

Herzogenrath (Germany), October 18, 2011.

New Release of Important 3GPP Standard Implemented by HEAD acoustics and Validated by GCF

The 3GPP standards TS 26.131 and TS 26.132 have undergone a major revision that led to the recent publication of Release 10 of both standards. HEAD acoustics is the first test solution provider to have implemented Release 10.

The Global Certification Forum (GCF) has just validated the HEAD acoustics test platform consisting of the communication quality analysis system ACQUA in conjunction with its TS 26.131/32 implementation and HEAD acoustics hardware. Thus, the first GCF-approved system in the world for conducting measurements according to Release 10 is now available.

Experts agree that Release 10 of the 3GPP standards constitutes an important step forward in the global standardization of wideband-capable telecommunication devices including LTE terminals. A substantial number of measurements and methods have been modified in order to establish a close-to-reality and forward-looking standard:

- The reference system for the frequency response is now an average diffuse field. As an advantage, the same reference system applies for both handsets and headsets making comparison easier.
- The distortion measurements take better into account the increasingly complex signal processing of modern terminals.
- The idle channel noise analysis now windows out the noise alone. Any remaining reverberation of the terminal or interference from other sources does not impair the result.
- The updated ambient noise rejection analysis includes a conditioning sequence for the terminal, accounts for the Lombard effect and performs the speech sensitivity measurements in the presence of background noise.

Already in 2009, HEAD acoustics proved their market leadership and innovation skills according to their motto "always aHEAD" by providing the first wideband audio test platform validated by GCF for all test cases required by TS 26.131 and TS 26.132.

***For immediate release.
In case of publication please notify and/or provide printed copy!***

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About HEAD acoustics GmbH:

HEAD acoustics was founded in 1986 and has been involved in noise and vibration, electroacoustics and voice quality testing since its inception. HEAD acoustics is based in Herzogenrath, Germany, with affiliates in USA, Japan and France as well as a world-wide network of representatives. The Telecom Division of HEAD acoustics manufactures telecom test equipment and provides consulting services in the field of speech and audio quality. Moreover, HEAD acoustics closely co-operates with DECT Forum, ETSI, ITU-T, TIA and other standardization bodies with regard to the development of quality standards for voice transmission and speech communication. In many partnership projects, HEAD acoustics has proven its competence and capabilities in conducting tests and optimizing communication products with respect to speech and audio quality under end-to-end as well as mouth-to-ear scenarios.

HEAD acoustics GmbH celebrates its 25th anniversary

Pioneering innovative acoustical measurement technology since 1986

- The expert of acoustical measurement technology from Herzogenrath, Germany, has grown to become one of the world's leading suppliers of products and solutions for sound and vibration analyses
- With a current workforce of roughly 150, and 15 international sales partners and subsidiaries, HEAD acoustics is present in all key markets
- In celebration of the anniversary, HEAD acoustics is organizing the symposium "How the World is Turning – The Future of Mobility and Communication"

HEAD acoustics, the international expert of acoustical measurement technology celebrates its 25th anniversary this year: Since its founding in 1986, HEAD acoustics has developed into one of the world's leading suppliers of products and solutions for sound and vibration. Today, the company sets international standards not only with the technical reproduction of human hearing, but also by pursuing a holistic approach which includes all aspects of human perception of sound and vibration events. "Our customers and business partners profit from our years-long experience, our know-how and our innovative prowess, which have characterized the company from the beginning", says founder and owner of HEAD acoustics, Prof. Dr.-Ing. Klaus Genuit. "We are at their side as a reliable and competent partner. At the same time we concentrate our attention on future challenges in acoustics such as electric mobility and wideband speech transmission."

On August 11, 1986, Klaus Genuit founded the company at the Aachen Technology Center (TZA) with four employees with the innovative concept of head-related recording and playback systems. The AACHENHEAD® technology is a technical reproduction of human hearing that enables aurally-accurate recording of sound events, supporting all characteristics of human hearing, in particular spatial hearing.

