

Kvantifiering av hörapparaters bullerreducering för talliknande signaler

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Bullerreducering i HA, vad då?

- Nästan alla är modulationsbaserade
- Kan skilja mellan tal och "buller"
- Använder många frekvenskanaler
Från 8 upp till 24
- Avgör S/N i en kanal och ändrar förstärkning utifrån bestämda regler

Metod

- HA funktioner
 - Mik, OMNI
 - MPO, MAXIMAL
 - Expansion, AV
 - VK, AV
 - Återkopplingsred., AV
 - Annan sign.beh., AV
- Programmering enligt föreslagen preskr.
- Utrustning
 - Equinox HIT440, IA
 - TBS25 mätbox, IA
 - 711 coupler, GRAS
 - Ref. och mätmik, GRAS
- Mätningar
 - Prekonditionering
~30 sek
 - Långtidsmedelv.
~30 sek

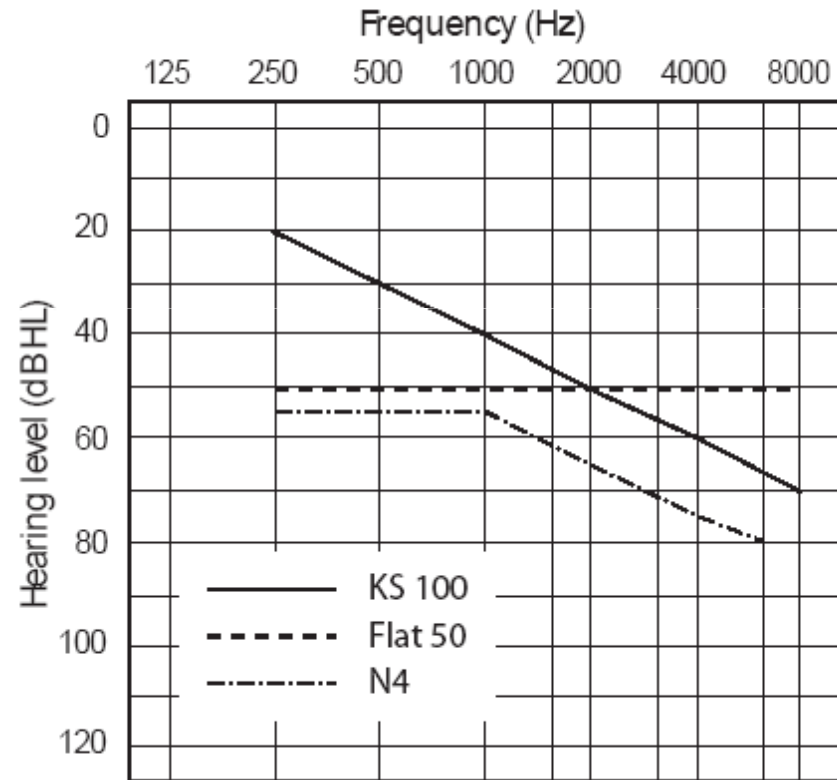
"Classification of steady-state gain reduction produced by amplitude modulation based noise reduction in digital hearing aids" by Hoetink AE, Körössy L, and Dreschler WA.

