1200 G Street, NW
Suite 500
Washington, DC 20005

P: 202-628-6380
F: 202-393-5453
W: www.atis.org

Chairman
Christopher T. Rice
AT&T

First Vice Chairman
Nick Adamo
Cisco Systems

Second Vice Chairman
Mark Wegleitner
Verizon

Treasurer
Harald Braun
Siemens Communications

President & Chief Executive Officer
Susan Miller
ATIS

Vice President of Finance & Operations
William J. Klein
ATIS

March 19, 2007

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: WT Docket No. 06-203
WT Docket No. 01-309
Ex Parte Presentation

On March 15, 2007, representatives from the Alliance for Telecommunications Industry Solutions (ATIS) Incubator Solutions Program 4 – Hearing Aid Compatibility (AISP.4-HAC), met with representatives from the Federal Communications Commission's Office of Engineering & Technology (OET) and Wireless Telecommunications Bureau (WTB). The purpose of the meeting was to provide information regarding hearing aid compatibility (HAC) T-Coil measurements in multiple radio configurations (RC), service options (SO) and vocoder rate modes, and to discuss other technical issues relating to HAC.

In attendance, representing the OET, were: Dr. Rashmi Doshi, Chief, Laboratory Division; William Hurst, Chief, Technical Research Branch, Laboratory Division; Patrick Forster, Senior Engineer, Policy and Rules Division; and James Szeliga, Systems Analyst. Representing the WTB at this meeting were: Christina Clearwater, Legal Advisor, Spectrum & Competition Policy Division (SCPD); and Weiren Wang, Industry Economist.

The individuals representing the AISP.4-HAC at this meeting were: Steve Coston, Technical Manager, Regulatory Project Office, Sony Ericsson Mobile Communications; Scott Kelley, Disability Access Manager, Motorola Mobile Devices Business; Robert Scodellaro, Senior Staff Manager, Qualcomm; James Turner, Technical Coordinator, ATIS; and Thomas Goode, General Counsel, ATIS.

The discussion at the meeting was consistent with the presentation that is enclosed with this letter.

Sincerely,

Thomas Goode
General Counsel

Attachment

ATIS Incubator Solutions Program #4 – Hearing Aid Compatibility (AISP.4-HAC)

Working Group 4

CDMA VOCODER Report

Technical Whitepaper

Overview

- In September 2006, the T-Coil requirements of ANSI C63.19-2006 Standard went into effect.
  - At that time, the FCC (Martin Perrine) had requested manufacturers of CDMA 2000 phones to perform the HAC T-Coil measurements in multiple radio configurations (RC), service options (SO) and vocoder rate modes to determine which configuration would have the most impact on a T-Coil hearing aid.
  - Qualcomm was asked to compile a matrix of all the possible 2nd and 3rd generation CDMA RC, SO and vocoder rates and assess these configurations for T-Coil interference.
    - The test matrix consisted of 81 possible RC, SO and vocoder rate configurations.
    - From this test matrix, 14 different RC, SO and vocoder rate settings were selected to determine their impact on the HAC ABM2 measurements. Unbeknownst at the time, the Rhode & Schwarz CMU 200 call test box, which is used to perform the ABM1 and ABM2, doesn't support the 14 different test modes that were selected.

Overview Continued

- The R&S CMU 200 call box did support the 14 different RC, SO and vocoder rate configurations.
  - 3 different manufacturers performed HAC ABM2 measurements on these modes of operation.
- On the individual phone platforms, the manufacturers test results showed that there was very little difference in the ABM2 levels for the 14 test cases.
  - An example of the test results are shown on separate slides.
  - There were much larger variances on the test results when comparing one manufacturer to another manufacturer.
- These results lead the working group to believe that ABM2 test results were not significantly affected by different RC, SO and vocoder rates, but instead by the test environment and/or the phone platform.

