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## Welcome to the European Mobile Media Association!

### 1.1 History & preface

EMMA was founded to create a level playing field for sound quality competitions in Europe and to unify the different rulebooks that are used all over the continent. Car Audio Competition has its roots in the United States, where the IASCA was the first organisation that designed a competition manual for SQ Events.

EMMA International is the leading organisation for the EMMA national car audio associations all over the World and is responsible for the yearly organised international head judge training, the standardised rulebook and the competition CD'S. Its website gives access to important information about the sound quality competitions. The European Sound Pressure League (ESPL) and EMMA Racing are also part of the EMMA competition series.

In this actual version of the EMMA rulebook, all our experiences gathered over the last years from all National Organisations and the Euro Finals have been used to create a rulebook that is fairer, easier for the competitor to understand and follow these rules. It is also EMMA's sincerest hope that these rules will be reviewed upon as an example of the organisations continuing efforts to promote the auto sound industry.

With EMMA Racing, a platform is created for tuned cars with mobile media systems to compete on a national and international level with common rules, to find the European Champion not only in sound but also on overall car performance.

### 1.2 EMMA mission statement

The mission of the European Mobile Media Association is to provide guidelines for an independent group of national car audio organisations all over the world. It sets rules and regulations by which the Sound Quality, ESPL and EMMA Racing competitions are held. EMMA's goal is to encourage fair competitions on an equal level throughout all membership countries, and to promote the growth of these Events. The intention is to have an international Car Audio and Multimedia Championship every year.

Furthermore EMMA encourages both competitors and installers to extend their knowledge about the equipment they are using. This will then result in a better quality standard for the installations and ensures the equipment will perform to its optimum. Ultimately this will result in a satisfied competitor and/or customer.

### 1.3 The competition challenge

For sound quality, the challenge is to build an audio or multimedia system that will overcome the problems of vehicle acoustics, reproducing music without noise, distortion and to make the music sound like the "original" – also the installation quality will be evaluated.

For ESPL, the challenge is to reproduce high sound Pressure levels in nice designed cars with quality installations.

For EMMA Racing, the car is looked at as an entire project. Sound quality and high sound Pressure levels but also tuning, looks, and racing capabilities are challenged during an EMMA Racing Event.

### 1.4 The competitive spirit

EMMA was established to satisfy the need of competitors to find out "Who is on top in Europe and the world". Today's high performance car audio equipment is capable of delivering sound reproduction so accurately and loud, that it does not sound like reproduction at all. EMMA is concerned that some people may forget that the most important instruments in this listening experience, their ears, have limits. The last thing we want to see is for enthusiasts abusing their ears by listening at extreme volume levels that could render them incapable of hearing the music they love so much!

**Good Luck!!**

This rulebook was discussed and written by the EMMA international Head judges & Supervisors and finalised with the support of Costas Christopoulos (Greece), Per Söder (Sweden), Reinier Wolf and Carel Wolf (Netherlands), Glen Saitowitz (Switzerland), Christian Körbel and Alex Klett (Germany).

**DISCLAIMER:**

In any EMMA-sanctioned Event, EMMA will not be held responsible, directly or indirectly, for any damage to or loss of competition cars, equipment and other goods. Furthermore EMMA urges the competitors and the public in general to protect their hearing.

**EMMA is a registered trademark.**

All copies of the official rules, score sheets and other related material, CDs, DVD's, provided Audio files like MP3 and AAC, and the use of brand name and logo are to be authorised by the directors of the European Mobile Media Association, Alexander Klett and/or Peter Fuhrmann



[www.emmanet.eu](http://www.emmanet.eu)

## 1.5 General

As a general rule of thumb, with regard to specific items, when not written and/or addressed specifically in this rulebook, it will be judged illegal until otherwise specified by the EMMA Rules and/or Head Judge Council. Amendments will be made to these rules, policies, and procedures in accordance with the changing times of our industry. Any Addendum to the Rulebook will be published on the EMMA Homepage – [www.emmanet.eu](http://www.emmanet.eu) - and accompany the actual version of the rulebook replacing or clarifying paragraphs. In all cases, the updated paragraphs written in the addendum will be classified as the updated actual version of the rulebook and will be valid from the day of publishing.

The following policies, procedures and rules have been formulated to benefit all competitors, officials and judges at EMMA sanctioned Events. Many manufacturers, retailers and fellow competitors established these rules and guidelines through many hours of research for the purpose of fair, unbiased judging standards. Because it is impossible to foresee every circumstance, or combination of circumstances that may arise during an Event, it will be up to the discretion of the Head Judge, Event Director and/or the Head Judge Council to address any of these circumstances or concerns when they arise.

All communication during an international Event will be in the English language. This applies to all communication, whether it is in presenting ones car, protests, written, announcements or otherwise. When necessary a competitor is allowed to use an interpreter. Using and providing for an interpreter is the sole responsibility of the competitor!

The Head Judge or the Event Director at the Event will outline the circumstances or concerns (regarding the rulebook) and forward them to the EMMA office for administration and forwarding them to the Head Judge Council for review / measures.

The Head Judge(s) and/or Event Director has to clarify judging discrepancies on the day of the Event, while the information is still fresh in everyone's mind and the system can be checked to determine the proper course of action. Discrepancies resolved by the Head Judge will be forwarded to the EMMA office.

**These General Rules apply to ALL competitions organised under EMMA rules.**

## 1.6 Changing Categories / Classes

A competitor who elects to change class and/or category during the competition season must compete at least once in the new class and/or category within the same season to qualify for invitations to the national final. All qualifications reached before expire with this change. A change of category and or class after the national final disqualifies the competitor for the European Final. It is the duty of the National Organisations to ensure the correctness of the participation of their competitors.

If a competitor joins the judge team or begins to work for the car audio industry during the season, he/she is no longer allowed to compete in EMMA Entry or EMMA Experienced (Sound Quality & Multimedia only) if previously started in the before mentioned categories. All qualifications reached before expire from this moment on.

Actual and retired judges are not allowed to compete in the EMMA Entry or EMMA Experienced category (Sound Quality).

A Head Judge/ Event Director is allowed to compete in the Event he is in charge of. If this is the case, the legal power for the class he/she competes in must be transferred to another qualified (Head) judge.

## 2 General competition rules and procedures

### 2.1 Registration

1. Any legal person is allowed to participate in EMMA Events. This can be a “natural living male or female” person, a group of persons or a legal entity that can act as one. This includes Association, foundations, establishments, companies etc. In no way is only one “natural person” meant. In any case, in the rest of the rulebook he/she/they will be called competitor
2. The vehicle entered in the competition must be (temporarily) registered (except for ESPL Master and Expert) and allowed to drive. The vehicle must be able to drive by its own engine.
3. Regardless of any state or national law requirement, a valid vehicle registration or certificate of title, or a facsimile thereof, must be available on request to verify vehicle ownership.
4. Vehicles must be registered in the owner’s name or business name or it must be proven that the competitor is the main user of the vehicle on request.
5. The competitor’s car that is registered to compete must be present and available to the judging process (take an active part at the competition); otherwise the registration is not valid.
6. Any falsification or misrepresentation of entry registration information regarding participant, vehicle and/or mobile media system, can be cause for immediate disqualification. The individual could be banned from competition for the balance of the competition season by the National Organisation or EMMA.
7. All competitors should be sufficiently familiar with their mobile media systems components and the installation before competing at the Event. This will help expedite the eventual Pre-staging and judging process.
8. The registration form / competitor agreement waivers must be signed / confirmed for a clear understanding and acceptance of all of the rules, both stated and implied.
9. The competitor registration form must be filled in completely via the internet in advance or by hand on the competition day with the following specifications (certain National Organisations might only accept registration over the Internet)
  - Complete name
  - Complete address
  - (Mobile)Phone- and fax-number (and if possible E-mail address)
  - Vehicle information (manufacturer, type, colour, registration number)
  - Category and class in which the vehicle will compete
  - Manufacturers of all installed components
  - Date and location of the Event (a registration form must be filled in for each Event separately)
10. The registration fee has to be paid in cash to the organising Association on the morning of the Event before it begins. The fee will depend on the National Association’s rules. In some cases the competitors will be asked to wire-transfer the money to the account of the organisation in advance of an Event to confirm attendance.
11. One competitor can participate and qualify in a maximum of four different formats during one Event with the same vehicle:
  - One class in Sound Quality
  - One class in Multimedia
  - One class in ESPL
  - One class in EMMA Racing

A competitor may enter more than one vehicle to one Event. Qualification points will be only awarded to the competing vehicle in the category/class it is competing in.

### 2.2 Conditions of entry

- Categories and the number of amplifier-channels / woofers or value of the car audio system separate the competitors. These are described in detail under the chapter titled “Categories and Classes”
- A competitor must register in the appropriate class according to all active components installed. If a discrepancy between the number of amplifier-channels / woofers reported during registration is determined after judging has been completed, the competitor may be disqualified
- Active judges at an Event are allowed to participate with their vehicle but they cannot judge the same category/class.

## 2.3 On the competition day

1. The competitors must be at the registration before the announced time (e.g. 9.00h - the times mentioned are an example and may vary). If he/she has not registered within the next 30 minutes (e.g. until 9:30h) there will be a deduction of 10 Points written on his/her score sheet (by the Head Judge / Event Director). After 60 minutes (e.g. 10.00h) the competitor will only be allowed to compete if the other competitors of the relevant category/class agree to this. The culprit will not be able to take part in the competition should one of the competitors complain about his/her late coming. A reasonable explanation must be given by the protesting competitor (because he might be better than me is not sufficient and also not reasonable!!!).
2. All vehicles must drive into the judging area by using its own power. The Head Judge or the Event Director can decide whether to deduct points or not if the vehicle had engine trouble during the journey to the Event. In case of engine troubles the organisation has to be informed as soon as possible. The judging area is defined as the designated location for SQ-cars on the Event (e.g. hall #5) and for ESPL-cars the locations for installation judging and measurement (might require driving with own engine between installation point and measuring point).
3. After registration, the competition vehicles must be located in the designated areas, directions from the organisation / staffs have to be followed.
4. The vehicle entering the judging area must be accompanied by the person showing the vehicle and no more than one co-pilot. When a competitor and his/her co-pilot are in the judging area, they must follow all directions pointed out by the judges, head judges and officials of the organisation.
5. Before beginning the judging process, the Head Judge will hold a briefing, judges and competitors must attend the briefing. If an EMMA Event is held over a two day period, the organisers / national organisation decides which classes start on which day. This information will be published in advance on the national or international website.
6. When the judges want to start their work, they will inform the first competitor of the day and the vehicle has to be prepared for judging within five minutes. In case of a time schedule being used – the vehicle has to be ready for judging one hour before the determined time.
7. Before the SQ/MM/ESPL-judging starts, the judges will give their CD/DVD to the competitor and allow him max. Two (2) minutes to check the settings of the system. The system will then be judged under those conditions. The judge(s) are not forced to inform the competitor if they find problems like wrong DSP setting, some speaker(s) not working etc. It's the competitor's responsibility to check this during the given two minutes. If a competitor feels that an equipment malfunction or operator error resulted in a score to be questioned, they have the right to bring this to the attention of the judge (team). It is up to the Head Judges / Event director if a re-judging will be permitted or not.
8. On national finals / international Events, it is up to the organisers to appoint a second/passengers side judge for those categories where normally only one judge is appointed as stated in the section "Categories and classes".
9. The installation is not allowed to be changed between the Installation-Judging and the Sound-Judging (i.e. remove covers, apply damping, remove grilles, etc.). Disregard of this may lead to 0 points in the relevant installation section after reviewing this issue with the Head Judge.
10. On some Events, a Pre-staging can be required.
11. During Pre-staging, an assigned Event official will verify the registration and/or the competitor information section on the score sheet. This includes verifying the registered category and class. If the competitor category and class is questioned, it is the responsibility of the Head Judge to determine the appropriate category and/or class for this Event only.
12. An official inspection person or the appointed installation judges have the option to inspect each competitor's vehicle to verify the information supplied under vehicle information and the system description.
13. During this inspection procedure, the official performing the inspection reserves the right to require a competitor to disassemble their audio system installation or elements of their vehicle, within reason, in order to verify the competitor's submitted equipment list and/or number of amplifier channels. If time constrains or other extenuating circumstances prohibit inspection of the system/vehicle during Pre-staging, inspection may be performed during installation judging or after the judging process. Failure to comply with inspection will result in the forfeiture of any and all prizes awarded and disqualification. In all cases, the decision of the Head Judge, the EMMA Supervisors, the Head Judge Council or the EMMA Directors are final.

14. Maintaining a detailed photo log will assist in the inspection process, as well as the system presentation portion of installation judging and in answering many of the installation judge's questions.
15. If any damage should occur to the sound system or vehicle during disassembly, it should be immediately reported to the Head Judge or the Event Director.
16. EMMA is not liable for damage or system failure occurring at or during an Event.

## 2.4 Event Types

**For all EMMA authorised Events:**

**Only this Rulebook and the appropriate Compact Discs /DVD's or provided Audio files are to be used.**

### 2.4.1 Regional Event

A regional Event can be organised by a retailer, a manufacturer or another accepted Association. During this Event there must be a minimum of one official Head Judge and one SQ and installation Judge Team each.

Regional Events are to qualify for the yearly national Final.

Competitors are more than welcome to pick up the idea of the international community and start in competitions in other EMMA-member countries! With their attendance, an account to earn qualification points is opened in the country they started in.

### 2.4.2 International Event

Whenever a competition is labelled as an EMMA International Event (e.g. Sinsheim Show in the past), the qualification points earned there will be added only to the competitors national (home) account as qualification points for the National Final. If no account is opened, the National Organisation must then open it.

### 2.4.3 Qualification points

For the qualification to the national finals, the following points will be awarded to an account for the competitor in conjunction with his competition vehicle and the category / class he was competing in with it.

1st place	10 points
2nd place	8 points
3rd place	6 points
4th place	5 points
5th place	4 points
6th place	3 points
7th place	2 points
8th place	1 point

Again: Qualification points are awarded to a Person-Car-Class combination. If anything in this combination changes, the points are void.

The points awarded in the Events will be accumulated and maybe published on the official national EMMA-website.

### 2.4.4 National Event

A national Event (Final) can only be organised by a National Member Organisation of EMMA, or by EMMA itself. National Finals can only be organised with the official permission of the EMMA office.

Participants for the National Final must have qualified at regional Events/International Events.

Participants for the National Final must have qualified at regional Events. It is suggested that the 10 competitors with the highest qualification points gathered over the season will be qualified for the final. The National Organisations are allowed to adjust the number of qualifiers for the finals.

If a "foreign" competitors are qualified for the National Finals, they can win, but they cannot become National Champion in another then their home country. In case of winning the foreign National Finals, they may qualify (it is up to the national organisation to allow this) for the European Finals, and if so are allowed to start for that nation.

During this Event there must be a complete authorised Head Judge Team and if possible an official EMMA Event Director.

A minimum of three Judge Teams (3 install and 3 sound) is necessary to organise a smoothly judging process.

#### 2.4.5 European Championship

The European Championship is the highest level a competitor can reach in Europe. These finals can only be held with the permission of the EMMA International office. EMMA will work strongly together with the organising National Association and is responsible for delegating the Event Director, Head Judges and the entire Judge Team.

Participants for the European Championship must qualify before and must start in the same category/Class they qualified in. It is the responsibility of the national organisation to guarantee this happens! This can be accomplished either by being in 1st place on the Finals of a national organisation or – if the finals are held to close to or after the European Championship – the first competitors of the national points table will qualify. The max. amount of competitors per Nation will be announced at latest three months before the European Final Event.

In every case the national organisation must nominate the participants with their data for the European Championship 2 weeks before the European finals at the latest to allow EMMA the organisation of the Event.

A minimum of eight Judge Teams (8 install and 8 sound) is necessary to organise a smoothly judging process.

### 2.5 Etiquette

1. No other than an EMMA Head Judge/Event Director or authorised official may look at any scores on any score sheet or judge's safety sheet during the competition. Competitors are permitted to see their score sheets and to receive an explanation of the judges, which will take a maximum time of 5 minutes. The scoring is not to be discussed.
2. The competitor will sign the score sheet after explanation of both SQ and Installation judging. By signing the score sheet the competitor accepts the scoring and waives all rights to file a protest. Furthermore, the signed scoresheet is a contract between EMMA and the competitor that can (in case of a failure) only be changed between the Headjudge and the competitor by signatures with the knowledge and approval (signature) of the Event Director.
3. If the competitor has any protest or concerns, only the Head Judge is allowed to clear the situation. After the judging, the competitor only has three choices, he signs, he protests or withdraws from the competition. Arguing the scores is not a part in any of these choices!
4. No competitor or Judge may discuss actual scores of any other vehicle or system with any competitor at any time prior to the trophy presentation.
5. After judging of the vehicle the competitor must immediately exit the judging area if so required.
6. Any competitor caught cheating during an Event will be dismissed from the Event. The EMMA office and Head Judge Council may review the incidence of cheating (even when the event is over)
7. Repeat offences or cheating can be cause for loss of all, or part of accumulated points that can be earned at EMMA sanctioned Events and for a possible disqualification from participation in all future EMMA sanctioned Events. In extreme cases the EMMA office will make the name of the cheating competitor public.
8. Abusive language or misconduct on the part of competitors or judges will not be tolerated and may result in dismissal from the Event, as well as forfeiture of Event registration fees for compensation.
9. It is the responsibility of the judges to make sure that nobody takes a look at the score sheet other than the competitor himself during explanation. Competitors who try to take a look at another score sheet (or have somebody do that for them) can be punished with 5 points deduction.
10. Anyone interfering with the judging process will get a five point deduction, or may be removed from the Event at the discretion of the Head Judge / Event Director (this includes also team leaders etc.).
11. Indecent or inappropriate behaviour can lead to the exclusion of the competitor from the competition by the Head-Judge/Event Director, in bad cases from all competitions that year (by the national EMMA organisation) or forever. In worst case a competitor can be banned by EMMA headquarters from competing in ANY EMMA competition.
12. During the Event all alarm system must be turned off. If the alarm system is triggered and the competitor does not immediately turn the alarm system off any Judge may deduct five points.



13. The use of Interior horns is absolutely prohibited during EMMA competitions and leads to immediate disqualification of the competitor. The risks of a SQ judge being subjected to the sound and consequently not being able to judge any more on that day is just too big.
14. The competitors can expect the judges to:
  - Be very polite to the competitors
  - Not to act like a strict teacher ready to punish the competitor
  - Not wear any clothing or badges that are not official EMMA-clothing
  - Try to find the good things in the sound-, Multimedia- or the installation-performance & give points for them, and not the other way around.
  - Be penalised for bad behaviour / bad judgingPlease feel free to bring up relevant disregards up to the descretion of the Head judges / event director.

## 2.6 Protests and Teardowns

1. A competitor has the right to question, challenge or protest a judge concerning the fairness of a score. This can only concern a score received by the protesting competitor.
2. Scores are defined as any points that are placed on a score sheet. This includes objective measurements as well as subjective observations. If a competitor feels that a judge has intentionally or unintentionally given a score that is incorrect or not consistent with intended interpretation of the current rulebook, he/she can protest the score. In order to prevent trivial protests, the protesting competitor must accompany his/her protest with a risk of losing 30 points, which will be deducted from the actual score sheet. In the Event that the score is deemed incorrect, the deducted points will be returned to the protesting competitor. If the score is deemed to be correct, the protesting competitor will loose the 30 points on his/her score.
3. A competitor can also challenge the fair play of another competitor. This may include the incorrect number of amplifier-channels / woofers and/or competitor category classification, suspected cheating or falsifying competitor information. This protest can result in a teardown or objective/subjective re-test of the protested competitor's vehicle. This challenge can only take place on the day of the Event and at the Event site. Should a competitor challenge another competitors vehicle and should the Head Judges / Event Director determine that the tear down or objective/subjective re-test is necessary for verification, the contesting individual must accompany his/her challenge request with 30 points of his/her actual score. Should a violation be discovered in the contested vehicle the 30 points will be returned to the challenger; and appropriate measures will be taken regarding the violation? However, should no violation be discovered, the protesting competitor will loose the 30 points on his/her actual score
4. A competitor should understand that if a protest is filed that questions a particular judges subjective judgement, it could only be resolved by that specific judge. It has to be verified that he/she is comfortable with the score issued and has a complete understanding of the rules as they are written and interpreted. A subjective judging section score cannot be re-judged nor be re-scored by any other judge or the Head Judge. If the Head Judge found an incorrect score he will take proper action. In case of re-judging, obvious items in the install-section like loose equipment, wrong fuses, etc. or in the sound / picture section like noise, etc. will not be changed because these may be changed by some competitors prior to the re-judging leading to another picture then in the original process
5. Only a competitor in the same class, registered in that Event, may request a teardown. Any non-competitor or Team Leader who protests or attempts to protest on behalf of a registered competitor can, at the Head Judge's or Event Director's discretion, have him/herself and the competitor (Team) he/she represents removed from the contest.

## 2.7 Request procedure for protests / teardowns:

1. The competitor should point out any score that he/she feels is incorrect immediately after the judging process (!!!) to the judges. The judges will contact the Head Judge or a designated Control Judge. If the Head (control) Judge is comfortable with reasoning behind the protest (logical analysis of the score) the head judge can permit the competitor to file a protest. Without this permission, NO protest can be filed!
2. An official protest must be in writing and will include the appropriate points deduction by the Head Judge. The competitor should specify what is being protested and include his opinion of

what the score should be on the base of this rulebook. Filing a protest 'because the scoring is too low' is not acceptable. In case of multiple problems with the scoring, multiple protests need to be filed, each with 30 points deduction. The official protest is lodged with the Head Judge.

3. The Head Judge should discuss the protest with the employed judge team and the second Head Judge. In case of no solution found by the two Head Judges, the Event Director will decide about the protest. Event Directors must be actual Judges. If not, an experienced Judge out of the present Judge Team will be asked for his/her decision and the proceedings will be forwarded to the head Judge Council
4. The Head Judges/Event Director will make the decision on the protest at the contest. The decision of the Head Judges/Event Director is final, prize giving ceremony will take place.
5. It is the competitor's right to send his/her protest also to the EMMA office. The EMMA office will forward the protest to the hands of the Head Judge Council. The Council may review the Head Judge's/Event directors' decision but there can be no change of the result in any way.

Requests for teardowns must be sent in on the day the class is being judged and minimum 4 hours before the prize giving ceremony begins. Re-testing must be done under the direction of the Head Judge after the protested vehicle's judging has been completed but before the winners of the affected class are announced.



### 3 Categories and classes in EMMA competitions

#### For the following categories in SoundQuality and Multimedia:

In the case of more than 14 competitors per class in a category, the national organisation (or on an international Event like the Euro-Final EMMA - International) can decide to separate this class by splitting the class in 2 groups and have the best 3 of each group judged by a new judge team to determine the places 1-6. As an alternative all cars can be judged by the same team within two days and the best six of this will meet again in a final the following day judged by another team. The following places will be determined according to the points achieved.

#### 3.1 Sound Quality Competitions

Sound Quality competitions are held to determine who has the best sounding car according to the rules in this rulebook. To make sure that the right people compete against each other, 6 categories with an ascending level of difficulty have been created. The starting level is called Entry and is meant for anybody who wants an evaluation of their in-car sound system without knowledge of rules and regulations. The highest level is called Expert Unlimited and is for the most experienced competitors with unbelievable high quality of installation and sound.

