarket component.
- Sound enhancing materials used in the vehicle (such as sound dampening) must not be visible or impede the proper fit of any vehicle panel.
- Commercially available dash pads may be used in Novice Class. Pads or coverings not intended specifically for automotive applications (example - towels, blankets, etc.) are not allowed.
- All OEM vehicle safety features in the interior of the vehicle which include, but are not limited to, spare tires, jacks, airbags, emergency brake, seat belts, seat adjusting mechanisms, etc. must be intact, unmodified and fully operational.
- There are no limitations to the type and amount of audio equipment used in Novice Class.

6.2.4 - Vehicle Judging/Evaluation

- To qualify for Triple Crown, competitors must also compete in the Pro 2 Class.

6.3 - AMATEUR CLASS

6.3.1 - Intent

The intent of the Amateur Class is to provide a progression from the Novice Class for competitors as they gain experience in competition, to compete against others with the same experience level and like systems, with a higher level modifications to their vehicles and systems than the Novice Class allows. Systems are evaluated in the one seat judging style (from the driver's seat).

6.3.2 - Competitor Requirements for Amateur Class

- Non-Industry Members only; competitors cannot be affiliated with or employed in the mobile electronics industry in any way.

6.3.3 - Vehicle/System Requirements for Amateur Class

- Modifications to certain interior cosmetic panels and components are allowed, for the purpose of housing sound system equipment. Panels that are allowed to be modified are; kick panels, roof pillar trim pieces (A/B/C pillars), dashboards, inside door panels, rear parcel shelf, console.
- Panels and interior vehicle components not listed above (including, but not limited to, seats, seat rails, headliner, floor carpet) must remain intact and unmodified. If you're unsure about a modification, contact the IASCA Office.
- Speakers (not including subwoofers) can be mounted in vehicle A pillars and/or dashboard if not equipped as such from OEM. For purposes of cosmetics, competitors may modify the mounting location using standard materials such as body filler, fiberglass and covering materials to make the area cosmetically appealing and maintain an OEM Appearance (see Glossary of Terms).
- Speakers being mounted in vehicle A pillars or dashboards are limited to 5 1/4" (133.5 mm) maximum size.
- Aftermarket audio components can be mounted in any of the "approved for modification" panels listed above, or within the vehicle's interior, as long as they do not compromise the safety of the vehicle, the Judge or impede the proper operation of any of the vehicle's safety features.
- Any other additional aftermarket equipment used in the vehicle's sound system may be mounted anywhere in the vehicle, so long as the vehicle interior maintains an OEM factory appearance.
- All OEM vehicle functions (such as windows, door locks, sunroof, door handles, etc.) must maintain their functionality. **Example:** windows designed to roll up and down must be able to completely perform that function without interference from any installed aftermarket component.
- Sound enhancing materials used in the vehicle (such as sound dampening) must not be visible or impede the proper fit of any vehicle panel.
- Commercially available dash pads may be used in Amateur Class. Pads or coverings not intended specifically for automotive applications (example - towels, blankets, etc.) are not allowed.
- All OEM vehicle safety features in the interior of the vehicle which include, but are not limited to, airbags, emergency brake, seat belts, seat adjusting mechanisms, etc. must be intact, unmodified and fully operational.
- Convenience items such as the spare tire and jack may be removed.
- There are no limitations to the type and amount of audio equipment used in Amateur Class.

6.3.4 - Vehicle Judging/Evaluation

- To qualify for Triple Crown, competitors must also compete in the Pro 2 Class.

6.4 - PRO/AM CLASS

6.4.1 - Intent

The intent of the Pro/Am Class is to provide a progression from the Amateur Class for more experienced competitors possessing the skills of a professional, with a higher level of modifications to the vehicle and audio system. Systems are evaluated in the one seat judging style (from the driver's seat).

6.4.2 - Competitor Requirements for Pro/Am Class

- Open to all competitors.

6.4.3 - Vehicle/System Requirements for Pro/Am Class

- Modifications to any or all interior cosmetic panels or components are allowed, however the vehicle must retain all standard seating positions
- All OEM vehicle functions (such as windows, door locks, sunroof, door handles, etc.) must maintain their functionality.
- Aftermarket items such as cell phone holders, iPod docks and their attachment cables are allowed within the boundaries of the vehicle interior.
- All OEM vehicle safety features in the interior of the vehicle which include, but are not limited to, airbags, emergency brake, seat belts, etc. must be intact, unmodified and fully operational, forward of the vehicle's B pillar. **Exception:** seat adjusting mechanisms (seat rails) modified for extended travel of the front seats to improve sound quality are allowed.
- Convenience items such as the spare tire and jack may be removed.
- Aftermarket audio components can be mounted in any of the interior panels and components, as long as they do not compromise the safety of the Judge or impede the proper operation of any of the vehicle's safety features.
- There are no limitations to the type and amount of audio equipment used in Pro/Am Class.

6.4.4 - Vehicle Judging/Evaluation

- To qualify for Triple Crown, competitors must also compete in the Pro 2 Class.

6.5 - PRO 1 & PRO 2 CLASSES

6.5.1 - Intent

- The intent of the Pro 1 and Pro 2 Classes are to provide a progression from the Amateur and Pro/Am Classes for more experienced competitors and Industry Members, with a higher level of modifications to the vehicle. Systems are evaluated as one (1) seat in Pro 1 and two (2) seat in Pro 2 (front driver and passenger seats).

6.5.2 - Competitor Requirements for Pro 1 and Pro 2 Classes

- Open to all competitors

6.5.3 - Vehicle/System Requirements for Pro 1 and Pro 2 Classes

Same as the Pro/Am Class but with the following exceptions;

- Only the front seating positions need to be maintained
- OEM vehicle safety features may be removed or disabled, as long as they do not compromise the safety of the Judge or their ability to evaluate the vehicle's sound system.

6.5.4 - Vehicle Judging/Evaluation

- To qualify for Triple Crown, competitors must also compete in the Pro 2 Class.

6.6 - EXPERT CLASS

6.6.1 - Intent

- The intent of the Expert Class is to offer a competition class for the most highly experienced competitors with vehicles that have extensive modifications beyond the criteria for the lower classes. Modifications to the vehicle are done specifically to increase the performance of the audio system at the highest level from both front seat positions. Systems in Expert Class are evaluated in both the one (1) seat and two (2) seat judging style (from the front driver and passenger seats); Judges will first evaluate the vehicle in the traditional 2 seat configuration, then each Judge will evaluate the system from the driver seat individually.

6.6.2 - Competitor Requirements for Expert Class

- Open to all competitors.

6.6.3 - Vehicle/System Requirements for Expert Class

- Seating positions may be modified to optimize the listening area for the listener. Any modification of seats or seating position must not compromise the safety of the Judge or their ability to evaluate the vehicle's sound system.
- The vehicle must be equipped with two seats, positioned side by side for a driver and a passenger to occupy the vehicle at the same time and, the seating must approximate the OEM location of the factory seats.
- Vehicles allowed to compete in the Expert Division must be motorized vehicles such as cars, trucks, vans, SUVs, COVs, designed and built by the manufacturer for the purpose of being *driven* on the road by the general public. Vehicles such as trailers, motorhomes, golf carts, motorcycles, etc. are not eligible to compete.
- OEM vehicle functions (such as windows, door locks, sunroof, door handles, etc.) may be disabled or modified, as long as they do not compromise the safety of the Judge or their ability to evaluate the vehicle's sound system.
- OEM vehicle safety features may be removed or disabled, as long as they do not compromise the safety of the Judge or their ability to evaluate the vehicle's sound system.
- Aftermarket audio components can be mounted anywhere in the vehicle, as long as they do not compromise the safety of the Judge or their ability to evaluate the vehicle's sound system.
- There are no limitations to the type and amount of audio equipment used in Expert Class, so long as they meet all other Vehicle/System Requirements for the Class.
- If you are unsure whether your vehicle qualifies, contact the IASCA Head Office.