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Today, the company employs a workforce of roughly 150. HEAD acoustics develops high-performance measurement and analysis systems for multi-channel sound and vibration analyses, binaural sound investigations and communication quality analyses. Furthermore, it offers comprehensive services for sound and voice quality optimization. The company benefits from state-of-the-art measurement technology combined with a longtime experience in industrial practice as well as decades of significant involvement with standardization bodies and industry organizations. With subsidiaries in USA, France and Japan and twelve sales partners, HEAD acoustics is internationally present in all key markets.

From the beginning, innovation has been a strong focus of the company's activities. Numerous patents and scientific publications validate the successful R&D work. AACHENHEAD® technology has made hearing sensation accessible to objective measurement procedures and allowed aurally-accurate sound analysis since the mid 1980s. As the first binaural analysis system for aurally-accurate sound analysis, BAS featured acoustical playback of the signal during analysis. In addition to their own research and development activities, HEAD acoustics is involved in numerous national and international research projects.

Symposium “How the World is Turning – The Future of Mobility and Communication” on the occasion of the 25th anniversary

On September 23, 2011, HEAD acoustics celebrates their anniversary with a symposium addressing the revolution of our society's mobility and communication as well as its impact on our future. In preparation for the symposium, six international experts met with HEAD acoustics in a workshop on “A Vision of our Society's Mobility and Communication“. The results of the workshop will be presented and discussed at the symposium. Featured themes will be technology and energy, communication and information, corporate governance and social responsibility, new networks and distributed artificial intelligence, environment and traffic circulation, soundscape and acoustic ecology, economy and finance, mobility and acoustic worlds.

In accordance with the company's motto "always a step aHEAD“, HEAD acoustics continually moves toward the future with innovative and customized solutions that meet customers' increasing demands.

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Find out more at www.head-acoustics.com/25years

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SQuadriga II

Mobile multi-channel front-end and stand-alone recorder

SQuadriga II is the new mobile recording and playback system from HEAD acoustics GmbH that covers a wide range of applications. The measurement system delivers high functionality and mobility due to key features, such as low weight, integrated battery with an operating time of several hours and a variety of connection possibilities.

“SQuadriga II is characterized by its versatility”, declares Prof. Dr. Klaus Genuit, founder and owner of HEAD acoustics GmbH. ICP® microphones and acceleration sensors, a binaural BHS I headset, pulse and CAN sensors, an artificial head and other sensors can be connected to the system. This allows for both classical dynamic measurements and static or quasi-static measurements such as brake pressure. Beyond the connection for the BHS I which is used for aurally accurate recordings and playback, SQuadriga II provides six ICP® compatible BNC inputs and outputs. The inputs operate with sampling rates between 8 and 96 kHz and are equipped with selectable high-pass filters, which allow recording without unwanted signal components. In addition, the input sensitivity is adjustable separately for each channel.

The measurement data can be saved on a removable SD card or directly to PC or notebook. “SQuadriga II can be conveniently operated via its function buttons and its touch screen display, as well as via the HEAD Recorder software – that is definitely a special feature”, says Genuit. “Both the channel configuration and the sensor setup can be easily adjusted and saved via touch screen.”

The system’s power is supplied by AC power adapter, USB, car adapter, or built-in battery which can have its mobile operating time extended by adding replaceable batteries.

The built-in rechargeable battery allows the extremely compact SQuadriga II unit to run on its own for several hours. The system operates silently and is ready for use immediately after turning it on.

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For even larger measurement tasks with higher channel numbers two SQuadriga IIs can be connected. Furthermore, SQuadriga II can be combined with the multi-channel front-end HEAD/ab. It can be used as an additional signal module of a HEAD/ab system or together with a HEAD/ab signal module as a controller.