Metod

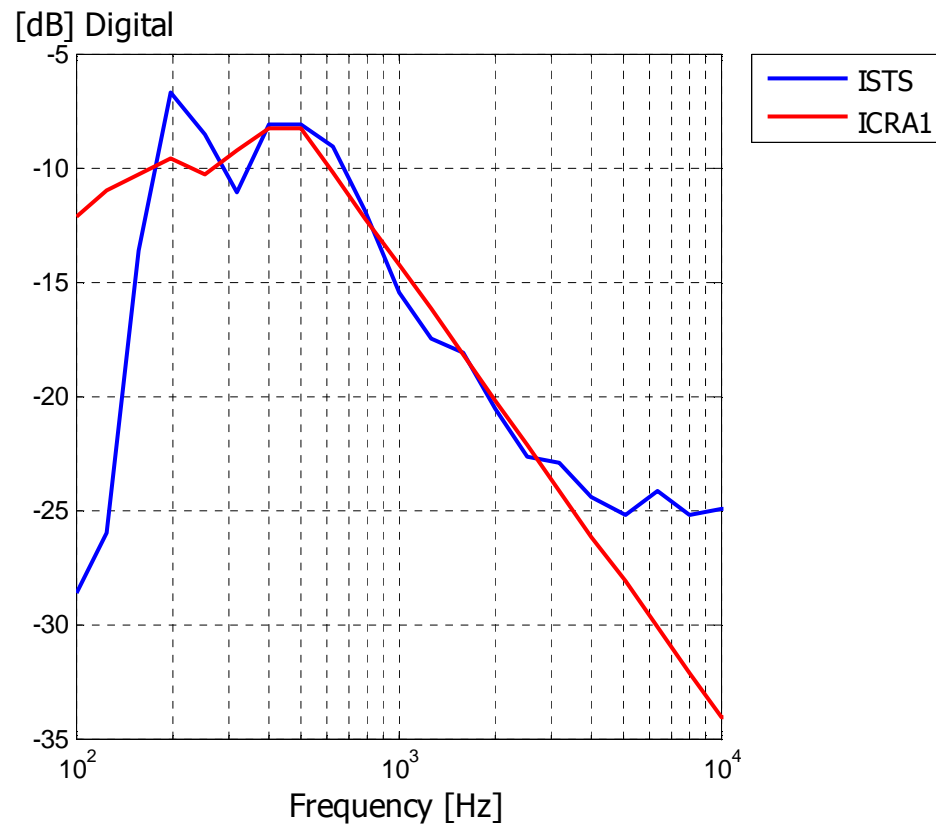
- **Mätsignaler**
 - ISTS ("riktigt" tal från ISMADHA utkast)
 - ICRA1 (talvägt stationärt brus)
- **Variabler**
 - **S/N hos insignal (8 olika)**
 - "Tal", +6 dB, +3 dB, 0 dB, -3 dB, -6 dB, -9 dB, -12 dB
 - **Ljudtrycksnivå (fast talnivå)**
 - 62 och 75 dB SPL (ANSI S3.5)
 - **Audiogram (3 olika)**
 - KS100, Flat50, N4