6.6.4 - Vehicle Judging/Evaluation

- Two (2) judges will be used to evaluate Expert Class at TKE 3X events. For SPE (1X) and DPE (2X) events, event promoters may elect to use one judge.
- Expert Class will be judged in both the 2 seat and 1 seat formats.
- In the 1 seat format, each judge (at TKE events) will evaluate the system from the driver's seat separately. Once 1 seat evaluations are complete, both judges will evaluate the system, one from the driver's seat and one from the passenger seat, in the 2 seat format.
- At SPE (1X) and DPE (2X) events that have only one SQC Judge, the vehicle will be evaluated from each seat by the same Judge, one seat at a time.

7 - JUDGING PROCEDURE

7.1 - PRIOR TO EVALUATION

1. The Judge will introduce themselves to the competitor prior to beginning the evaluation and ask the competitor if they are ready to be evaluated.
2. If a Judge has to return to a vehicle more than twice for any reason to ask the competitor if they are ready, the Judge has the authority to penalize the competitor by deducting up to 10 points from the overall score for tardiness or delay of judging.
3. The Judge will ask the competitor to instruct them on which source unit is to be used and the proper use of the volume and track selection of that source unit, and point out the system display. *For vehicles with multiple source units and volume controls, the competitor must specify which one (1) source unit and volume control should be used throughout the contest. This is to be indicated to the Sound Judge at the beginning of the judging process. The Judge will mark which unit was used on the score sheet.*
4. The Judge will then ask the competitor if they have made all the adjustments they wanted to the system and the vehicle, to ensure that the competitor's system and vehicle are ready for evaluation.
5. The Judge is not allowed to evaluate the system and vehicle until the competitor gives approval that the vehicle is ready to be Judged.
6. Once approval is given, the Judge will sit in the vehicle and check the seat position for comfort level during evaluation. The Judge is not allowed to change the position of the seat to evaluate the sound system without first conferring with the competitor. If the seating position is deemed unreasonable, the Judge and competitor will work together to find an acceptable seating position that satisfies both. Any seats that are reclined to more than a 45 degree angle may be considered unreasonable.
7. At this time, the vehicle and system will be evaluated as presented; no other adjustments are allowed, other than the volume and track adjustments necessary to perform the evaluation.

7.2 - THE EVALUATION

1. During evaluation, the Judge will only adjust the volume (up/down) and track selection (up/down) as needed.
2. The vehicles and systems for all competitors will be evaluated with the engine off, unless extenuating circumstances require that the engine be running. If running the engine is required, the Head Judge will notify all competitors prior to the start of judging.
3. The Judge will use the pink noise track from the CD (or source material) to set the evaluation volume level between 80 and 90dB, using a portable SPL meter. The meter's sensor will be positioned directly in front of them, approximately 6 to 12 inches from their face at ear level.
4. The Judge will then test the system for Left and Right Channel Verification. If the system passes this test, the Judge will continue. If the system fails, the Judge will exit the vehicle and notify the competitor, at which time they have 5 minutes to correct the issue. If the issue cannot be corrected in five (5) minutes, the vehicle and system will be evaluated "as is".
5. The Judge will then continue to evaluate the vehicle in the order of the score sheet, starting with Tonal Accuracy and Spectral Balance, then Sound Stage, Imaging, Linearity, Noise and System Control Operation.
6. Once the Judge has completed the evaluation, they will remove the CD (or source material), all evaluation tools and exit the vehicle.

7.3 - AFTER THE EVALUATION IS COMPLETED

1. The Judge will take a moment with the competitor to summarize their evaluation. As their time is limited, they are limited to a brief overview of two minutes or less.
2. The Judge isn't allowed to speak about scores or any specifics; they can only cite general areas of interest or concerns within the system and vehicle. No specific questions may be asked by the competitor.
3. The Judge will instruct the competitor that they will be available after the awards ceremony to review their evaluation in greater detail.
4. The Judge will then thank the competitor for the opportunity to evaluate their system and vehicle and excuse themselves to proceed to the next evaluation.

8 - SQC JUDGING GUIDELINES

This section describes the details of what an IASCA Judge will be evaluating in SQC competition. Each subsection will not only describe what is being evaluated, but what the Judge is looking for when evaluating and what the competitor should strive to achieve.

Prior to the beginning of any judging of Tonal Accuracy and Spectral Balance at any and every event, the IASCA Judge will listen to the Official IASCA CD through a quality source that will be utilized as a reference level for the event.

While there is no perfect substitution for a live performance, IASCA recommends that Judges use of a set of studio monitor headphones as the reference level for Tonal Accuracy and Spectral Balance judging, to be used at events to condition their ears tonally before evaluating vehicles. The quality and performance of a high end set of studio monitor headphones will provide one of the most tonally accurate, realistic reproductions of vocals and instruments.

8.1 - SYSTEM SAFETY

2 points max.

The general safety of the vehicle, for the protection of the competitor and the judge at an IASCA event, is of first and foremost importance. This section evaluates the safety aspect of the vehicle and system against potential damage and the protection of the individual in the seated evaluation position, in regards to any potential damage to the system or injury to the individual seated in the vehicle.

This section of judging is "Pass/Fail" scoring. It will be used as an instructional tool at local level events (1X, 2X) to promote system safety and will be scored as such; at large scale events (3X, INAC), if a system is found to be unsafe for the judge or competitor, it will be required to be repaired before the system is evaluated. If repairs are not implemented, the vehicle will not be judged.

FUSING - 0 or 1 point

The Judge will ask the competitor to point out the main power source (battery) of the system and any secondary power sources (if applicable). The Judge will then visually inspect the system/vehicle's power sources to ensure they are properly fused within 18 inches of the power source. If the power sources are fused, 1 point will be awarded.

EQUIPMENT SECURED - 0 or 1 point

All items within the judge's seated and foot well area, including but not limited to, equipment, cables, connectors, knobs, remotes, etc., must be properly secured to avoid any potential damage to said items, and to protect the safety of the competitor and/or the Judge.

Procedure: Judges will determine if the equipment is properly secured by visually inspecting around and under the seating and foot well area for any items that may be connected to the sound system, and their connecting cables.

If items are found, the Judge will then physically inspect to see if the items are securely mounted and cables are protected, by attempting to move the item to confirm it is secured. If there is any question as to their mounting, the Judge will ask the competitor to prove that the items are properly secured and that cables are protected, by physically attempting to move the items/cables. If all items/cables are properly secured/protected, 1 point will be awarded.

Example: A processor mounted under a seat where the individual is sitting; the unit must be securely mounted so that it cannot be inadvertently moved by an individual either attempting to adjust the seat or by moving their feet near the front of the seat. Cables must also be secured so that a person's hands or feet cannot accidentally hook the cables and disconnect them from the processor, potentially causing a loss in system performance or potential shorting danger.

NOTE: Judges are not allowed to adjust the seat once the competitor has set it in position for judging. Where the example states the use of hands under the seat or adjusting the seat, it is referring to the competitor only and not the Judge.

8.2 - TONAL ACCURACY AND SPECTRAL BALANCE

In Tonal Accuracy and Spectral Balance judging, Judges will evaluate the tonal characteristics of the system based on how well it reproduces four specific frequency ranges; ***Sub Bass, Mid Bass, Mid Range and High Frequencies.***

For a system to reproduce a recording with superior tonal accuracy, it must perform without significantly affecting the parameters of these frequency ranges. When all of the above parameters come together well, a system is said to sound natural and spectrally accurate.