The difference between the categories is the amount of judging that will take place. In the Entry-category only a few elements of the total Installation and Sound-score available will be judged. As the competitor progresses through the categories, more and more elements of the Installation and Sound will be judged. It is up to you, the competitor, to decide in which category to start (it's possible to change categories up or down, except back to EMMA Entry or EMMA Experienced). With this system the competitor is able to increase his/her knowledge about the mobile media system in the car.

How does the judging work? Both Sound and Installation are judged by a set of criteria. There is only one list of judgement criteria (or elements), and the higher your experience (and your category), the more elements will be judged. Following these rules, when a competitor who normally competes in a higher category decides to compete in a lower category, he/she will NOT have any advantages, because one or more elements will not be judged in this lower category.

The categories themselves are divided into classes, depending on the number of amplifier channels used to power the speakers or speaker-system installed. If two amplifier-channels are bridged to create one bridged channel or two mono- amplifiers are linked together, this will be counted as "one amplifier-channel". If a competitor is competing in two categories, it is possible that a different number of amplifier channels are used (e.g. 8 channels in Multimedia and 5 channels for SQ). In this case, only the numbers of channels used for SQ are counted to determine the correct class. This may be checked by the judges, e.g. by disconnecting speaker cables at the amplifier-connections.

In some classes money-limited classes are available. There the total system price is the sum of all non-binding retail price recommendations of the manufacturers (even if they are used or "old") and includes all electronic material (the source unit, processors, active crossovers, amplifiers, all speakers etc.). All mounting materials (wires, mounting boards, passive crossovers, fuse blocks, batteries, capacitors etc.) are not included into the total price. It does not matter if a contestant bought the products on a lower price level or second hand. To provide an equal basis, EMMA will use the actual pricing level of the manufacturers in the European Union.

For the assumption of total system price, the official retail price valid in the respective country will be considered. The respective national Organisation is responsible to verify that the customer starts in the correct category. If products will be used which are not available on the European Market, the competitor has to show a proof for the retail price. If this is not available an average price of a similar product available in the European Union will be taken as reference.

If a competitor decides to use the factory installed, original source unit a value of 200.-€ for a CD-Tuner / 500.-€ for a Moniceiver/DVD-Player will be calculated and added up together with the rest of the components to the total system price.

If a remote control is installed, that is, one not delivered directly with the source unit and the retail price is unknown, it will be calculated with 50€ and adds up together with the rest of the components to the total system price.

When participating in a competition, the competitor will always get a qualified feedback about the Sound and Installation of his mobile media system and tips how to improve these to get a better result in the future.

Portable Media-Players such as I-pod and / or USB-Devices or portable Memories such as SDCards, Memory Sticks, HardDrives, etc. are valid sources of media. They can be used in the judging process when they are physically connected to the head unit. For a competition these devices have to be provided by EMMA.

**SQ is split into 6 categories:**

### **3.1.1 EMMA Entry**

EMMA Entry is the way to get acquainted with car audio competition and is meant for anybody interested in getting a qualified opinion about his/her in-car mobile media system. The EMMA-judges will give the competitor feedback about the performance and installation of the mobile media system in a clear and simple way. The competitor will get the chance to listen to other cars and talk to other people interested in car audio. He/she can get inspired by other cars, installations or sound and will be able to buy an official EMMA Rulebook and CD to get an even better result next time around. Perhaps even more important, he/she will be able to meet people of all sorts and nationalities, make friends, get support from other competitors and in general have as much fun as possible.

**A competitor is allowed to compete in this category if he/she meets all of the following criteria:**

- The vehicle and/or competitor has never competed in any EMMA Sound Quality competition in any other category than EMMA Entry
- The vehicle and/or competitor has never won first place in the category EMMA Entry
- The competitor is not an active or retired judge in any car audio organisation
- The competitor is not related to, employed by, or otherwise affiliated with, and/or has not received financial support or other compensation from any manufacturer of mobile audio equipment, or publisher of auto sound related material, retail dealer or other representative of the mobile electronics industry and magazines (also auto sound organising or sanctioning body)
- He/she has neither received, nor expects to receive, financial support or other compensation for promotional consideration from any industry-related person or company for participation in any EMMA Event or promotion
- The mobile electronics system that he/she is entering to the competition should have been purchased through retail channels or used. If requested by an Event official, proof of purchase (i.e. numbered sales receipt) should be available for verification

**Furthermore:**

- A professional installer is allowed to install the audio system
- No modified or self built active equipment (e.g. head unit, linedriver, amplifier, active crossover etc.) is allowed
- In EMMA Entry, there will be national or international Championships.

Typically, certificates will be awarded to all competitors in this category (no trophies). The winner of the category will receive an official EMMA rulebook together with an EMMA Sound Quality CD and will be invited for a free participation on an upcoming EMMA-Event in the category EMMA Experienced. Furthermore, he/she will be asked to compete in the EMMA Experienced category for the rest of the season.

**Classifications:**

- Up to 1.500€ (no limit on Channels of (Power-) Amplification)
- Up to 5 Channels of (Power-) Amplification
- Unlimited

**Judging procedure:**

One EMMA judge will first introduce and explain EMMA and then judge both Sound Quality with the designated track and Installation, according to the judging-matrix on the last page.

- **Sound Quality:** Overall spectral balance  
Distance to sound stage  
Listening Pleasure
- **Installation:** The mounting of the components  
The usage of the correct fuse size for the wires installed.  
The status of the installation

The competitor will be invited to accompany the judging process. He/she is not allowed to disturb the judging. The judges are advised to explain what they judge and give hints and tips to the competitors but without using brand names.

### 3.1.2 EMMA Experienced

EMMA Experienced is the next step up from Emma Entry, and the first category with competitions on a national and international level. The judging on Sound and Installation consists of criteria only concerning safety (installation) and simple sound judging.

In this category a competitor with a decent sounding and installed car will feel at home. As only a couple of things will be judged in Installation, no extensive installation is expected in the car. Sound will be judged with a couple of tracks of the official EMMA-CD. Of course if, through the qualified advice from the judges and other competitors, the Installation and Sound improve, it will be time to make the next step up, the advanced category.

As there will be finals (the national and European kind) in this category, it will be the first step to learn why EMMA is special – it's the feeling of belonging to a community of people who have the same hobby on an international scale, where being there is more important than winning.

#### **A competitor is entitled to compete in this category if he/she meets all of the following criteria:**

- The vehicle and/or competitor have never competed in any EMMA Sound Quality competition in any other category than EMMA Entry or EMMA Experienced / Rookie.
- The vehicle and/or competitor has never won first, second or third place in the category EMMA Experienced / Rookie on a national or international championship
- The competitor is no active or retired judge in any car audio organisation
- The competitor is not related to, employed by, or otherwise affiliated with, and/or has not received financial support or other compensation from any manufacturer of mobile audio equipment, or publisher of auto sound related material, retail dealer or other representative of the mobile electronics industry and magazines (also auto sound organising or sanctioning body)
- He/she has neither received, nor expects to receive, financial support or other compensation for promotional consideration from any industry-related person or company for participation in any EMMA Event or promotion
- The mobile electronics system that he/she is entering to the competition should have been purchased through retail channels or second-hand. If requested by an Event official, proof of purchase (i.e. numbered sales receipt) should be available for verification

#### **Furthermore:**

- The audio system can be installed by a professional installer
- No modified or self built active equipment (e.g. head unit, linedriver, amplifier, active crossover etc.) is allowed
- External (separate from the head unit) analogue or digital processors (e.g. DSP, EQ, etc.) are only allowed in the class with unlimited number of amplifier channels
- In EMMA Experienced, there will be a national and an international Championship.

The winners of first, second and third place at a national or international final will be promoted to EMMA Advanced or up in the following competition season.

#### **Classifications:**

- Up to 2.000€ (no limit on Channels of (Power-) Amplification)
- Up to 5 Channels of (Power-) Amplification
- Unlimited

**Judging procedure:**

- One EMMA Sound Quality judge will perform a basic judging according to the matrix on the last page
- One EMMA Install judge will perform a basic judging according to the matrix the last page

Depending on the Event permission can be granted to the competitor to accompany parts of the judging process. He/she is not allowed to disturb the judging. The judges are advised to give hints and tips to the competitors but without using brand names

**3.1.3 EMMA Advanced**

Almost the full Sound-judging will be done by two judges and the Installation will be judged on more points than safety alone. Unlike the Entry- and Experienced categories, there will be no automatic promotion to the next level.

**This category is open to anyone who wants to compete in an EMMA-competition**

**Furthermore:**

- Only in EMMA Advanced Pure Sound and Unlimited it is allowed to use modified or self-built active equipment (e.g. head unit, linedriver, amplifier, active crossover). Competitors within EMMA Advanced with modified or self-built active equipment have to compete there. .
- In EMMA Advanced, there will be a national and an international Championship.

**Classifications:**

- Pure Sound Up to 5 Channels of (Power-) Amplification \*1 (see below)
- Up to 5 Channels of (Power-) Amplification
- Up to 7 Channels of (Power-) Amplification
- Unlimited

**Judging procedure:**

- Two EMMA Sound Quality judges will perform the judging according to the matrix on the last page
- Two EMMA Install judges will perform the judging according to the matrix on the last page.

**\*1 Note for Pure sound:**

Pure Sound is the format following EMMA Pure Passive. The competitors vehicle will be judged as described above with the exception of the imaging-section. This will not be judged. The active time alignment has to be turned off or set to zero.

**3.1.4 EMMA Master**

We are now entering the category where a sophisticated sounding (and built) system is expected and the judging and competition will be tough. The competitors in this category are supposed to set an example for the other competitors how to be an exemplary EMMA-competitor – as well in a competition as in the community.

**This category is open to anyone!**

**Furthermore:**

- In this category it is allowed in all classes to use any modified or self built equipment.
- In EMMA Master, there will be a National and an International Championship.

As improvement is always possible, the competitors will get a qualified feedback from the judges regarding their sound-system and installation.

**Classifications:**

- Pure Sound unlimited \*2 (see below)
- Up to 5 Channels of (Power-) Amplification
- Up to 7 Channels of (Power-) Amplification
- Unlimited

**Judging procedure:**

- Two EMMA Sound Quality judges will perform a more sophisticated judging according to the matrix on the last page.
- Two EMMA Install judges will perform a more sophisticated judging according to the matrix on the last page.

**\*2 Note for Pure sound:**

Pure Sound is the format following EMMA Pure Passive. The competitors vehicle will be judged as described above with the exception of the imaging-section. This will not be judged. The active time alignment has to be turned off or set to zero

**3.1.5 EMMA Expert Unlimited**

There is no higher level possible in EMMA Sound Quality Competitions. The competitors in this category should have the ultimate in sound and installation in their cars.

To be certain that this is true, this class is only open to those competitors who took a 1st, 2nd or 3rd place in EMMA Amateur, PRO or Expert on a Eurofinal of the former seasons or in EMMA Advanced or Master. Furthermore, the winner of the national title in the above mentioned categories in the former seasons is qualified. It is the responsibility of the national organisations to guaranty that the level of the competing cars in this category is the highest available in the country.

As is true for every installation and sound-setup, there will always be room for improvement, so the judges in this class also will give a qualified feedback to the competitors to improve the sound and installation in the future. To keep the balance between the Installation and the Sound Quality points the scoring for tonal accuracy will be doubled from max. 30 Points to max. 60 Points.

**Furthermore:**

- In this category it is allowed in all classes to use any modified or self built equipment.
- In EMMA Expert unlimited, there will be a national and an international Championship.

**Classifications:**

- EMMA Expert Unlimited (One class)

**Judging procedure:**

- Two EMMA Sound Quality judges will perform an ultimate judging according to the matrix on the last page.
- Two EMMA Install judges will perform an ultimate judging with no limit on bonus points according to the matrix on the last page.

**3.2 Multimedia Competitions**

Multimedia is the stage for those competitors who not only love great sound in their car but also the synthesis of visual and acoustic impression in the actual multi-channel formats. This form of competition was created to meet the increasing interest for mobile multimedia. The goal for the multimedia category is to entertain! Multimedia judging is divided in two categories; sound & picture and installation. Depending on the Event permission can be granted to the competitor to accompany parts of the judging process. He/she is not allowed to disturb the judging. The judges are advised to give hints and tips to the competitors but without using brand names.

In EMMA Multimedia, there are four categories with no separation into classes.

### 3.2.1 EMMA Multimedia Experienced

As there is no Entry-level category in Multimedia, this is the first available category and at the same time the entrance to international in-car Multimedia competitions. The judging on Sound and Installation consists of criteria only concerning safety (installation) and limited sound/picture judging.

In this category a competitor with decent sound, picture and installation will feel at home. As only a couple of things will be judged in Installation, no extensive installation is expected in the car. Sound will be judged with a couple of tracks of the official EMMA-Multimedia DVD. Of course if, through the qualified advice from the judges and other competitors, the Installation, Picture quality and Sound improve, it will be time to make the next step up, the advanced category.

As there will be finals (the national and European kind) in this category, it will be the first step to learn why EMMA is special – it's the feeling of belonging to a community of people who have the same hobby on an international scale, where being there is more important than winning.

**A competitor is eligible to compete in this category if he/she meets all of the following criteria:**

- This category is open to anyone who wants to compete in an EMMA-competition
- The mobile electronics system that he/she is entering to the competition should have been purchased through retail channels or used. If requested by an Event official, proof of purchase (i.e. numbered sales receipt) should be available for verification

**Furthermore:**

- The audio system can be installed by a professional installer
- No modified or self built active equipment (e.g. head unit, DVD, player, display, sound or video amplifiers, linedriver active crossover etc.) is allowed
- In EMMA Multimedia Experienced, there will be a national and an international Championship.

**Classifications:**

- EMMA Multimedia Experienced (One Class)

**Judging procedure:**

- One EMMA Multimedia judge will perform the sound / picture judging but without 360° degree movement / Dolby Surround- judging according to the matrix on the last page (allowing stereo-systems with screen and DVD-player to compete with a fair chance)
- One EMMA Install judge will perform the judging according to the matrix on the last page.

### 3.2.2 EMMA Multimedia Advanced

EMMA Multimedia Advanced is the next step following EMMA Multimedia Experienced – taking the Multimedia experience to the next level, where a little bit more is judged on installation and the full spectrum for the sound and picture performance will be judged. If you cannot or do not want to go to further with your installation, this is the category to be in.

The competitors will receive qualified feedback about the sound & picture and installation of their MM-systems to improve these in the future.

**Furthermore:**

- In this category it is not allowed to use any modified or self built active equipment (e.g. head unit, DVD, player, display, sound or video amplifiers, linedriver active crossover etc.).
- In EMMA Multimedia Advanced, there will be a national and an international Championship.

**Classifications:**

- EMMA Multimedia Advanced (One Class)



**Judging procedure:**

- One EMMA Multimedia judge will perform the complete sound / picture judging according to the matrix on the last page.
- One EMMA Install judge will perform the judging according to the matrix on the last page.

**3.2.3 EMMA Multimedia Master**

EMMA Multimedia Master is the next step following EMMA Multimedia Advanced . The top vehicles of this category represent nearly everything achievable in the vehicle environment in both – Sound/Picture- and Installation-Performance. The competitors will receive qualified feedback about the sound & picture and installation of their Multimedia systems with potential for improvements in the future.

**Furthermore:**

- In this category it is allowed to use any modified or self built equipment.
- In EMMA Multimedia Master, there will be a national and an international Championship.

**Classifications:**

- EMMA Multimedia Expert (One Class)

**Judging procedure:**

- One EMMA Multimedia judge will perform the complete sound / picture judging according to the matrix on the last page.
- One EMMA Install judge will perform the judging according to the matrix on the last page.

**3.2.4 EMMA Multimedia Expert**

EMMA Multimedia Expert is the highest level that can be reached.

There is no higher level possible in EMMA Sound Quality Competitions. The competitors in this category should have the ultimate Multimedia-Experience in their cars.

To be certain that this is true, this class is only open to those competitors who took a 1st, 2nd or 3rd place in EMMA Multimedia on a Eurofinal of the former seasons. Furthermore, the winner of the national title in the above mentioned categories in the former seasons is qualified.

To keep the balance between the Installation and the Sound Quality points the scoring for tonal accuracy will be doubled from max. 15 Points to max. 30 Points.

**Furthermore:**

- In this category it is allowed to use any modified or self built equipment.
- In EMMA Multimedia Expert, there will be a national and an international Championship.

**Judging procedure:**

- One EMMA Multimedia judge will perform the complete sound / picture judging according to the matrix on the last page.
- One EMMA Install judge will perform the judging according to the matrix on the last page.

**3.3 EMMA Sound Pressure League (ESPL)**

The EMMA Sound Pressure League is made for those kinds of competitors who are (also) interested in the maximum level of volume in their cars – not forgetting about a safe installation and a neat looking appearance.

To guarantee similar conditions and fairness to all competitors, the amount of subwoofers will be regulated in the following terms in most categories:

- All speakers with a diameter equal to or larger than 8" (20 cm) / 6"x9" are calculated as woofers.
- It is defined, that one 25cm=10" woofer will be counted as one woofer. Since not all people have 10" woofers installed, the following calculation key will be used for

transferring the different woofer sizes into the above classes.



- In the case that a subwoofer of a size not listed below or a different shape is installed, the circumference will be measured (as per drawing) and the woofer will be classified according to the table.

Number of woofers	Size of woofer	Classification	Circumference (No longer than)
1x	<b>25cm = 10"</b>	Equals	<b>1 woofer</b> <b>78,5cm</b>
1x	<b>30cm = 12"</b>	Equals	<b>2 woofer</b> <b>94,2cm</b>
3x	<b>20cm = 8" / 6"x9"</b>	Equals	<b>2 woofer</b> <b>62,8cm (per 8")</b>
1x	<b>38cm = 15"</b>	Equals	<b>3 woofers</b> <b>119,3cm</b>
1x	<b>46cm = 18"</b>	Equals	<b>4 woofers</b> <b>144,4cm</b>

**ESPL is split into 6 categories:**

### 3.3.1 ESPL Entry

ESPL Entry is the true entry to ESPL competitions for anybody to find out how well his/her installation is built and how loud the system can play. Competitors will have a chance to get inspired by other competition cars and learn about the potential of their own car for improving SPL performance and installation. For those interested a rulebook and an official EMMA-ESPL competition CD are available. Chances are you will make friends and learn that there is not only competition but also support and fun – even by competitors within the same class. ESPL Entry is truly the entry for the competitor and his vehicle to become part of EMMA.

**A competitor is allowed to compete in this category if he/she meets all of the following criteria:**

- The vehicle and/or competitor has never competed in any ESPL competition in any other category than ESPL Entry
- The vehicle and/or competitor has never won first place in the category ESPL Entry
- The competitor is no active or retired judge in any car audio organisation
- The competitor is not related to, employed by, or otherwise affiliated with, and/or has not received financial support or other compensation from any manufacturer of mobile audio equipment, or publisher of auto sound related material, retail dealer or other representative of the mobile electronics industry and magazines (also auto sound organising or sanctioning body)
- He/she has neither received, nor expects to receive, financial support or other compensation for promotional consideration from any industry-related person or company for participation in any EMMA Event or promotion
- The mobile electronics system that he/she is entering to the competition should have been purchased through retail channels at retail prices or used. If requested by an Event official, proof of purchase (i.e. numbered sales receipt) should be available for verification

**Furthermore:**

- The audio system can be installed by a professional installer
- No limits on amount of woofers or speakers
- In ESPL Entry, there will be no international Championship. Every national organisation can use this category according to needs or particularities of each country.

A proposal to national organizations is: Certificates will be awarded to all competitors within this category (no trophies). The winner of the category will receive an official, actual EMMA rulebook together with an EMMA ESPL CD and will be invited to a free participation on an upcoming EMMA-Event in the appropriate ESPL-category. Furthermore, he is invited to compete in the appropriate ESPL category for the rest of the season.

**Classifications:**

- ESPL Entry - ESPL Entry (One class)

**Judging procedure:**

- Installation check according to the matrix on the last page.
- Measurement with closed doors
- Measurement with open doors

**3.3.2 ESPL Experienced & Experienced Plus**

ESPL Experienced is the entry to international ESPL competition on a slightly higher level than in ESPL Entry. Competitors with a descent installation and SPL- performance will have a fair chance within this category. Only the elementary things are part of the judging. There is a good possibility to learn and improve the installation and the SPL performance step by step by competing in this category – and it is not simply depending on spending more money on the equipment. The most successful competitors within this category will be ready to take the next step towards an even higher level of competition. And with the chance of participating in national and international finals it is a good way to become part of the international EMMA-community and learn what makes EMMA so special – the Great Spirit under the crowd of international competitors and the international EMMA team.

While ESPL Experienced is for any car, competitors who put some effort in the design and style of their car might have a better chance in ESPL Experienced Plus since not only is the quality of the installation and of course the volume level important, but also the design and styling of the competition car will be judged.

**A competitor is eligible to compete in this category if he/she meets all of the following criteria:**

- The audio system can be installed by a professional installer
- No modified or self built active equipment is allowed
- The vehicle must be registered and approximate the “original” from C-pillar to the front and should look original. Cosmetic changes which highlight the installation are encouraged. The installation of the Woofers & sub-box including ports, etc. must be in the trunk area and should not go higher then the top of the original backseats (not head rests!!!). This must be proved by the competitor on request, for. E.g. by photo before / after, Amplifiers and other equipment may be installed in other areas then the before mentioned trunk area.
- A maximum of two channels of amplification are allowed per physical installed woofer (two channels bridged to one is counted as one)

**Furthermore:**

- This category is open to anyone!
- In ESPL Experienced & Experienced Plus, there will be a national and an international Championship.

**Classifications:**

- ESPL Experienced 2 - 2 Woofers
- ESPL Experienced 4 - 4 Woofers
- ESPL Experienced PLUS 4 – 4 Woofers
- ESPL Experienced Plus Unlimited

**Judging procedure:**

- Installation check according to the matrix on the last page.
- Measurement with closed doors
- Measurement with open doors

**3.3.3 ESPL Advanced & ESPL Advanced Plus**

ESPL Advanced is the step following ESPL Experienced – taking ESPL competition to the next level considering not only the elementary things on the installation site and allowing more changes to the Interior of the vehicle.

The competitors will receive qualified feedback about the SPL-measures and installation of their systems with potential for improvements in the future.

While ESPL Advanced is for any car, competitors who put some effort in the design and style of their car might have a better chance in ESPL Advanced Plus since not only is the quality of the installation and of course the volume level important, but also the design and styling of the competition car will be judged.

**A competitor is eligible to compete in this category if he/she meets all of the following criteria:**

- The audio system can be installed by a professional installer
- No modified or self built equipment is allowed
- The woofers have to be installed behind the original B-pillar
- The vehicle must be registered and approximate the "original" from B-pillar to the front and should look original, cosmetic changes which highlight the installation are encouraged. The installation of the Woofers & sub-box including ports, etc. must be behind the B-pillar and should not go higher than the top of the original backseats (not head rests!!!). This must be proved by the competitor on request, for. E.g. by photo before / after, etc. Amplifiers and other equipment may be installed in other areas than the before mentioned area.
- A maximum of two channels of amplification are allowed per physical installed woofer (two channels bridged to one is counted as one)

**Furthermore:**

- This category is open to anyone!
- In ESPL Advanced & Advanced Plus, there will be a national and an international Championship.