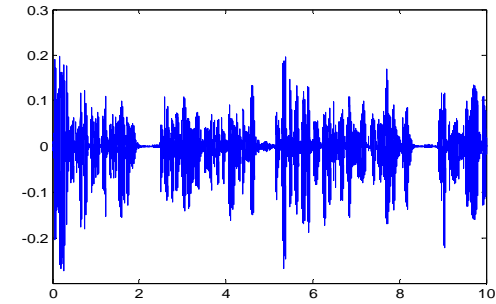
Audiogram



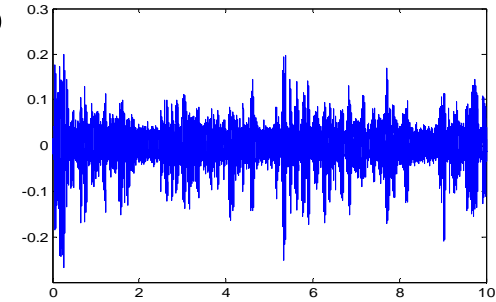
ORCA *Europe* Signaler



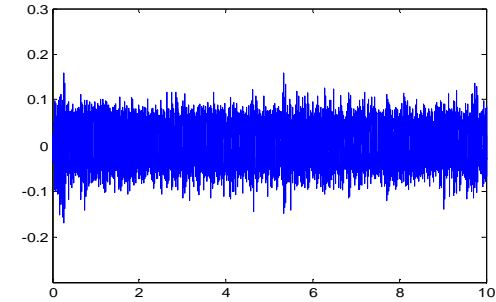
ISTS



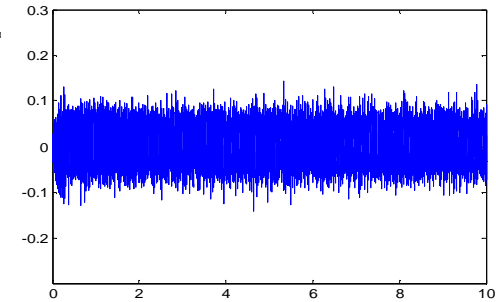
S/N +6



S/N -6