The Judge will evaluate whether the sound of the instruments and voices reproduced by the system in these frequency ranges sound real and natural, in and of themselves. When evaluating the system, the Judge will concentrate on instruments in each range specifically, ignoring the relative balance of the whole spectrum (which will be evaluated next).

A Judge will use the six basic characteristics that describe a tone when evaluating Tonal Accuracy and Spectral Balance; *Loudness, Pitch, Timbre, Modulation, Duration and Attack & Decay.* The descriptions of these characteristics are listed in the glossary of terms at the back of this rule book.

What Judges listen for:

The following general guidelines apply to a broad range of music. The judging tracks of the Official IASCA Sound Quality Reference CD may or may not contain some of the instruments listed below. For accurate information on the content of the judging tracks, please refer to the liner notes.

SUB-BASS (1Hz-60Hz) All Divisions

1 to 20 points

The Judge will concentrate on the lowest notes of the large string instruments (bass guitar and stand-up bass, in particular), large drums (kick drums, timpani), low synthesizer sounds, low pipe organ notes, etc. The sounds reproduced by the system in this range should be immediately recognizable, articulate, free of distortion and have proper attack and decay. Accurate low-frequency extension is a desirable trait. An example is the lowest frequency range of very large pipe organs.

MID-BASS (60Hz-200Hz) All Divisions

1 to 20 points

The Judge will focus on the sounds produced by the mid-size drums (tom-toms, large congas, etc.), the middle range of the bass guitar and stand-up bass, lower notes of the piano and synthesizer. These should be reproduced smoothly with good detail and proper attack & decay. Particular attention should be paid to the attack & decay of drums and bass guitars. Because of the small size of the vehicle as a listening area, problems with resonance are common in this frequency range.

MID-RANGE (200Hz-3KHz) All Divisions

1 to 20 points

This range contains the vast majority of musical information in most recordings. The Judge will focus on the human voice, brass instruments, woodwinds, strings, the upper range of the bass guitar, electric and acoustic guitar, synthesizer, piano, smaller drums and other percussion instruments. Resonance and sibilance are common system flaws in this frequency range. Voices should sound full and natural. All instruments should sound realistic without sounding thin, dull or contain uncharacteristic ringing or distortion. Large stringed instruments, for example, should have the characteristic 'wood' sound without undue resonance.

HIGH FREQUENCIES (3kHz-+) All Divisions

1 to 20 points

The Judge will concentrate on cymbals, triangles, bells, the upper frequencies of the snare drum, rim shots, hand clapping, synthesizers, the upper stretches of string and woodwind instruments, and the tendency to exaggerate "s" or "f", or "t" sounds in the voice recordings. These should sound accurate, smooth, neither too dull nor too bright and should not exhibit any harsh, thin, metallic sounds or distortion.

SPECTRAL BALANCE**1 to 20 points**

Spectral Balance is a test of the system’s overall ***tonal realism*** at the listening level, encompassing the Tonal Accuracy of the system across the entire frequency spectrum. The same factors described under “Tonal Accuracy” affect overall Spectral Balance. The system will be judged according to its ability to reproduce the recording as a whole, rather than by dissecting it into individual frequency ranges.

Superior systems will sound effortless and natural with any of the judging tracks. Weaker systems will exhibit distortion, unnatural coloration, dynamic compression, and frequency response errors, which lead to listening fatigue and lend an unnatural sound to the music.

Spectral Balance: What Judges Listen For:

The Judge will listen to the “big picture” and score the vehicle on a twenty point scale. Does the system create the illusion of real instruments and voices as they listen to the judging tracks? Is the distribution of energy between the frequency ranges appropriate and natural sounding? Particular attention is paid to how smoothly the system integrates different frequency ranges. As an example, a system may have good sounding high frequency performance in and of itself, but when the level of the high frequencies is compared with the rest of the spectrum, they may be too loud or too quiet.

Tonal Accuracy Scoring Scale	
Perfect	20 points
Exceptional	16 - 19 points
Very Good	12 - 15 points
Good	8 - 11 points
Marginal	2 - 7 points
Needs Improvement	1 point
NO Zero Scores are Given	

8.3 - SOUND STAGE

A Sound Stage is the platform where the musical source originates from; it can be quite large (orchestras) or quite small (room in a jazz club). The goal is to reproduce that sound stage as accurately and realistically as possible so that it seems to exceed the physical boundaries of the vehicle interior.

A sound stage is broken down into five factors:

- **Listening Position Relative to Sound Stage** - The position of the listener relative to the sound stage and the apparent distance between the front of the sound stage and the listener.
- **Stage Width** - How wide the stage is from its furthest point to the left to its furthest point to the right
- **Stage Height** - How tall the stage is from the floor of the stage to its highest point
- **Stage Depth** - How deep the stage is from its furthest point forward to its furthest point back
- **Ambience** - The sense of space naturally created by the music and the size of the stage

In Sound Stage judging, the Judge will evaluate how well the vehicle's sound system is able to recreate the sound stage and ambient content of the program material being played. The ideal car audio system sound stage will create the illusion that the sound is originating well in front of the listener, with additional ambient content. While evaluating the Sound Stage, the Judge will draw maps describing the sound stage boundaries. These maps will not only help in evaluating the sound stage elements, but will be vital to the evaluation of imaging.

The Judge will not let any visual cues influence their judgment (apparent speaker locations or lack of them, vehicle boundaries, for example). Sound Quality Judges have been trained to be "blind" to any equipment in the vehicle, the vehicle itself, or any distractions that interfere with their ability to properly determine the sound stage.



8.3.1 - LISTENING POSITION RELATIVE TO SOUND STAGE

1 to 15 points

“Listening Position Relative to Sound Stage” refers to the Judge’s physical position in the vehicle relative to the front of the sound stage.

Based on where the Judge perceives the front of the sound stage, they could be sitting well in front of, or behind, or even on, the stage itself. The Listening Position Relative to Sound Stage scoring chart example (Fig. 1) denotes where the judge perceives the *front* of the sound stage relative to where they are seated; **for example**, if a Judge scores the Listening Position Relative to Sound Stage as a 9, it means that the front of the stage *appears to be* at the dashboard *in relation to where they are seated*.

The best systems will give the illusion of the stage being well in front of the listener, exceeding the front boundary of the vehicle. This is considered ideal as it approximates sitting in an ideal location to the stage at a live concert.

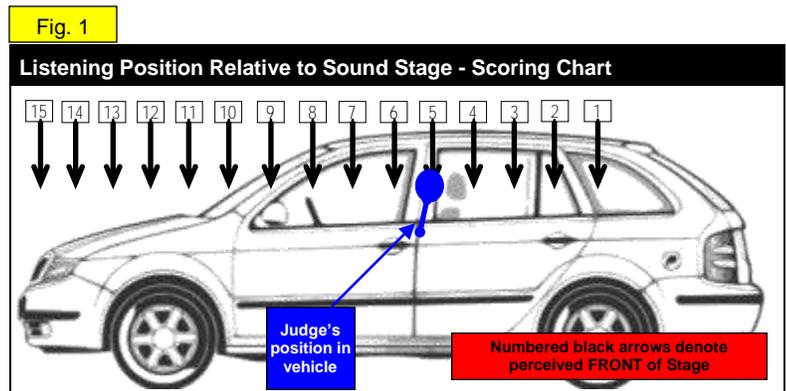
The Judge will base scoring on the distance between themselves and the perceived front of the sound stage.

Listen carefully to the bass. Does it seem to come from up front or from behind? Maximum points within each scoring tier will only be given to systems that convincingly create the illusion that all the sound originates from the Sound Stage.