Figure 1: SQuadriga II



Figure 2: SQuadriga II – Front View



Figure 3: SQuadriga II – Rear View

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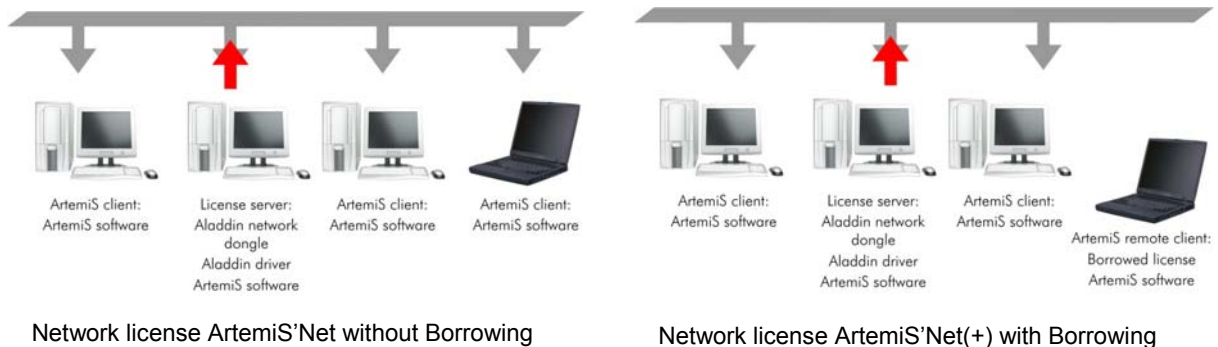
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New license management for ArtemiS multi-channel analysis software

With ArtemiS'Net and ArtemiS'Net(+), HEAD acoustics GmbH now offers two new license management variants for the ArtemiS multi-channel analysis software. "The new options allow companies using the software in their network to flexibly employ ArtemiS where it is currently needed", declares Prof. Dr. Klaus Genuit, General Manager of HEAD acoustics GmbH.

Already with the previous version of ArtemiS, the software protection method was switched to the modern and powerful HASP technology from SafeNet. With the latest version ArtemiS 12, this technology change now allows very powerful network solutions and thus an optimal utilization and organization of ArtemiS resources. "For example, companies working in a network can use the software not just locally at certain workplaces, but on any computer connected to the network", says Genuit.



With the ArtemiS'Net network license, ArtemiS licenses are combined in a license pool. From each computer connected to the network, users can compile the licenses they currently need from the available pool of base version licenses and licenses for optional tools. Optional tools not needed for the current task remain available to other ArtemiS users in the network. As soon as ArtemiS is closed, the licenses used are returned to the license pool and are available again. This allows licenses to be utilized in a much more flexible way than is possible with local licenses. Even remote access to network licenses via a VPN connection is possible, allowing network licenses to be used at varying locations.

Beyond the possibilities of ArtemiS'Net, ArtemiS'Net(+) offers the additional possibility to temporarily use licenses on computers not connected to the network. For this purpose, licenses are checked out of the network for a limited time, during which they can be used on a mobile computer, e.g. for in-vehicle measurements.

The administration of the ArtemiS network licenses is very convenient. Even without detailed knowledge of the network architecture, a software administrator can easily configure the access rights of individual users to the available network licenses.

About HEAD acoustics

HEAD acoustics has developed into one of the world's leading specialists in the fields of sound and vibration analyses and optimization, vibration measurement technology and quality optimization of communication equipment. For more than 20 years HEAD acoustics has developed products and solutions for artificial head recording and playback technology, exceptional acquisition and analysis software and techniques, and communication measurement technology

Software for Offline Examination of Beamforming Recordings with HEAD VISOR

With HEAD VISOR core, HEAD acoustics now offers a software product for offline processing of HEAD VISOR recordings. HEAD VISOR is an innovation from HEAD acoustics in the area of microphone array technology, which allows real-time localization of sound sources.

The powerful and easy-to-use offline analysis and playback system HEAD VISOR core is recommended especially for customers making use of HEAD VISOR as a third-party service, or for those who already own a HEAD VISOR microphone array system and need an additional workplace for processing the recordings.

With HEAD VISOR core, recordings made with HEAD VISOR can be processed in the absence of the HEAD VISOR hardware. The offline software provides users with the full functionality of the HEAD VISOR software, except for the recording function. All interesting frequency ranges are displayed as source maps in a clearly arranged interface. Even when using the adjustable slow-motion function, the synchronicity of source maps, video image, analyses and auralized time domain signals is retained. HEAD VISOR recordings also store the distances to the sound sources determined via three industrial-grade cameras. If an area is marked manually, HEAD VISOR core determines the distance using offline auto-focus. The sound signals emitted by a measurement object at any position in the video image can be calculated, auralized and exported. The software can also be used to perform order analyses, to determine coherence and to filter or amplify coherent signal components. Source maps can be exported as movies, still images or time domain signals.