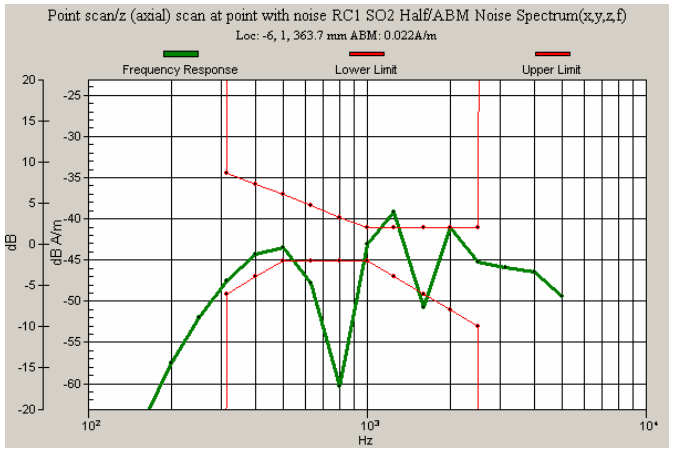
Overview Continued

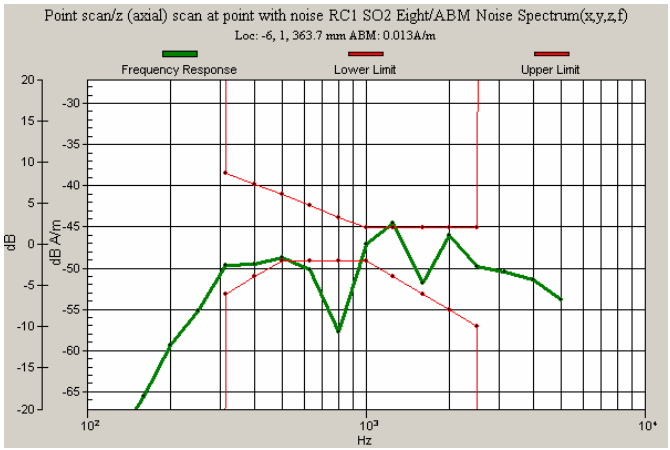
- A series of experiments were performed in which ABM2 measurements were performed on a phone in 3 different test environments.
- The 3 test environments were:
  1. normal laboratory background noise.
  2. individuals talking near phone platform while the ABM2 measurement is taking place.
  3. WD microphone's aperture plugged.