Some systems will exhibit some localization of sub bass towards the rear, but still maintain a forward listening position. Judges should not drop these vehicles to the “behind the listening position” scoring tier.

In this situation, a Judge should deduct 2 points for obvious rear sub bass within the scoring tier established by the higher frequencies (mid-bass and up) and make note of that action on the score sheet. In no case should a vehicle be dropped to a lower tier for rear sub bass only.

These are general guidelines for scoring. Keep in mind that if a vehicle exhibits different characteristics for each seat in two seat judging, the Judges are instructed to arrive at a score for each seat and then average them to arrive at a final score. **Example:** A vehicle may score 13 points from one seat and 9 points from the opposite seat. The sum of the scores (from both seats) is 22, which is then divided by 2 for a score of 11 points for listening position.



Listening Position Relative to Sound Stage Scoring Scale	
Sound stage well exceeds front boundary of vehicle interior	13 - 15 pts.
Sound stage exceeds front boundary of vehicle interior	11 - 12 pts.
Sound stage originates at or near front boundary of interior	8 - 10 pts.
Sound stage originates directly in front of listeners	6 - 7 pts.
Sound stage appears to be at the Judge's Position	5 pts.
Sound stage originates from behind or is impossible to define	1 - 4 pts.

8.3.2 - STAGE WIDTH

1 to 15 points

Stage Width refers to the distance between the perceived left and right boundaries of the sound stage, and is evaluated in relation to the listening position relative to the sound stage and the stage depth.

What Judges listen for:

The judging tracks on the official **IASCA** Sound Quality Reference CD, in conjunction with the enclosed liner notes, allow the Judge to quickly and accurately evaluate stage width.

The Judge will focus on the original dimensions of the room, as outlined in the liner notes, in relation to the listener. The system's reproduction of the music should not artificially compress or expand stage width. The Judge will listen for additional stage width cues beyond the furthest left and right instruments/vocalists. In many recordings, there is additional space beyond them that can be heard. These are general guidelines for scoring. If, in two seat judging, a vehicle exhibits different stage width characteristics for each seat, the Judges are instructed to arrive at a score for each seat individually then average these scores to arrive at the final score.

NOTE: If a sound stage originates beyond the interior boundaries of the vehicle (e.g. beyond the side view mirrors), Stage Width is evaluated using the vehicle's exterior boundaries **as a reference point only** to describe the stage's width.

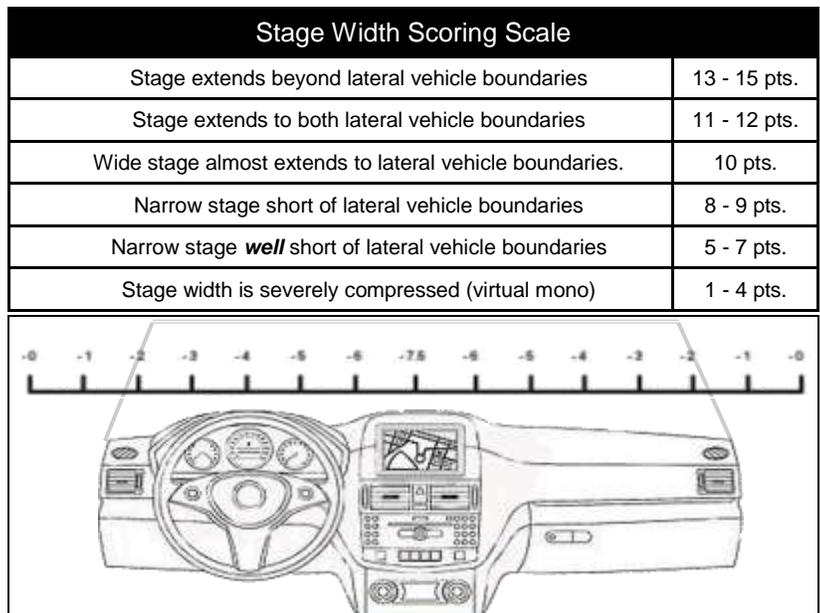
Defining the stage width as the vehicle's boundaries (such as A pillars) is incorrect.

The stage's width is defined by where the judge hears the outermost musical cues from the program material being reproduced. If musical cues originate from outside the vehicle's physical boundaries, the Judge will detail where they perceive the left and right sides of the stage on the stage map, regardless of the vehicle's physical boundaries. The boundaries are used as a reference point only and are not "where" the stage should be.

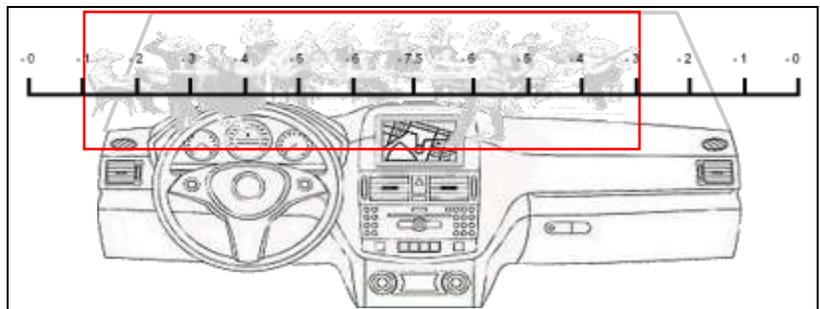
Example (see figure below):

When evaluated from one seat (in the example below, the left seat), the Judge will determine the score by identifying the left and right sides of the stage by determining where they hear the musical cues. In this example, the left side musical cues seemingly originate just outside the vehicle's A pillar; based on the scoring chart, the Judge would deduct 1 point for the left side. The right side musical cues of the stage seemingly originate over the middle of the passenger glove box area; based on the scoring chart, the Judge would deduct 3 points for the right side.

The sum of this score is a 4 point deduction (1 point for left, 3 points for right) from the original 15 point scale, for a score of 11 (see diagram below). When evaluated by two Judges, the same principle is used from each seat, then the two scores are added together and divided by 2 to establish the average stage width score.



E X A M P L E	In the example to the right, using the vehicle's boundaries <u>as a reference point only</u> , the stage width extends beyond the boundaries of the left side "A pillar", but only extends to about midway over on the right side of the dashboard.
	Utilizing the scoring scale, the judge would deduct 1 point from the left side and 3 points from the right side from the maximum score of 15, for a score of 11.
	$15 - 1 - 3 = 11$



STAGE WIDTH EXAMPLE #1

Example of
"Stage extends beyond lateral vehicle boundaries"
13-15 points



STAGE WIDTH EXAMPLE #2

Example of
"Stage extends to both lateral boundaries"
11-12 points



STAGE WIDTH EXAMPLE #3

Example of
"Wide stage almost extends to lateral vehicle boundaries"
10 points



STAGE WIDTH EXAMPLE #4

Examples of
"Narrow stage short of lateral vehicle
boundaries"