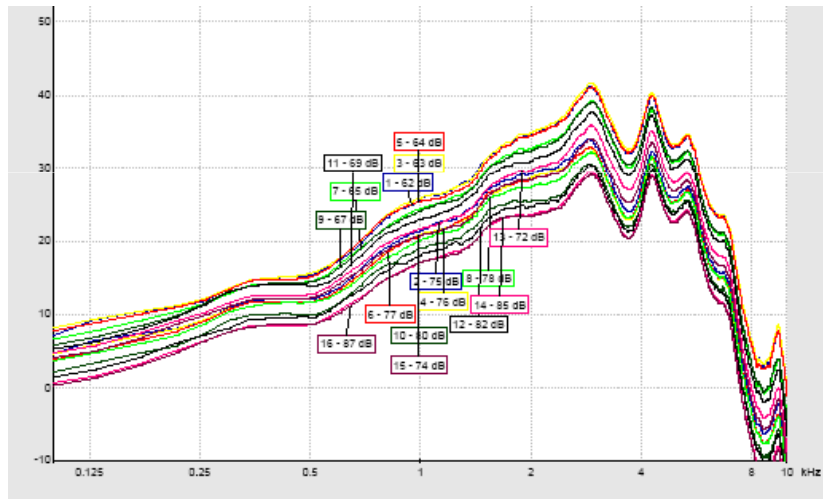


S/N -12

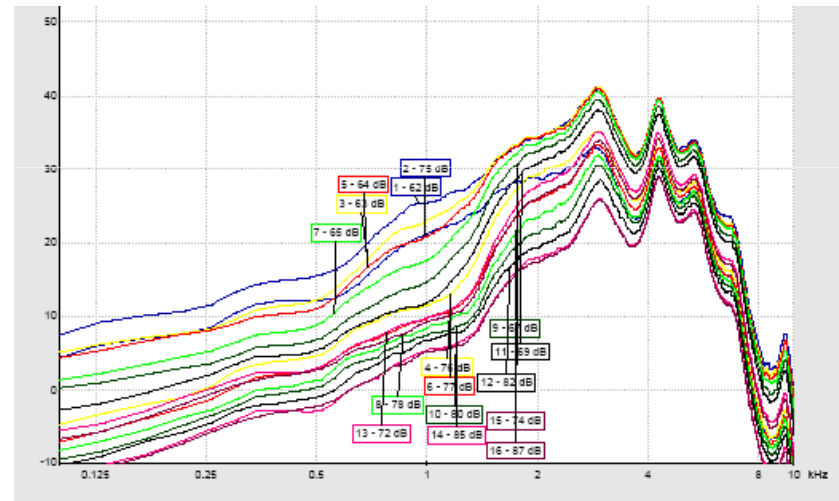


Exempel förstärkningsmätning

Förstärkning med BR-AV



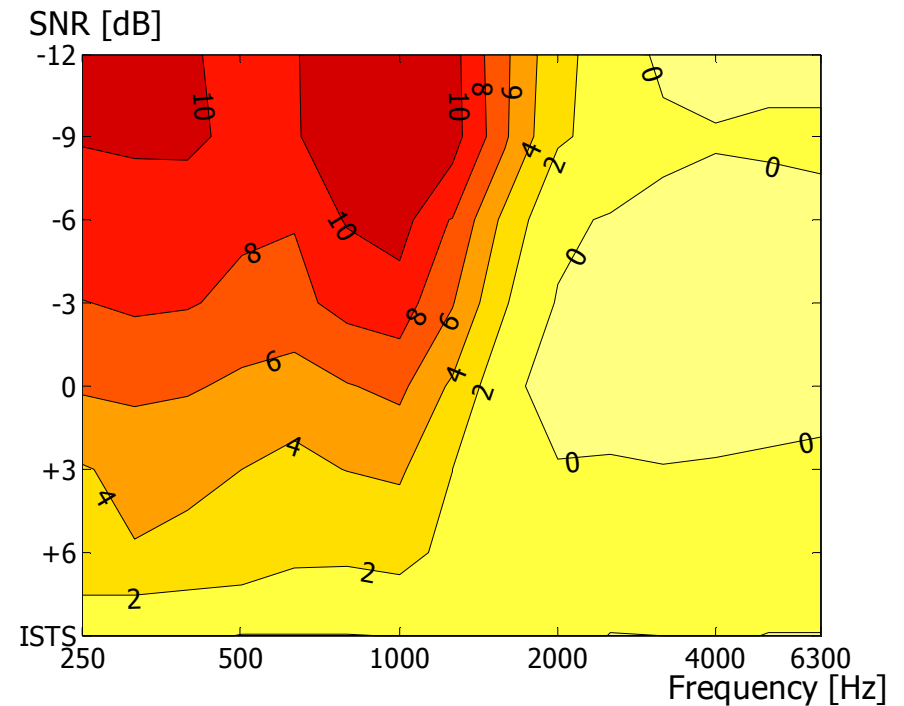
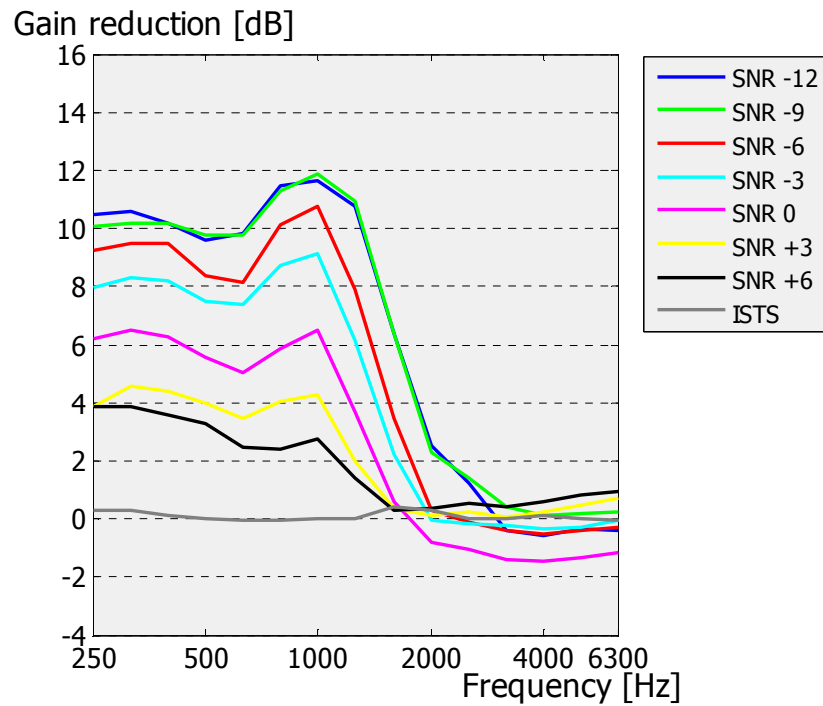
Förstärkning med BR-PÅ