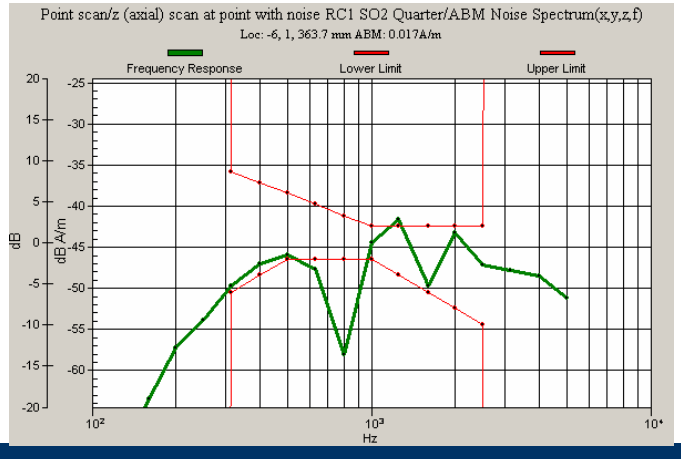
Selected VOCODERs for Test

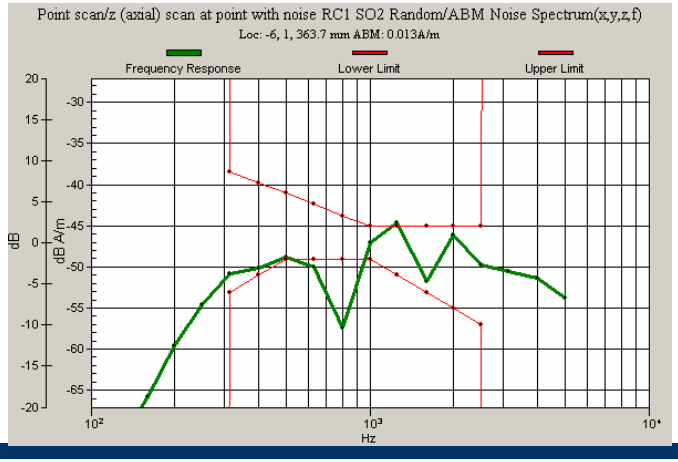
Application	RC	Service Option	Data Rate
Voice/data	1	SO2	9600
Voice/data	1	SO2	4800
Voice/data	1	SO2	2400
Voice/data	1	SO2	1200
Voice/data	1	SO2	RANDOM
Voice/data	1	SO3	NOT SELECTABLE
Voice/data	2	SO9	14400
Voice/data	2	SO9	1800
Voice	3	SC02	9600
Voice	3	SC02	4800
Voice	3	SC02	2400
Voice	3	SC02	1200
Voice	3	SC02	RANDOM
Voice	3	SC03	NOT SELECTABLE

Example of ABM2 Test Results from Manufacturer A for RC1, SO2, Vocoder Rates 1/2, 1/4, 1/8 and Random