8 - 9 points



8.3.3 - STAGE HEIGHT

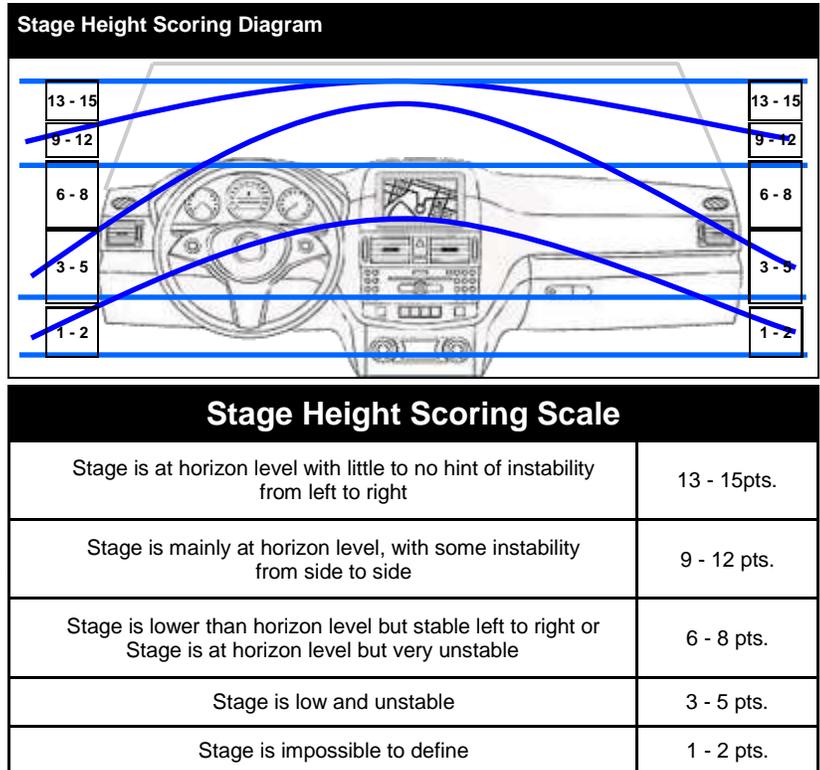
1 to 15 points

Stage height refers to the apparent height of the sound stage and the vertical spread above that level. The center of the vertical spread of the stage should be at horizon level with appropriate instruments/vocalists being above or below this plane from left to right of the stage. The height of the stage should also remain horizontal from the front of the stage, where the lead singer may be placed, to the rear of the stage, where the drums may be located. This spread should not be exaggerated or incoherent and should be proportional to the other stage dimensions.

What Judges listen for:

Systems with good stage height properties will produce a stable sound stage at horizon level with a natural sense of vertical space above that point. Instruments and voices should sound complete and whole at that height with no portion of them coming from below the sound stage floor. The Judge will look for the stage height to remain stable from left to right and front to rear. Some vehicles may exhibit good height in the center with left and right boundaries dropping lower (or vice versa) and this will be taken into account in the scoring. Some vehicles may also exhibit good height within the high frequencies but the lower mid bass and bass frequencies are well below the dash.

These are the guidelines for scoring Stage Height. The Judge will write comments describing the sound stage height after evaluation. If a vehicle exhibits different stage height characteristics for each seat (two seat judging), the Judges are instructed to arrive at a score for each seat, add the 2 scores then divide by 2 to arrive at the final score. The Judges should note when averaging is used to arrive at a stage height score, they will write the individual seat scores in the comments section of the score sheet.



STAGE HEIGHT EXAMPLE #1

Example of

“Stage is at horizon level with little to no hint of instability from left to right”

13-15 points



STAGE HEIGHT EXAMPLE #2

Example of

“Stage is lower than horizon level but stable left to right”

6-8 points



STAGE HEIGHT EXAMPLE #3

Example of

“Stage is low and unstable”

3-5 points



8.3.4 - STAGE DEPTH

1 to 15 points

Sound Stage Depth is the perceived physical depth of the stage, from its forward most point to the rearward most point, *in relation to* the Judge's seating position in the vehicle, relative to the front of the stage. The perceived position of the instruments or vocals on the stage, either behind or in front of each other, creates that perceived stage "depth".

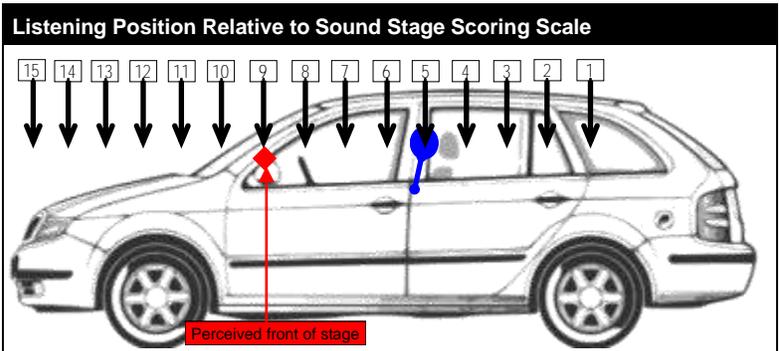
Stage Depth Evaluation Instructions - The perceived front of stage has been established by the Listening Position Relative to Sound Stage score. From the *perceived front of stage*, the Judge will determine where the perceived rear of stage is, *in relation to* the front of the stage.

Stage Depth STEP 1 - FRONT of the sound stage is determined by the *Listening Position Relative to Sound Stage* evaluation.

EXAMPLE

Arrows denote scoring scale for perceived **FRONT** of Stage, established in the *Listening Position Relative to Sound Stage* evaluation.

In this example, the **red diamond** denotes where the judge perceives the front of the stage *relative to* where they are sitting (depicted in blue).

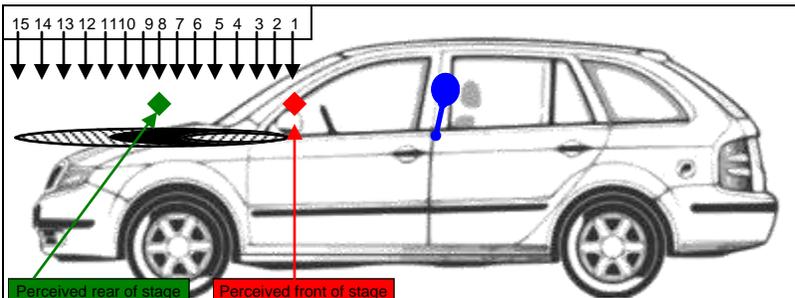


Stage Depth STEP 2 - Determine the perceived **REAR** of the sound stage, *in relation to* the front of the stage. Using the scoring scale in the *example* diagrams below, score the Stage Depth based on the perceived front and rear of the stage.

EXAMPLE

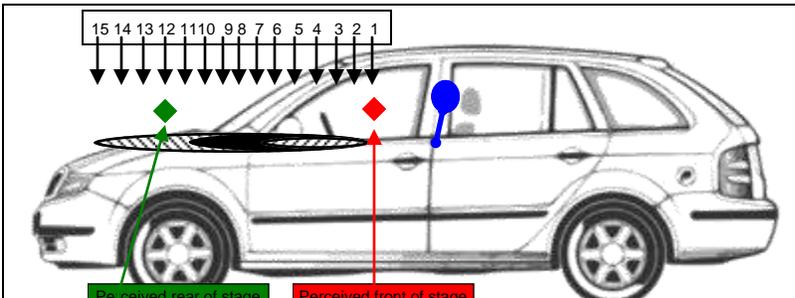
In this example, the **green diamond** denotes where the judge perceives the **REAR** of the stage **IN RELATION TO** the perceived front of stage.

In this example, the Stage Depth would receive a score of 8.



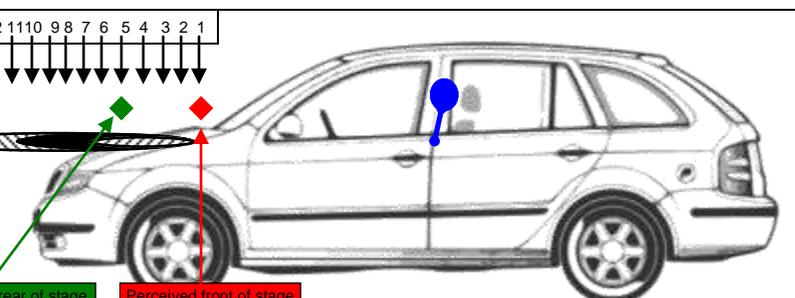
EXAMPLE

In this example, the perceived front of the stage is much closer to the seated position, but the perceived rear of the stage is further back (deeper) and would score higher (12 pts.)