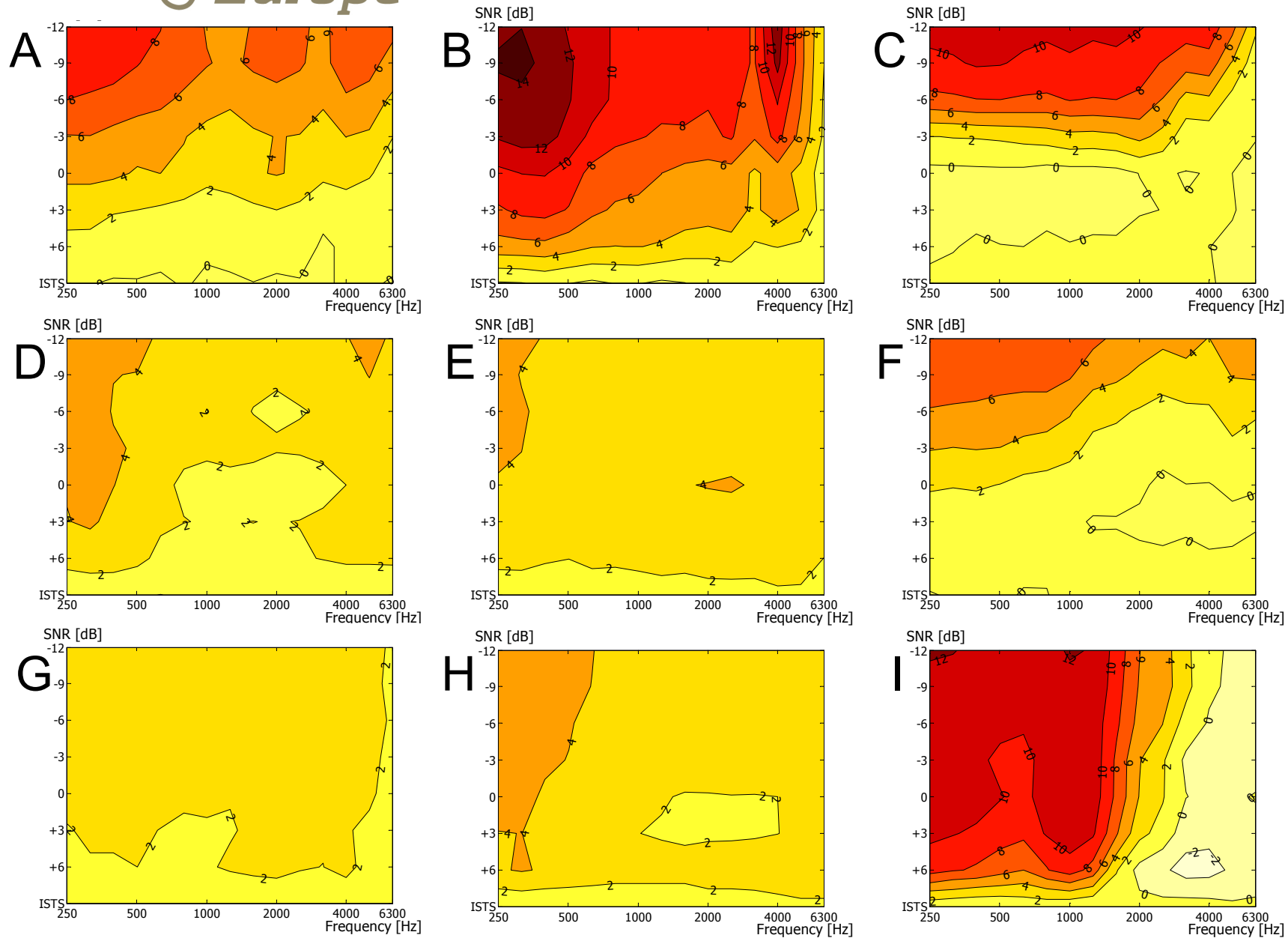
Reduktion

Först. reduktion = AV - PÅ

Reduktionskonturer



KS100 audiogram och 75 dB SPL tal



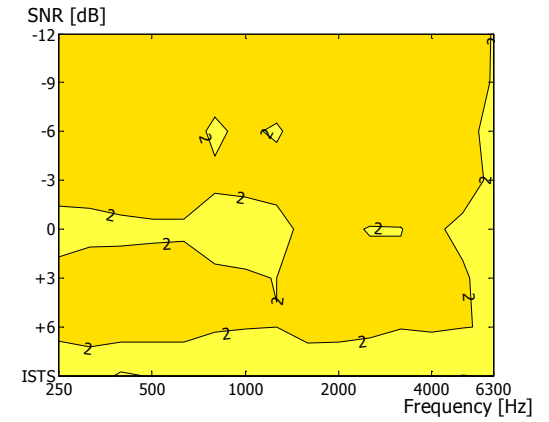
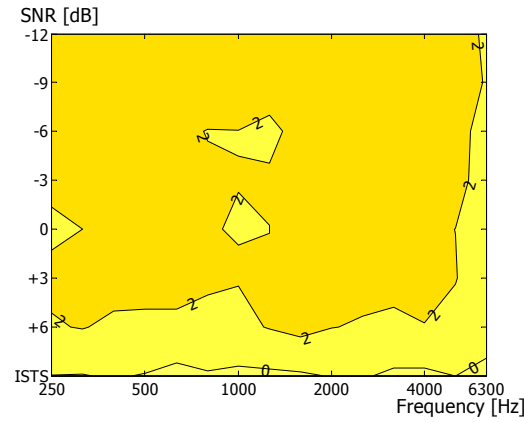
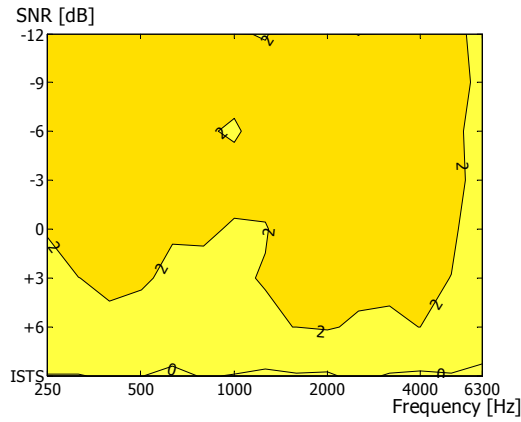
Minst reduktion och minst skillnad "G"