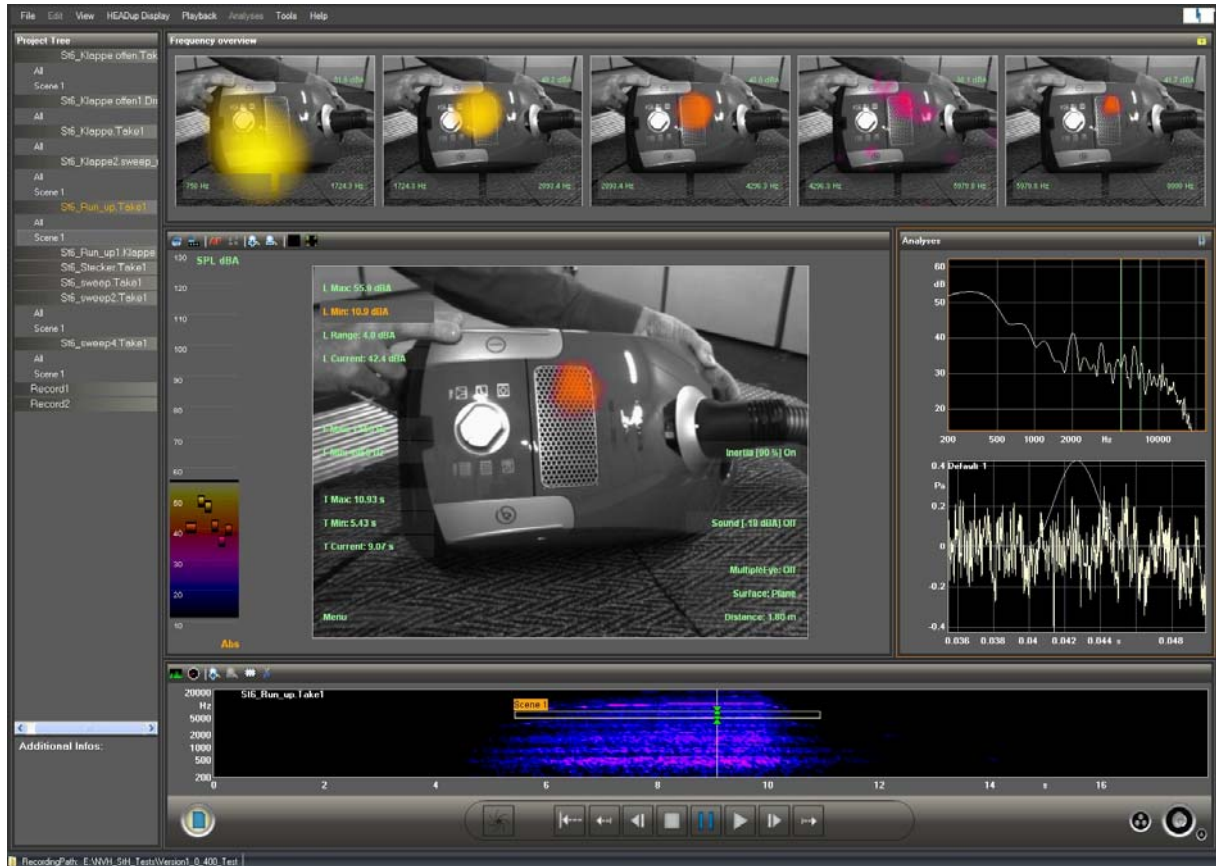


Figure 1: HEAD VISOR core: Offline analysis and playback system

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**Now Available:
The New HEAD Seat Mount Adapter HSM V for Artificial Head Measurement Systems**

The seat mount adapter HSM V was developed specifically for making safe and authentic artificial head recordings in a vehicle. Thanks to the quick-lock coupling, the artificial head can be attached to the seat mount adapter in seconds, resulting in a position resembling a real person sitting in the vehicle. Since different body postures lead to different acoustic impressions in the interior of a vehicle, the HSM V is height-adjustable, and the angle can be adjusted by 30 degrees in the driving direction, allowing the artificial head to take various postures with exact positioning. To avoid interfering friction noise, the seat mount adapter is designed to keep the artificial head at sufficient distance from the backrest and to ensure a stable position on the seat. During the drive, the artificial head is held in place with the safety belt or with an optional ISOFIX adapter.