**Classifications:**

- ESPL Advanced Unlimited
- ESPL Advanced Plus Unlimited

**Judging procedure:**

- Installation check according to the matrix on the last page.
- Measurement with closed doors / front-windows
- Measurement with open doors / front-windows

### 3.3.4 ESPL Master

ESPL Master is taking the ESPL competition to a sophisticated level. The top vehicles of this category represent nearly everything achievable in the vehicle environment. The top competitors will be highly respected and set an example to the international crowd of EMMA competitors.

The competitors will receive qualified feedback about the SPL and installation of their mobile electronics-systems with potential for improvements in the future.

**A competitor is eligible to compete in this category if he/she meets all of the following criteria:**

- The car has not to be registered and can be modified but must be able to drive by its own engine
- At least a drivers seat must be installed (a car-seat, not a bench or a piece of wood to sit on)
- The audio system can be installed by a professional installer
- Modified or self built equipment is allowed
- There is no limit on the voltage (so it can be higher than 14,4V)

**Furthermore:**

- This category is open to anyone!  
In ESPL Master, there will be a national and an international Championship.

**Classifications:**

- ESPL Master - ESPL Master – (one class)

**Judging procedure:**

- Installation check according to the matrix on the last page.

- Measurement with closed doors
- Measurement with open doors

### 3.3.5 ESPL Expert

ESPL Expert is similar to ESPL Master, but not only is the quality of the installation and of course the volume level important, but also the design and styling of the competition car will be judged.

The competitors will receive qualified feedback about the SPL-measures and installation of their systems with potential for improvements in the future.

**A competitor is eligible to compete in this category if he/she meets all of the following criteria:**

- The car has not to be registered and can be modified but must be able to drive by its own engine
- At least a drivers seat must be installed (a car-seat, not a bench or a piece of wood to sit on)
- The audio system can be installed by a professional installer
- Modified or self built equipment is allowed.
- There is no limit on the voltage (so it can be higher than 14,4V)

**Furthermore:**

- This category is open to anyone!
- In ESPL Master, there will be a national and an international Championship.

**Classifications:**

- ESPL Expert - ESPL Expert – (one class)

**Judging procedure:**

- Installation check according to the matrix on the last page.
- Measurement with closed doors
- Measurement with open doors



## 4 EMMA rules – Installation Quality

The installation quality judging criteria's are formulated to promote system durability and longevity, as well as logical integration and visual impression.

The installation quality judging will be performed according to this official rulebook by one or two installation judges (depending on category). These judges are specially qualified and trained to work with the rulebook to determine the installation quality of a sound quality, ESPL or multimedia system

After the installation quality judging, the competitor will receive a qualified and objective feedback about the quality of his installation to his vehicle in regards to the aspects mentioned in this rulebook.

EMMA has spread the installation quality part into easy to follow up sections that will be judged and evaluated with an understandable classification. The judges will not tell you "your vehicle has a good or a bad installation / you earned xyz points". Together with their qualified judgement and the help of the score sheet they will explain exactly the quality of the installation in all relevant details. The awarded score will be easy to follow for the competitor - if necessary with support of the EMMA-Rulebook. Furthermore, he/she can learn the potential of his/her sound system installation. The judges are allowed to give the contestant's tips and hints on how to improve the installation of his/her audio system (without using brand names). This will allow the competitor, a qualified dealer or e.g. experienced mates in a competition team to improve the installation and reach the next level of quality installation of his components to receive the performance of his equipment he actually paid for.

### **The following procedures and rules must be adhered to during the Installation Quality Judging:**

1. Active judges are not allowed to adjust or prepare any competition car (except their own if they are competing) during the Event.
2. The process of the installation quality judging starts with the system presentation. It is the registered owner's/main user's responsibility to explain the sound system installation to the judges. If for some reason the owner/main user of the vehicle is not capable of guiding his/her vehicle through the judgements, a designated presenter may present the vehicle. In a National or European Championship the registered owner/main user must explain his/her car in person; otherwise the judges will award 0 points for system presentation
3. The competitor will be given seven (7) minutes to explain his system, his installation, and his ideas and point out any special elements of the vehicle's mobile electronic installation. If a translator is required, the time will be extended to 14 minutes. In this case, the competitor is only allowed to speak in his native language!
4. The judges will politely inform the competitor when the presentation time starts. They will never interrupt the competitor during the presentation time. The judges will politely inform the competitor when the time has expired. Judges are allowed to stop the presentation immediately after the 7 (or 14) minutes.
5. The competitor will be politely asked if the installation is of the same status like for SQ (no changes allowed). A check-box on the installation sheet will document if so y/n. Disregard of this may lead to 0 points in the relevant installation section after reviewing this issue with the Head Judge.
6. The competitor should stay close to his/her car until the judging process is complete. He should not interrupt or disturb the judges unless asked by them to answer a question or to explain a system element.
7. The calculations of the scores, etc. should not be done by the judges. This service will be done in the back office allowing the judges to focus on their mission.
8. If possible/necessary, the installation judges are invited to explain their scoring with additional notes / explanations written on the score sheet.
9. The judges must explain their scoring to the competitor after finishing their judging. This should not take more than five minutes. The judges must show the competitor the score sheet, in case of further questions they can refuse the explanation. The reason to refuse the explanation of the scoring can only be the time limit of five minutes. After the competitor has seen the score sheet and accepted the result, he/she should sign it. Protest has to be made immediately after the explanation of the judges. No more protest regarding his/her scoring is allowed after signing the score sheet.

## 4.1 Presentation and documentation

Points are given for the quality of the presentation and documentation used during the 7(14) minute presentation. All parts of the installation should be documented by photo-log. Highest points will be awarded when the documentation is self-explaining so the judges do not have questions about the development of the system. Lower points will be awarded for just showing some pictures without verbal comments by the competitor. The media used for the presentation does not influence the score – only the quality of the presentation and documentation counts

Please remember that the presentation is very important. This is what the judges will base their judgement upon. The details of the installation should be made clear during presentation. The judges should not have to look for the details themselves. What cannot be seen cannot be judged!!

### 4.1.1 Basic Presentation & documentation, (0 to 5)

Requested are:           A wiring-diagram containing the sizes of the wires & the fuses  
                                   (Photo-)Documentation of the main power circuit and the fuses  
                                   A presentation held by the competitor

4-5	relatively fluent presentation photo log with requested information wiring diagram with the requested infos
1-3 points	Poor or no wiring diagram, poor or no documentation / photo-log of main power circuit & fuses presentation barely fluent.
0 points	No presentation and no documentation

### 4.1.2 Documentation of hidden / components not accessible (0 to 5)

All components not accessible or hidden from view should be explained in the documentation.

#### What to look for:

- Black boxes
- Crossovers (passive and/or active)
- Speakers behind door panels or dashboard grills
- Additional battery
- Etc.

The judges deduct one (1) point for each component that is not documented.

### 4.1.3 Documentation of hidden / not accessible wiring (0 to 5)

All wires to components not accessible or hidden from view should be explained in the documentation.

#### What to look for:

- Behind source unit
- Black boxes
- Crossovers (active and/or passive)
- Behind/under covers, racks, carpets etc.
- Power / Ground wires
- Speaker wires
- Signal-cables (including cables to multi-media-screens, remote controls, etc.!!!)
- Control-cables (bus-cable to processors etc.)
- Connections to additional battery
- Etc.

The judges deduct one (1) point for the wiring of each (set of) component that is not documented. Hint. E.g.: If only the wiring of one tweeter/speaker is shown in the documentation and the competitor states that the other side has been installed in the exact same way, no points will be deducted.

#### 4.1.4 Progressed presentation & documentation (0 to 5)

Based on the documentation requested in paragraphs 4.1.1 to 4.1.3, additionally requested is:

- a well organized documentation
- Relevant details explained by quality photos
- Not only describing the finished “product” but also the development - not missing any relevant step
- not to forget any components of the installation
- a fluent and logical presentation within the available presentation time

##### How to score:

3-5 points	Fluent, logical and detailed presentation detailed documentation including quality photo log not only showing the finished product, but also describing the development of the system, not missing any relevant step All parts of the installation should be available on detailed photo documentation for checking
1-2	relatively fluent presentation documentation including photo log (with gaps and deficiencies in organization of the documents) available
0 points	No presentation and no documentation / no performance better than requested under 4.1.1

#### 4.1.5 Presentation to the public (0 or 10)

A car audio competition is a relatively quiet but a very interesting Event. To allow spectators to see what equipment is installed in the cars and to get some idea about the details of the installation, the cars should be displayed to the crowd.

Points will be awarded, when the following is made available for visitors during the whole competition day/Event:

- A display of the installed equipment (can be a diagram attached to the inside of a window)
- Showing off of the car – at least the trunk (or if nothing is installed there the front doors) should be open
- The competitor (or friend) is available for explanations and allows people to listen to the car by request or having the door open and the system playing in a low volume.
- Additionally, it would be nice, if the material/equipment used as a documentation to the installation judges (laptop, DVD, photo logs, samples etc.) is also available for visitors

##### How to judge:

The installation judges will award the points during their judging process.

During the entire competition, the head judge or a designated judge will, in irregular intervals, have a walkabout and keep a record of the status of the competition cars. At the end of the competition day and/or before prize-giving ceremony, these records will be analysed and if the above requested points were not fulfilled more than 50% of the time, the score will be adjusted to zero (0) points.

##### Exceptions:

- Active judges or EMMA-staff (on this Event) will not be judged for presentation to the public besides judging
- Bad weather or other circumstances during an Event may influence the display of equipment, showing off and availability of the competitor for offering people to listen to his system. In this case, it is up to the discretion of the Event director to decide how to proceed for all competitors.



#### 4.1.6 Cleanliness (0 to 5)

A sound off is a car show, so the vehicle has to be clean.

Two (2) points are deducted for each category not cleaned (down to 0 points, no negative scoring).

**The following four categories are to be judged:**

- Exterior of the car
- Engine compartment
- Interior/passengers compartment
- Trunk compartment / bed

#### Note:

- The car is considered clean when the exterior of the car is washed and the Interior is vacuumed. (Judges will refrain from extremes like checking with their fingers the Interior of the wheels, searching dirt under the carpets, under the dashboard, or any hidden places).
- During check of the engine compartment, the judges should not get dirty fingers when checking the relevant parts connected to the audio system (battery posts, fuses, wiring etc.). The engine itself and other not audio related components do not necessarily need to be clean.
- Damages to the car due to accidents or age are not to be considered. For example: Damages due to an accident that happened recently
- The engine compartment of an 20 year old car can not be compared to a new car

#### Weather

- If the weather conditions during a car audio Event are very bad (snow, rain etc.), the judges should take into consideration that the car could be dirty due to the weather.

#### Engine compartment and / or trunk

- If there is nothing related to the audio system installed to the engine compartment and / or trunk compartment or bed, no points are deducted when dirty.

#### Interior / Passenger compartment

- If sound judging was performed prior to installation judging, the judges should take into consideration that the Interior can be dirty due to this. The install-judges will look if the SQ-sheet is already filled in and judge cleanliness accordingly.
- If something not belonging to the system is lying inside the car (i.e. luggage, boxes, clothing, CD/DVD-cases etc.), points can be deducted. Otherwise inspection of the installation could be obstructed and the overall impression will be poorer. Exceptions can be made if there are problems to store personal belongings outside the car (bad weather etc.)

## 4.2 Wiring

### 4.2.1 Any power wire fused properly (0 or 10)

The fusing of the power wires is to protect the car in case of a short circuit. If there is no fuse installed or the fuse is too big, the risk is that the wire will burn before the fuse blows and so may cause severe damage or fire. Therefore, all power wires related to the car audio system must be fused except the wire(s) that are used to connect the alternator to the battery, which is used to operate the vehicles electric system.

#### What to look for:

1. The judges will follow the route of the power wires in the system. Every power wire must be fused properly according to table A. Exception: If the OEM-wiring-harness together with a DIN/ISO-adapter to the source unit is used, the fuse must not be bigger than original (has not to be according to table A!) or can be smaller. All fuses should be physically available for inspection, the size of the wires should be visible or described in the documentation.
2. Any power wire of the system connected to a positive battery post (including possible extra batteries) must be fused within 40 cm from the battery post (considering total wire length and/or length of metal bar). If the wire passes through any metal panel before the fuse, it must be properly protected with a grommet (not only tubing/sleeve!). There must be no risk for the

cable to connect to metal before the fuse. This includes wiring for external charging systems / service connections etc. that are permanently installed.

3. If more than one additional battery is used, the wire length / length of metal bars between the positive posts must be shorter than 40cm, otherwise they should be properly fused.
4. Anytime the gauge (mm<sup>2</sup>) size of a power circuit changes, the fuse size has to be appropriate to the smallest gauge size in that circuit. Please note that the circuit includes both positive & negative wire! Otherwise it has to be fused within 40 cm from the point of the diameter reduction and before it passes through a metal panel before the fuse.
5. Ground cables will be taken into consideration! If the Ground wire is smaller than the positive wire, the Ground wire will determine the fuse size! (Example: positive wire 50mm<sup>2</sup>, Ground wire 20mm<sup>2</sup> => max. fuse size refers to the 20mm<sup>2</sup> Ground cable)
6. Do not forget to consider the ground-wire from the battery to the vehicles chassis. Ideally additional ground-wire should be installed that is equal to the mm<sup>2</sup> of positive wire feeding the car-audio-system. The sum of the fuse rate of all wires from the battery feeding the audiosystem (except OEM-wiring-harness) can not be higher than the maximum fuse rate according to table A allowed for the size of the ground wire. To make judging easier in the case that the vehicles ground wire is without modification / addition, the OEM-ground wire will be calculated with a spare of 6mm<sup>2</sup> for the car audio system = 40Amps.
7. If the remote wire is a control wire, no fuse is necessary. If it is connected to a relais, the power cable to this relais should be fused.

**Note:**

- Factory dual battery systems may not have any fuse (or protection) between the batteries. It is up to the competitor to prove the original installation of his vehicle. If the OEM-installation was not changed, any additional fuse or protection is not required
- Raw metal material such as metal bars, etc. instead of wire with an equivalent surface can be used

The judges will check the installation. If all of the above points are fulfilled, only one (1) deviation of the above described will result in 0 points.

**Table A**

The table shows what maximum fuse is allowed for the size of the wire.

Wire size (mm <sup>2</sup> )	Wire size (AWG)	Max fuse size (A)
0,5	20	5
0,75	18	7,5
1	17	10
1,5	15	15
2,5	13	25
4	11	30
6	9	40
8	8	50
10	7	60
16	5	80
20	4	100
25	3	125
30	2	150
50	0	200
70	000	250
95	0000	300

E.g. a 50 mm<sup>2</sup>/AWG0 wire must not have a fuse larger than 200 ampere.

Please note that the above fuse rates are what the maximum fuse size is allowed to be! Not what the fuse should be, smaller fuse sizes are always ok.

Example: 80A fuse on a 50 mm<sup>2</sup> wire is OK, but there could be a risk the fuse will blow when the system is cranked up (depending on the power draw).

**Hint for the competitor!**

It's a good thing to support the judging process if the competitor provides the judges with a diagram showing how the system is connected, what fuse & wire sizes are used etc.

**4.2.2 Wires properly terminated (0 or 5)**

All wires must be properly terminated at the connecting point, for example at the battery post (including the battery post itself!), the amplifier-terminal, distribution blocks, power capacitors, speaker-terminals etc. Each termination should be solid and free of any fraying wire strands.

**What to look for:**

- Power / Ground wires
- Speaker wires
- Signal-cables
- Control-cables

The judges will check by physical inspection and/or the documentation.

Only one loose or poorly executed wire connection, or a missing connection in the documentation (not requested in Entry) in will result in 0 points.

**4.2.3 Any wire termination properly protected (0 or 5)**

All connections of wires to terminals related to the car-audio/-mobile-media-system must be protected from short circuit. All positive connections (and surfaces) and all speaker connections must be covered with a non-conductive material.

Furthermore all connections of wires to terminals related to the car-audio/-mobile-media-system must be protected against corrosion if located in a potentially corrosive environment, for e.g. speaker-connections in the doors, power connections in the engine compartment, etc. Means to prevent corrosion can be using precious metal (e.g. gold or titanium plated connectors, etc.) or other means (e.g. anti corrosive lubricant, soldering, heatshrink-tube, etc.).

**What to look for:**

- Power / Ground wires
- Speaker wires
- Signal-cables
- Control-cables

The judges will check by physical inspection and/or by the documentation. All relevant spots should be accessible or shown in the documentation. If the positive battery post and/or any other termination of the wiring can be touched (watch out: fingers are flexible!) or only one unprotected wire termination is detected physically or in the photo documentation or missing in the documentation, the score will be 0 points.

**Common sense should be used when evaluating and scoring this category!**

**Note:**

- If a detachable panel must be removed to reach the connection (e.g. a plastic or wooden cover over a battery), it will be considered as proper protection from a short circuit (but don't forget the risk for corrosion). The engine hood itself is not sufficient protection!
- If the wire to the alternator is changed, the connection to the alternator must be protected from a short circuit.
- Some terminals at speakers may not require extra protection (e.g. spring loaded type, types where the wire will fixed by a screw).

- Cables related to the Audio / mobile media system should be terminated using precious metal (e.g. gold or titanium plated connectors, etc.) or other means (e.g. anti corrosive lubricant, soldering, heatshrink-tube, etc.) to prevent corrosion.

#### 4.2.4 Wires protected from damage (0 or 5)

The system wiring must be properly protected from hazardous elements like sharp metal edges, heat radiation, moisture, moving parts, critical mechanisms and wear by vibrations, etc.

EMMA recommends routing the wires away or properly protecting them from potential noise-producing components like critical existing vehicle wiring, engine management computers etc. to avoid eventual radiated noise problems.

All wires passing through a metal panel must be protected by a grommet and/or protective sleeve/tubing. This includes also speaker wires routed into doors etc.

##### What to look for:

- Power / Ground wires
- Speaker wires
- Signal-cables
- Control-cables

The judges will check either by physical inspection or by the documentation. All relevant spots should be accessible or shown in the documentation. Zero (0) points will be scored if only one wire is neither accessible nor documented, not protected for heat radiation (e.g. mounted too close to the exhaust manifold), exposed to mechanical hazards (critical mechanisms, fans etc.), without proper protection, etc.

#### 4.2.5 Interior wires hidden from view (0 to 5)

All system wiring in the Interior of the vehicle should be hidden from view.

##### What to look for:

- Power / Ground wires
- Speaker wires
- Signal-cables (including cables to multi-media-screens, remote controls, etc.!!!)
- Control-cables

The judges will check by visual inspection, sitting in an upright position on the drivers / passenger's seat with the front doors open. The judges will verify that no wires under the dashboard or passing into doors are visible. The judges deduct one (1) point for each wire or bundle of wires visible.

##### Note:

- Only wiring that is part of the Audio/Multimedia System are to be considered.
- Portable Navigation System and Mobile Phone Chargers are not part of an Audio/Multimedia system.
- Visible wires behind the B-pillar will not be considered (e.g. amplifier installation in a station wagon)
- Wires or bundles of wires in snakeskin / plastic tubing etc. are considered "not hidden from view" and will lead to point deduction!
- If for design purposes matching the rest of the installation theme (!) wires are covered by transparent material within the view of the judges, they will be considered as "hidden from view"

##### Note:

For multimedia categories this is judged from the sound judging position (not always the front seat!).

## 4.3 Installation

### 4.3.1 Components securely mounted (0 to 20)

All components belonging to the stereo / Multimedia system should be solidly fixed to their mounting panels and/or to the vehicle. This includes equipment that is able to generate a signal but maybe not in use to reproduce the EMMA-CD, e.g. Playstations, DVD-players, etc. If this equipment is only temporarily in the vehicle and not installed, it should be taken out of the vehicle before the installation judging starts.

The judges will check by physical inspection and/or photo log. For any component that is not fixed or not documented (there are only two possibilities: fixed or not fixed), three (3) points will be deducted.

#### What components to check:

##### Front end

- Operator panel
- Source unit
- Black boxes
- Screens
- CD/DVD-player / changer
- External D/A converters
- Pre-Amplifiers
- Remote controls

##### Amplifiers

##### Speakers (see definition below)

##### Other Devices

- Line drivers
- Crossovers (passive or active)
- Signal-processors
- Batteries (original as well as additional)
- Multiple battery charge regulators
- Fuses / fuse blocks / power distribution blocks
- Capacitors
- Etc. (including all other devices not mentioned above through which the audio signal will pass once it leaves the source unit until it reaches the speaker)

#### Note: Definition of "speakers":

Speakers include all sound reproducing devices driven by the source unit or any amplifier. The judges score all speakers even when they are not in use (except factory speaker systems which are not removed, separate speakers for navigation systems and/or cellular phones). A Bass shaker (or similar) that not by itself produces any sound (but vibrations) connected to the sound system is judged as a speaker.

#### Notes:

1. Judges should not use force when judging securely mounted components. It depends on what component is being checked according to the weight of it (e.g. a tweeter in the a-pillar doesn't have to be fixed as tightly as a subwoofer to its box in the trunk)
2. The method for fixing doesn't matter as long as the component is properly fixed (e.g. could be screwed to a wooden plate or glued as well as welded to a steel plate)
3. Grills or any other protective elements will not be checked for proper fixing.
4. If a front end with detachable faceplate is installed, it might be that the faceplate / detachable part has some play. If so, the judges will take away this part and check the installation of the remaining unit.

#### 4.3.2 Mounting panels securely mounted (0 to 20)

All mounting panels supporting the components belonging to the stereo / Multimedia system should be solidly installed to the vehicle.

The judges will check by physical inspection and/or photo log. For any mounting panel that is not fixed or not documented (there are only two possibilities: fixed or not fixed), three (3) points will be deducted.

##### What mounting panels to check:

###### Front end

- Operator panel
- Source unit
- Black boxes
- Screens
- CD/DVD-player / changer
- External D/A converters
- Pre-Amplifiers
- Remote controls

###### Amplifiers

###### Speakers

- Any panel where a speaker is mounted (dashboard, door panels, kick panels, subwoofer boxes etc.)

###### Other Devices

- Line drivers
- Crossovers (passive or active)
- Signal-processors
- Batteries (original as well as additional)
- Multiple battery charge regulators
- Fuses / fuse blocks / power distribution blocks
- Capacitors
- Etc. (including all other devices not mentioned above through which the audio signal will pass once it leaves the source unit until it reaches the speaker)

##### Notes:

1. Judges should not use force when judging securely mounted components. It depends on what component is being checked (e.g. a panel for the tweeter in the a-pillar doesn't have to be fixed as tight as a subwoofer-box in the trunk)
2. The method for fixing doesn't matter as long as it's properly fixed (e.g. could be screwed to a wooden plate or glued as well as welded to a steel plate)
3. If a component is attached to a factory (original) panel and this panel is not properly fixed, points will be deducted (e.g. tweeter mounted to panel fixed with clips could be a bit loose)
4. Grills or any other protective elements will not be checked for proper fixing.
5. If the panel to which the components are mounted is movable, the judges will verify that this panel is fixed in the closed end position. Motorised installation elements (with the exception of motorised source unit displays) must be incapable of operating when the vehicle is started and shifted into "Drive" and/or the parking brake is released. Failure to meet this requirement will result in a 5-point deduction in this category.

