

Sophisticated Antenna Development for Modern Hearing Aids



Erik Jensen received a M.Sc. in Communication Engineering from The University of Manchester, UK, in 2008 and B.Sc. in Electronic engineering from the Engineering College of Aarhus, Denmark, in 2005 with a stay at Shandong Jiaotong University, China, in 2005. Erik worked in various telecommunication companies since 2005 and joined Widex as a RF Design Engineer in 2018. He has been managing the WSA wireless team in Denmark since 2019. His research interests are EM modelling and system integration.



Farooq Jawed received his M.Sc in Wireless Engineering from Denmark Technical University, Denmark in 2007. Farooq joined WS Audiology, Denmark as an RF Design Engineer in 2019. He is responsible for design, development & integration of Bluetooth Antenna in the Hearing Aid. Farooq have 13+ years of experience in the area of wireless/antenna/RF research, development & design. Farooq have worked as an RF Engineer at Intel Mobile Communication, Denmark from 2013 – 2018 & worked at Molex Interconnect, Denmark from 2007 – 2012. In his earlier work he had been involved in the complete development of Antennas (Frequency: 700 MHz to 6 GHz) of commercial devices such as mobile phones, tablets, laptops, Wearables, WIFI/WLAN routers, IOT devices.



Andreas Pfrommer received the Dipl.-Ing. degree in electrical engineering from the University of Stuttgart, Germany, in 2012 and the Dr. rer. nat. degree from the University of Tübingen in 2018. From 2013 to 2018, he was working as a researcher at the high-field magnetic resonance center at the Max-Planck Institute in Tübingen. In 2018, he joined the Sivantos company as RF antenna engineer. His research interests are antenna integration and EM modelling for biomedical applications.



Dr. Hamed Hasani received the M.Sc. degree in Wave Telecommunications from the K. N. Toosi University of Technology, Tehran, Iran, in 2010, and the Ph.D. degree in Electrical Engineering jointly from the École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, and the Instituto Superior Técnico (IST), Universidade de Lisboa, Lisbon, Portugal. Since 2016, he has been with WS Audiology, Erlangen, Germany, where he has been developing antennas for hearing aids at Bluetooth frequency range. His current research interests include multiband reflectarray/transmitarray antennas and small integrated antennas.

Abstract

Today's hearing aids provide Bluetooth connectivity as a state-of-the-art feature. The design of antennas in hearing aids is however a challenge due to its boundary conditions. The device size and its lossy environment (human tissue) demand for innovative ideas, design and measurement approaches. The workshop will provide insight in different options to integrate electrically small antennas into hearing aids. Furthermore, use-case oriented and device specific measurement techniques are demonstrated, and details are discussed.

WS Audiology is a manufacturer of hearing aids formed through the merger of Widex and Sivantos in 2019.

Workshop outline

The workshop comprises four lectures which are each followed by a Q&A session:

- Erik Jensen: “Company Introduction and Connected Hearing Aids” (20 mins)
- Farooq Jawed Shaik: “Integration of Electrically Small Antennas into Hearing Aids” (20 mins)
- Dr. Andreas Pfrommer: “Use-case oriented Antenna Measurements” (20 min)
- Dr. Hamed Hasani: “Impedance and Efficiency Measurements with Waveguides” (20 min)

Each lecture focuses on certain aspects of antenna integration into hearing aids.