

Ex Parte Presentation

WT Docket No. 07-250

Amendment of the Commission's Rules Governing Hearing Aid-Compatible Mobile Handsets, Petition of American National Standards Institute Accredited Standards Committee C63 (EMC) ANSI ASC C63®

ANSI Accredited Standards Committee C63® (EMC)



HAC Update and Synchronization with the FCC OET / WTB activity

Donald Heirman (Chair ASC C63®)

Tom Victorian (Starkey)

Joe Morrissey (Chair ASC C63R SC 8)

Dave Case (Cisco)

Stephen Berger (Chair SC 8 WG 3)

Overview of ASC C63®

Hearing Aid Immunity

HEI* Study

700 MHz/ Wi-Fi Report

Testing Refinements

* House Ear Institute

ASC C63® Overview

Don Heirman, Chair ASC C63®



Don Heirman
President
Don HEIRMAN Consultants

Presentation to the FCC April 8th, 2008

April 8, 2008

ANSI C63® presentation to FCC

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Overview of ASC C63® (EMC)

Don Heirman, Chair ASC C63®



■ Scope

- Development of definitions and methods of measurement of electromagnetic noise and signal strengths (radiated and conducted), determination of levels of signal strength, levels of unwanted sources, limiting ratio of noise (and/or unwanted sources) to signal and development of methods of control of, and guideline for, influence, coupling and immunity.

Note: Where subjects deal with overlap with those of other national committees, appropriate liaison will be established.

ASC C63® Membership



- Alcatel-Lucent
- Alliance for Telecommunications Industry Solutions (ATIS)
- American Council of Independent Laboratories (ACIL)
- American Radio Relay League (ARRL)
- AT&T (formerly Cingular)
- Cisco Systems
- Curtis-Straus LLC
- Dell Inc.
- ETS-Lindgren

Membership Continued



- Federal Communications Commission (FCC)
- Food and Drug Administration (FDA)
- Hewlett Packard
- Information Technology Industry (ITI) Council
- Institute of Electrical and Electronics Engineers
- IEEE EMC Society
- Motorola
- National Institute of Standards and Technology (NIST)
- Polycom
- Research in Motion (RIM)
- Samsung Telecommunications America
- Society of Automotive Engineers (SAE)

Membership Continued



- Sony-Ericsson Mobile Communications
- Telecomm. Industries Association (TIA)
- Telecomm. Certification Body Council (TCBC)
- TUV-America
- Underwriters Laboratories
- U. S. Department of Defense—Joint Spectrum Center
- U. S. Department of the Navy--SPAWAR
- Three individuals
- Four members emeritus

ASC C63® Committees



- SC1 (Measurement Techniques and Developments)
- SC2 (EMC Definitions)
- SC3 (International Standardization)
- SC5 (Immunity)
- SC6 (Laboratory Accreditation)
- SC7 (Unlicensed Personal Comm. Service)
- **SC8 (Medical)**

Subcommittee 8 (Medical)



- Maintains C63.18 (in-situ immunity tests) & C63.19 (Hearing Aid Immunity)
- Three Working Groups:
 - Revision of C63.18
 - Effect of patient connection
 - Maintenance of C63.19
- Receives updates on IEC, FDA, and Association for the Advancement of Medical Instrumentation (AAMI) activity
- Subcommittee Chair: Joe Morrissey

Subcommittee 8 (Medical)



- Working Group 3 (C63.19):
 - Standard published in 2001, 2006 and 2007 (increased activity as industry needs accelerated)
 - Versions included ways to make tests easier and more appropriate to accommodate FCC requirements for cell phones to be compatibility with hearing aids
 - Multiple recirculation ballots—all meeting procedures for acceptance;
 - Referenced now in FCC Rules

Who uses ASC C63® Standards?



- Manufacturer internal testing groups
- Independent testing organizations
- Federal Communications Commission
- Industry affected by or using standard
- Members of US National Committee of the IEC in Technical Advisory Groups as they input to IEC committees for possible harmonization
- Others

Advantages to Regulators



- Receives industry participation in EMC standardization to meet their needs
- Regulators (e.g. FCC):
 - Can participate in standards process
 - Get broad input via ANSI public review process
 - Can cite standard as a reference without repeating in rules or have to do all the work internally
 - Where there are voids, agency can (and does) write bulletins and testing procedures with possible adoption/adaptation by ASC C63®
 - Can rely on proven reputation of ASC C63®