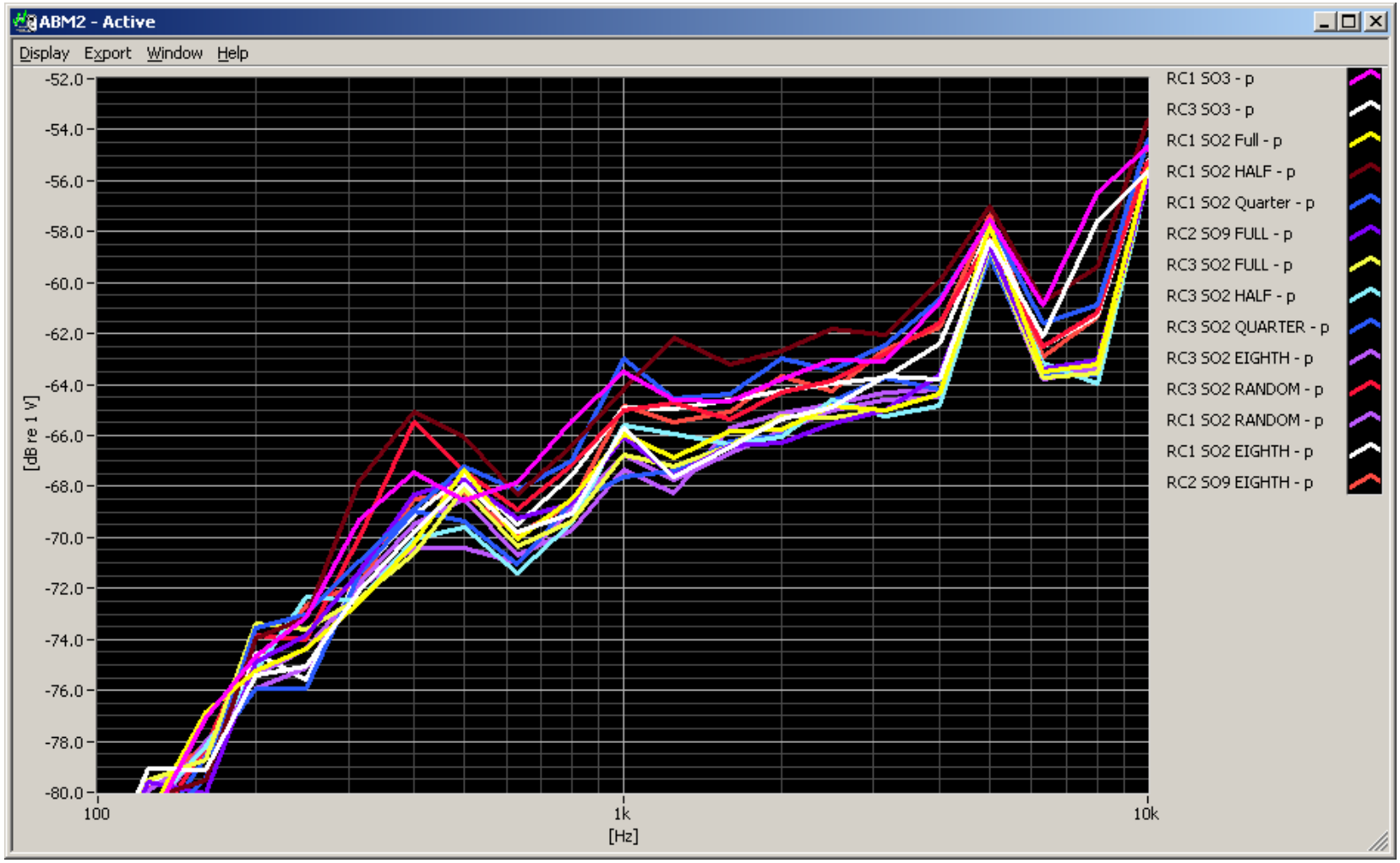








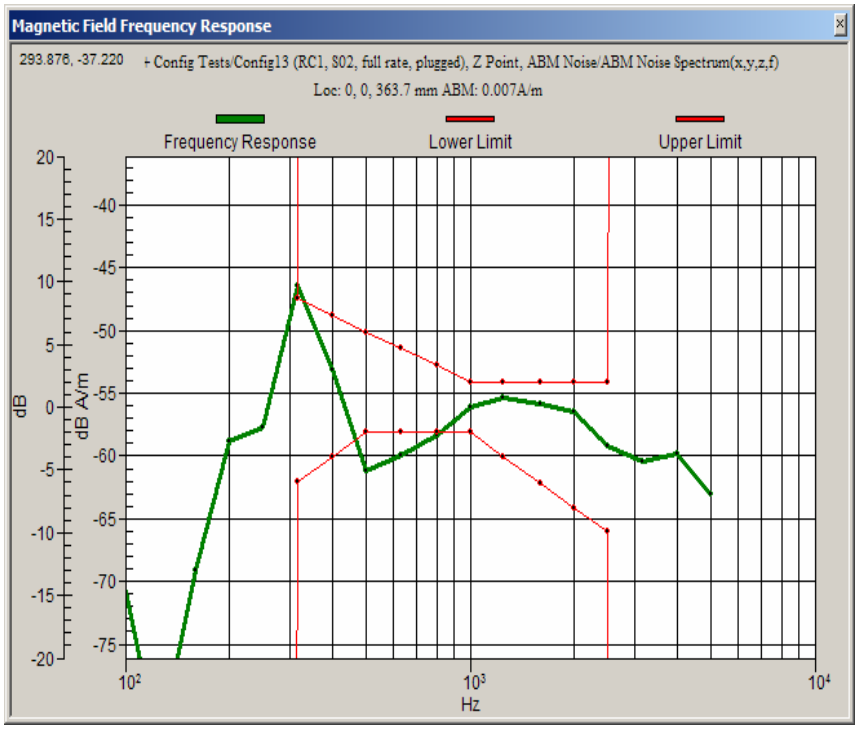
Manufacturer B Results



Experiment Results

- The experiments clearly show that the impact of the test environment on the ABM2 levels significantly overshadowed the minor variances to ABM2 levels due to different RC, SO and vocoder rate configurations.
- For the RC1, SO2, full vocoder rate configuration, the ABM2 results are shown on the next slides.
  - The laboratory with normal background noise mode is approximately 10 db higher at some frequencies than the microphone aperture plugged mode, and the talking mode is approximately 20 dB higher at some frequencies than the plugged mode.