EXAMPLE

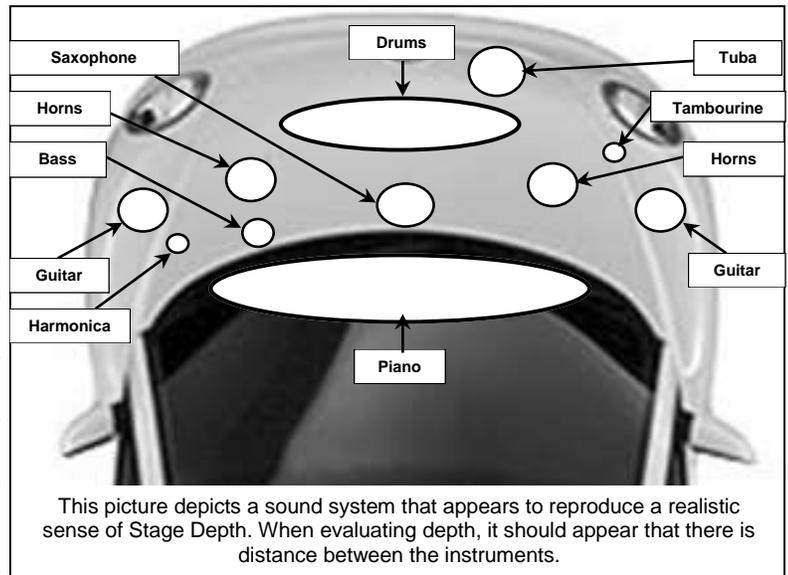
In this example, the perceived front of the stage is much deeper, but the perceived rear of the stage is not as far back (shallower) and would score lower (5 pts.).



What Judges listen for:

The Judge will compare what they hear from the system in regards to instrument and vocalist position (from the front to the rear of the stage). If the system exhibits a realistic, almost three dimensional interpretation of those instruments and vocalists in their proper order on the sound stage, it will score well.

These are general guidelines for scoring. The Judge will write comments describing the stage depth. If in two seat judging, a vehicle exhibits different stage depth characteristics for each seat, the Judges are instructed to arrive at a score for each seat, add the two (2) scores together then divide by two (2) to arrive at the final score. The Judges should note that when averaging is used to arrive at a stage depth score, they should write the individual seat scores in the L / R space provided in the comments section of the score sheet.



Stage Depth Scoring Scale	
Stage exhibits realistic sense of depth	12 - 15 points
Stage exhibits good sense of depth	8 - 11 points
Stage exhibits some sense of depth	2 - 7 points
Stage is impossible to define	1 point
NO Zero Scores are Given	

8.3.5 - AMBIENCE

1 to 10 points

Ambience can be defined as the perceived sense of space around a sound source. Most recordings contain ambient cues, which are either naturally created by the room used for recording or created by recording engineers using processing equipment. These cues can interact with the acoustics of the vehicle and the design of the sound system to help create that sense of space.

What Judges listen for:

The Judge will envision the size of the “room” the music was recorded in and listen for ambient cues that help them create a feeling of being in that room. The ambient cues should sound natural to the size of, and recreate the feeling of being in, the room the music was recorded in.

These are general guidelines for scoring. Keep in mind that in two seat judging, if a vehicle exhibits different ambient characteristics from each seat, the Judges are instructed to arrive at a score for each seat, add the scores together then average these scores to arrive at the final score. The Judges should note on the score sheet when averaging is used to arrive at a final score and write the individual seat scores in the comments section of the score sheet.

Ambience Scoring Scale	
Realistic Ambience / Sounds like an appropriate room	8 - 10 points
Slightly closed in / Sounds like a very small room	4 - 7 points
Lack of ambience / Sounds like a very confined area	2 - 3 points
Overbearing /Artificial ambient effect	1 point
NO Zero Scores are Given	

8.4 - IMAGING

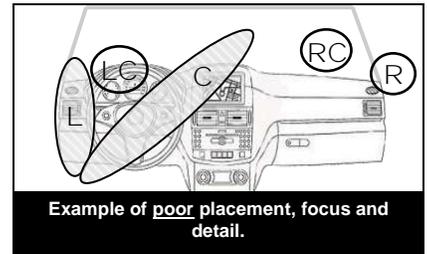
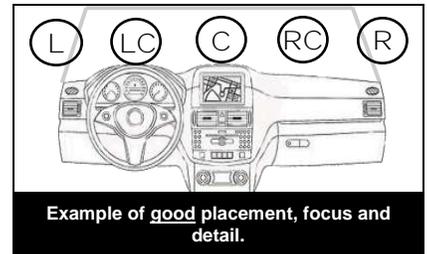
The term “imaging” describes a system’s ability to reproduce the sounds of instruments and vocals in their correct locations and proportions on the sound stage. Correct locations are defined by their placement as they were actually recorded. Systems are evaluated based on their ability to place instruments and vocals accurately in their positions across the sound stage.

Points Breakdown for Imaging Judging

IMAGING: FAR-LEFT Far-Left Vocal or Instrument	1 to 10 points
IMAGING: LEFT OF CENTER Left-of-Center Vocal or Instrument	1 to 10 points
IMAGING: CENTER Center Vocal or Instrument	1 to 10 points
IMAGING: RIGHT OF CENTER Right-of-Center Vocal or Instrument	1 to 10 points
IMAGING: FAR-RIGHT Far-Right Vocal or Instrument	1 to 10 points

Detailed sound stage maps in the liner notes of the Official **IASCA** Competition CD provide the exact locations of specific instruments and voices in the recordings used to evaluate this category. These maps have been produced in conjunction with the recording engineers who produced the tracks.

The Judge will listen for and reward for properly placed, coherent, and defined images that accurately convey the size of the instrument relative to the soundstage. Particular attention should be paid to whether or not the sound of the instrument or vocal is focused and properly placed in its correct location on the soundstage (i.e. a piano may be very large relative to a saxophone). If an image seems unnaturally wide, or the image wanders as the pitch changes, or if it seems to split into two or more images, points will be deducted. Height should also be consistent (the lower part of the voice should not come from the foot well, while the rest of it is up high).



Judges Use the Following Scale to Score Imaging (No zero scores given)

Images are correctly defined (Focused) and located (Placement)	10 points
Images are well defined and located, but not perfect (Excellent)	8-9 points
Images are somewhat diffused and shifted in location (good)	6-7 points
Images are diffused and somewhat difficult to place (average)	3-5 points
Images are very diffused and very difficult to locate (below average)	1-2 points

8.5 - SOUND LINEARITY

The object of this section is to evaluate an audio system's ability to reproduce a recording with accurate spectral balance and accurate dynamics at varying volume levels.

The Judge will use the instructions on the dedicated Sound Linearity tracks for setting the base volume level at approximately 81dB peak using the portable SPL meter. Once the setting is done, the Judge **will not touch the volume control** until after all the sound linearity tracks are completed. Each linearity track will play at the decibel ranges listed below. Each musical sample is identical, so the Judge can directly compare spectral balance and dynamics. The Judge will score the system by how well it reproduces the music spectrally and dynamically at each volume level.

What Judges will listen for:

At the lower volume level (Track 21), the Judge will listen for low, mid and high frequency changes as the level increases. They will pay particular attention to the dynamic impact...does it increase, or improve, as the track varies between its average and peak dB levels? Is it noticeably diminished at the lower levels? Sub Bass extension at lower levels will naturally decrease and this is taken into consideration when evaluating Track 21.

