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bit Tune

Bit tune, key features

To describe the bit Tune and its functions, it would be easier and faster to describe what is not possible to do, but this would not convey the breadth of possibilities…, so let's progress step by step.

What is included?
The bit Tune system comes packaged in a professional carrying case, complete with all of the accessories required for its use. This case ensures safe transportation during events or trips outside of the installation center, and properly secures all materials, such as the microphones that requiring particular attention.

HSM - Hearing Simulation Mic. This is the most important component and is where the Audison research team focused most of its work, along with the acoustic analysis software. It is a **disc-shaped microphone with 5 high-quality microphone capsules** arranged around half of its circumference.
The most important design element of the HSM was to **simulate the "head" of the listener from the listening position**, hence the name Hearing Simulation. The simulation of human sound perception is accurate, thanks to precise design choices: the overall diameter of the disc shape approximates the distance between the two human ears; number and placement of the capsules are designed to reproduce the polar response of the human auditory system. Through the bit Drive algorithm integrated within the PC software, the signals acquired by the human hearing characteristics of HSM microphone are processed, setting configuration parameters for the processor, making the response of the audio system "natural." The unique mounting system provided places the microphone array in the perfect position.

LPM - Level and Polarity Mic. This is a single-capsule microphone, used for **setting system levels and for checking the acoustic phase of the speakers.**
The "strap-type" mounting system provided places the microphone perfectly between the two front headrests. This small microphone can easily be removed from the mounting system in order to check the phase of a speaker, making best use of the "polarity check" wizard in the software.

CMU - Central Measurement Unit. This is the "brains" of the system, acting as an **interface between the acquired/generated data and the PC based management software.**
It is equipped with a set of inputs and outputs to the car audio system and USB connection to control the Audison bit processor.

All specifications subject to change without notice_17.B

Technology Art Sound Manufactured by elettromedia Italy

Elettromedia
62018 Potenza Picena (MC) Italy
T +39 0733 870 870 - F +39 0733 870 880
www.elettromedia.it

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The CMU also incorporates a chassis mounted speaker that lets you hear the signal from a given input (pre-amplified, speaker, optical digital, etc.) or from the EMS (Electro Magnetic Sniffer). In the case of unwanted noise in the audio system, listening to the signal between various devices allows you to identify where the noise is generated.

EMS and Speaker Load Simulator: fundamental functions for the mobile electronics specialist!
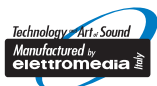
EMS - Electro-Magnetic Sniffer. Using the supplied probe and built-in speaker, this function allows you to identify areas of the car where electro-magnetic (radiated) noise is present, which can turn into unwanted noise present in the audio system (alternator noise, interferences of electronic control units, etc.). Once the "noisy" area is detected, it is possible to avoid noise by locating cables and/or devices away from the affected area.

Speaker Load Simulator. In recent years some manufacturers of OEM audio systems have provided a fault detection function to check for any speaker faults or problems with connections. In these cases, if the speaker is disconnected from the source to connect the cables to a processor/amplifier input, the system marks a failure or, in the worst-case scenario, blocks the source. The Speaker Load Simulator function provides the flexibility to **simulate different types of loads** by connecting the speaker cables directly to the CMU Speaker-In inputs. The CMU will then check if the source is equipped with a fault detection system and, possibly, what type of diagnostic it performs. By selecting one of three available types of load (No Load, 47 ohm or Speaker Simulator), you can identify what type of dummy load must be connected in parallel to the processor/amplifier input.

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apm acoustic performance measurement