Additional equipment, such as HEADlab modules or a notebook, can be mounted safely on the bottom plate of the HSM V using suitable accessories, making them easily accessible from the driver's seat.



Figure 1: Seat mount adapter HSM V with artificial head and HEADlab

New data acquisition system from HEAD acoustics

HEAD/*lab* is a new multi-channel front-end system for easy and mobile data acquisition. The rugged and modular system consists of control units plus various power supply and signal modules.

„One important advantage is flexibility. From the beginning we have aimed to develop a data acquisition system able to support our customers optimally even with changing and very individual tasks. That is what HEAD/*lab* stands for“, declares Prof. Dr. Klaus Genuit, General Manager of HEAD acoustics GmbH. Various combinations of individual modules allow for a variety of configurations ranging from compact systems to decentralized multi-channel systems for comprehensive measurements with a high number of channels. Moreover, HEAD/*lab* is suitable for both stationary and mobile use. Due to the high-performance battery, even large systems can be operated without external power. Because a fan is not required, all HEAD/*lab* modules run silently.

This front-end system is used for acquiring data in the field of sound and vibration analyses. It is especially suited for automotive tasks or for all applications involving artificial head recordings. Even the base module provides an input for a digital artificial head and CAN bus as well as pulse inputs, so that no additional modules are required for recording these data.

HEAD/*lab* ideally supplements the HEAD acoustics product line. In combination with the recording software HEAD Recorder and the analysis software ArtemiS, it forms a complete measuring system.

For more information please refer to our website

www.head-acoustics.de/de/nvh_headlab.htm.

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Figure 1: HEAD/lab - Distributed sample configuration



Figure 2: HEAD/lab - Sample configuration with ten signal modules



Figure 3: HEAD/lab - Sample configuration with one signal module

New and individual front-end of the DATaRec 4 Series

DIC24X is a high-performance element of the front-end series DATaRec 4 allowing for completion of any measurement tasks by means of a single signal input module. DIC24X is exclusively available from HEAD acoustics GmbH.

DATaRec 4 is a rugged data acquisition system with signal conditioning. DIC24X is a new input module usable by itself as a complete and versatile multi-channel front-end, when connected to a power supply unit.

DIC24X has 24 input channels with a sampling frequency of up to 50 kHz each. Some of the channels are equipped with selectable DC coupling as well as with high-pass and low-pass filters, or can be configured as pulse inputs. This allows for both classical dynamic measurements and static or quasi-static measurements such as brake pressure. The selectable high-pass and low-pass filters allow recording without unwanted signal components. The pulse inputs operate at a 32-fold module sampling frequency and thus can be used for high-precision capture of e.g. engine rotation speed and vehicle speed.

DIC24X is easily integrated into existing system configurations with other modules of the DATaRec 4 series. If additional inputs are required, systems with up to 768 channels can be easily realized. DIC24X was developed by Zodiac Data Systems according to the specifications of HEAD acoustics GmbH and ideally meets the requirements of the market. It is exclusively available in the HEAD acoustics edition of the DATaRec 4 front-end series.



Figure 1: Signal input module DIC24X

New CAT-iq™ Audio Test System Available

On April 23 the DECT Forum, the international association of the wireless home and enterprise communication industry, officially approved the new "Test Specification Audio for CAT-iq 2.0 Devices". As partner of the DECT Forum, HEAD acoustics GmbH, the international solution provider for communication quality testing, has been and still is actively involved in the development of all audio-related test specifications for CAT-iq™.