At high levels, the Judge will listen for smooth spectral balance and solid, realistic dynamics. Instruments should have a realistic attack and impact that does not get compressed by distortion (amplifier clipping or speaker system limitations). The relative level between low, mid and high frequencies should be natural and realistic, with no section overpowering another. Points should be deducted for any unnatural harshness or distortion.

System Linearity Scoring Scale	
Perfect	10 points
Exceptional	8 - 9 points
Very Good	6 - 7 points
Good	4 - 5 points
Marginal	2 - 3 points
Needs Improvement	1 point

NO Zero Scores are Given

Soft Volume track - 81 dB peak/74 dB avg.	<i>1 to 10 points</i>
Moderate Volume track - 93 dB peak/86 dB avg.	<i>1 to 10 points</i>
Loud Volume track - 105 dB peak/98 dB avg.	<i>1 to 10 points</i>



8.6 - NOISE

Possible 0 - 6 Point deduction

In this section, Judges will evaluate noises within the vehicle and system, which may affect the 'listenability' of the system, based on any noises generated while listening to the program material. Points will be deducted for varied noises affecting the listening enjoyment of the system.

Procedure for Noise Testing:

Musical tracks, as well as the Absence of Noise Tracks on the current Official IASCA Sound Quality Reference CD will be used to determine the system's listenability. Judges will determine the level of noise *from a normal seated position*.

Judges will evaluate for Noise throughout the entire judging process, not just using the musical tracks and tracks designated for Noise testing on the Official **IASCA** Sound Quality Reference CD, to determine the level of hiss heard. For the Noise testing tracks, the Judge will set the volume to a moderate level (approx. 90dB) at the beginning of the track. As the output level of the track decreases, Judges will increase volume to maintain a consistent output level until maximum volume is reached, then listen for hiss within the system.

NOISE SCORING

Scoring is based on the level of the noise heard by the Judge. If no noise is heard, full points will be awarded; if noise is heard, points will be deducted based on the level of noise. There are two levels of noise that will be considered; a "Slight Noise" and an "Apparent Noise"

Slight Noise (-1 point) - A noise that is barely perceptible during the evaluation process, that slightly detracts the Judge's attention from the music being played. Example: a low level hiss that can be heard during quiet passages or between tracks; a barely perceptible rattle or click during playback under all conditions.

Apparent Noise (-2 points) - A noise that very perceptible during the evaluation process, under all playback conditions, that heavily detracts the Judge's attention from the music being played. Example: a loud hiss that is easily perceptible while playing music at evaluation listening levels; a consistent rattle, or resonance, caused by a loose panel or item within the vehicle; a consistent mechanical noise that is not part of the original source material.

Noise scoring scale	Slight Noise	Apparent Noise
Floor noise/gain hiss detected	-1 point	-2 points
Mechanical noises detected	-1 point	-2 points
Environmental noise detected	-1 point	-2 points

FLOOR NOISE/GAIN HISS

Possible 1-2 point deduction

Floor noise (also known as Gain Hiss) is a hissing sound in and between audio tracks that is audible from a normal seated position. Similar noises that may affect scoring in this section include, but are not limited to, hums (from amplifiers, power supplies or other sources) and whining sounds heard while the system is playing.

MECHANICAL NOISE

Possible 1-2 point deduction

Any air flow or mechanical noise (see Glossary of Terms for description) that is produced by anything audio system related, while the system is playing.

ENVIRONMENTAL NOISE

Possible 1-2 point deduction

Environmental Noise is defined as any noise generated by the vehicle or any item within the vehicle and the system, that is not part of the original recording, that detracts from the Judge's ability to hear the music while the source media is being played. Examples include, but are not limited to, vehicle panels rattling, items within the vehicle creating noise due to resonance (e.g. candy box in door pocket rattling, loose screw rattling, plastic panel resonating because it's not securely snapped in place, etc.).

Exterior environmental noises such as crowd noise, other vehicles playing music, revving engines, etc. will not be considered.

8.7 - SYSTEM CONTROL OPERATION

1 to 3 points

The Judge will evaluate whether certain system controls can be operated from a control device without unreasonable distraction from the road.

Any function that the judge has to perform while evaluating the vehicle and system must be able to be controlled by the control device from the judging position (Judge's seated position) without having to move, lean forward or backward or adjust their seated position to operate the system controls from that seated position, with the exception of inserting and retrieving the judging media (CD, flash drive, etc.).

NOTE: The competitor determines the seat position for SQC evaluation. Once the competitor has set the seat position for evaluation, that will be the position used for the entire judging of SQC. The seat position will not be moved or adjusted during the judging process. Example: if a seat is adjusted as far back as it can go, that is where the judging process will take place from. **NOTE:** The judge must be able to reach the control device and operate the controls, without undue movement from that seated position, throughout the entire judging process.

The control device must be able to operate the following functions; volume adjustment up/down and track selection up/down. A system display must also be visible within the Judge's field of vision. These are the features that will be evaluated to determine if the system is safe to operate while driving.

A Control Device is defined as a device capable of completing the functions required by the judge to evaluate the system. System controls can include but are not limited to; steering wheel controls, wired/wireless remote, voice activation, mechanical/electrical switches/knobs, head units, source units, etc.

System Control Operation Scoring Scale:

The System Control Operation scoring scale is based on a 3 point system:

- 1 point for easy accessibility of the control device while in the seated position for evaluation.
- 1 point for control device being securely mounted (See "Securely Mounted" in Glossary of Terms)
- 1 point for display within Judge's field of vision from the seated position.

NOTE - Standard control devices for source units that are not securely mounted will not be awarded 1 point. A "loose remote" can be a potential hazard while driving and does not provide a consistent location to access the system controls of the source unit. **NOTE:** Control devices (such as steering wheel controls or source unit controls) **that are not** easily accessible by the judge in the seated position for evaluation selected by the competitor will not receive a point for accessibility.

9 - TIEBREAKERS

9 - SQC COMPETITION TIE BREAKERS

Tie scores in SQC are settled in this sequence:

1. The vehicle with the highest *Tonal Accuracy* score wins.
2. If a tie remains, the vehicle with the highest *Sound Stage* score wins.
3. If a tie remains, the vehicle with the highest *Imaging* score wins.
4. If a tie remains, the vehicle with the highest *Linearity* score wins.
5. If a tie remains, the vehicle with the highest *Noise* score wins.
6. If a tie remains, the vehicle with the highest *System Control Operation* score wins.
7. If a tie remains, the vehicle with the highest *Safety* score wins.
8. If a tie remains, affected competitors will equally share the position.

10 - CHANGING SQC CLASSES

10 - CHANGING SQC CLASSES

In SQC competition, a competitor may move up in Class, but **cannot** move down. If a competitor wishes to move down in Class, it is at the sole discretion of the IASCA Head Office to approve the Class change. **All petitions for a Class change must be submitted electronically by email or in writing, listing the circumstances and sent to the IASCA Head office or affiliate office for approval. Petitions will be examined on a case by case basis.**

NOTE: Competitors who achieve INAC Champion status twice in a class will be required to move up in Class, regardless of industry status or experience level.

11 - GLOSSARY OF TERMS

SIX BASIC CHARACTERISTICS FOR DESCRIBING A TONE

Loudness: The magnitude of the auditory sensation produced by the sound (can be affected by equalization or improper level matching between speakers).

Pitch: The subjective quality of a sound which determines its position on a musical scale. (Excessive distortion and non-linearity can affect pitch.)

Timbre: The interaction of the harmonics and fundamentals of a sound which give it its sonic signature. (Example: The sound of a guitar can be affected by poor reproduction of high frequencies in the system if the harmonics of the fundamental tones produced by the guitar are not reproduced accurately.)