#### 4.3.3 Cooling (0 to 5)

Some components may require circulation of air to reduce the chance of overheating. If necessary, an additional cooling device (like fans, water-cooling, air conditioning etc.) Should be present.

##### Components that may require cooling are:

###### Front end

- Source unit
- Black boxes
- External power supply
- External D/A converters

- Pre-Amplifiers

#### **Amplifiers**

#### **Other Devices**

- Signal-processors
- Multiple battery charge regulators
- Voltage converters (e.g. 12V to 14V, or 12V to 220V. Check specially in multimedia category)

The judges will look whether circulation of air is possible. If the competitor has taken sufficient steps for optimising ventilation (holes, fans, water cooling etc.) or the components are in an open area/space, the points will be awarded.

If there is no circulation of air possible / no cooling device is installed, two (2) points will be deducted per component (no negative scoring).

**Example:** two amplifiers in a sealed rack => 4 points deduction

#### **Note:**

- The judges should verify if cooling of the component is required or not – modern switch mode power supplies as used in actual processors or head units may work with an efficiency around 90% and may not produce heat.
- If no cooling is necessary, full points will be awarded.

#### **4.3.4 Protection of Speakers (0 to 5)**

The judges will check whether all speakers (including subwoofers in the trunk) are protected from physical damage. One should not be able to touch the membrane with a cylindrical object with a diameter of 3 cm. There should be at least one protective element per speaker.

#### **Note:**

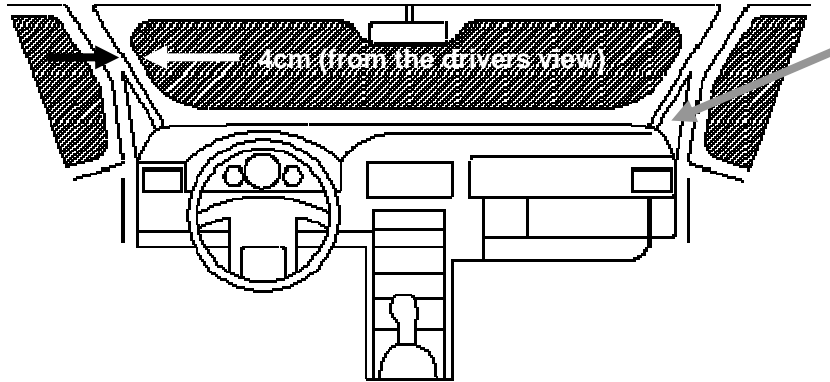
- Protective bars with less than 3 cm gaps will get no deduction.
- Grill clothes with high tension but no support underneath is not considered as sufficient protection and will get points deducted.
- Speakers, which are installed inside enclosures (and are not touchable) or with the baskets on the outside of the enclosure, do not need separate protection.

The judges will verify the protection of the speakers as described above. Two (2) points deduction for each speaker not protected. (No negative scoring)

#### **4.3.5 Normal use of vehicle (0 to 20)**

All components of the stereo / Multimedia system should be mounted in such a manner, that the physical location does allow normal use of the vehicle and the two front seats.

The normal use of the two front seats is defined as following:

**Hiding drivers view:**

Note to triangular windows:  
If the vehicle has a triangular window and this is not higher and/or longer than half the height of the side window, it will be considered as a design element. If it is higher and/or longer than half of the height of the side window, the 4cm-rule will be applied!!! The measurements will be taken outside of the vehicle.

Nothing should be installed covering the darker zones.

**Note:**

Some vehicles may be equipped from factory with a monitor that is installed fix / moving up / swiffeling up so that it is maybe partly in the darker zone. This will not cause a point deduction. In all other cases, a monitor that is partly in the dark zone is judged as hiding drivers view and will result in a points deduction. It is up to the competitor on judges request to prove that the monitor will not hiding drives view while driving. The Headjudge can also request the physically proof.

**The following will be considered as normal use:**

Drivers side	Passengers side
<ul style="list-style-type: none"> <li>• Pedals should not be obstructed</li> <li>• Leg-room should allow persons (between 1,60m to 1,90m) to operate the pedals and rest the left foot</li> <li>• Arm-room should be enough for persons (between 1,60m to 1,90m) to turn the steering wheel</li> <li>• The view to the instruments should not be blocked</li> <li>• <b>No part of the installation should block the view to the vehicles original side mirrors in original position. If the passenger side mirror is not factory-installed, the rear-view-mirror must allow a full view to the back</b></li> </ul>	<ul style="list-style-type: none"> <li>• The passenger should sit comfortable (look for sub/speakers up front and / or to high raised floor) – has not to be perfect for tall passengers.</li> </ul>

The judges will verify the normal use of the vehicle as described above. 3 (three) points deduction for each component that is interfering with the normal use of the two front seats / hiding drivers view. If components are only installed into the OEM-original locations, the competitor will receive full points.

**4.3.6 First optic impression of installation (0 to 10)**

To score full points, the installation should be completed and not "under construction". All parts should be installed decently and properly, but it doesn't have to be extreme. A basic/simple installation, e.g. in original locations is enough for a full score. Custom panels, boxes, racks etc. should be finished, e.g. be painted or covered with cloth/fabric.



**What to look for:**

- Front end (0 or 2p)
- Speakers (0 or 3p)
- Amplifiers (0 or 3p)
- Other devices (as described above – 0 to 2p)

The judges will check by visual impression according to the above description.

#### 4.4 Design

##### 4.4.1 Design of vehicle – Passenger Compartment (0 to 10)

To score full points, the installation of the components belonging to the sound system and the related mounting panels, etc. should follow the same design theme. The competitor should point out during his presentation / in his documentation the ideas behind the design he has chosen for the passenger compartment of the vehicle, otherwise the judges will ask the competitor about his ideas.

**Examples:**

- One idea could be to keep the Interior “stock” – the competitor is trying to accomplish the impression as if his car-audio-installation is a factory option. Therefore, all visible components together with the related mounting panels, etc. should not stand out and blend perfectly with the OEM-vehicle-surrounding. Some pictures of “before” and “after” may help the judges to understand better (note: a silver source unit replacing an OEM-black one will lead to point deduction)
- Another idea could be to implement own styling ideas for the components together with the related mounting panels, etc. installed – like a styling element around all speakers, the head unit, the remote control, etc. in the passenger compartment. The important thing is, that the theme is consequently followed through all visible components together with the related mounting panels, etc.
- Another idea could be to promote components of a certain manufacturer while other ones are not highlighted as much but also follow the basic ideas of the installation, there can be a very futuristic, rebuilt Interior, a “car-theme”, etc.

**What to look for:****Front end** (only the components that are used to reproduce the EMMA-CD/DVD)

- Operator panel
- Source unit
- Black boxes
- Screens
- CD/DVD-player / changer
- External D/A converters
- Pre-Amplifiers
- Remote controls

**Amplifiers****Speakers****Other Devices**

- Line drivers
- Crossovers
- Signal-processors
- Additional batteries
- Multiple battery charge regulators
- Capacitors

**How to judge:**

- There will be a two (2) point-deduction for each component and/or mounting panel not following the design-theme.
- The judges will evaluate, whether all the installed components of the sound system and the related mounting panels, etc. which are visible in the passenger compartment, consequently follow the idea of the competitor in a consistent way.

- The judges will look for the matching of materials, surface finishes, lights (except knobs/display of components), colours etc. Significant deviations here can lead to a point deduction of up to two (2) points per component together with mounting panel.
- Hidden components will not be evaluated.

#### 4.4.2 Design of vehicle – Trunk compartment (0 to 10)

To score full points, the installation of the components belonging to the sound system together with the related mounting panels, etc. should follow the same design theme. The competitor should point out during his presentation (or in his documentation) the ideas behind the design he has chosen for the trunk compartment. When there's any uncertainty about the design, the judges will ask the competitor about his ideas.

##### Examples:

- One idea could be to keep the trunk-compartment "stock" – the competitor is trying to accomplish the impression as if his car-audio-installation is a factory option. Therefore, all visible components together with the related mounting panels, etc. should not stand out and blend perfectly with the OEM-vehicle-surrounding or should be covered as OEM's. Having some pictures of "before" and "after" may help the judges to understand. (Note: visible amplifiers in a previous all black trunk will lead to points deductions)
- Another idea could be to implement ones own styling ideas for the components together with the related mounting panels, etc. installed – like a design feature around all amplifiers, speakers, etc. in the trunk-compartment. The important thing is, that the theme is consequently followed through all visible components.
- Another idea could be to promote components of a certain manufacturer while other ones are not highlighted as much but also follow the basic ideas of the installation, there can be a very futuristic, rebuilt trunk compartment, a "car-theme", etc.

##### What to look for:

**Front end** (only the components that are used to reproduce the EMMA-CD/DVD)

- Black boxes
- Screens
- CD/DVD-player / changer
- External D/A converters
- Pre-Amplifiers
- Remote controls

##### Amplifiers

##### Speakers

##### Other Devices

- Line drivers
- Crossovers
- Signal-processors
- Additional batteries
- Multiple battery charge regulators
- Capacitors
- Fuses / fuse blocks / power distribution blocks
- Etc.

##### How to judge:

- There will be a two (2)-point deduction for each component and or mounting panel not following the design-theme.
- The judges will evaluate, whether or not all installed components of the sound system and the related mounting panels in the trunk, etc. which are visible, consequently follow the idea of the competitor in a consistent way.
- The judges will look for matching materials, surface finishes, lights (except knobs/display of components), colours etc. Significant deviations here can lead to a point deduction of up to two (2) points per component together with mounting panel.
- Hidden components will not be evaluated.
- If nothing belonging to the sound system is installed in the trunk, no deductions will be made (10 p will be scored)

#### 4.4.3 Overall design of the vehicle (0 to 10)

To score full points, the car itself and the components installed in it must show a design theme that was followed, throughout the car; inside, outside and to the trunk compartment. It should be immediately clear that the car was designed as a project from beginning, with a clear statement to the judges and the viewers.

The kind of design theme is of no matter; but the competitor should be aware that an original looking car is not able to score any points on the areas where no effort for design was taken.

##### How to judge:

The judges will evaluate, whether or not the below mentioned parts add up to a complete picture, whether a consistent, optical appearance was followed consequently and whether the ideas regarding design of the competitor are realised.

##### What to look for:

Exterior	(0 to 3 points)
Interior	(0 to 3 points)
Trunk-compartment	(0 to 3 points)

Additional items used to support the idea of the project or explain the vehicle to spectators, e.g. "presentation besides judging" (e.g. like a little, self made display that explains the equipment used / installation instead of just sticking a paper to a window), etc. (0 or 1 point)

##### Note (Example how to judge stock looking cars):

- Exterior: 100% stock – 0 points
- Interior: equipment installed behind original panels – 1-3 points depending how much the original is approximated; no effort / nothing installed = 0 points
- Trunk-compartment: equipment installed behind original panels – 1-3 points depending how much original is approximated; no effort / nothing installed = 0 points

#### 4.5 Craftsmanship and Bonus points

##### 4.5.1 Craftsmanship – wiring (0 to 10)

The execution and visual impression of the system wiring is judged in this section. Wiring that is not visible and is not clearly visible in the documentation cannot be considered. The judges will give their score based only on the visible/documented part of the wires.

##### The judges will consider the following points to evaluate craftsmanship:

- Execution of connections (crimping, soldering)
- Routing of power-, Ground-, speaker-, signal- and control-wires (nice, logical and orderly, no "knots", etc.)
- Execution of fixing of wires (usage of wire ties and fixation in regular intervals of not more than approx. 30cm)
- Quality of wire protection (not depending on the material used, but lower points for "somehow under the carpet", and higher points for usage of protective tubing/materials)
- Usage of shrink-hose (yes/no)
- Colour-coding or labelling of wires (yes/no)
- How is the wiring made behind panels/covers
- Etc.

##### How to score:

4-10 points	higher efforts (suggestion: following the list above)
1-3 points	low effort
0 points	no effort

##### Note:

- The value/price of the materials used is of no particular interest (e.g. no extra points for massive gold compared to bare metal). It's the looks and the quality of the work behind that is of interest.

#### 4.5.2 Craftsmanship – Front end (0 to 10)

The execution and visual impression of the installation of the front end is judged in this section. Components that are hidden or not shown in the documentation cannot be evaluated. The judges will give their score based only on the clearly visible/documented part of the front end.

The front end is defined by those components of the installation that are necessary to read the EMMA-CD, do the digital/analogue conversion, track/volume control and provide the signal to RCA- or symmetrical outputs (all components before the Pre-amplification stage of an external amplifier):

- Operator panel
- Source unit
- Black boxes
- Screens
- CD/DVD-player / changer
- External D/A converters
- Pre-Amplifiers
- Remote controls

#### The judges will consider the following points to evaluate craftsmanship:

- Quality of mounting (lower points for only metal slot with bend-flaps, higher points for additional struts, bolts, screws, etc. or woodscrews versa metric bolts for black boxes / CD/DVD-changers, etc. Pay special attention to mounting of black boxes)
- Does the operator panel / source unit / screen / trim ring protrude (yes = lower points / no = higher points)
- Quality of installation of the remote control
- Using an original source unit trim ring (lower) or custom made trim ring (higher)
- Gaps around trim ring to vehicle and operator panel / source unit / screen (same size all around – higher / gap size varies – lower)
- Finish of front end installation (considering all above mentioned components)
- Etc.

#### How to score:

4-10 points	higher efforts (suggestion: following the list above)
1-3 points	low effort
0 points	no effort

#### Note:

- The value/price of the materials used is of no particular interest (e.g. no extra points for titan screws compared to steel screws, or carbon fibre compared to glass fibre). It's the looks and the quality of the work behind that is of interest.

#### 4.5.3 Craftsmanship – Amplifiers (0 to 10)

The quality and visual impression of the amplifier installation, and the related mounting panels / covers is being judged in this section. Components that are not clearly visible or shown in the documentation cannot be evaluated. The judges will give their score based only on the visible/documented part of the amplifier-installation.

#### The judges will consider the following points to evaluate craftsmanship:

- Execution of mounting of amplifiers (lower points for wood screws, higher points for metric bolts)
- Execution of mounting of mounting panels
- Fitting of and gaps around trim rings / covers (same size all around means higher points / gap size varies means lower points)
- Finish of amplifier-installation
- Etc.

#### How to score:

4-10 points	higher efforts (suggestion: following the list above)
1-3 points	low effort
0 points	no effort

**Note:**

- The value/price of the materials used is of no particular interest (e.g. no extra points for titan screws compared to steel screws, or carbon fibre compared to glass fibre). It's the looks and the quality of the work behind that is of interest.
- If the internal amplifiers of the source unit are used within the system, the source unit will be judged twice, one time under "front end" and one time under "amplifiers"

**4.5.4 Craftsmanship – Speakers (0 to 10)**

The quality and visual impression of the installation of the speakers and the related mounting panels / grilles are judged in this section. Components that are hidden and/or not shown in the documentation cannot be evaluated. The judges will give their score based only on the visible/documented part of the speaker-installation.

**The judges will consider the following points to evaluate craftsmanship:**

- Execution of fixation of speakers (lower points for woodscrews, higher points for metric bolts)
- Execution of mounting of mounting panels and grilles
- Fitting of and gaps around trim rings / grilles (same size all around means higher points / gap size varies means lower points)
- Finish of speaker-installation
- Etc.

**How to score:**

4-10 points	higher efforts (suggestion: following the list above)
1-3 points	low effort
0 points	no effort

**Note:**

- The value/price of the materials used is of no particular interest (e.g. no extra points for titan screws compared to steel screws, or carbon fibre compared to glass fibre). It's the looks and the quality of the work behind that is of interest.

**4.5.5 Craftsmanship – Other devices (0 to 10)**

The quality and visual impression of the installation of the other devices are judged in this section. Components that are hidden and/or not shown in the documentation cannot be evaluated. The judges will give their score based only on the visible / documented part of the other devices installation.

**What to look for:****Other devices**

- Line drivers
- Crossovers (active or passive)
- Signal-processors
- Additional batteries
- Multiple battery charge regulators
- Capacitors
- Etc. (including all other devices not mentioned above through which the audio signal will pass once it leaves the source unit until it reaches the speaker)

**The judges will consider the following points to evaluate craftsmanship:**

- Execution of mounting (lower = only metal slot with bend-flaps, higher = additional bolts, screws, etc. or woodscrews versa metric bolts for black boxes / CD-changers, etc. pay special attention to fixation of black boxes / hide away units)
- Does the operator panel trim ring protrude (yes = lower / no = higher)
- Usage of trim ring that comes with other device (lower) or custom made trim ring (higher)
- Execution of fixation of mounting panels and covers
- Fitting of and gaps around trim rings / covers (same size all around – higher / gap size varies – lower)
- Finish of installation of other devices (considering all above mentioned components)

- Etc.

**How to score:**

4-10 points	higher efforts (suggestion: following the list above)
1-3 points	low effort
0 points	no effort

**Note:**

- The value/price of the materials used is of no particular interest (e.g. no extra points for titan screws compared to steel screws, or carbon fibre compared to glass fibre). It's the looks and the quality of the work behind that is of interest.
- If no other device is installed, the unit where the filter and/or sound processor is integrated will be judged a second time (e.g. the source unit or amplifier).

**4.5.6 Overall craftsmanship (0 to 10)**

The overall quality and visual impression of the complete installation is judged in this section. Components that are hidden and/or not shown in the documentation cannot be evaluated. The judges will give their score based only on the visible/documented part of the installation.

**What to look for:**

All parts that belong to or are directly depending on the mobile electronic systems installation but that are not covered under the above paragraphs for craftsmanship like:

- Quality of work behind or under covers/panels/racks
- Finish of surfaces/covers (leatherwork, paintjob etc.)
- Cracks on plastic panels
- Damages/scratches on components
- Quality of covers, panels, racks etc.
- Etc.

**How to score:**

0-2 points	gaps
0-2 points	scratches, damages
0-2 points	leatherwork / paintjob
0-2 points	quality of work behind or under covers / panels
0-2 points	cracks

**Advice for category "Advanced"**

In the category "Advanced" the "Overall craftsmanship" will summarise the evaluation of all above-mentioned aspects within the available 10 points.

**How to score:**

as described in 4.5.1 to 4.5.5 with the only deviation of using a point range of 0 to 2 points per element:

Craftsmanship Wiring	0 to 2
Craftsmanship Front end	0 to 2
Craftsmanship Amplifiers	0 to 2
Craftsmanship Speakers	0 to 2
Craftsmanship other devices	0 to 2

**Note:**

- The value/price of the materials used is of no particular interest (e.g. no extra points for real leather compared to vinyl, or titan compared to steel). It's the looks and the quality of the work behind that that is of interest.

**4.5.7 Bonus points (0 to ??)**

With the bonus points, the competitor has a chance to earn extra points beyond the standard installation for extra efforts taken for sound quality, multimedia-experience and installation quality.

**Depending on the category, bonus points will be awarded as following:**

Category	Points
Entry, Experienced, Advanced and ESPL	No bonus points
Master	Max 20 bonus points
Expert Unlimited and Multimedia Expert	No limit for bonus points

Bonus points will only be awarded for items that are part of / connected to the car audio installation.

#### Note for Multimedia Master and Expert-category:

- Bonus points will be awarded also for creativity related to the multimedia equipment and to enhance the multimedia experience of the project (e.g. multiple screens, game console(s), computers, navigation, internet connection etc.)

#### How to judge:

- There is no "average" bonus, so each point has to be earned by the installation.
- All vehicles begin at "0"
- Maximum 3 bonus points can be earned for each element (the score can be from 1 to 3 p)
- The judges have to document the exact item for which point(s) is awarded.
- The competitor should specify the special details for bonus points during the presentation. The judges should not have to search by themselves for unique details.
- Each detail-earning bonus must be visible or shown in the documentation.

#### Hint:

- It is the risk of the competitor when a judge has to go and look for bonus points himself. Therefore it is best to point out possible bonus points in documentation, a list and in the presentation.

#### What to look for:

- Presentation besides judging (limited to max 6 points total):
- Spectacular things that highlight components to visitors (1 to 3 points)
- Special show around the car available all day (1 to 3 points)
- Ergonomics (limited to max 3 points total):
- Solutions for improving the systems ergonomics and the safety of using the system when driving will get extra points. One (1) point for each detail, max 3 p total.

#### Note!

- The judges will verify the function of the remote control(s). The remote control should have minimum the following functions: volume, track selection and on/off (or pause/stop or mute)
- Source unit/display moved from OEM-installation place for better visibility
- Custom installed steering wheel remote, not OEM / Change of OEM-remote control to operate system (not using an available interface) => to be proven by photo log
- Illuminated remote buttons
- Additional remote controls for passengers
- Additional displays for passengers
- Etc.

#### Sound:

- Special tasks to improve SQ or multimedia experience – but remember: the vehicle will be judged in the condition "as driving", curtains, window-covers, etc. are not allowed and have to be removed before judging (exception: multimedia category) (1 to 3 points)
- Bonus points can be awarded for building co-axials out of a component set, modifying of amplifiers, rebuilding the transfer of digital signals from optical to coaxial, etc...
- Etc.

**Installation:**

- Extraordinary craftsmanship (1 to 3 points)
- Additional battery if located in the passenger compartment and connected to the system installed to sealed box (1 point)
- Sealed box of additional battery located in the passenger compartment and connected to the system vented to outside (1 point)
- Special efforts for serviceability of components (1 to 3 points)
- Special efforts for safety of vehicle operation (1 to 2 points)
- Special efforts for serviceability of vehicle, e.g. access to inside of back lights for changing light bulbs, bolts for muffler, fuel pump, etc. (1 to 3 points)
- Manual for service shop how to disassemble parts of the installation (e.g. doors) for vehicle service (1 to 3 points)
- Lighting of source unit matches original gauges or lighting used in other places (1 point)
- Usability of trunk area (1 to 3 point for full trunk space)
- Promote component longevity (1 to 3 points)
- Special materials and technologies (1 to 3 points)
- Special performance of installation for theft resistance (1 to 3 points) Note: an installation of an alarm system will receive no bonus points.
- Original ideas
- etc.

**Note for installation:**

- The value/price of the materials used is of no particular interest (e.g. no extra points for titan screws compared to steel screws, or carbon fibre compared to glass fibre). It's the looks and the quality of the work behind that is of interest.

**Note:**

The judges are allowed to use a Judgebook for Installation which includes further detailed descriptions. This book will be continuously updated by the international Head Judge Council.





## 5 EMMA rules – Sound Quality

The sound quality judging will be performed with the actual, official EMMA-Sound-Quality-recordings by one or two sound judges. These judges are specially trained and qualified to use the EMMA-Sound-Quality-recordings together with the EMMA sound quality rules and the score sheet as a tool to determine the sound-performance of a stereo- or a Multimedia system.

The sources provided by EMMA are:

- Audio CD                   all categories
- MP3                         all categories
- AAC (I- Pod)             all categories

The source to be used for the judging process has to be provided by EMMA. It is not allowed to use own copies in no format for the judging process. Note: The EMMA Tracks are under the copyright of EMMA GmbH and any copy without authorisation is illegal.