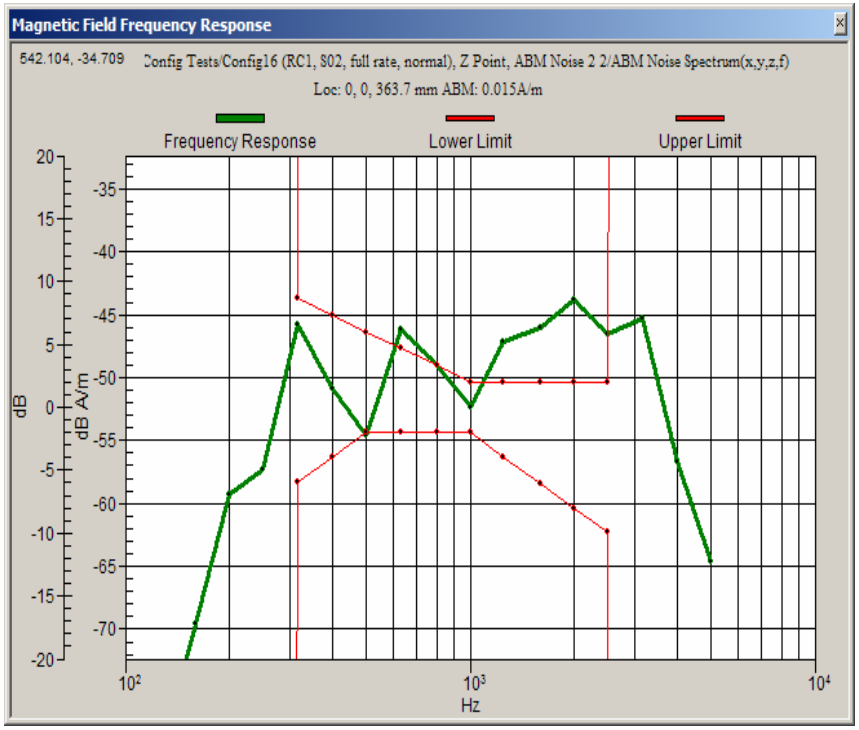
Experiment Results



RC1, SO2, vocoder rate full, microphone aperture plugged

*red limit lines are meaningless

*scale reference is different

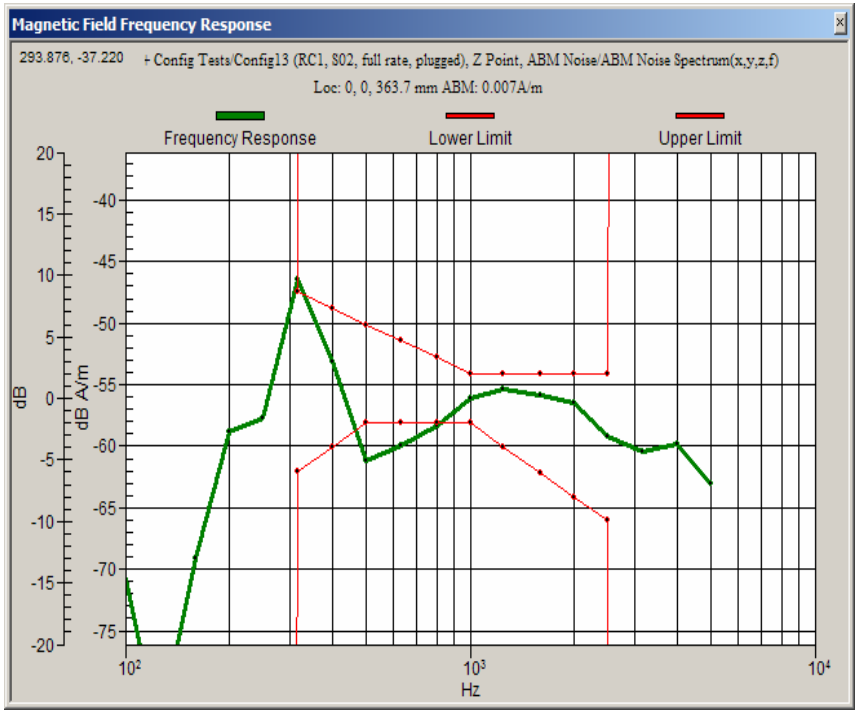


RC1, SO2, vocoder rate full, normal laboratory background noise

*red limit lines are meaningless

