



## **AES Technical Committee on Loudspeakers and Headphones**

### **TC-LH 145th Meeting Notes:**

**Chair: steve hutt**

**vice Chair: Juha Backman**

- Trends:
  - DSP to correct for transducer non-linearities,
  - *Wolfgang Green..... to present in Dublin. Integrating DSP with hardware “fixed” by DSP.*
  - *system dsp phase alignment eg. Meyer dsp to system & kii audio.*
  - Micro speakers – *now some planars*
  - Headphones
  - Hi Resolution Audio
    - *still some motion*
  - 3D sound
    - *games, etc trade off spatial accuracy vs. timbral accuracy.*

*New trend:*

Graphene is being developed, product release pending

- Workshops:
  - 145 – Loudspeaker Testing & Amp requirements
  - 145 – Powered System testing, evaluation
  - Ideas:
    - Reliability Testing – could we make a standard separate from AES2.
    - Short term power handling – let’s find the correct or best description i.e. duty cycle, crest factor etc.
    - Test signal. Pink Noise may not be best as compared to music. - need a signal that is more representative of syllabic dynamics.
      - Note. The Heyser Lecture by John Meyer included a brief overview of what they call “M-noise” - “a new test signal that was mathematically derived by analyzing a broad spectrum of music content. Meyer is planning to release this signal under an open source type of license.

- A workshop on test signals was proposed for the 146<sup>th</sup> Dublin Convention: Laurie Fincham, Richard Little & Wolfgang Klippel volunteered to participate.
- *Andy Lewis volunteered to re-explore a workshop on hi-res audio loudspeaker requirements.*
- Standards Liaison:
  - SC04-03:
    - AES2-R has begun discussion - drivers only.
    - x168 (systems) first draft is launched - in parallel discussion with AES2-R.
    - x223 - test chambers
      - ID pre-release draft is posted, Call for Comments pending
    - x241 - driver end of line test standard
      - will refer to x223 for chambers
      - tolerance data being developed.
  - SC04-08:
    - SPL<sub>max</sub> in vehicles:
      - SC04-08 has agreed to casually explore the SPL<sub>max</sub> definitions & how to develop a standard to measure & define SPL<sub>max</sub>.
      - A Project Initiation Request (PIR) is required to officially kick off SC04-08.
    - Frequency Response measurements in vehicles
      - SC04-08 is exploring measurements in small rooms & has casually agreed to consider how automobiles may be accommodated in the definitions, or vice-versa.
      - A Project Initiation Request (PIR) is required to officially kick off SC04-08.
- Modeling topic was discussed in SC04-03 with agreement that a standard on modeling is not of interest, similar to the consensus in TC-LH.
  - however a project to correlate models with measurements is being explored. Alfred Svobodnik will coordinate with NAFEMS to accommodate best practice for benchmarking.
- in-situ acoustic measurements in automobiles.
  - A successful workshop was presented at the 145<sup>th</sup>.
- **Conferences:**
  - 2019 International Conference on Headphone Technology
  - 27-29 August 2019, San Francisco, CA, USA

- **New Topics:**
- *iec – modular instrumentation, just started.*
- *Iec tc29 is a new working group on modular instrumentation, test system with sound level type.*
- *iec tc100, iec 60268-7 headphones, amendment to include free & diffuse response - 2019*
- *Iec 60268 21 & 22.*
- *Loudspeaker Conference:*
  - *Juha Bachman proposal.*
  - *target proposal date 147<sup>th</sup> New York, 2019.*
  - *Target conference date 2021.*
  - *Depending on location, Juha might chair.*
  - *Juha will lead exploratory investigation.*
- **Next Meeting:**
- **146th March 2019, Dublin**