After the sound quality judging, the competitor will receive a qualified and detailed, objective feedback about the acoustical performance of the sound system installed in his/her vehicle.

EMMA has divided the sound quality part into easy to follow sections that will be judged and evaluated accordingly.

The judges will not tell you “your vehicle sounds good or bad and you earned xyz points”, with their evaluation and with the help of the score sheet they will explain exactly how the car sounds with all relevant details.

The awarded score will be easy to follow for the competitor - when necessary with support of the EMMA-Rulebook. Furthermore, he/she can learn exactly about the potentials of their sound system. This will allow the competitor, a qualified dealer or an experienced friend to improve the sound system.

### **The following procedures and rules must be adhered during the Sound Quality Judging:**

1. For sound quality judging, the car has to be in a “ready for driving status” as used on public roads. Windshield / window covers, curtains, etc. are not allowed to be used.
2. The judges will only adjust the designated volume control, track selection, fast forward / reverse and head unit power switch.
3. The competitor will suggest the volume to be listened at by the sound judges. But to protect the judges from too high levels the un-weighted slow measurement on pink noise cannot be higher than 80dB
4. Participants may advise the judges about the specific operational features of the system before SQ-judging begins. Depending on format and categories, participants will proceed to a designated area and remain there until judging has been completed or remain with the judge during the evaluation of his/her vehicle.
5. During testing and scoring, judges must sit in the front seats of the vehicle facing forward. This applies to all vehicles, including limousines. All competing vehicles must have at least two front seats (exception Multimedia). If there are Cars with more then two Front Seats (Vans or special Vehicles) it is up to the competitor to decide on the seating position for the passenger side judge. If the vehicle is judged by only one Sound-Judge as in Entry or Experienced categories (not Multimedia), he has to sit on the drivers seat. Windows and sunroof need to be closed during judging. Only convertibles can be judged with the roof folded down, when the competitor asks for it AND the weather conditions are appropriate.
6. Highest scores will be awarded to systems that provide accurate reproduction from both listening positions. If the judges disagree on a sound quality score, they may switch seats to establish whether the vehicle presents a different sound from each seat.
7. If the Judges agree that the system presents a different sound from each seat, they should arrive at a consensus score for each seat, and then average this. This rule is intended to reward vehicles that produce good sound quality for both front seat listeners (which EMMA considers to be the ideal scenario).
8. The judges should not readjust the seat without asking the competitor.
9. The judge is not allowed to change his seating position during the judging process.
10. The competitor is allowed to ask the judge to sit in his/her reasonable (driving) position. The competitor may also point out that the judges must not influence the sound coming from the speaker's placement in the vehicle (kick panels, mounted under the seats, etc) by either covering them with the score sheets or by blocking them with their feet.

11. The SQ-judges will verify that the competitor is able to operate the gear-stick, the steering wheel and the pedals. (Note: If there is a very big difference between the height of the competitor (small) and the judge (tall), the judge must not be required to judge the sound in the competitor's reasonable driving position. The other way around, a pillow or similar can be used to adjust the height difference. => The reasonable driving position will be certified in a checkbox on score-sheet
12. The competitor should be aware, that any sports or non-adjustable seats could cause effects on the sound judging.
13. The sound judges should avoid any actions that could have a possible effect to the sound performance. (E.g. not to wear hats/ball-caps, avoid chewing gum, turn off cellular phones, pay attention how the scoring board is held, etc.).
14. Active judges (on the competition day) are not allowed to prepare any adjustments on a competition car (except their own if they are competing) during the Event.
15. Prior to judging, the Head Judge shall inform the judges and competitors whether vehicles will be judged for sound quality with the engine running or the engine off. This announcement should be made at the competitor's and judges meetings. All vehicles must be judged consistently. It is within the Head Judges discretion to make exceptions based on extenuating circumstances (extremely loud engines etc.). In some climates this may impose unreasonable fatigue and/or discomfort on judges (very cold or hot weather). It is the Head Judges decision whether to allow engines to be run so that the air conditioning or heating systems can be used during sound quality judging. In the Event that the running of engines is allowed, judges should adjust the vehicle's ventilation fan to a quiet setting during the listening tests.
16. The judges are allowed to use the "additional tracks" on the official EMMA test CD to verify their impressions - judging will be done with the foreseen tracks.
17. The judges should not let any visual cue (apparent speaker locations or lack of them, for instance) influence their judgement. Sound quality judges should be "blind" to any equipment in the vehicle.
18. After the judging process judges must show the score sheets together with an explanation about the scoring to the competitor, this should not take more than five minutes. Judges can refuse any further comment after this 5minute time period. Should the competitor refuse (for any reason) the scoring or explanation presented to him/her by the judges it must be done within this 5minute time period.
19. After the competitor has seen the score sheet and accepted the result, he/she should sign it.
20. Protest has to be made immediately after the explanation of the Judges. (General Rules, Chapter 2.6) No more protest regarding his/her scoring is allowed after signing the score sheet.
21. Calculations of the scores, averaging etc. should not be done by the judges. This service will be done in the back office allowing the judges to focus on their mission.
22. If possible/necessary, the sound quality judges are invited to explain their scoring with additional notes / explanations written on the score sheet.
23. In case of an equipment breakdown or vehicle malfunction during SQ-judging, the competitor shall be allowed 5 minutes to correct or repair any malfunction. Only one attempt (one period of five minutes) to repair is allowed. If the problem occurs again, the scoring will continue under the given circumstances. Furthermore, the head judge has to be informed by the judge team about the malfunction/breakdown.

## 5.1 Pre judging check

### 5.1.1 Checking Charger connected y/n

- Before the sound quality judging starts, the judges will check if any external power supply is connected and request the competitor to disconnect it.
- It is forbidden to use any power supply except the vehicles battery together with possible installed additional batteries connected to the system during the sound quality judging.
- Besides the battery system no additional sources of energy like solar panels, generators, fuel cells, etc. are allowed during sound judging, they have to be disconnected and / or put out of operation not charging the battery
- The judges will document that no charger is connected in the relevant checkbox on the score sheet.

**5.1.2 Verification of reasonable driving position y/n**

- Before the sound quality judging starts, the judges will check that the competitor is able to operate the gear-stick, the steering wheel and the pedals with the adjustment of the seat as for the SQ-judging to verify the reasonable driving position. Exceptions are only allowed for people smaller than 1,70m.
- The judges will document the reasonable driving position in the relevant checkbox on the score sheet.

**5.1.3 Channel verification**

- The channel identification track on the official EMMA Sound Quality source will be used. If the system has correct left and right channel integrity, the judges will mark it on the score sheet. If the judges find that channels are reversed they will notify the competitor. The competitor then has the opportunity to correct the "problem" within five minutes. If the problem could not be corrected, the competitor will decide if he/she wants the system to be judged.

**5.1.4 Calibration of volume**

- The volume adjustment for the Following sections shall be done according to the instructions on the track for volume calibration on the official EMMA Sound Quality recording - The competitor will suggest the volume to be listened at by the sound judges. But to protect the judges from too high levels the un-weighted slow measurement on pink noise cannot be higher than 80dB
- The digital readout on the display / angle of the volume-knob will be noted in the designated box on the score-sheet.
- Furthermore, the equipment used for reproducing the EMMA Sound Quality source will be noted on the score sheet.

**A quick note on sound quality**

A good audio system will faithfully reproduce the original recording by offering accurate frequency response and staging. Good frequency response reproduces high tones such as cymbals, the human voices and most instruments, and down to the very low tones from synthesisers and drums. Frequency response includes timbre (the accurate replication of an instrument), linearity (the tonal quality is the same regardless of volume level), and clarity (lack of distortion of the original signal). Good staging offers the illusion of a stage upon which players are located and it has a sense of height, width, and depth. Imaging is a sound system's ability to correctly place the instruments on the imaginary stage.

**5.2 Sound Stage and Imaging Characteristics**

The sound stage produced by an audio system can be defined as the perceived space from which the sound originates. Much like the stage in a concert hall is the space from which the sound originates. The term "Imaging" describes a sound system's ability to reproduce the sound of instruments in their correct locations and proportions on the sound stage. Five image locations across the sound stage are to be considered:

(X)	(X)	(X)	(X)	(X)
X	X	X	X	X
<b>Left</b>	<b>Left Center</b>	<b>Center</b>	<b>Right Center</b>	<b>Right</b>

To evaluate sound stage: width, height, the distance to the soundstage, stage depth and in imaging the positions of the imaging characteristics, the judges use the "technical track for staging and imaging" on the actual EMMA Sound Quality recording. On this track, all positions from left to right are displayed first on a frontline, second on a line in the back. For judging the ambience there are extreme far positions on the left and right side. These positions together mark the boundaries of the stage, the depth, the ambience and the positions on the stage.

The object of the judging is to define the boundaries of the sound stage created by the vehicles audio system. These boundaries must be identified in order to judge imaging correctly. In addition the Track No. 7 (A change is gonna come) will be used to evaluate the impression of the room size.

#### Notes for the judges:

- While judging the sound stage, each judge must draw a map describing the sound stage boundaries as heard at their listening position (seat). This map will not only help in judging the sound stage elements, but will be vital to the evaluation of imaging.
- If distractions are making it hard to determine staging, it is helpful to close the eyes while judging. This takes away any distractions and makes it easier to concentrate on the music.
- Keep in mind that a vehicle may exhibit different sound-characteristics for each seat. Each judge will judge from his actual position and note this score on the score sheet. Necessary calculations will be done in the back office.
- The scores from the driver's side and the passenger's side judge will be added together and divided by 2, the scores WILL NOT be rounded up by the judgeteam.

#### 5.2.1 Sound Stage – Distance to sound stage (0-15 points)

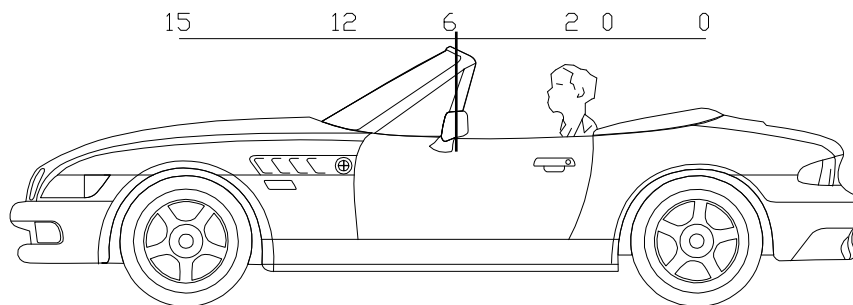
This is to find out the distance to the point of origin of the sound in regards to the listener's position. Good staging offers the illusion of a stage upon which players are located and it has a sense of height, width, and depth. (Even apparently exceeding the front boundary of the vehicle). This is considered to be ideal as it approximates the experience of listening to a concert or a fine home audio system.

Maximum points within each "point range" should only be given to systems which convincingly create the illusion that all sounds originates from the specified location.

Go with your first impression, you should only give 0 (zero) points when the first impression of all sound is coming from behind.

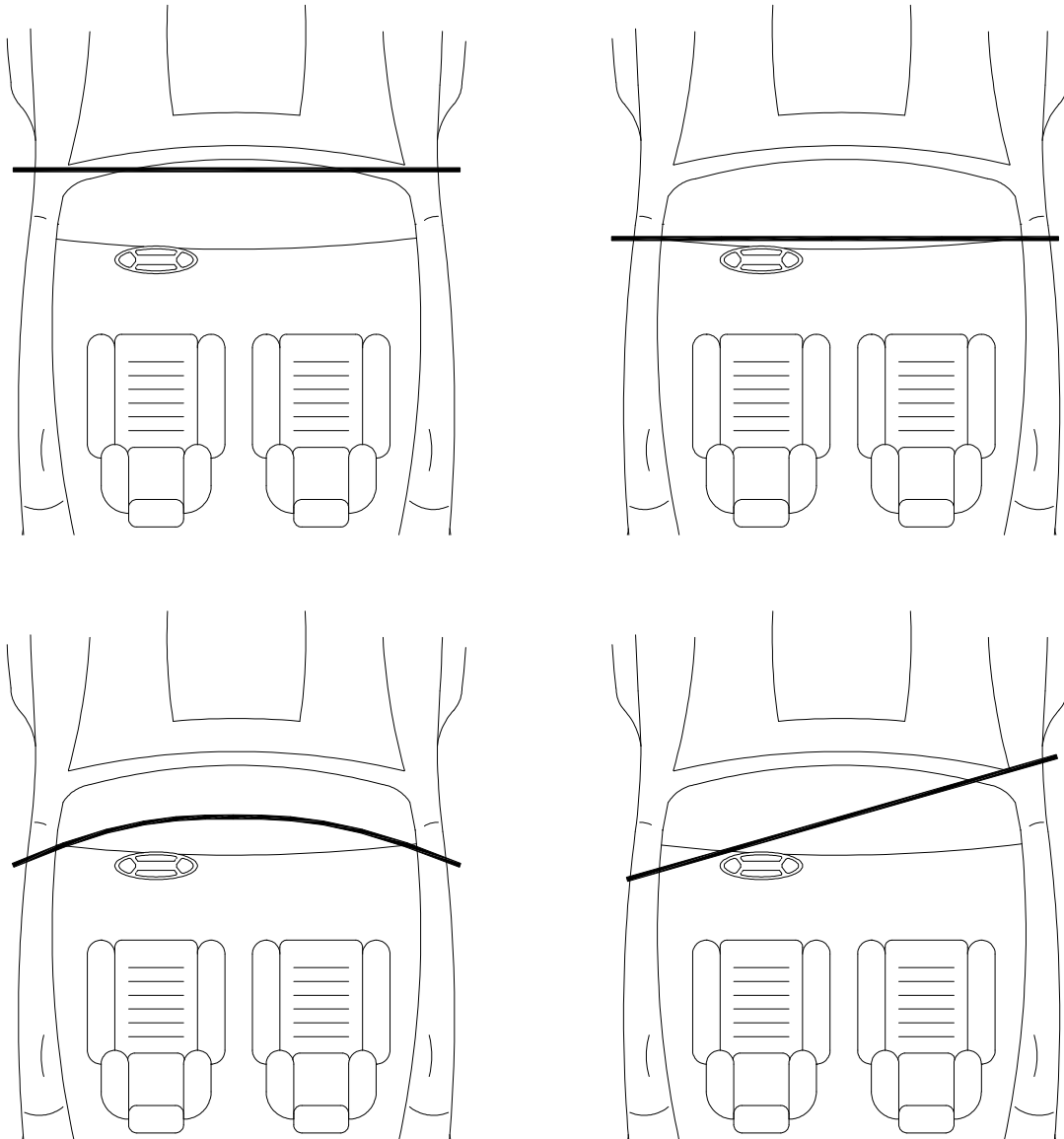
The judges will evaluate the sound stage over the entire width, not only in the centre position.

#### How to score:



**The reference for the distance to the soundstage is the top of the steering wheel (with a value of 6 points).**

13 to 15	Sound stage is out of the (bottom of the) front <b>windshield</b>
12	Sound stage is at the (bottom of the) front <b>windshield</b> but inside the car
7-11	Sound stage is in between the top of the steering wheel and the (bottom of the) front windshield
<b>6</b>	<b>Sound stage at the top of the steering wheel</b>
3 to 5	Sound stage is between the top of the steering wheel and the listener (meaning head or chest of the listener, not back of the seat)
2	Sound stage is on the listening position
1	Sound stage is behind the listener
0	Sound stage is impossible to define

**Possible effects and advises how to score:**

- Top-left: 12 points  
 Top-right: 7 points  
 Bottom left: 7 points (find the average and score the theoretical line)  
 Bottom right: 8 points (find the average and score the theoretical line)

**5.2.2 Sound Stage – width of the sound stage (0-15 points)**

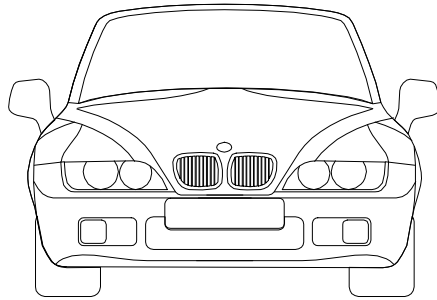
The width of the sound stage defines the distance from the ultimate “left” position to the ultimate “right” position relative to the vehicle. The objective is to create a wide sound stage for both listeners. Exceptional sound systems will have sound stages that seem to exceed the physical boundaries of the vehicle Interior.

At this point, it is only of interest where the placements of “left” and “right” positions are on the virtual sound stage.

**How to score:**

7,5      6      0      6      7,5

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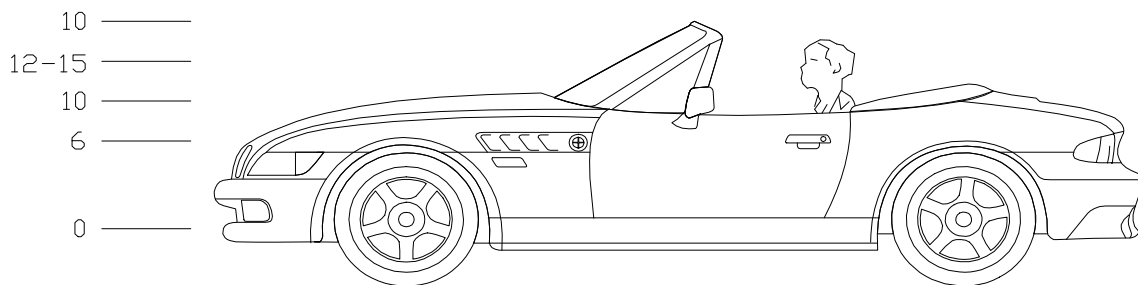


**5.2.3 Sound stage – height of the sound stage (0-15 points)**

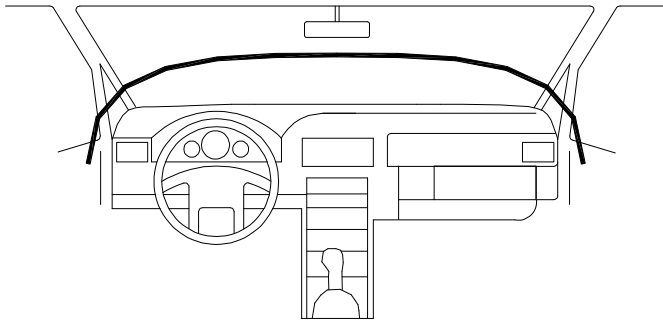
The height of the sound stage defines the apparent height (points of origin of the sound in between the entire width of the sound stage) in relation to horizon level and how consistent this height appears to be during the entire range of frequencies.

The object is to achieve a “stable” sound at horizon level with a natural sense of vehicle space above that point. Instruments and voices should be originated entirely at that height with no portion of them coming from below the sound stage. Pay particular attention to make sure that the stage height remains stable, from left to right. Some vehicles may exhibit good height in the centre with left and right boundaries dropping lower. This should be taken into account in the scoring. Vocals and instruments should all appear at the same basic height.

**How to score:**

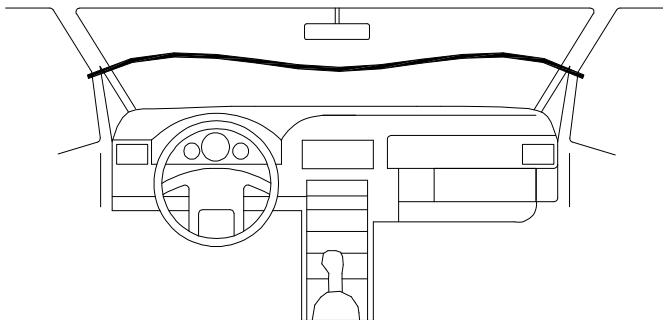


**Possible effects and advises how to score:**



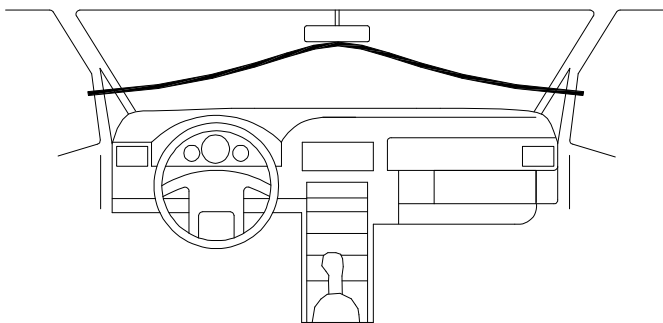
**“Rainbow-effect”**

Left and right drops down a bit, centre is good. 7-9 points.



**“Wing effect”**

Height is good but not stable, 8-10 points.



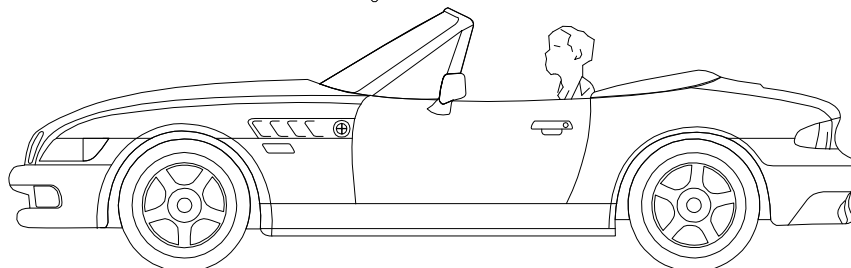
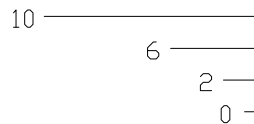
**“Dutch mountain-effect”**

Left (centre) and right (centre) are too low; centre is too high, unstable effect. 6-8 points

**5.2.4 Sound Stage – Depth of the sound stage (0-10 points)**

Depth of Stage defines the ability of the system to place voices or instruments at different distances from the listener. (E.g. whether they are placed behind each other.)

The designated track of the actual EMMA SQ medium will be used to judge the stage depth



### 5.2.5 Sound Stage – Ambience (0-10 points)

Ambience is a psycho-acoustic phenomenon that can be defined as the perceived space around a sound source. The judges use the dedicated tracks on the official EMMA Sound-Quality media for evaluating the ambience of the reproduction.

In simple words: If the recording was performed in a big church, the sound system should give you the impression of listening in a church. If the recording was performed in a studio with no reflections, there will be no feeling of ambience.

#### How to judge:

Close your eyes and try to imagine the size of the "room" you are listening to. In car audio, it is very challenging to create the illusion of a space larger than the Interior of the vehicle. The object is to feel the boundaries of the vehicle "disappear" creating a spacious natural ambience. Unnatural ambient effects (like a jazz band playing in a cathedral) will score low points.

8 to 10	gives impression of the room size
5 to 7	gives some impression of the room size or sounds bigger than a car
2 to 4	no impression of room size
0 to 1	Overbearing / Artificial ambient effect

## 5.3 Imaging characteristics

### 5.3.1 Imaging - Position (0-25 points)

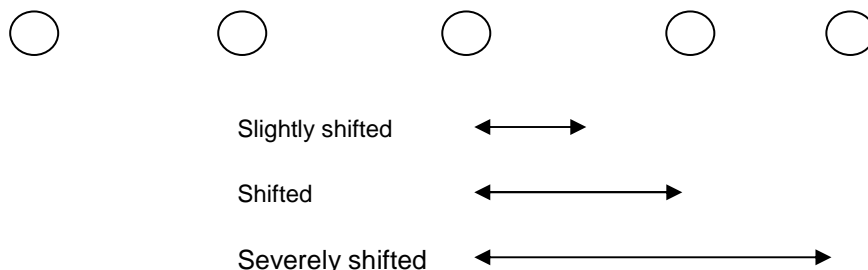
The sound stage is defined by the left and right boundaries established during the sound stage judging.