KS100

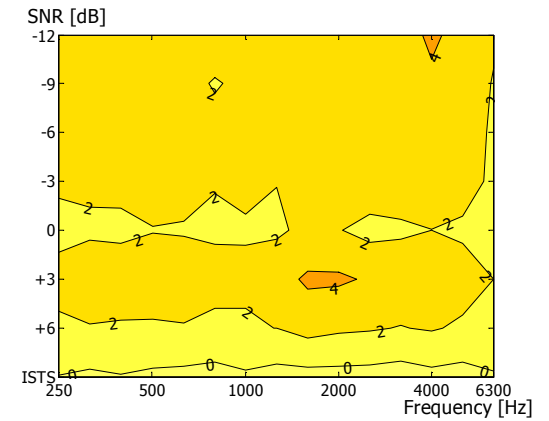
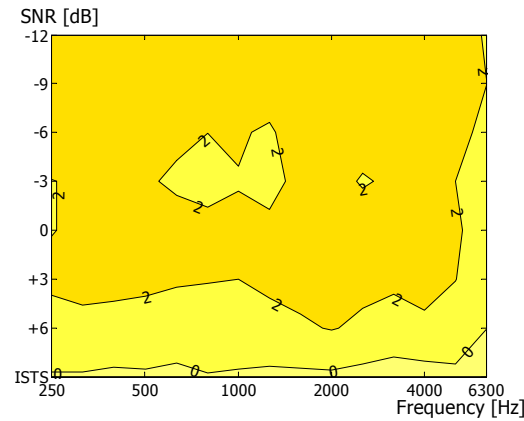
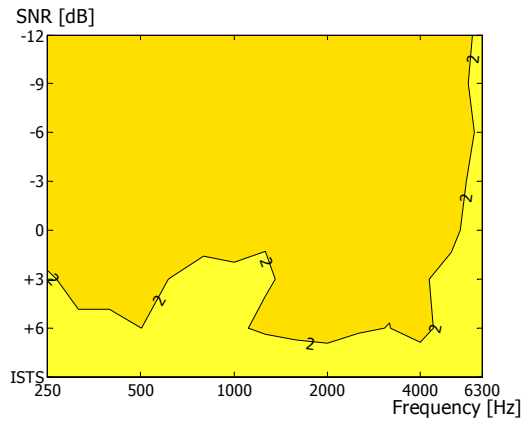
Flat50

N4

62 dB



75 dB



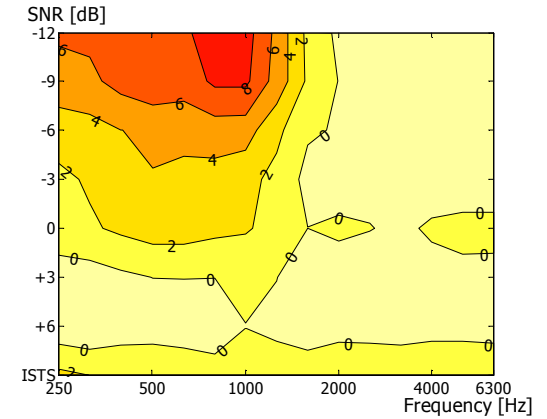
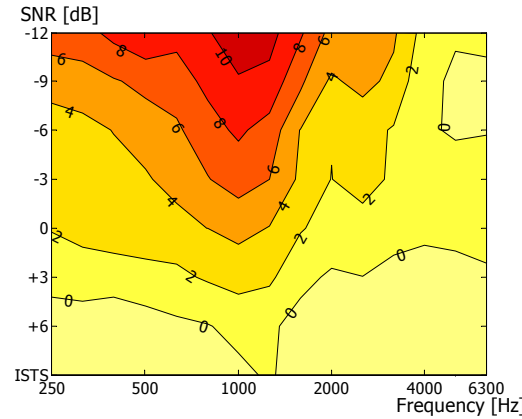
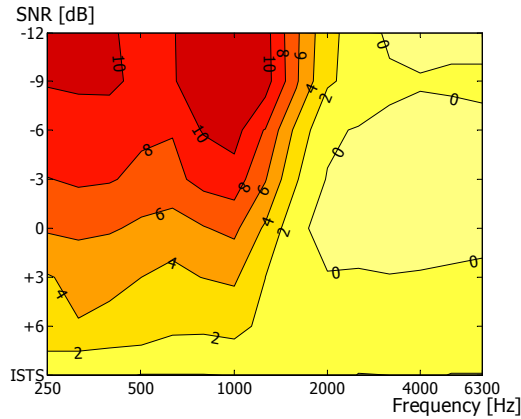
Stor reduktion och mest skillnad "I"