*scale reference is different

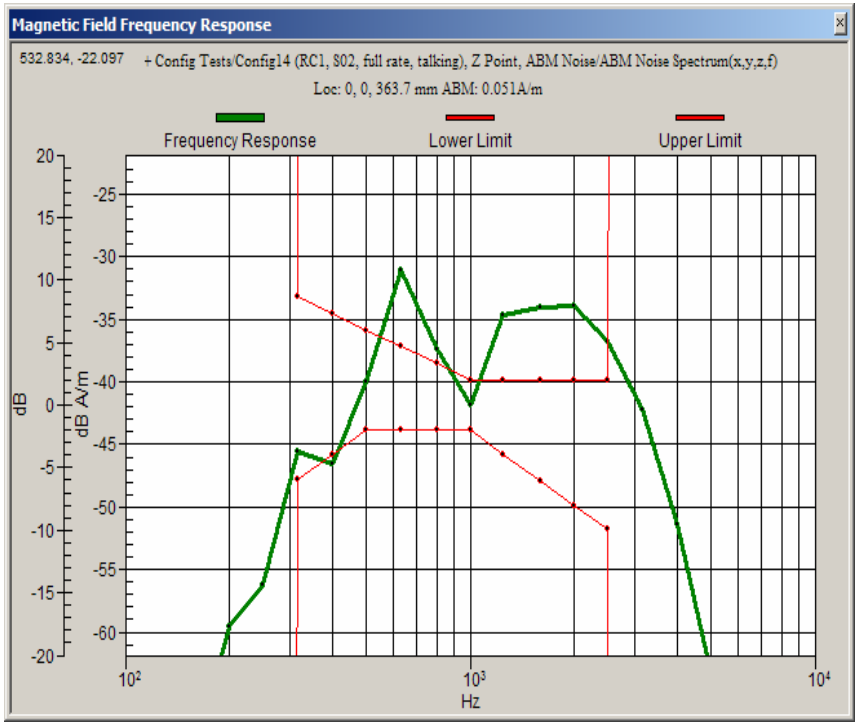
Experiment Results



RC1, SO2, vocoder rate full, microphone aperture plugged

*red limit lines are meaningless

*scale reference is different



RC1, SO2, vocoder rate full, talking near the phone platform while the ABM2 measurement is being made.