#### How to judge:

The technical track for staging and imaging will be used to define the five positions. The centre position should be exactly in between the ultimate left and ultimate right, found in judging Staging. Left centre should be exactly in between ultimate left and centre. Right-centre should be exactly in between in between centre and ultimate right. This means that all positions should be evenly spaced as in the illustration below. When this is the case, full points will be awarded for every position. In normal cases, left and right position will be at the outer boundaries and score full points – but be careful, it's not a must!

When the sound is not coming from the position where it should come from, less point will be given for that position.

**Example:** centre should be exactly in between ultimate left and right. If it is slightly shifted in location (see picture) the judges will deduct one point. When the centre is a full position shifted, the judges will deduct two points. Etc.



5 points	image appears in correct position
4 points	image is slightly shifted in position – half position difference
3 points	image is shifted in position – one position difference
2 points	image appears in multiple positions or is severely shifted
1-point	image position is impossible to localise
0 points	no sound



Remember, judgement will be done on how evenly the sound is spread across the soundstage, and not how wide it is, nor how it is placed relative to the car. This will be judged in the section Staging.

### 5.3.2 Imaging – Focus (0-25 points)

The focus will be judged for each of the above 5 positions separately using the designated track recorded on the EMMA Sound Quality CD (MP3/AAC).

Detailed sound stage maps found in the liner notes of the official EMMA CD provide the exact positions of specific instruments and voices in the recordings used to judge this category.

These maps have been produced together with the recording engineers who produced these tracks.

Just as a reminder: Left and right instruments should appear at or near to the left and right boundaries of the sound stage, not necessarily the vehicle's boundaries.

#### How to judge:

The 5 positions have already been determined under the staging section. Judges can now use the photos found in the liner notes to determine whether the size of the instruments and voices are correct.

They must compare the size of the instruments/voice with the sound in (or out of) the vehicle.

5 points	Instrument/Voice is of correct focus
4 points	Instrument/Voice is slightly unfocused
3 points	Instrument/Voice is very big or too small
2 points	Instrument/Voice has no focus
1 point	Instrument/Voice is impossible to localise
0 points	no sound

## 5.4 Tonal accuracy

### 5.4.1 Tonal Accuracy and overall spectral balance

A sound system should reproduce a recording as realistically and authentically as possible. If it is a live recording, it should sound just like that, if it is a studio recording, it should sound as close as possible to the intentions of the producer. Therefore, EMMA trains the Sound Quality judges to fully understand exactly how the EMMA Sound Quality CD (MP3/AAC) has been recorded and what it should sound like. It is a valuable tool that allows the scoring of the tonal accuracy of the four sections that separate the audible frequency range into:

- Sub-bass
- Midbass
- Midrange
- High frequencies

And the overall Spectral Balance of the entire audible frequency range.

Under Tonal Accuracy, the judges will concentrate on each range specifically, ignoring the spectral balance of the whole spectrum.

Under overall spectral balance, the Judges will evaluate how well the four sections combine together to create a full picture approximating the originality of the EMMA Sound Quality CD (MP3/AAC) as much as possible.

### 5.4.2 Tonal Accuracy (0-120 points)

#### How to judge:

The following guidelines are general guidelines that apply to a broad range of music. The judging tracks of the official EMMA Sound Quality CD (MP3/AAC) may or may not contain the instruments listed below. For accurate information on the content of the judging tracks, please refer to chapter 9 in this rulebook.

The judges will concentrate on the four individual sections step by step and award the points for each of the following sections accordingly:

28 to 30 points	excellent
25 to 27 points	very good sound, almost excellent
19 to 24 points	good sound, almost no mistakes
13 to 18 points	average sound
7 to 12 points	poor sound and/or big mistakes

1 to 6 points	unacceptable, harsh sound
0 points	no sound

### Sub-Bass (10 Hz - 60 Hz)

The judges will concentrate on the lowest notes of large string instruments (bass guitar and stand up bass, in particular, piano), large drums (big bass drums, kettledrums, timpani) low synthesiser sounds, low pipe organ notes, etc.

The sounds reproduced by the system in this range should be immediately recognisable, realistically weighted, articulate, and free of distortion and overhang. It is vital to recognise the difference between good extension and overhang. Overhang refers to a blurring or exaggeration of the decay time of a sound. Accurate low frequency extension is a desirable trait. Many systems will exhibit some localisation of the low bass towards the rear. The judges should not regard these vehicles as being "behind the listening position" point range. Instead, the judges should deduct 2 points for obvious rear-bass.

### Mid-bass (60 Hz - 200 Hz)

The judges will concentrate on the sound produced by the mid-sized drums (kick bass drums, tomtoms, large congas, etc.), the middle range of the bass guitar and stand-up bass, lower notes of the piano and synthesiser, lower male-voice, low tones of horns, trombones, tubas, etc.

These should be reproduced smoothly with good articulation and detail. Particular attention should be paid to the attack and the decay of drums and the bass guitar. Because of the small size of the vehicle as a listening environment, problems with resonance, sound peaks and standing waves are common in this range. The best systems control these problems so that they do not interfere with fidelity.

### Midrange (200 Hz - 3 Khz)

This range contains the vast majority of musical information in most recordings. The judges will concentrate on: the human voice, brass instruments, woodwinds, strings, the upper range of bass guitar, electric and acoustic guitar, synthesisers, piano, smaller drums and other percussion instruments. Voices should sound realistic without uncharacteristic ringing, thin sound, dullness or distortion.

### High-Frequencies (3 Khz-inaudibility)

The judges will concentrate on cymbals, triangles, bells, the upper frequencies of the snare drum, rim shots, hand clapping, synthesisers, the upper range of string and woodwind instruments, and the sibilance (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 harshness, thin sound, excessive sibilance or distortion.

This means that the judges listen to the quality of each frequency, not the relative volume. Relative volume is one of the parts that is judged in Spectral Balance.

## 5.5 Spectral balance

### 5.5.1 Overall Spectral balance (0-30 points)

While in chapter 5.4 the four sections sub-bass, mid-bass, midrange and high frequencies were evaluated each individually resulting in separate points – here it is evaluated how they combine together to create a full picture.

Depending on how well they are balanced and play together, they will receive results accordingly:

28 to 30 points	excellent
25 to 27 points	very good balance, almost excellent/realistic
19 to 24 points	good balance, only small deviations / coloration's
13 to 18 points	average balance, some deviations /coloration's, e.g. bass quite loud
7 to 12 points	poor balance, parts of the spectral balance are clearly covered by others
1 to 6 points	unacceptable balance, e.g. hard to detect that there is a reproduction of the entire spectral balance
0 points	no sound

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.

Does the system create the illusion of realistic instruments and voices as you listen to the judging tracks? Is the distribution of energy between the frequency ranges appropriate and natural sounding? Particular attention should be paid to how smoothly the system integrates the different frequency ranges.

**Note:**

Do not expect to receive the average points of the before mentioned 4 individual sections – for example: each of the four individual sections for itself may be 20 points, but when judging overall spectral balance, the judges discover that the sub-bass is too loud, the mid-bass is a little bit too low, the midrange is ok and the high frequencies are a little bit too loud again. This will result in a score on overall spectral balance in between 13 to 15 points!

### 5.5.2 Overall Spectral balance at higher volume level (0-30points)

The same track that was used for judging 5.5.1 on the official EMMA Sound Quality CD (MP3/AAC) has been recorded with +3dB gain, allowing the sound quality judges to evaluate the ability of the sound system to reproduce the overall spectral balance as described before at a higher volume level. This may also indicate the dynamic abilities of the sound system.

At high levels, the judges will listen to the same items described under 5.5.1 but also for solid, realistic dynamics. Instruments should have a realistic attack and impact that does not get compressed by distortion (amplifiers clipping or speaker system limitations). Points will be deducted as described under 5.5.1 and for any unnatural harshness or distortion.

**How to judge:**

28 to 30 points	excellent
25 to 27 points	very good balance, almost excellent/realistic
19 to 24 points	good balance, only small deviations / coloration's
13 to 18 points	average balance, some deviations /coloration's, e.g. bass quite loud
7 to 12 points	poor balance, parts of the spectral balance are clearly covered by others
1 to 6 points	unacceptable balance, e.g. hard to detect that there is a reproduction of the entire spectral balance
0 points	no sound

## 5.6 Listening pleasure

### 5.6.1 Listening pleasure (0-25 points)

Now since the sound quality judges have been listening to the competitors sound system for quite a while, they must determine the enjoyment the music generated to the listener and the acoustic impression of the music. There is no special track; listening pleasure reflects the judge's experiences over the entire sound quality judging process.

**How to judge:**

Start with	
12 – points	Average listening pleasure
0 – points	no sound

**Add points to the average for:**

- Real listening pleasure
- Realistic dynamics
- Enjoyment to listen to
- Authentic reproduction
- Get the feeling to move your foot / make your fingers snap,

**Deduct points to the average for:**

- Unrealistic (missing) dynamics
- A stressful sound to the ears
- Artificial reproduction of the music
- A boring impression
- Making you tired to listen to it
- Symptoms getting worse

## 5.7 Adjustments

### 5.7.1 Adjustments to score

While the SQ judges are actually listening to and operating the audio system, they will judge adjustments for noise and system handling. The judges should briefly note what caused any adjustment to the score in the comments section of the score sheet.

A well-executed installation should be free from any noise at all listening levels. Noise is defined as any sound not present on the original EMMA Sound Quality CD (MP3/AAC) and that has been added by either the vehicle electronics / charging system or by the audio system.

#### Note on Amplifier Gain:

This is essentially how a system should be set up. The head unit should be able to use most of its range before the amplifier is driven into clipping. Again, if the gains are set too low, the head unit won't be able to drive the amplifier to its maximum output level. If the gains are set too high, the amp will be driven into clipping at a very low volume level (on the head unit).

An amplifier amplifies what it is given. Your RCA-cables carry the audio signal, and they also carry "noise" in the system due to grounds, internal components, etc. The noise stays the same, but the signal increases with the volume. So, the higher the volume, the higher the audio signal is above the noise level; hence a better signal-to-noise ratio.

Now, the amp is still amplifying the noise, but the level of the audio signal is high enough you don't notice the noise floor.

A system with an improperly set gain structure will exhibit a hiss or "static" sound at full volume playing the noise track.

Keep in mind that this adjustment does not affect the power output of the amp — you're simply setting the amount of input signal needed for optimum sound quality from your system.

#### The following rules apply to judging noise:

1. Each system is listened to using the dedicated noise tracks on the current official EMMA CD for the absence of noise, if noises are heard during the regular judging, points can also be deducted.
2. The judges must listen for every specific type of noise for which a deduction of points occurs on the score sheet.

#### Judging will be done under the following two conditions:

- Engine running to test vehicle noise (noise induced by the vehicle's charging system or electronics).
  - Engine off with the key in the accessory or off position (ignition off) to test for system noises
3. The judges will determine the audibility of noise from a normal seated listening position.
  4. To verify the system noise level EMMA produced a special track with fade out music. This track is to be used for evaluating the Ground noise.
  5. The same track will be used to evaluate switching noise, hiss, volume etc.
  6. The judges should briefly note what caused any adjustment to the score in the comments section of the score sheet.
  7. The charging system must be in proper working order with the alternator producing an increase in DC voltage output while the engine is running. Other than a voltage regulator, the use or existence of any circuit, switch or device designed to affect the operation of the alternator while the engine is running or physically disconnected alternators will result in immediate disqualification and possible suspension, forfeiture of entry fees and possible suspension upon review by the Head Judge Council.
  8. If a vehicle test is clean of alternator whine, the judges may request that the charging system be tested. This test will be done at the amplifier's 12 Volt input connections. These must be made accessible within 60 seconds, upon request by the judges.
  9. Alternator failures (non-existent or unusually weak charging voltage) will result in an automatic maximum deduction for alternator whine (6 points deduction).

10. The source unit's power switch must control the turning on and turning off of all audio system components (this does include video systems, video games, cellular communications equipment, navigation systems etc.). In the Event that a source unit lacks a conventional power switch, a single external switch can be designated to power up and powers down the entire audio system.
11. Electrical powered vehicles may compete in EMMA competitions and are exempt from rules 10, 11 & 12. Deductions can be made for extraneous hums and other noises produced by an EPV's power plant according to the same guidelines used for alternator whine testing. EPV's must be self-powered during the judging process.

**Advice for Turn-on and Turn-off noise test:**

This test should be performed using the designated noise testing track with no change to the volume. Only the source unit's (or designated) power switch is to be used to turn the system on or off. The ignition switch is not to be used. The mechanical „click“ of a relais will not be cause deductions.

If a system is completely quiet in this test, the judges have the authority to test the system to determine whether all equipment is truly turning on and off. If any of the audio system's electronics do not power down with the source unit's power switch / designated switch for turn on/off, an automatic 3-point deduction is given. The burden of proof is on the competitor. If a competitor cannot convincingly show that his/her equipment is turning on and off, the 3-point deduction will be enforced by the Head Judge.

Deductions can only be made for noises specifically listed in the following sections.

**5.7.2 Engine-off testing - switching noise (-6 – 0 points)**

Noise caused by turning the system on/off, or changing the volume, or changing the track, or using fast forward / reverse. The designated noise-testing-track will be used after the music fade. The (mechanical) clicking sound of relays while switching the system on /off will be ignored.

**Potential noises can be:**

Turn-on / turn-off noise, switching pops -- a popping, thumping or clicking noise that is heard through the system's speakers when the system is powered up by the source unit's on/off switch or switching pops - a clicking or popping noise that comes through the speakers when adjustments are made to the audio system's volume or track selection controls. Zipper, digital search, or stepper noises, which are inherent in some digital volume control designs, are beyond the scope of being corrected by proper installation techniques, but are not considered acceptable and will result in point deduction.

**How to judge:**

0 points	No audible noise
-1 - -2 points	barely audible noise
-3 - -4 points	plainly audible noise
-5 - -6 points	Potentially damaging noise

**5.7.3 Engine-off testing - System noise (-6 – 0 points)**

A noise that is somehow emulated from or by the audio system, the vehicle or the vehicle environment and that is not recorded on the EMMA Sound Quality CD (DVD-A/MP3/AAC). Track 10 is used.

**Potential noises can be:**

Rush, hum, hiss, cracks, floor noise, rattling panels, loud fans, mechanical noise etc.

Points are not to be deducted for mechanical noises such as relay clicks or automatic motorised covers being activated.

**How to judge:**

0 points	No noise
-1 – -2 points	barely audible noise
-3 – -4 points	Audible noise
-5 – -6 points	Disturbing audible noise

**5.7.4 Engine-on testing (-6 – 0 points)**

Noise that is generated by the mechanical/electrical system of the vehicle that is reproduced through the speakers with the audio system turned on and/or off. Track 10 is used after the music fade.. The judges will adjust the volume level from medium to maximum. If the noise increases the judges may deduct maximum 6 points.

**Possible noises are:**

Alternator whine, ignition noise, PWM-noise created by control boxes, etc.

**How to judge:**

0 points	No noise
-1 – -2 points	barely audible noise
-3 – -4 points	Audible noise
-5 – -6 points	Disturbingly audible noise

**Note:**

- The competitor can request that the system be shut down before starting the car.
- If the engine won't start (due to drained battery), the competitor will be offered the chance to jump-start his vehicle within 3 minutes. 3 points will be deducted. If the car cannot be jump-started within those 3 minutes, the maximum deduction of 6 points will be made.
- The judges must carefully determine whether the noise is actually coming from the system itself. Many engines produce whining sounds from various different mechanical actions (turbochargers, alternators spinning etc.). To do this the judges can move their heads closer to the speaker in the vehicle (not to judge the audibility of the noise, but only to establish its origin). If the judges are not sure about the audibility of alternator whine, they should not deduct any points.
- Whenever a vehicles running engine is so loud that noise can't be checked, the maximum amount of points for 'noise with running engine' shall be deducted.

**5.8 Ergonomics****5.8.1 System handling (0 – 6 points)**

The judges are to look for ease of system handling and a minimum of distraction from the road, as if the vehicle were being driven. The system with the closest approximation to these conditions will receive points.

The system handling will be judged by turning the audio system power on/off, controlling the volume, track selection or fast forward / rewind controls and visibility/readability of the display only.

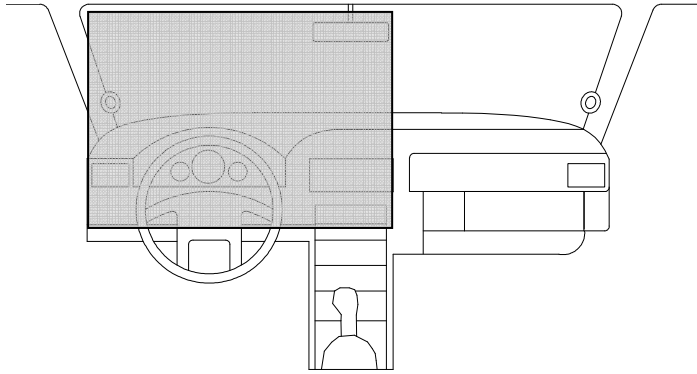
Shrouds or covers, hiding the controls (e.g. for theft protection) will be removed and will not affect the scoring of system handling.

The judge seated in the driver's seat will operate the audio system and determine the level of difficulty and / or distraction in reaching the above defined user adjustable components and controls.

The audio system must demonstrate a good balance of comfort and vehicle safety during operation. The judges must be able to immediately operate the audio system from the driver's seat without any confusion. General visibility and accessibility of the above mentioned, relevant user adjustable component(s) from the driver's seat during theoretical vehicle operation, is desired.

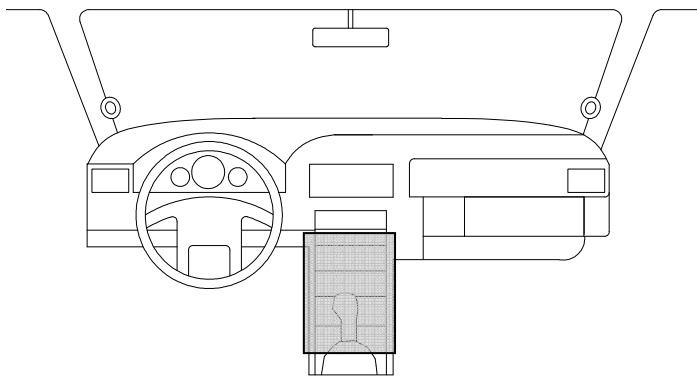
CD changer units that have been installed in the passenger compartment for convenience are not to be considered and will not be a negative factor in the judge's scoring.

**System handling – visibility (0 to 3 points)**



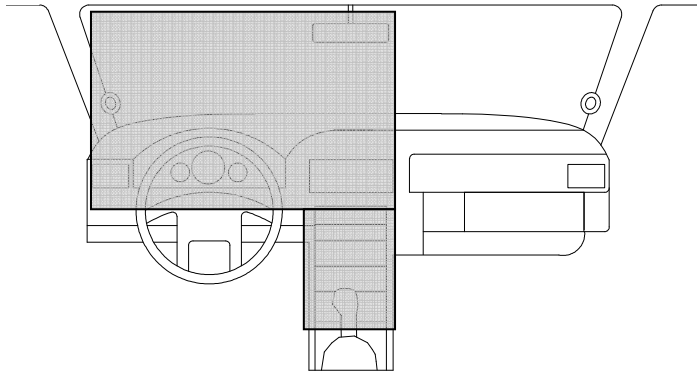
**Very good visibility, display above centre of steering wheel.**

**(3 points)**



**Good visibility, display in centre console below centre of steering wheel**

**(2 points)**



**Bad visibility display outside grey area**

**(1 point)**

**Very bad visibility or no display**

**(0 points)**

**Note:**

- If the visibility is very bad due to a dark display, colours of lighting changed, reflections, etc., the scoring can be influenced accordingly. Not to be considered under extremely bright conditions (like direct sunlight)

**System handling - control (0 to 3 points)**

**How to judge:**

3 points	Very easy to access and operate the system. (Extra Remote) Controls can be adjusted with hands on the steering wheel. (Extra Remote) control unit should be proper mounted (should not move when adjusting).
2 points	Easy to access and operate the system. (Extra remote) control is installed and properly mounted (should not move when adjusting). A loose handheld remote control is not accepted.
1 point	Easy to access and operate the system. No remote control
0 points	Hard to access and operate the system. Source unit out of reach

**Note:**

- If a steering wheel remote control is fitted, it does not need to function in all positions but for sure in the driving straight position.
- If a remote control is installed, it should have minimum the following functions: volume, track selection, pause/mute or on/off. Furthermore the buttons should be either labelled or a written instruction how to operate should be provided to the judges.

**Note:**

The judges are allowed to use a Judgebook for Sound Quality which includes further detailed descriptions. This book will be continuously updated by the international Head Judge Council.





## 6 EMMA rules - Multimedia sound & picture judging

### 6.1 General rules for multimedia judging

The Multimedia competition was created to meet the increasing interest from the mobile multimedia competitor. The target for the multimedia category is to entertain!

The multimedia sound and picture judging rules were created to separate the multimedia judging from the regular sound quality judging as this cannot be judged under the same criteria. Careful consideration has been taken into account as not to handicap competitors without a full multi-channel system.

It's up to the competitor to choose the desired position for judging. It must be from a seat that is approved by the national vehicle inspection and normally used to transport people in the car. E.g. a cinema chair in the back of a van, an extra seat without safety belt etc are not allowed in competition.

The competitor is allowed to, if he/she so wishes, to cover all windows reducing the level of light in the vehicle, which will enhance the judging of the picture quality. This is permitted for both indoor and outdoor Events.

The official DVD software used for multimedia judging will be announced by EMMA. An official guideline on how to use the actual DVD will be published together with these rules. EMMA reserves the right to change the software during the competition season. Should this be the case refer to [www.emmanet.com](http://www.emmanet.com) for updated information.

#### The multimedia sound judging is divided into 5 categories:

5.1. Sound stage and room	Max. 105 points
5.2. Tonal accuracy	Max. 135 points
5.3. Picture quality & multimedia experience	Max. 70 points
5.4. System handling	Max. 6 points
5.5. Adjustment to score	

**Max. Total**

**316 points**

#### 6.1.1 Checking Charger connected y/n

- Before the Multimedia judging starts, the judges will check if a charger is connected and request the competitor to disconnect it.
- It is forbidden to use a charger during the judging.
- The judges will document that no charger is connected in the relevant checkbox on the score sheet.

### 6.2 Sound stage and room quality

#### 6.2.1 360° Level (0 – 25 points)

360° level refers to how well the system performs regarding the sound level around the listener. When sound sweeps around the listener, the level should not vary as the sound moves. (E.g. when a car is passing by from left to right, or when a train comes from the rear to the front, the level should not change)

#### How to score:

20-25 points	No level changes
15-19 points	Slight level inaccuracy
10-14 points	clear level inaccuracy
5-9 points	several inaccuracies
0-4 points	Total failure

**Note:**

In a full Multimedia-system setup, the Surround sound is supposed to be reproduced behind the listener. In the case that no sound is coming from behind the listener, the score should be in the span between 5-14 p, depending of the rest of the system.