KS100

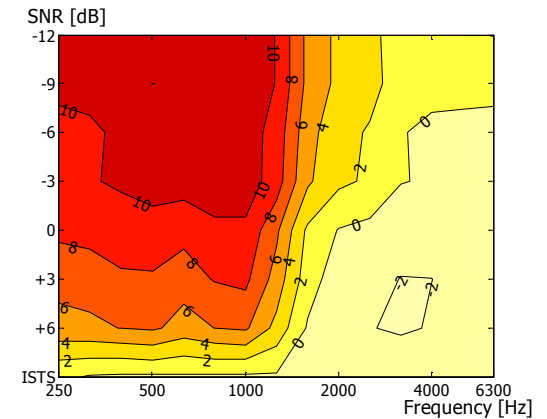
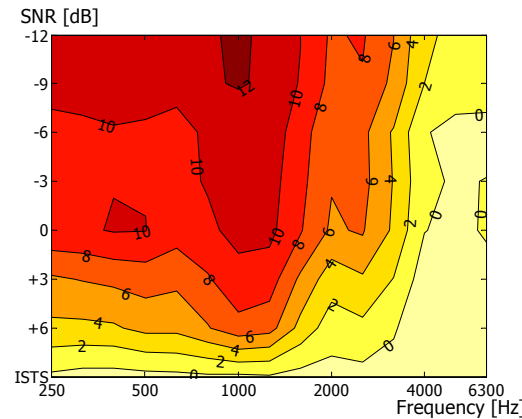
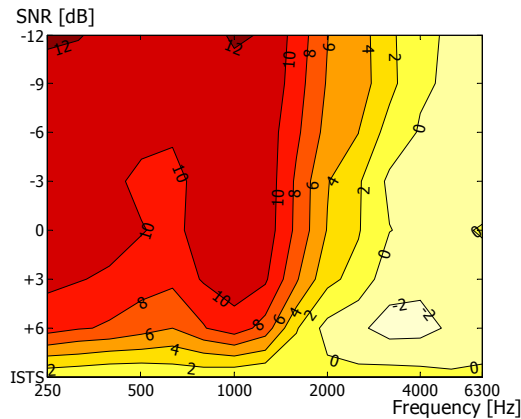
Flat50