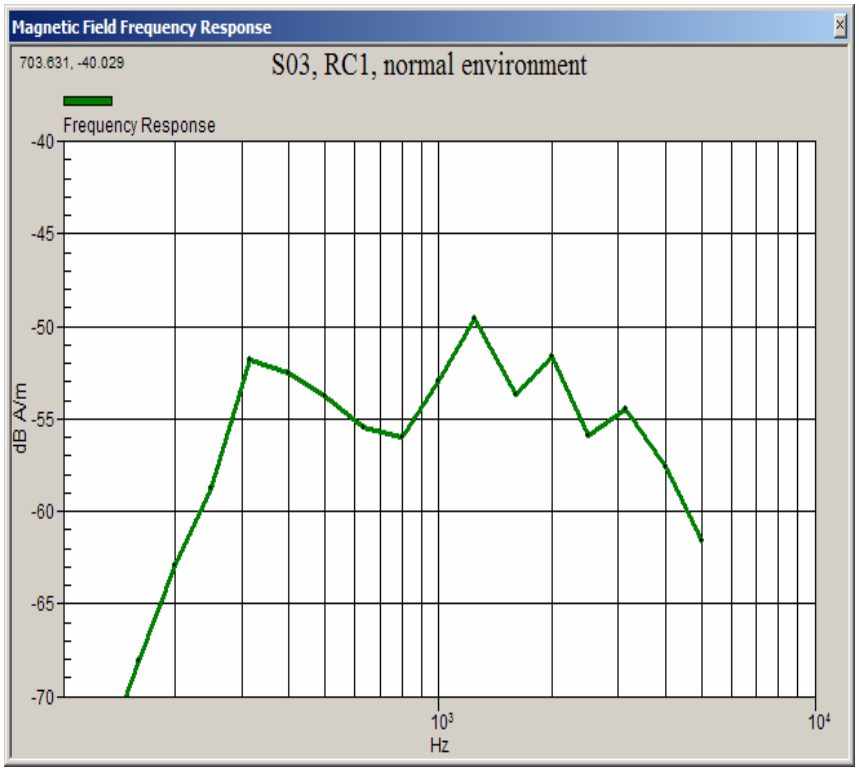
*red limit lines are meaningless

*scale reference is different

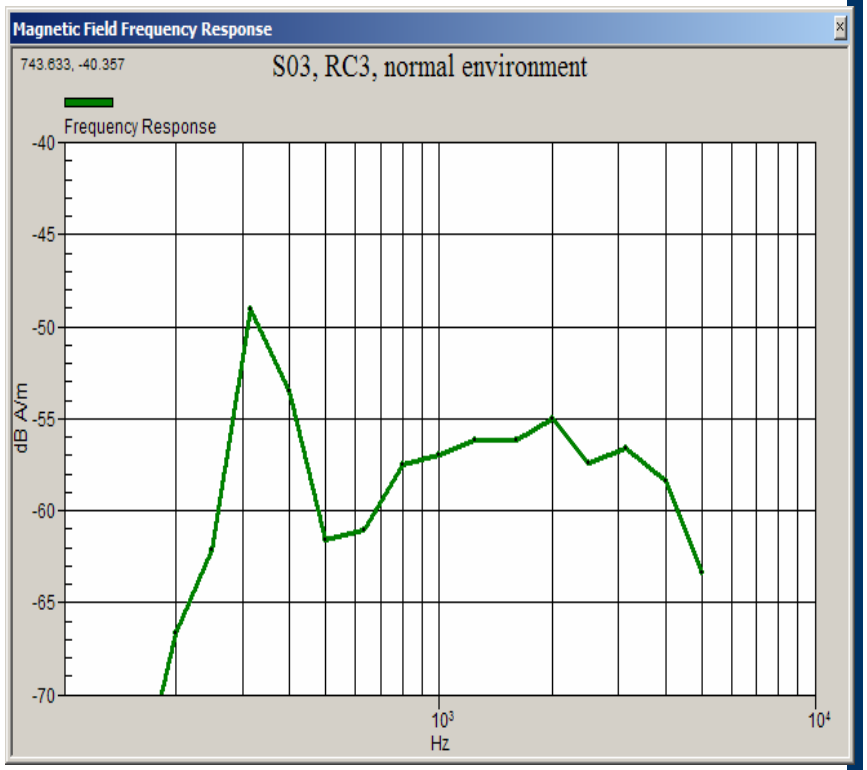
Experiment Results

- The Agilent 8960 call box was used in the experiment, because that call box supports more RC, SO and vocoder rate configurations than the R&S CMU 200 call box.
  - For each RC, SO, vocoder rate tested, the results tracked those of the RC1, SO2, vocoder rate full, that was displayed on the previous slides.
  - The Agilent 8960 call box does not have the audio capability to support the HAC ABM1 measurements.
  - It is not practical to use the R&S CMU 200 to make the ABM1 measurement and then use the Agilent 8960 for making the ABM2 measurement.
- The R&S CMU 200 supports the following RC, SO configurations: RC1, SO; RC1, SO3; RC3, SO; RC3, SO3; RC2,SO17
  - The R&S CMU 200 was used to make ABM2 measurements of the above RC, SO phone configurations.
  - The SO3 service option is variable and doesn't allow the vocoder rate to be set.
  - The test results are shown on the next slide.

Experiment Results



RC1, SO3, normal laboratory environment



RC3, SO3, normal laboratory environment

VOCDER Conclusions

- Of the different RC, SO configurations that the R&S CMU 200 supports, the RC1, SO3 causes the highest ABM2 results.
  - This test configuration was also one of the modes of operation that Qualcomm had selected for the original test matrix, based upon the processing that's taking place internal to the phone.
- It is recommended that the RC1, SO3 test configuration be the only required test mode for the HAC ABM1 and ABM2 measurements.