**Example for 360 level:**

A perfect front stage and no Surround => Score "10-14 p clear level inaccuracies"

Level of centre is too low (or high) and no Surround => Score "5-9 p several inaccuracies"

**6.2.2 360° Movement (0 to 25 points)**

360° movement refers to how well the system reproduces the sound positions all around the listener. When sound sweeps around the listener, the movement/panning should be smooth and seamless as the sound moves. (E.g. when a ufo is passing by from left to right, or when a train comes from the rear to the front, the movement of the sound should be smooth and realistic.)

**How to score:**

20-25 points	Seamless movement
15-19 points	Minor gaps
10-14 points	big gaps
5-9 points	Jumping speaker to speaker
0-4 points	No movement (mono-like)

**Note:**

In a full Multimedia-system setup, the Surround sound is supposed to be reproduced behind the listener. In the case that no sound is coming from behind the listener, the score should be in the span between 5-14 p, depending of the rest of the system.

**Example for 360 level:**

A perfect front stage and no Surround => Score "10-14 p big gaps"

Centre position is unclear and no Surround => Score "5-9 p Jumping speaker to speaker"

**6.2.3 Room quality – Sub (0 to 10 points)**

Consider the sub-bass ability to "fill up" the room. The sub should be audible / felt in the whole listening room, but not easily localised. It's quite different to SQ, where the sub idealistic should be positioned only in front of the listening position.

The LFE (Low Frequency Enhancement) integration should also be considered. LFE is a very important part of a multimedia system. Consider the crossover points from the sub/LFE with regard to the rest of the system (usually around 50-100 Hz); there should be no peak or distinct change in level.

High points when sub is clearly audible / felt, but cannot be localised.

**How to score:**

10 points	excellent integration of sub/LFE
7-9 points	close to excellent (no big faults)
4-6 points	one obvious fault (boomy bass / easy to localise / audible dips or peaks etc.)
1-3 points	several faults, your false teeth rattle out
0 points	No sub/LFE

**6.2.4 Room quality – Front stage (0 to 10 points)**

The soundstage relative to the screen/picture is judged here. High points can be earned for a system that has the front stage is aligned with the picture showed on the screen, both horizontal, vertical and in depth.

You should get a feeling of "where you see is where you hear". Look for the systems quality to reproduce a feeling of reality and being part of the action. Also consider the distance to the front stage, which idealistic should be the same distance as to the screen.

**Points are deducted if e.g.**

- The screen is located low in centre console and the sound is above dashboard.
- If the centre sound and the screen is not aligned vertically. (The centre is reproduced to the side from the screen)
- If the sound and screen doesn't align in depth (e.g. sitting in backseat with screen in headrest and sound at the dashboard)
- If the front stage height is not stable.
- Narrow front stage (distance from left to right position, compare to width for SQ)
- Bad lip-sync (sound and picture not in phase)

**Note:**

- The width of the front stage does not apply to the size of the screen. A small screen is no excuse for a narrow front stage.
- The quality of the picture is not judged under this paragraph.

**How to score:**

10 points	excellent front stage
7-9 points	Close to excellent (no big faults)
4-6 points	only one obvious fault (picture not aligned, unstable soundstage, bad lip-sync etc.)
1-3 points	several faults
0 points	No front stage (only sound from behind)

**6.2.5 Room quality – Surround (0 to 10)**

The systems ability to reproduce the Surround information is important for good room quality. High points can be earned for a system that reproduces a feeling of a big "room" behind the listener. Also consider the distance to the "Surround soundstage".

**How to score:**

10 points	Excellent Surround experience
7-9 points	Close to excellent (no big faults)
4-6 points	Indistinct Surround feeling / Surround clearly separated from front stage
1-3 points	Hard to verify if there is any Surround
0 points	No Surround (only sound from front)

**6.2.6 System separation (0 to 25)**

This could roughly be compared to the imaging characteristics for SQ judging. The information showed on the screen should be clearly defined by the sound system. Look for correct focus and separation between the sound positions. Also consider the left/right separation in the Surround.

**Note:**

- It's most important that the front stage separation is clearly defined; a slight lack of separation in the Surround sound is acceptable and will not result in a high point deduction.

**How to score:**

20-25 points	Placements clearly defined for the whole system
15-19 points	Surround lacking focus/position
10-14 points	Front stage lacking focus/position
5-9 points	Central voice lacking focus/position
0-4 points	No separation / mono-like

**6.3 Tonal accuracy and spectral balance**

A multimedia system should reproduce a recording as realistic and authentic as possible. If it is a live recording, it should sound just like that, if it is a studio recording, it should sound as close to the intentions of the producer as possible. Therefore, EMMA teaches the Multimedia judges to fully understand exactly how the EMMA Multimedia DVD was recorded and what it should sound like. It is a

valuable tool that allows the scoring of the tonal accuracy of the four sections that separate the audible frequency range into

- Sub-bass
- Midbass
- Midrange
- High frequencies

and the overall spectral balance of the entire audible frequency range.

Under tonal accuracy, the judges will specifically concentrate on each range, ignoring the spectral balance of the whole spectrum.

Under overall spectral balance, they will evaluate how well the four above sections add together to create a full picture approximating as much as possible the original on the EMMA Multimedia DVD.

<b>5.4.2</b>	<b>0 to 15</b>	<b>Sub-bass</b>
<b>5.4.2</b>	<b>0 to 15</b>	<b>Midbass</b>
<b>5.4.2</b>	<b>0 to 15</b>	<b>Midrange</b>
<b>5.4.2</b>	<b>0 to 15</b>	<b>High frequency</b>

Listen to the systems tonal accuracy from all positions (including Surround) and the ability to reproduce the sound in a realistic way. Please remember the material reproduced from a music- or movie-DVD could be excessive depending on the sound mix. Tonal accuracy for a multimedia system should not necessarily be compared to a SQ system.

For more detailed information about tonal accuracy (for music), please refer to the SQ chapter.

#### **Advice for bass sweep on DVD**

To check the linearity of the bass the Bass Sweep will be used. The competitor will be asked before the start of sound judging, if he/she wants to switch the unit from Dolby Digital to PCM Mode. If the competitor confirms, the judge will ask the competitor to switch the unit before usage of bass sweep.

#### **How to score:**

15 points	Excellent
13-14 points	Very good sound, close to excellent
10-12 points	Good sound, almost no mistakes
7-9 points	Average sound
4-6 points	Poor sound and/or big mistakes
1-3 points	Unacceptable, harsh sound
0 points	No sound

#### **6.3.1 Spectral balance**

#### **6.3.2 Overall spectral balance – normal volume (0 to 25)**

#### **6.3.3 Overall spectral balance – high volume (0 to 25)**

Listen for the overall spectral balance and tonal accuracy on normal respectively high listening volume. Spectral balance at low volume will not be judged.

For more detailed information about overall spectral balance, please refer to the SQ chapter.

#### **How to score:**

24-25 points	Excellent
21-23 points	Very good balance, almost excellent/realistic
16-20 points	Good balance, only small deviations / coloration's
11-15 points	Average balance, some deviations / coloration's, e.g. bass quite loud
6-10 points	Poor balance, parts of the spectral balance are clearly covered by others
1-5 points	Unacceptable balance, e.g. hard to detect that there is a reproduction of the entire spectral balance
0 points	No sound

**6.3.4 Voice/timbre matching (0 to 25)**

The voice/timbre matching should not vary depending on the location in the sound mix. All the systems speakers should match. E.g. a dark male voice at the left moving to the centre position should not then sound like a boy.

**Note:**

- It's most important that the front stage matching is good; a slight difference in the Surround sound is acceptable and will not result in a high point deduction.

**How to score:**

20-25 points	Excellent matching throughout the whole system
15-19 points	Minor difference in the Surround sound
10-14 points	Poor Surround matching
5-9 points	Slight difference front stage
1-4 points	Poor front stage matching
0 points	No sound

**Note:**

- The matching should only be judged on the speaker-locations you hear. If e.g. Surround sound is missing, points will be deducted under other sections.

**6.4 Picture quality & Multimedia experience**

The screen used for judging should be pointed out by the competitor before the judging starts (if multiple screens are installed). During judging only one screen is allowed to be turned on!

**6.4.1 Details and resolution (0 to 15)**

Look for the screens ability to reproduce details and that the resolution makes the picture look realistic. E.g., look especially for small details (a person's hair, snow/rain drops, microbes, details on a wall, etc.) and that you don't see the pixels.

**Note:**

- A big screen is not always better. The bigger screen demands a higher resolution. No deduction will be made for the wrong aspect ratio (stretched/shrunk picture, e.g. 4:3 on a 16:9 screen)

**How to score:**

13-15 points	Excellent picture / Looks very realistic
9-12 points	Close to excellent (no big faults)
6-8 points	Average / one obvious fault
1-5 points	below average / several faults
0 points	No picture

**6.4.2 Contrast and brightness (0 to 15)**

Look for the screens ability to reproduce details and information in dark and bright areas. E.g. clouds in the sky, movements in shadows, a car on a dark street etc.

**How to score**

13-15 points	Excellent picture / Looks very realistic
9-12 points	Close to excellent (no big faults)
6-8 points	Average / one obvious fault
1-5 points	below average / several faults
0 points	No picture

**6.4.3 Colour (0 to 15)**

Look for the screens ability to reproduce colours. The colours should not be dull or lustreless or excessive. Look especially for "bleeding" colours, often seen where the contrast is high.

**How to score:**

13-15 points	Excellent picture / Looks very realistic
9-12 points	Close to excellent (no big faults)
6-8 points	Average / one obvious fault
1-5 points	below average / several faults
0 points	No picture

**6.4.4 Multimedia experience (0 to 25)**

The overall multimedia experience is judged here; both sound and picture will be considered. This point could be slightly compared to listening pleasure in SQ.

Focus only on the picture and sound presented by the multimedia system.

Don't take installation issues and gadgets, which will enhance the multimedia feeling (popcorn machine, moving curtains in front of the screen, etc.) into consideration with this point because the installation judges will judge these.

A good multimedia system should be able to reproduce the multimedia experience in such a realistic manner and it should make you feel part of the action, just like a good movie theatre does. Keep in to consideration that a lot of movies offer a "larger than life" experience. (Loud noises, big explosions and bullets flying around your head.)

**Start with average points and then award points for everything that enhances the multimedia experience. For example:**

- Real listening and viewing pleasure
- Good dynamics in the sound
- Real life-like picture quality
- Convincing LFE sound effects (think of the roar of a dinosaur, the rumbling of an active volcano, a big helicopter flying overhead etc.)

**Deduct points for anything that makes the experience less enjoyable. For example:**

- Bad tonal accuracy and/or spectral balance
- Unrealistic/bad picture quality
- Unrealistic, artificial sounding sound.
- Rattling noises from the car
- Screens which are too small to see enough detail of the movie
- A lack of Surround information

**How to score**

21-25 points	Excellent
15-20 points	Close to excellent
10-14 points	Average
5-9 points	below average
1-4 points	absolutely no multimedia experience
0 points	No sound

**6.5 System handling****6.5.1 System handling (0 to 6)**

A multimedia system could be very complex with lots of units, but the system should be easy to use and control. Full points will be awarded, if the complete system can be controlled by one control unit. Two (2) points are deducted for each additional control unit/separate button if required. A control unit could be the source unit itself, but also remote control, power button, keyboard, game pad etc. It should be easy for the judge to operate the system during the judging process and leave no doubt or confusion on how to navigate menus, change volume etc. The handling should be made in a relaxed way from the judging position.

**Only the controls needed for judging should be considered:**

- Volume + / -
- DVD--Menue navigation
- Power on/off (including all units used during judging; source unit, Amps, screen etc.)
- Etc.

**Note:**

- If all controls are available on the source unit itself but are located at different places, this will be judged as one (1) control unit. For example a source unit with flip-out touchscreen with volume and menu navigation but the power button is a separate button under the screen.
- The remote control unit doesn't necessarily have to be mounted fixed.

**How to score**

6 points	Whole system controlled from one (1) control unit.
4 points	two control units (e.g. one for screen, one for source unit)
2 points	three control units (e.g. one for screen, one for source unit, one for DVD-player)
1 points	four or more control units (lowest score if it's possible to operate the system)
0 points	Impossible to operate the system

*Example:*

One remote control for source unit but screen needs to be turned off by a separate button → 4 points

**6.6 Adjustment to score**

Please refer to the [sound quality chapter 4.12](#) for detailed information how the noise test should be made.

**6.6.1 Engine-off testing - switching noise (-6 - 0points)**

Noise caused by turning the system on/off, or changing the volume, or changing the track, or using fast forward / reverse. Any track except the technical tracks can be used.

**Potential noises can be:**

Turn-on / turn-off noise, switching pops -- a popping, thumping or clicking noise that is heard through the system's speakers when the system is powered up by the source unit's on/off switch or switching pops - a clicking or popping noise that comes through the speakers when adjustments are made to the audio system's volume or track selection controls. Zipper, digital search, or stepper noises, which are inherent in some digital volume control designs are beyond the scope of being corrected by proper installation techniques, but are not considered acceptable and will result in point deduction.

**How to score (deduction):**

0 points	No audible noise
-1 - -2 points	barely audible noise
-3 - -4 points	plainly audible noise
-5 - -6 points	Potentially damaging noise

**6.6.2 Engine-off testing - System noise (-6 – 0 points)**

A noise that is somehow emulated from or by the audio system, the vehicle or the vehicle environment and that is not recorded on the competition DVD.  
Any track except the technical tracks can be used.

**Potential noises can be:**

Rush, hum, hiss, cracks, floor noise, rattling panels, loud fans, mechanical noise etc.

**Note:**

- Points are not to be deducted for mechanical noises such as relay clicks or automatic motorised covers being activated.

**How to score (deduction)**

0 points	No audible noise
-1 - -2 points	barely audible noise
-3 - -4 points	plainly audible noise
-5 - -6 points	Potentially damaging noise

**6.6.3 Engine-on testing (-6 - 0 points)**

Noise that is generated by the mechanical/electrical system of the vehicle that is reproduced through the speakers with the audio system turned on and/or off. Any track except the technical tracks can be used. The judges will adjust the volume level from medium to maximum. If the noise increases the judges may deduct maximum 6 points.

**Possible noises are:**

Alternator whine, ignition noise, PWM-noise created by control boxes, etc.

**How to score (deduction)**

0 points	No audible noise
-1 - -2 points	barely audible noise
-3 - -4 points	plainly audible noise
-5 - -6 points	Potentially damaging noise

**Note:**

- The competitor can request that the system be shut down before starting the car.
- If the engine won't start (due to drained battery), the competitor will be offered the chance to jump-start his vehicle within 3 minutes. 3 points will be deducted. If the car cannot be jump-started within those 3 minutes, the maximum deduction of 6 points will be made.
- The judges must carefully determine whether the noise is actually coming from the system itself. Many engines produce whining sounds from various different mechanical actions (turbochargers, alternators spinning etc.). To do this the judges can move their heads closer to the speaker in the vehicle (not to judge the audibility of the noise, but only to establish its origin). If the judges are not sure about the audibility of alternator whine, they should not deduct any points.
- Whenever a vehicles running engine is so loud that noise can't be checked, the maximum amount of points for 'noise with running engine' shall be deducted

**6.6.4 Picture noise (0 to -6)**

Look at the screen for noise, flickering, jamming etc. Especially while the engine is running. Look also for Moiré-patterns in the static test picture

**How to score (deduction)**

0 points	No noise
-1 - -2 points	barely visible noise, Moiré-patterns
-3 - -4 points	clearly visible noise
-5 - -6 points	Picture is totally jammed

**Note:**

- No deduction will be made for the wrong aspect ratio (stretched/shrunked picture, e.g. 4:3 on a 16:9 screen)

**7 EMMA rules - Sound Pressure League (ESPL) judging**

When judging Sound Pressure Level, it is important to have a clear notion what kind of Competition this is about. Not only the absolute SPL-number should be the criteria, but also "how" the vehicle is built.

**The following procedures and rules must be observed during the ESPL judging:**

1. The volume is only controlled by the owner or presenter of the competition vehicle



2. The judges will not adjust any volume control, track selection control and head unit power switch.
3. Only the official EMMA ESPL judging CD is to be used for the judging process and the announced track will be played.
4. The maximum voltage is 14,4 Volts with engine running, except in Master & Expert category.
5. A maximum of two (2) physical amplifier-channels for each physically installed woofer is allowed, except in Entry, Master & Expert category (two bridged/linked channels will be counted as one channel).
6. Cars with modified active equipment must compete in Master or Expert category.
7. Cars with modified charging systems (modified = charging the batteries with more than 14.4 volts, measured at the battery-post (which is connected to the audio system) must compete in Master or Expert category
8. In some EMMA ESPL categories it is requested that subwoofers including enclosures, ports, etc. must be installed in the trunk area (retractable rear seat must be locked in upright position) and / or not higher than the top of the original rear seat with a maximum height not higher than the top of the original rear seat (not headrests!), otherwise the car must compete in the next higher category that is suitable to the installation of the car, e.g. Master or Expert category.
9. A front system must be installed and play audible music during measurement, if the front system is not audible there will be a 10 point deduction. It should be installed according to the official EMMA Rulebook. If the front system is installed in another or even dangerous way the car has to compete in Master or Expert category.
10. Cars with more than two midrange/-woofer speakers per side installed (front and rear together) must compete in the next higher competition category. Each two additional midrange/-woofers (e.g. #5&6) installed in the system will be counted as one additional woofer. The mid woofer(s) must be smaller than 20cm (8") / 6x9". Not used OEM speakers will not be taken in consideration. The competitor has to prove that the speakers are not connected to the audio system.
11. The competitor is responsible for his/her equipment and EMMA takes over no responsibility or guarantees in case of any damage to the sound system or the vehicle.
12. It is the competitor's decision if he/she sits inside the car during the judging process. EMMA is not responsible for damages to the health of the competitor but strongly recommends being careful!!!
13. The vehicle must be shown to the public after the measurement is finished. The organisers will point out an area for presentation. In that case the cars must be presented to the public for a minimum time of 15 Minutes. If the presentation does not happen the judge or Event Director will deduct 10 Points.
14. Only officially registered cars are allowed to compete (except for Master and Expert class) and they must be able to be driven inside and outside the judging area by using their own engine.
15. No additional power supplies are allowed to be connected to the mains during the measurement process => no external power supply.
16. Except in ESPL Master & Expert, all competitor cars must have driver and passenger side seats installed in original condition or similar (sport seats, etc.).
17. Transporters, vans, pick-ups, or sports cars / Smarts etc. without rear seats have to start in the Advanced (Plus), Master or Expert category.
18. All components of the audio-system have to be installed into the vehicle – trailers etc. are not allowed.
19. The participating vehicles should be stock or are allowed to be moderately damped (as normal for SQ-cars, approx. 3mm per panel). If polyurethane-foam, concrete, etc. is used, the car has to compete in Master or Expert category.
20. Additional batteries are allowed to be installed and must be properly mounted and fused.
21. The source unit must be installed properly into the car – except in Master or Expert category.
22. If during measurement the head unit stops/blocks/jumps, the system or a component of the system fails/breaks down, etc. the competitor has a second chance to start over after 2 minutes for every measurement (open/closed). The same if he used accidentally another track. There is no third chance for any reason.
23. All official ESPL Measurements have to be done with the Measurement Systems licensed by EMMA
24. The EMMA ESPL-CD has to be reproduced with (car-) audio equipment.
25. Passive membranes do not count as a woofer (on request by the judge to be proven by the competitor).

## 7.1 ESPL-Judging

### Installation-Judging:

Installation judging can be done before or after the measurement process. The competitor guides the judge through the installation of his vehicle. The scoring will be explained immediately to the competitor.

### Measurements:

The Event Director or Head Judge decides on the track to be used for measurement from the official ESPL CD on the day of the Event (e.g. by lottery, etc.).

Only for the national final and the European Final, the track that will be used will be announced one week in advance. The measuring procedure is as follows:

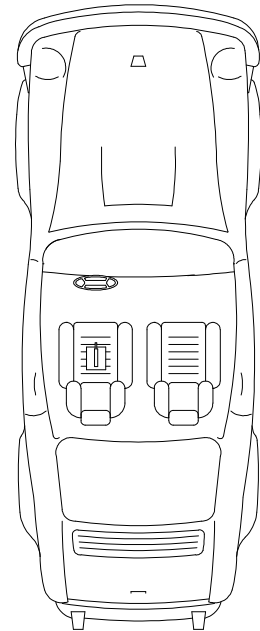
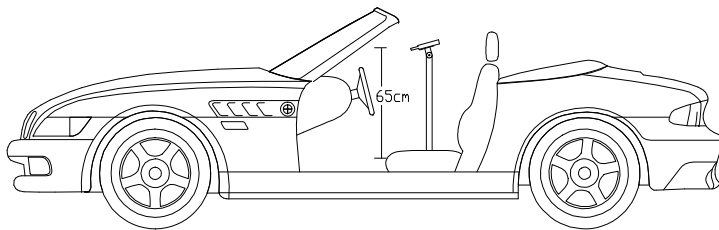
### Measurement closed:

The first measurement will be with the doors closed – a minimum 30 seconds of music will be played. Within the next 2 Minutes a second measurement will follow:

### Measurement open:

The second measurement will be done with both front doors completely open – a minimum 30 seconds of music will be played with the same track as in the first measurement.

If the competition is outside, it is allowed to have the engine running. If it is inside a hall no vehicle will be allowed to run the engine. The microphone/sensor will be placed by an authorised Judge and the



competitors are not allowed to touch it in anyway, during and between both measurements. The judges must ensure that the microphone height and orientation are absolutely consistent from vehicle to vehicle with the exception of the angle.

### The following guidelines apply for using a microphone

1. The driver's seat must be positioned to a reasonable driving position of the competitor (driver must be able to operate the pedals / steering wheel / gearbox and see the gauges on request of the judge). The backrest of the seat is not allowed to be tilted towards the steering wheel.
2. The Omni-directional microphone/Sensor must be positioned in the centre of the driver's seat, approx. 65 cm above the seat, oriented on a level horizontal plane towards the dash of the vehicle. This is referred to as the "standard position".

The cable of the microphone / sensor must be routed through the original door opening by the judge. No special devices are allowed. No other equipment than the official measuring equipment, cables etc. are allowed to be used.

## 7.2 Optional for ESPL

The Event Director can decide, before the competition starts, to have a qualification round and a final round. If the decision is made to have a qualification and a final, two tracks will be elected. The track for the final will not be announced before the final starts.

### The Qualification:

Installation, measurement open and closed as described above. The results will be added together. The best four to eight competitors of each category are qualified for the Final round.

### The Final:

The measurement modus is the same but with another track from the official ESPL CD. The installation points will be carried over from the qualification round. The number one of the first round will compete against the competitor who finished last in that same round, the second against the seventh, the third against the sixth, and the fourth against the fifth place qualifiers. In the semi-finals the first will compete against the fourth, and the second against the third. The final follows with the two winners of the semi-final against each other.

If something is not covered in these rules, the general guidelines of the official EMMA rulebook are to be used. In each Event the Head Judge and/or the Event Director is the highest court of appeal, and his/her decision is final.