ASC C63® publication process



- Follows procedures prescribed by the American National Standards Institute
- *"Approval of standards requires a letter ballot with approval by at least a majority of the balloting group and at least two-thirds of those voting, excluding abstentions"*
- C63® secretary sends ANSI description of method by which the Standard can be obtained from IEEE
- ANSI publishes that description in their monthly **Standards Action**
- C63® committee reviews public comments which have been minimal to non-existent

Typical standards timeline



- Project initiation via ANSI notification
- Depending on research/study needed, usually takes 2-3 years to publish (typical of international EMC standards)
- If only simple modifications/improvements needed to existing standard, can be less than a year but more likely a year to 18 months
- Next amendment work can start immediately or in parallel with modification underway

Hearing Aid Immunity

Tom Victorian



Tom Victorian
Vice President of Engineering
Starkey Laboratories, Inc

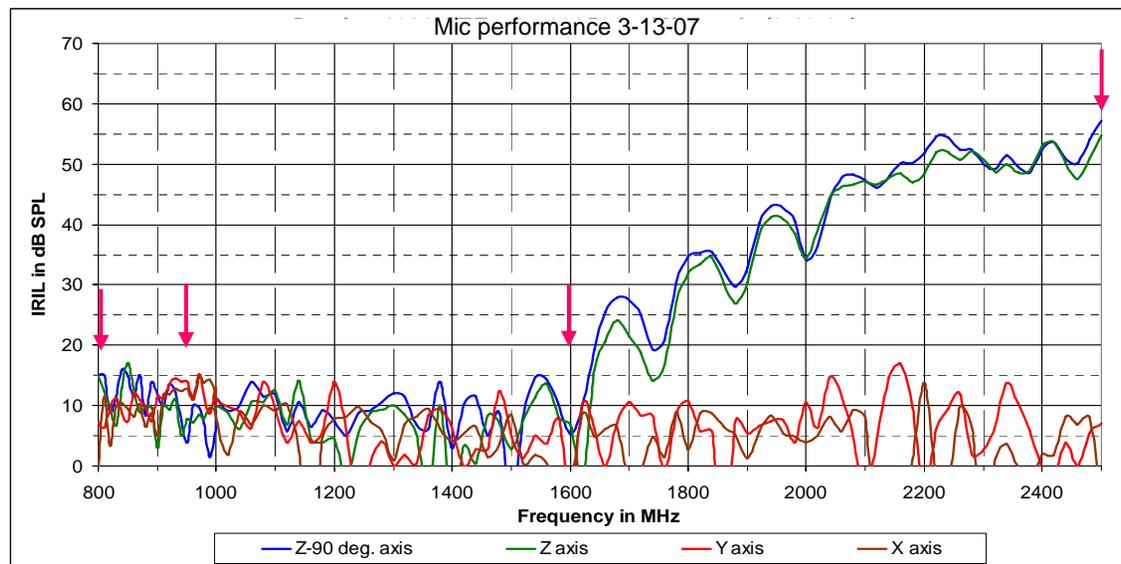
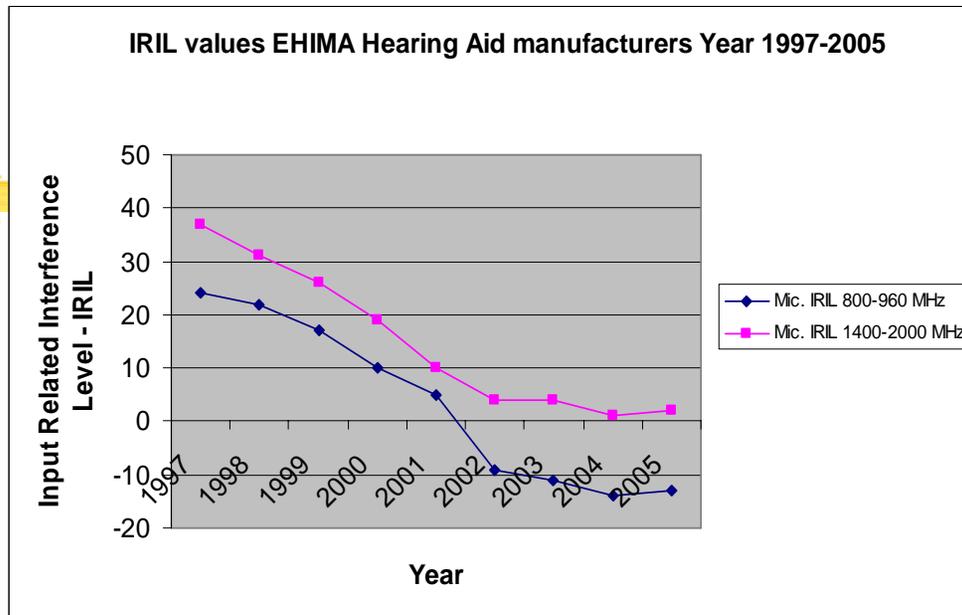
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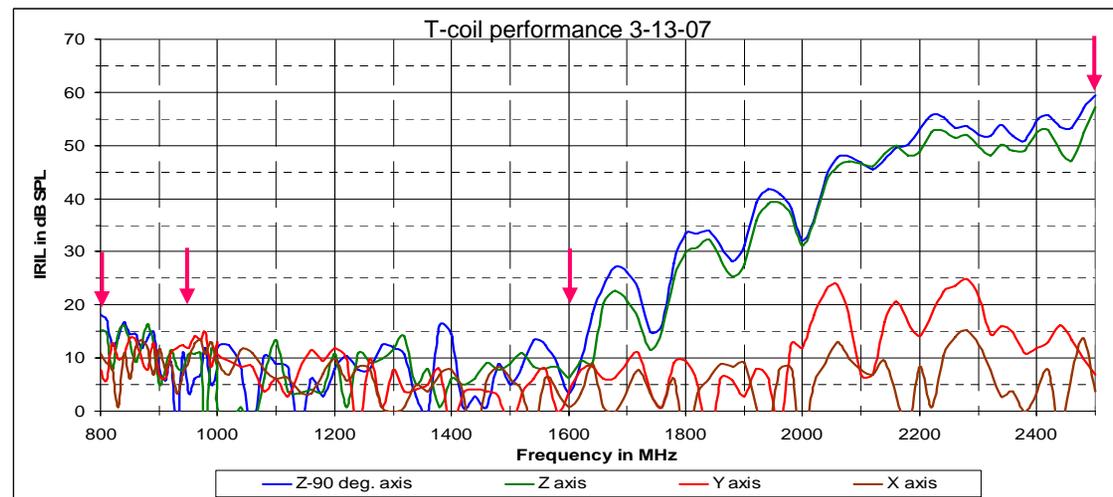
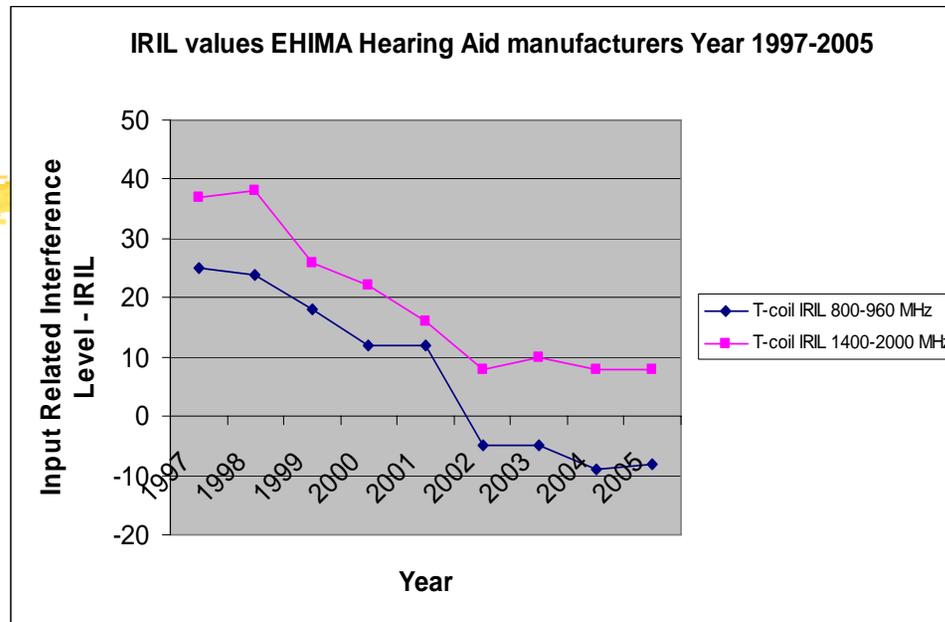
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Current RF Immunity Capability



Current T-coil Immunity Capability



IEEE PC63.9™/D3.4
Draft Standard
for
RF Immunity of Audio Office Equipment to
General Use Transmitting Devices with
Transmitter Power Levels up to 8 Watts

F.3 New and emerging services

Several new services are in the process of being approved or deployed. Table 5 lists those of most interest for this standard.