Technical Whitepaper

- FCC's 3 Year HAC Report: examine impact of rules, evaluate whether to increase or decrease the 2008 requirement, benchmarks beyond 2008, new wireless technologies, new hearing loss technologies.
- Wireless Device (WD) Technical Review
- Logistical Issues and Challenges
- Current and Futuristic Insight
- Proposed Recommendations

Technical Whitepaper

- FCC 3 Year HAC Review

- Examine impact of rules
  - Did not anticipate the FDA push-back
  - Reluctance of Hearing Aid (HA) Mfgrs to label products
  - ANSI Std. (system evaluation) was not applied to HA devices
- Benchmarks
  - Wireless industry taking action, (mfgrs, carriers, consumers)
- New Wireless Technologies
  - CDMA and beyond
  - GSM and beyond
- New Hearing Aid Technologies
  - Cochlear, CIC, improving?

Technical Whitepaper

- Wireless Device Technical Review
- Early Assumptions
  - Ratings would work for most
  - HA devices ‘typically’ meet M2 level
- Wireless Device Variables
  - Measurement uncertainties, test equipment
  - Technologies, design styles, form-factor
- Laws of Physics
  - WDs are intentional transmitters
  - HAs are amplified receivers
  - Transmission vs. Interference
- Technology agnostic
  - CDMA, GSM, iDEN, UMTS, WCDMA

Technical Whitepaper

- Logistical Issues and Challenges
- Rules do not differentiate Mfgrs and Carriers
  - Development cycles
  - Release dates
- Portfolios
  - Global products
  - Regional demands
- Deliverables
  - Product availability

Technical Whitepaper

- Logistical Issues and Challenges

- WD Design Challenges
  - Global market, minimize design variants,
  - Package size, style, and HW design features
    - Thin, small, large displays, metallic faceplates, region defined styles
  - User interface, intended use
- HA Device uncertainties
  - Mfgr design rating is only ½ of solution
  - Mfgr designs may be compromised by Audiologists' settings for consumer
  - T-Coil supports the 'profound hearing loss' consumers only
- Consumer challenges
  - Lack of insight to information
  - Audiologist setting of HA
  - HA Mfgrs and Audiologists absent from Incubator

Technical Whitepaper

- Current and Futuristic Insight
- Current insight
  - Flooding the market with HA compatible devices, no demand has been demonstrated
  - Subjective data shows both HAC and non-HAC used by consumers
  - Severe profound loss a challenge
  - Most HA impaired consumers that want a WD, have obtained one
- Futuristic insight
  - More tech-savvy consumers in the next 5 years (boomers)
  - Audiologists will be challenged for proper HA settings
  - HA Mfgrs will be required to design with immune components
  - WD Mfgrs will offer features to meet needs
  - Carriers will offer services to support needs

Technical Whitepaper

- Proposed Recommendations

- Continue an approach in a gradual plan (Launch, Learn, Adjust)
  - Maintain innovation,
  - Future technologies must be a ‘win-win’ for all involved to be successful
- Wireless Industry Commitment
  - Support for 2007 version of the C63.19 Standard (with appropriate time for product development/availability pursuant to this version)
  - Feb 2008 50% M-rated device benchmark should be reduced; consider gradual release of additional T-rated products beginning 2009
  - Re-review commitments to products offered in Feb 2011 to determine future benchmarks and percentage requirements

Any Questions?

- Any questions regarding this matter or the technical filings made by the AISP.4-HAC can be directed to:

Steve Coston, Sony Ericsson Mobile, AISP-4-HAC Co-Chair
steve.coston@sonyericsson.com

Scott Kelly, Motorola, AISP.4-HAC WG4 Chair
Scott.Kelley@motorola.com

James Turner, ATIS Technical Coordinator

jturner@atis.org

Thomas Goode, ATIS General Counsel

tgoode@atis.org