## 8 EMMA rules - Racing

The EMMA Racing concept is based around a competition in which all aspects of car modification (styling, tuning and audio) are judged. It is run as a motor sport Event, in accordance with the rules and regulations approved by the national authorities in the organising country, and the international rules approved by the European Mobile Media Association (EMMA).

Each Event is run under the EMMA Banner, and the organiser of the competitions will be a licensed EMMA Partner. The judging will be performed by judges that have been approved by either the national or international EMMA organisations.

The slalom course will be held in a secure area designated by the Event Organisers. In order to restrict entry by any unauthorised persons the area must be **clearly** marked by a security ribbon or any other form of security – (Stacks of tires etc, etc). All incidents within this secured area are under the strict jurisdiction of the organiser. All incidents outside the secured area will be the responsibility of the people involved in the particular incident, and the Event organiser shall not be held responsible.

### 8.1 The Event schedule

The registration of the competitors will be done in accordance to the EMMA rules, and will commence at 9.00am.

**The different sections within the competition are as follows:**

1. Tuning, Craftsmanship and Security
2. Design
3. Sound Quality
4. SPL Measurement
5. Slalom/Drag racing

**8.1.1 The Registration**

1. Anyone that has a valid driving license, with no driving restrictions, can participate in the EMMA competition.
2. Any person found to be under the influence of alcohol, drugs or any other medication, which will affect their ability to drive, will not be allowed to enter the competition.
3. The car must be registered to the competitor or his/her team, and this must be confirmed by producing either the original or a copy of the vehicle registration document on the day of the competition. It is the responsibility of the competitor to prove that he/she is the main user of the vehicle.
4. The competitor's car must be kept in the competition area at all times during the Event.
5. Any inaccurate or false data regarding the competitor, car or audio system will lead to the immediate disqualification of the competitor. In addition, the competitor will be banned from competing in all future EMMA Events.
6. All competitors must have full knowledge and understanding of the modifications that have been made to their vehicle prior to the competition, as this will accelerate the judging process, also a photolog or similar might be helpful.
7. The competitor will need to complete the registration form agreeing to participate in the competition under the official rules of EMMA. The registration form contains the following information and a new form must be completed for each Event:
  - full name of the competitor
  - full post address
  - (mobile) telephone number
  - Email address
  - information about vehicle (manufacturer, model, registration number)
  - category in which the competitor will be competing
  - information regarding the Event location and format of the Event
8. The rules regarding etiquette and disputes are laid out in the official rules of EMMA 2009 (Section 2.5 und 2.6 respectively).
9. The registration fee must be paid to the organisation that carries out the competition, prior to entry. The competition fee is set by the EMMA national association.

Once the judging process has been completed, each competitor will receive a review of the scoring by the judges in the categories Tuning/Craftsmanship and Sound Quality of maximum 3 minutes.

**8.1.2 EMMA Racing will be judged in 2 categories:**

1. **Advanced** (elegant cars, like "everyday-cars", family cars, daily drivers)
2. **Master** (Can be extreme (design) cars and / or tuned or not everyday usable)
  - In Emma Racing Master, 20 Bonus points can be earned if the car offers more potentials than requested by the items 8.2 to 8.5 below (and the competitor brings the attention of the judges towards them)

It is up to the competitor to decide in which of the both classes he/She wishes to

EMMA allows to the national Partner Associations to add two categories with a reduced installation part similar as experienced in Sound Quality. This format can only be offered on a national level, no international Championships will be held.

In case there are more cars entered than normal the national organisation (or on an international Event like the Euro-Final EMMA Europe) can decide to separate this class by splitting the categories into the following classes:

- Front wheel drive
- Rear wheel drive
- 4x4

## 8.2 Tuning, Craftsmanship and Security (max. 55 points)

This section will be judged by two certified EMMA judges or two designated judges from another association accepted by EMMA. The judging is performed by two judges. Remember that the competitor has to prove the changes if necessary.

### 8.2.1 Performance (0 - 10 points)

Under performance the judges will evaluate the following items

#### 0 to 4 points Brakes (changes to the discs and/or callipers)

**EVERY** single following change will award 1 point.

- -pads changed
- -metal hoses
- -changed discs

**Examples:**

0-original

1-changed disc OR pads OR brake wires

2-changed disc AND pads OR changed pads AND wires

3-complete system (like porsche, movit) with discs, pads AND callipers changed

4-like before PLUS changed brake wires

#### 0 to 3 points Suspension (changes to the springs and/or shock absorbers)

**EVERY** single following change will award 1 point.

- changed springs
- changed shock absorbers
- changed strut bars
- etc.

**Examples:**

0-original

1-springs changed OR strut bar changed

2-system (springs and dampers)

3-like above plus strut bars OR changed stabilising struts OR holders...everything which is not just changing the damping!

#### 0 to 3 points Exhaust System / Air-Intake system

**EVERY** single following change will award 1 point.

- changed air filter
- changed back box
- changed catalysers (like 200cell metal)
- changed air routing to the filter

**Examples:**

0-original

1-air filter OR backbox changed

2-filter AND backbox, OR backbox AND catalysers

3-complete exhaust system or above plus changed intercoolers, hoses to the intercooler or filter

### 8.2.2 Overall Craftsmanship (0 - 30 points)

Craftsmanship describes the amount of effort involved, and the finish of the modifications undertaken. The aim of any additional equipment installed is to increase the performance of the vehicle, without affecting safety. The Judges evaluate the quality of all modifications both on the inside, and the exterior of the whole vehicle. Aspects judged under this category are:

- All additional items on the exterior of the vehicle Spoilers, Tuning foils, painting etc.
- All changes in the engine compartment Covers, Tubes, and Wires etc.
- All modifications performed to the Interior and the trunk compartments  
Installation of entertainment system, source unit, amplifiers, speakers, seats, special seatbelts, stitching, leather, covers etc.

**The scores are awarded as per the following table:**

10 points = excellent

8 points	= very good
6 points	= good
4 points	= average
2 points	= poor
0 points	= nothing to evaluate

### 8.2.3 Extra Power/Tuned engine/drivetrain (0 – 5 points)

In countries where changes to the car have to be approved, this will only be judged when officially mentioned in the registration papers of the car. ALL changes to the drivetrain is judged here, like changes to the gearbox or differentials.

Chip	2
Intercooler changes	3
NOS/WAES	4
Heavy Mechanical Tuning (bigger turbo/engine swap/gear box or transmission tuning)	5

### 8.2.4 The Security of the Connected/Changed Components and Parts (0 – 5 points)

The judges will check that all the cables and fusing of the entertainment system/audio system are in accordance with the official regulations of the EMMA Rulebook. Any dangerous installation, which might cause a security risk, will result in the deduction of points in this category. All incorrect items such as fuse value will result in the deduction of one point per item. This includes any additional item installed. The competitor should check his wiring like mentioned in Table B. The judges will judge it like in EMMA entry-category.

### 8.2.5 Wheels and Tires (0 - 5 points)

Under this section the judges will check the changes to the wheels and tires. Points are to be awarded for change of wheel size, change of wheel (alloy wheels), changes of tires, changes on the wheel housing (fender, wheel arcs) to fit bigger wheels etc.

**EVERY** single following change will award 1 point.

- alloy instead of steel wheels
- changed alloy size (smaller also, but only if reasonable!)
- painting/putting chrome on the wheels
- change of wheel house (fender, wheel arcs) to fit bigger wheels
- special designed wheels (like custom made or VERY special, like leather-covered)

#### Examples:

- 0-original steel wheels
- 1-original alloys OR painted original steel wheels
- 2-changed alloys OR styled original alloys
- 3-changed wheel size alloys AND painted
- 4-changed wheel size with a special design in chrome
- 5-like above plus changed wheel house (fender, wheel arcs)

## 8.3 Design (max. 40 points)

This section will be judged by two certified EMMA judges or two designated judges from another association accepted by EMMA. The judging is done by two judges.

The entire vehicle is evaluated, judging the work that has been completed to create something unique. The general aesthetics of the design, the combination of the system with the surrounding components, the look of the exterior, Interior and trunk compartments of the vehicle, are also considered.

The exterior of the vehicle must be well cleaned. The engine bay, Interior, and trunk compartments must be also thoroughly cleaned. 1 point is deducted for each area that has not been cleaned sufficiently (maximum 3 points).

### 8.3.1 The Overall Impression of the Vehicle (0 - 20 points)

20 points	= excellent
16 points	= very good
12 points	= good

8 points = average  
4 points = poor  
0 points = nothing to judge

**Note:**

The judges will evaluate mainly the exterior design and effort taken to create a unique vehicle and how well it blends with the engine compartment, interior and trunk-compartment. The entire vehicle should follow a consistent theme, a red line in order to score highest points.

**8.3.2 The passenger's compartment (0 - 10 points)**

The judges will look at the general impression of the passenger's compartment for itself.

10 points = excellent  
8 points = very good  
6 points = good  
4 points = average  
2 points = poor  
0 points = nothing to judge

**Note:**

The passenger's compartment has to show a complete picture where all the additional components are perfectly integrated, regardless of whether it is a "show" or a "discrete" style.

**8.3.3 The trunk compartment (0 - 10 points)**

The judges will look at the general impression of the vehicle's trunk compartment for itself.

10 points = excellent  
8 points = very good  
6 points = good  
4 points = average  
2 points = poor  
0 points = nothing to judge

**Note:**

The trunk compartment has to show a complete picture where all the additional components are perfectly integrated, regardless of whether it is a "show" or a "discrete" style.

**8.3.4 Bonuspoints in Master Category (20 Points max.):**

Bonus points can only be awarded if the competitor sets the attention of the judges towards them.

Things that are special might be:

leatherworks outside the car

Engine swap AND mechanical tuning (maybe even from another make/model)

Ghost-airbrushes

Special design elements

Special presentation elements

Etc.

This list is NOT comparable to Master/Expert!!!

**8.4 Sound Quality (max. 40 points)**

This section will be judged by a certified EMMA judge. The judging will take place from the driver's seat of the vehicle. The rules and conditions applied will approximate EMMA Sound Quality Entry

**8.4.1 Distance to the sound stage according to 5.2.1 – 10points****8.4.2 Overall spectral balance at normal volume according to 5.5.1 – 20 points****8.4.3 Listening pleasure according to 5.6.1 – 10 points**

The Judge will listen to the designated test track from the official EMMA Sound Quality Disc to evaluate the quality of the music reproduced by the entertainment system. The volume will be at a moderate level and after completion of the judging process; the competitor will receive a short explanation of the judge's conclusions.

Furthermore the judges will start the engine to find out if there is any noise produced by the audio-system with the engine running. Depending of the level of the noise, 0 points (no noise) to –2 points (clearly audible noise) will be deducted from overall spectral balance.

**8.5 SPL Measurement (max. 40 points)**

This section is only to be judged by a certified EMMA judge. The judging is done by one judge. The Sound Pressure Level is evaluated on the basis of the official code from the EMMA Rules (Section 7 - "EMMA rules - Sound Pressure League (ESPL) judging")

The microphone placement is in accordance to the official EMMA Rules ESPL but only one measurement will be performed, with open doors. Under given circumstances it might be necessary to measure with only one open door (very much wind) or both doors closed.

**Notes:**

- When giving marks for ESPL they are given according to the following principle: 100 dB - 0 marks. For each subsequent dB – 1 point. For example, 135,7 DB= 36 points. (To, 4 down and from, 5 rounded up)
- The competitor will be given the opportunity to change the setting of the audio system between the SQ and SPL judging. However the midrange and high frequencies of the track must be clearly audible during SPL judging. The highest possible score is 40 points, which is equal to 140 dB.

**8.6 Slalom/Drag Racing (max. 40 points)**

Optionally, the organising body may offer a slalom race in addition to the previous judging process. The official rules of safety and security will be followed according to the national law of the country. Other race elements may also be included such as drag racing, skill tests etc. If this section is not offered by the organising body, then the judging process will be complete after the ESPL judging. An example of a slalom course is illustrated on the diagram below. Only those competitors who have start numbers, and whose names are displayed on posts 1-4 are permitted to begin the slalom course.

Each competitor is allowed one attempt to drive the course in order to familiarise themselves with it, before the judging begins. The judging will then begin, and the competitor will re-start the course, and attempt to drive it in the shortest possible time. It is also up to the national organisation to do i.e. 3 runs with the best time counted. The competitor will start the course with the engine running, and will finish the course with one axle on either side of the "Stop" line. It is also recommended to use a computer checked time measurement system with photo finish.

The final time in the slalom is the addition of the time taken to complete the course, combined with the total time penalties. The penalties are listed in the table below.

<b>Violations</b>	<b>Penalties</b>	<b>Notes</b>
Deviation from the start		Disqualification
False start or missing the track	+20 sec	
The touching of any restriction device	+3 sec	incorrect stop at the finish line (not in-between the axles) +5sec

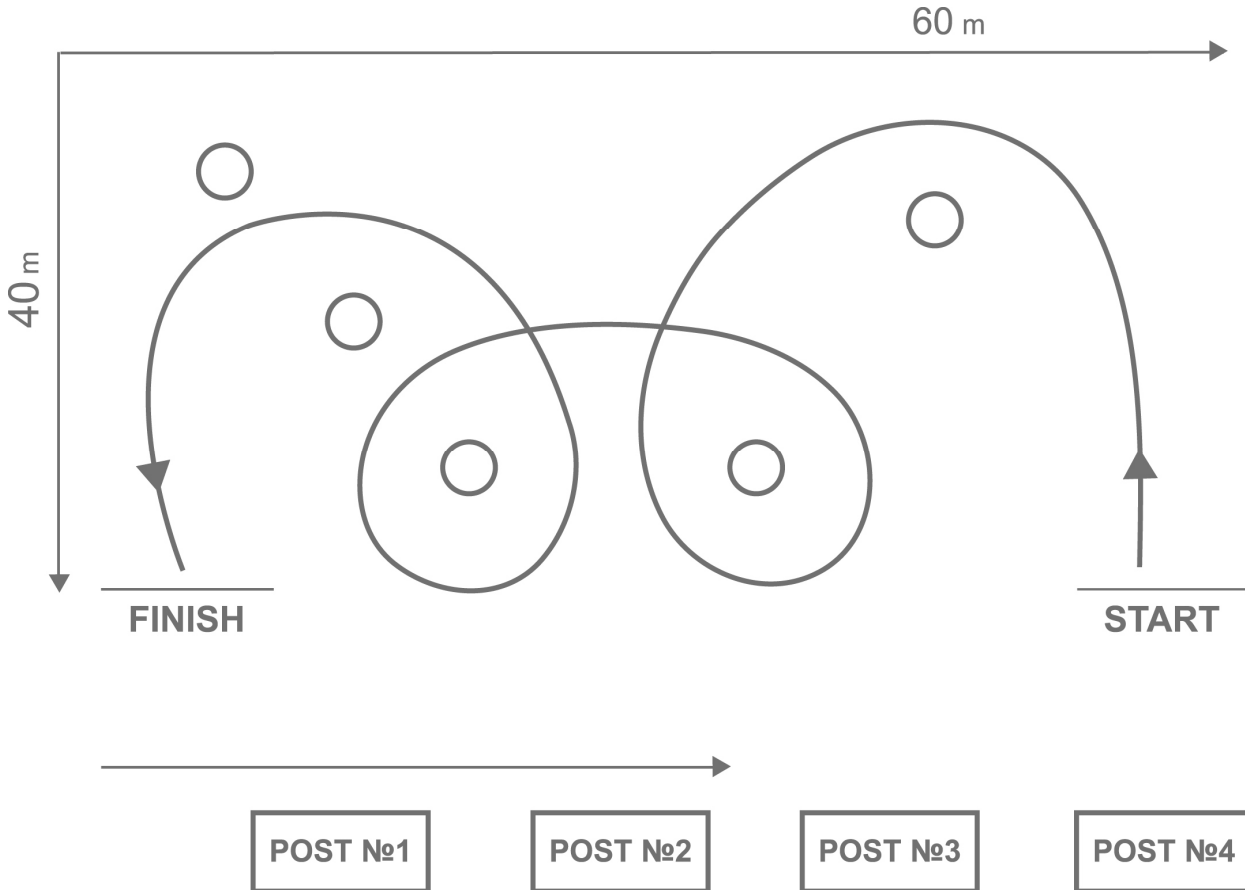
Points are awarded as following:

**Best time: 40 points**  
**2nd best: 37 points**  
**3rd best: 35 points**



4th best: 33 points  
 5th best: 32 points  
 etc., counted down by ONE points down to zero

### 8.6.1 The slalom course



## 8.7 The results and the prize ceremony

For the final result to be determined, the sum of points accumulated by each competitor in all categories is combined. The competitor with the largest number of points is the winner. If there is a tie, with more than one competitor holding the largest number of points, then the winner will be the competitor with the highest score in the Design category.

It is up to the national association to add extra trophies for each section judged. In addition, it is possible to split the competition into separate categories, but only the official announced categories are valid at the international finals.

**Any modification to the rules is up to the official EMMA Head Judge at the scene and the international Head Judge council. Addendum's will be published on the official EMMA homepage [www.emma-racing.com](http://www.emma-racing.com) and [www.emmanet.eu](http://www.emmanet.eu)**

## 9 Explanation Sound Quality CD

### Please note:

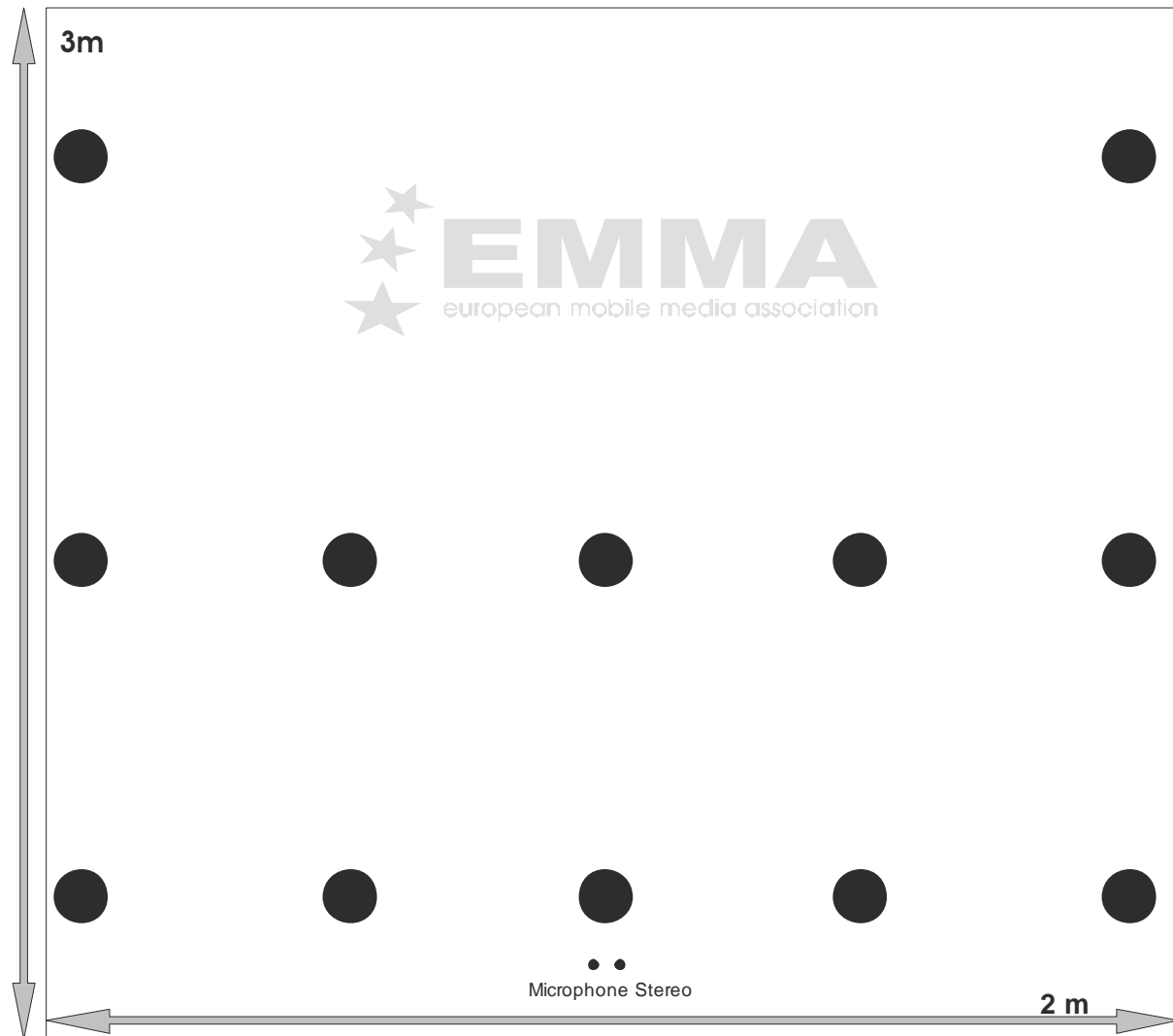
The Bass Drum, Snare, Bass and Lead Vocals of all tracks are Centre Position. The Snare tends to be a bit right, this is the nature of a Drum Kit. Because of its linear/natural content Moonglow and Staendchen will only sound fine on selected high end hifi systems. The gospels and the jazz tune will sound good also on average sound system!

### Track 1: Intro

**Track 2: Calibration, Channel Verification**

**Track 3: Technical Track For Staging And Imaging**

The speaker appears on several positions



**Track 4: Moonglow:**

Piano I/R. Entertainment Jazz mix with nice reverb on Vocals. All instruments quite linear. Overdubecording.

**Track 5: Ständchen in D**

Piano L/R. Flute 48 % right, Guitar 48 % left, triangle 48% right . Classic track without eq. Live recording, only room reverb.

**Track 6: A change is gonna come**

Organ L/R, Piano L/R. Choir 80 % L/R Live recording with a touch additional reverb on lead vocals. Drum kit and bass compression big time, otherwise it would have been lost in the mix.

**Track 7: Blues Power**

Guitars 70 % L/R, Solo 17 % right, piano I/R. Overdub all the way. Delay on Guitars and vocal, no reverb, heavy compression on the sum. old school mix

**Track 8: What the funk**

Clean rhythm 88% left, crunch solo 88% right, clean guitars I/R, heavy guitars L/R, solo centre, sax centre, phaser 76% right, pad intro sound L/R. overdub recording, heavy compression on everything. Chorus on crunch and clean guitars. reverb on solos.

**Track 9: What da funk**

3dB louder recording to check linearity of the sound system. Fades out to zero

**Track 10: Zero bit**

**Bonus Tracks:**

**Frequencies**

First Steps: 20Hz, 30Hz, 40Hz,45Hz,50Hz,55Hz,60Hz,65Hz,70Hz,75Hz,80Hz

Second Steps: 85Hz,90Hz,95Hz,100Hz,125Hz,160Hz,200Hz,250Hz

Third Steps: 315Hz,400Hz,500Hz,630Hz,800Hz,1KHz,1K25, 1K6, 2K,2K5, 3K15, 4 KHz

Fourth Steps: 5 KHz, 6K3, 8 KHz, 10khz, 12 kHz, 16 kHz, 20 kHz

**Please see the Explanation DVD available at the EMMA online shop for a detailed description of the tracks and the artists.**

This Rulebook was written with the support of the international Head Judge Council

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## 10 Judging Matrix

