hear·it

Avenue Tervuren 35
B-1040 Brussels
Belgium

e-mail: hear-it@hear-it.org
tel: +32 477 53 25 89

ING Bank.
Avenue des Arts 26
B-1040 Brussels
Belgium
Account No. 3 10-4935378-07

80 million EU citizens at risk of poor quality of life

More than 80 million EU citizens and more than 120 million Europeans have hearing difficulties severe enough to create daily problems for them.
These problems arise in communication with their family, friends, colleagues and every other human interaction they have in their workplace or in their private lives. In most cases, these problems can be helped with good, professionally fitted hearing aids. However, this is not the case when these millions of hard of hearing fellow citizens have to participate in meetings at work or take part in public events or want to engage in religious or cultural activities. In houses of worship, museums, lectures, concert halls, cinemas, theatres or the like they need to be able to connect their hearing aids to transmitters that enable them to hear and take part. Even to navigate in a train-, bus- or airport terminal hard of hearing people need connection between their hearing aid and a transmitter system.
In these cases, the hard of hearing are more and more dependent on Bluetooth technology to be able to hear public announcement systems, cell phones, sound in cinemas and theaters, television and many other communication situations. Hearing impaired children and students need these solutions to listen to and understand their teachers and instructors.

Today we have technologies to ensure these millions of fellow citizens sufficient help to function normally in their daily lives. But their quality of life and ability to live a normal life is in danger of being sacrificed to a combination of pressure from multinational companies and individual governments wishing to create short sighted income. European politicians and regulatory authorities are faced with a difficult choice:

- To bend to pressure from multinational companies and ministers of finance to auction public airwaves and make them the exclusive property of large companies or specific commercial technologies
- Or to reserve and protect a small fraction of available bandwidths to ensure millions of hard of hearing citizens a better quality of life and the ability to function in society in line with the principles in the UN Convention on the Rights of Persons with Disabilities, which are:

    - Respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons;
    - Non-discrimination;
    - Full and effective participation and inclusion in society;
    - Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity;
    - Equality of opportunity;
    - Accessibility;

The challenge is quite simply that hearing aids are already using Bluetooth technology for audio communication with mobile phones, personal audio, TV, schoolteachers, and many other daily interactions.
Efforts are ongoing to standardize this technology for hearing aid usage and in the future, it will also be used in public venues such as theatres, cinemas, points-of-sales and announcements in transportation systems.
Bluetooth technology is working in the free ISM band (2400-2500 MHz) at low radio levels of typically 10 milliwatt, which is further reduced to about 1 milliwatt for hearing aids themselves due to limitations in battery supplies. Just adjacent to the ISM band other applications will use the available spectrum. Recently the spectrum band just below (Band 40: 2300-2400 MHz) and just above (band 7: 2500-2570MHz) have been targeted by multinational companies and several European and worldwide administrations for use in smartphones and tablets for the new 4G LTE (Long Term Evolution) technology. LTE technology uses radio levels in the order of 100 milliwatt for handhelds and up to 1000 watt for LTE Base-stations. These levels may cause interference in the ISM band and thus may disturb or block Bluetooth applications, like the ones utilized by hearing aids. A special challenge is, that small Bluetooth devices like hearing aids have limited possibilities to protect themselves against such interference because effective filters are impossible to apply in hearing aids due to size and power supply constraints.
Simulations have been made for a few relevant use cases. When using a Bluetooth based audio communication system between a teacher with

microphone and a student with hearing aids, it is found that the teacher-student connection ceases to function when the student is sitting among his fellow students using LTE smartphones or tablets. The hard of hearing student must keep a distance of 2 meters or more to his fellow students using LTE devices or he must sit within 3 m of the teacher to receive the wireless audio transmission from the teacher. This could be feasible in some situations; however, in many other situations it will not be feasible and in all circumstances it will cause serious challenges and stigmatize the student with the hearing aid. And the problem will only increase as smartphones and tablets are being used more and more in schools as lessons are taking advantage of internet access.

Another common situation is when a person in a train or bus is using his phone or personal music player with a wireless audio connection to his

hearing aids. In that situation, other passengers using LTE smartphones within a few meters may interfere with the hearing aid audio connection making the wireless audio connection useless.
From the above explanation and examples, we ask politicians and regulatory authorities to ensure that administrations and mobile operators are restrained in the deploying of LTE radio frequencies adjacent to the ISM (2300-2400Hz) band. It is requested, that LTE emitting levels are kept low, that out of band emissions into the ISM band are kept minimal and that a large guard band of 20 MHz or more is used to keep separation of LTE and ISM frequencies. This will create some assurance that low power ISM based communication systems that are important for supporting hearing impaired citizens remain possible in the future.
The choice is very simple: To ensure 120 million hard of hearing Europeans a well-functioning daily life and a better quality of life or to accommodate the wishes from large multinational companies and add few millions or even billions of Euro to national coffers – and risk a much higher bill for millions of citizens who may not be able to function properly in their daily lives, will have a lower quality of life and may cost the same public coffers huge amounts in health and social related costs. We strongly urge and recommend European politicians and relevant regulatory authorities to choose the first option.

Kim Ruberg
Secretary General
Hear-It AISBL

Hear-it AISBL is an international non-profit and non-commercial organization.
The objective of Hear-it AISBL is to collect, process and circulate all and any up-to-date scientific (sociological, legal, medical, public, policy related) and other relevant information pertaining to hearing impairments and their human and socio-economic consequences.

Hear-it AISBL is comprised of IFHOH (The International Federation of the Hard Of Hearing), EFHOH (European Federation of Hard of Hearing People), AEA (Association Européenne des Audioprothésistes), and individual members from the hearing aid industry, dispensers of hearing aids and others who share the objectives of Hear-it AISBL.