HEAD acoustics therefore is pleased to announce the immediate availability of a complete test system for measuring and certifying CAT-iq™ devices according to the new "Test Specification Audio for CAT-iq 2.0 Devices". Big test houses which are members of the DECT Forum have already been equipped with the new CAT-iq™ measurement system provided by HEAD acoustics and are using it for development, optimization and certification. The audio quality (echo, reverberation, frequency response, voice quality) of CAT-iq™ HD Voice devices is brought to a high level by this new standard.

"The DECT Forum is pleased to work with HEAD acoustics for the audio part of CAT-iq 2.0 certification. HEAD acoustics has long been a partner to the DECT industry and are well known and respected for the upkeep of the highest standards with respect to audio test and measurement. We are looking forward to prolonging this successful industry partnership", says Daniel Hartnett, DECT Forum Board member and Chairman of the CAT-iq Working Group.

CAT-iq™ (Cordless Advanced Technology - Internet and Quality) has successfully been introduced into the market as the successor of the DECT standard by the DECT Forum. CAT-iq™ is continuously developed in further profiles and requires a certification of terminals by means of measurement systems approved by the DECT Forum and used by qualified test laboratories.

The new ACQUA measurement standard CAT-IQ 2.0 (Code 6794) contains the full implementation of all measurements specified by the "Test Specification Audio" (Version 1.11) as automated test suite for the communication analysis system ACQUA. In combination with the new NG-DECT/CAT-iq™ measurement front end MFE X (Code 6481) and further HEAD acoustics components, a complete test system for measuring and certifying CAT-iq™ devices according to the new "Test Specification Audio" is now available.

MFE X serves as "Reference Portable Part" (RefPP) and as "Reference Fixed Part" (RefFP) for acoustic measurements of cordless terminals. As required by CAT-iq™, it supports modern wideband and IP connections as well as the classic DECT telephony. MFE X is used in conjunction with the following HEAD acoustics system components:

- ACQUA (communication analysis system, version 2.4.200 with extensions or later)
- HMS II.3 (artificial head measurement system) with HHP III (handset positioning mechanism),
- MFE VI.1 (analog measurement front end with integrated mouth amplifier),
- MFE VIII (IP reference gateway)
- MFE IX (IP network impairment simulator with WLAN/WiFi access point).



Figure 1: NG-DECT/CAT-iq™ Measurement Front End MFE X

Configuration example HEAD acoustics audio test system for CAT-iq 2.0™ devices

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About DECT Forum:

The DECT Forum is the international industry association of the wireless home and enterprise communication industry. With more than 800 million devices sold and growing by more than 80 million devices per year, DECT, DECT 6.0 and CAT-iq are worldwide-adopted technologies with high relevance for wireless voice and broadband home and enterprise communication. The DECT Forum is located in Berne, Switzerland. Full members of the DECT Forum are currently: Ascom, AVM, CCT, Cetecom, Deutsche Telekom, DSP Group, Gigaset Communications, GN Netcom, Lantiq, NEC, Nemko, Orange FT, Panasonic, Philips, Plantronics, Polycom, RTX, Sagem, Samsung, SiTel, SGW Electronics, Swissvoice, Technicolor, Unical, Uniden, VTech. Please visit: www.dect.org www.cat-iq.org

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HEAD acoustics develops high-performance measurement and analysis systems for multichannel sound and vibration analyses, and binaural sound investigations. To meet virtually any requirement for sound and vibration analyses, we offer a variety of standard hardware and software systems as well as user-specific solutions. The business activities of HEAD acoustics range from real time identification of sound sources, artificial head measurement technology, aurally-accurate playback and multi-channel record technology, to jury testing, virtual engineering and procedures for automatic noise detection. Consulting, training and support complement the product offering.

Furthermore, HEAD acoustics offers comprehensive services for sound quality optimisation. Our company benefits from state-of-the-art measurement technology coming along with our longtime experience in industrial practice.

HEAD acoustics pushes a strong focus on innovation. Thus, in addition to our own research and development activities we are also involved in numerous national and international research projects, e.g. dealing with virtual reality.

HEAD acoustics is a competent partner of all reputable automotive manufacturers and suppliers as well as of numerous manufacturers and network operators in the telecommunication sector.



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