Modulation: A change in amplitude, phase or frequency which occurs to a sound. (Can be affected by systems with phase problems, frequency response problems, etc.)

Duration: Literally, the duration of a sound (for example this can be affected by systems with poor transient response or panel resonance).

Attack and Decay: The time it takes for a sound to build up (attack) or die down (decay). Attack and decay can be affected by systems with poor transient response, panel resonance and excessive reflections.

OTHER TERMS

Accurate (Accuracy) - Precise, free from errors, capable of providing information in accordance with an accepted standard

Ambience (Ambient) - An atmosphere, giving the feeling of being in the room where the music was performed. Also known as "Realism".

Baffle/s - Panels built, or created specifically, to redirect or enhance the sound quality characteristics of a system.

Cargo area - The common area in a vehicle used to store cargo. In a car, the cargo area would be referred to as the trunk, or boot. In trucks it is referred to as the bed, or box. In minivans, SUVs and crossover vehicles, it is the area directly behind the second row of seats.

Characteristics - A feature or quality that makes somebody or something recognizable; distinguishing or representative of a particular person or thing

Coherent - logically or aesthetically consistent and holding together as a harmonious or credible whole.

Coloration - The ability of a system component to give the sound a unique characteristic that is unnatural to or not recorded in the original reproduction.

Control Device - A device capable of completing the functions required by the judge to evaluate the system. System controls can include but are not limited to; steering wheel controls, wired/wireless remote, voice activation, mechanical/electrical switches/knobs, source units, head units, etc.

Decibel - A unit of relative loudness, electric voltage, or current equal to ten times the common logarithm of the ratio of two readings. For sound, the decibel scale runs from zero for the least perceptible sound to 130 for sound that causes pain and beyond. The symbol for decibel is *dB*.

Dynamics - In reference to music, the varied levels of amplitude in a piece of music, and the way in which a performer reproduces them within the performance.

Driver's seat - In IASCA competition, the term refers to the main seat used to operate the vehicle in normal driving conditions. It is the seat immediately behind the vehicle's steering wheel with access to the gas and brake pedals.

11 - GLOSSARY OF TERMS (cont.)

Environmental Noise - Any noise generated by the vehicle, or any item within the vehicle and the system, that is not part of the original recording.

Ergonomics - The factors or qualities in the design of an item that contribute to its comfort, efficiency, safety, and ease of use.

Industry - The term "Industry" by IASCA's definition refers to the Mobile Electronics Industry and any facet of any other industry that directly relates to mobile electronics, such as car audio competition (Judge, Trainer, Event Promoter), magazines (online and print).

Industry Member - Definition: any individual who is employed in the industry, meaning they receive compensation from a company within the industry in the form of a paycheck or support for promoting the company's brand/s.

Kick pods (or Kick Panels) - Pods or panels built to house speakers that are positioned in the vehicle's foot well area, designed specifically to enhance or improve the sound quality characteristics of the vehicle and system.

Live concert environment - The ability of a vehicle and sound system to reproduce the feeling and emotion of a live concert for the listener.

Mechanical Noise - Mechanical Noise is considered noise not generated by the judging media (CD, flash drive, etc.), such as airflow noises from fans, relay noises, or any noise coming from a piece of equipment within the system that detracts from the ability of the Judge to properly listen to the source media as it was intended to be listened to.

Noise Floor - The volume level of any ambient noise in the area of the vehicle, in relation to the listening volume level of the system evaluation.

Newcomers - Somebody who has recently arrived, appeared, or been introduced to the sport of car audio competition who is competing in their first season.

OEM - Abbreviation for "Original Equipment Manufacturer", referring to both the automotive and mobile electronics industries, for the purposes of these rules. When OEM is referred to through this text, it signifies the original equipment the vehicle or components came with from the factory when it was originally assembled.

OEM Appearance - This term refers to the vehicle maintaining a similar look to what it did from the manufacturer's original design. If a panel in a vehicle is modified, the intent must be to refinish the panel so it maintains an original "look", using the same or similar materials and maintaining the same or similar "shape" to its original counterpart. The look of the modified panel must maintain the flow of the original interior and not be designed to stand out from the rest of the interior design. **Example** - A pillars trim panels that do not have OEM tweeters mounted in them from the factory, but with aftermarket tweeters mounted in them. The original design was a plastic A pillar trim piece attached to the A pillar frame of the vehicle; the new (or modified) trim piece with the tweeter would be designed to replicate the look of the original trim piece with similar materials, such as a plastic spray, or a cloth or vinyl material of similar color and texture to the original trim piece in the vehicle.

Parameters - A fact or set of guidelines that restricts how something is done or what can be done within those facts or guidelines.

Permanently affixed - An item that has been added to the vehicle with the intent of permanence. An item is considered permanently affixed if the manner in which it was affixed causes potential damage to the panel where it is attached when removed. Examples of manners of attachment that could potentially cause damage when removed are, but not limited to: double sided tape, Velcro, screws, glue, solder, nuts/bolts, screws.

11 - GLOSSARY OF TERMS (cont.)

Pillars - The metal posts that hold up the roof of the vehicle. The front pillars at the windshield are commonly referred to as the "A" pillars, the center pillars at the middle of the roof are referred to as the "B" pillars and the rear pillars at the back window are referred to as the "C" pillars.

Realism/Realistic - The simulation of the music by the sound system in a way that accurately resembles the live performance of that music. Also known as Ambience.

Reproductions - The act or process of reproducing the music through the sound system using the source material.

Resonance - An intense and prolonged sound produced by sympathetic vibration, usually caused by the reproduction of the music by the sound system vibrating a panel in the vehicle. Resonance is the effect of a panel continuing to vibrate, reproducing a frequency after the musical equivalent of that frequency has stopped playing through the system.

Securely mounted - For purposes of the SQC rules referring to equipment securely mounted, it refers to any item within the vehicle that is not properly installed, and could potentially pose a safety hazard to the judge while evaluating the vehicle and system. Examples of items would include, but are not limited to, remotes, bass knobs, processors, amplifiers, speakers, etc. Smaller items such as bass knobs or remotes may be mounted with Velcro and be considered as securely mounted, so long as the Velcro used is properly affixed to a panel and will not fall off. Larger items such as processors, amplifiers and speakers must be mounted more securely, such as with the use of screws. Wires coming out of the equipment must also be properly protected against the possibility of being accidentally pulled out of the equipment by a person's movement while seated in the seat. **NOTE:** IASCA, nor any of its representatives (Judges, staff, etc.) are liable for any damage to any piece of equipment or wiring in a vehicle that is not securely mounted and protected. It is the competitor's responsibility to ensure that their equipment and wiring is securely mounted and protected and IASCA holds no responsibility in regards to any damage that may occur from improperly secured items.

Sense of Space - The ability of the sound system being able to give the listener a "feeling" of being in the area where the music was originally recorded.

Sibilance - The hissing sound created when certain consonants are vocalized, such as the letter "s". Can be compared to the sound made by a tire losing air.

Spectrum - The complete range of audio frequencies from the lowest bass to the highest highs the average human ear can perceive, commonly referred to as the "Sound Spectrum".

Stock - Term used when referencing a vehicle, to reference the original (or OEM) design and appearance of that vehicle, before any modifications were made.

Vehicle - Used as a general term referring to all motor powered cars, trucks, vans, SUV's, Crossovers and minivans. To qualify as a "vehicle" under IASCA's definition, the unit used to house the sound system being evaluated must have a motor that powers it, a transmission, an electrical system, a front and rear axle (one of which must be the driving axle), a steering wheel and a seat from which to control the unit while it is in motion. A trailer with a "tow vehicle" attached does not meet the definition; it must be one unit containing at minimum all of the above criteria.