N4

62 dB



75 dB

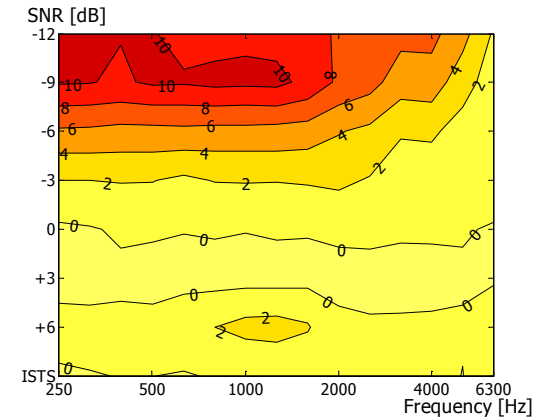
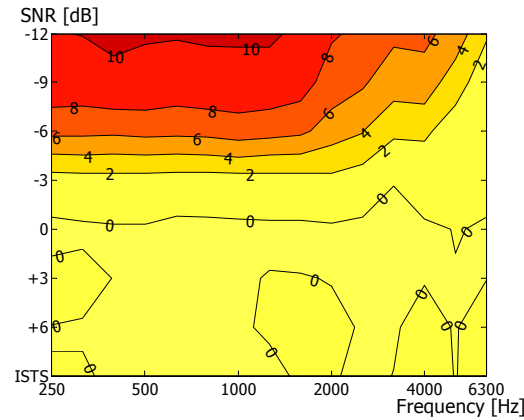
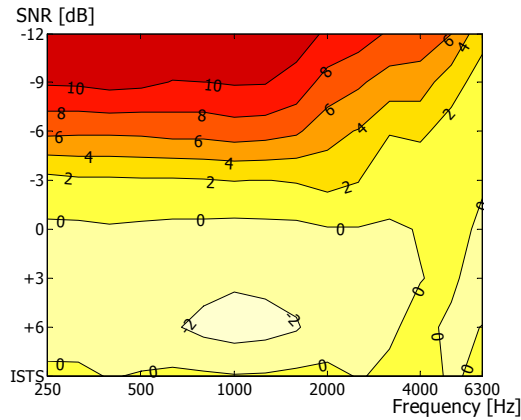


KS100

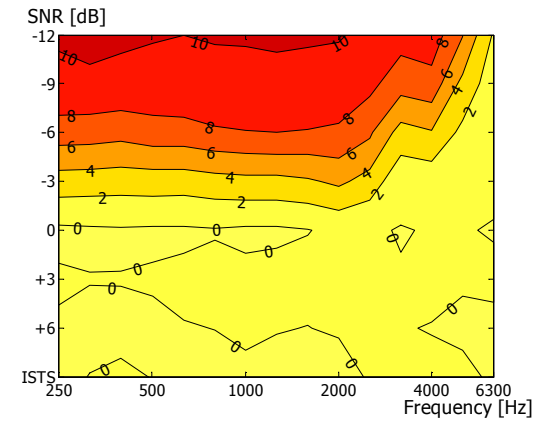
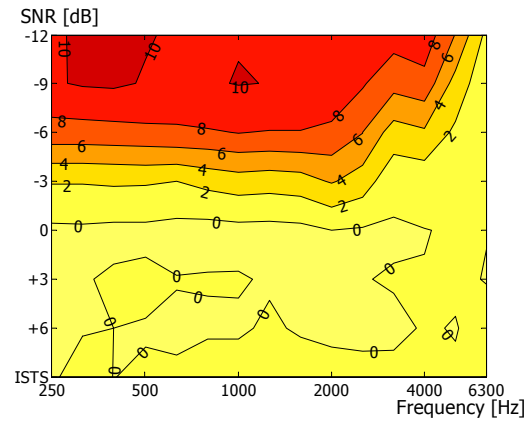
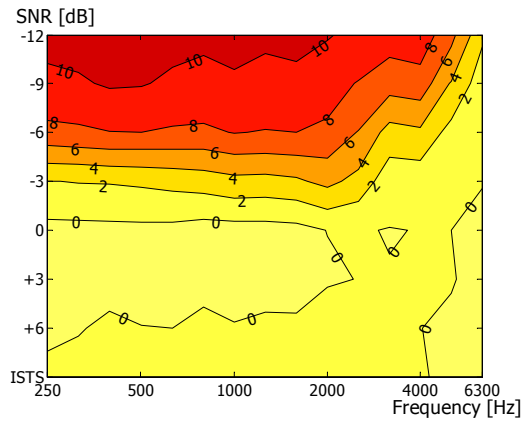
Flat50

N4

62 dB



75 dB



Sammanfattning

- Begränsningar
 - Långtidsmedelvärden
 - Couplermätningar
 - Vet ej brukarens nytta med de olika BR
- Ändå:
 - Dessa nio moderna HA väldigt olika BR
- Vidare:
 - Andra bullertyper
 - Snabba förlopp
 - Undersöka nyttan

ORCA *Europe*

ORCA Europe / Widex A/S

Josefina

Karolina



Niklas

Sofia

Systemer till ORCA USA i Chicago