bit Tune Splash screen with APM tool
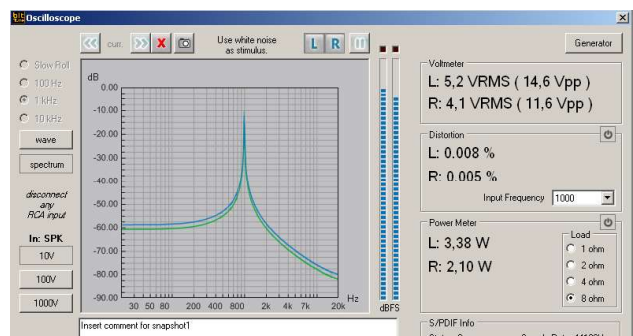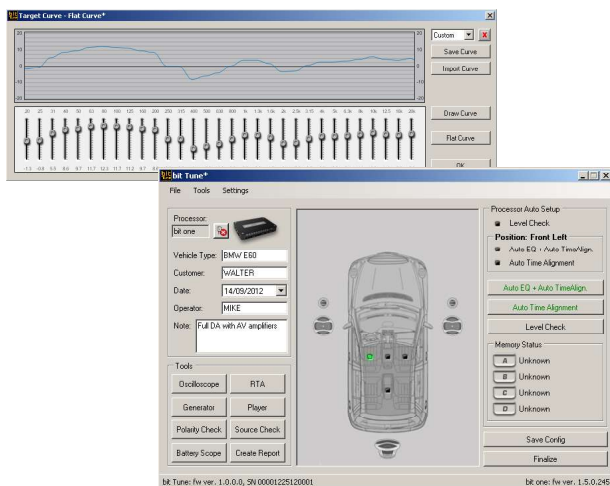
The development of Audison **APM** is the result of years of research and development into a complex topic, the evaluation of in-car sound quality. Many people in the industry have been talking about measuring acoustic performance without ever having achieved a tangible result up to now.

Thanks to the capabilities of APM, sound quality evaluation is no longer influenced by the preferred music genre of the listener. The APM technology is able to replicate the auditory perception of humans and therefore to measure the system performance with a high level of precision.

The **bit Tune hardware platform** implements APM functionalities providing the market as well as industry specialists with a complete tool, enabling two innovative types of analysis which **objectively evaluate** customized and OEM car audio systems.

bit Tune + dummy head
(optional)

Technology *Art & Sound*
Manufactured *by*
elettromedia *Italy*

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62018 Potenza Picena (MC) Italy
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www.elettromedia.it
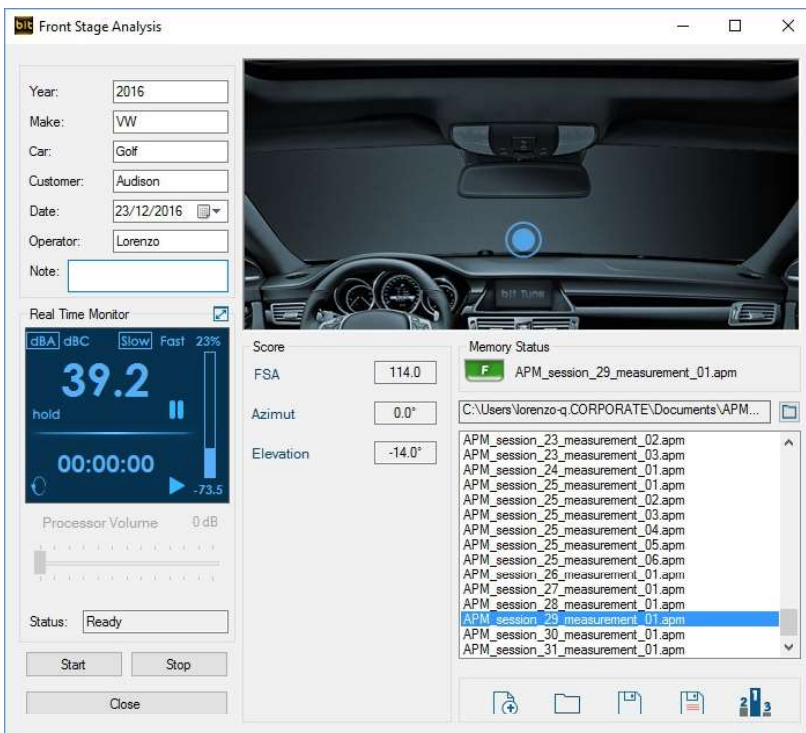
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acoustic performance measurement

APM measurements

The APM software is composed by two measurement tools:
the **FSA (Front Stage Analysis) and TMD (Total Music Distortion).**

The asymmetric listening position affects the quality of in-car sound reproduction. Placing the front soundstage at the center of a car hi-fi system is the most critical and challenging element. For this reason, we have developed the FSA, a dedicated analysis tool for **the automatic localization of the virtual sound image generated by a stereophonic configuration.**
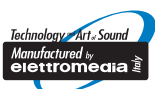
This technology has been made possible thanks to the dummy head, which allows the recreation of a HRTF (Head Related Transfer Function) and **a new approach, based on binaural and monaural cue** which was studied to simulate the human auditory perception of the sound image.

Thanks to the FSA, the front sound emission can be analysed as if your dashboard was the soundstage of a concert and this allows one to determine, with high level of accuracy, the centre stage on the two axis, providing the FSA score as result.

FSA (Front Stage Analysis)

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