Band	Frequency	Transmit Power	Service
Land Mobile	698-746, 747-762 and 777-792 MHz Bands	3W	Mobile / Fixed
Advanced Wireless Services (AWS)	1710 – 1755 MHz	1W	Mobile (IMT / 3G)
Advanced Wireless Services (AWS)	2155 – 2175 MHz	1W	Mobile (IMT / 3G)
Mobile	2.5 - 2.689 GHz	2W	Mobile (IMT/3G)
Land Mobile	3650 - 3700 MHz	1W/25MHz eirp	Broadband wireless
Land Mobile	4940 - 4990 MHz	2W	Public Safety

Table 5 – New Services

HEI Study

Joe Morrissey



Joe Morrissey
Motorola
Presentation to the FCC April
8th, 2008

April 8, 2008

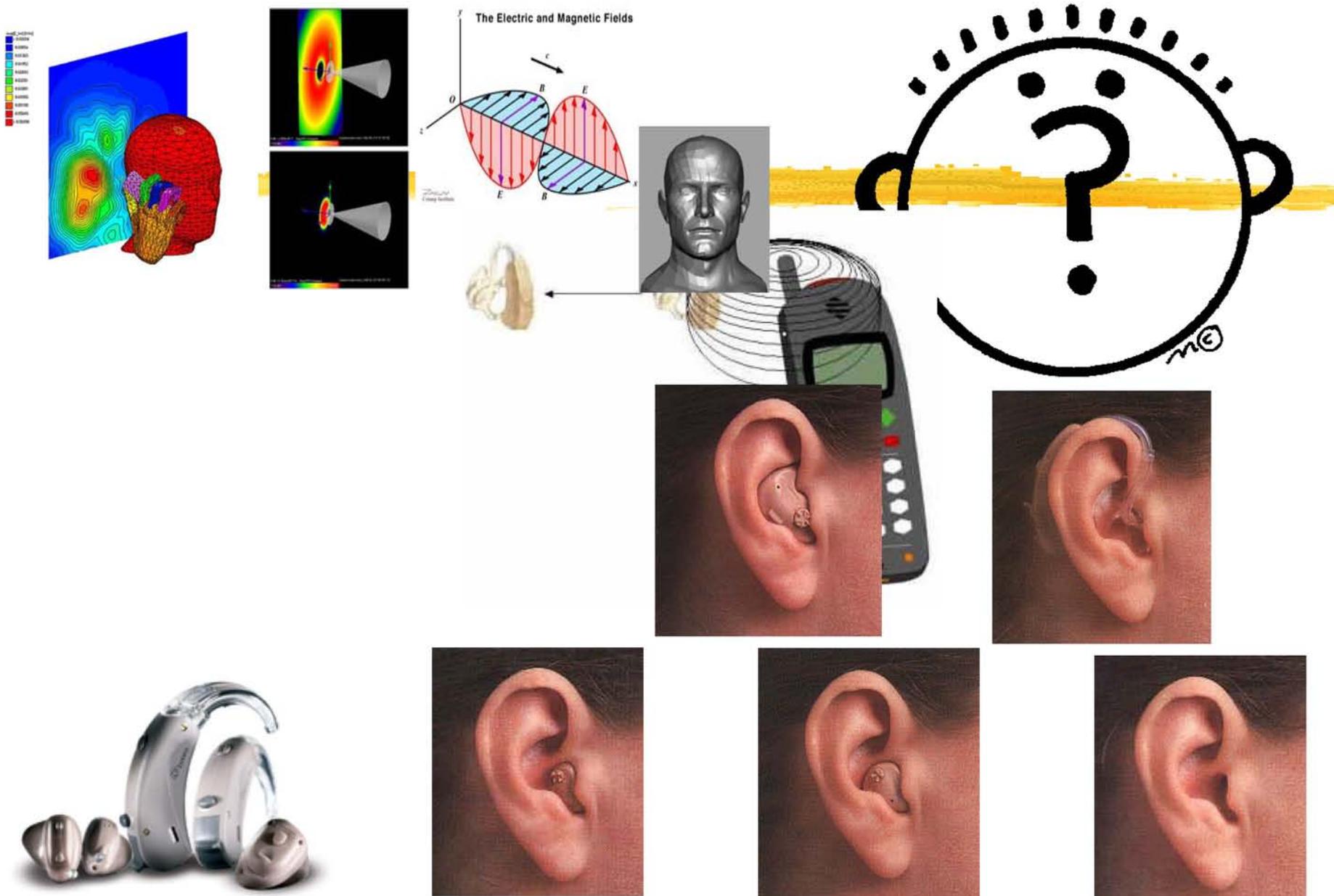
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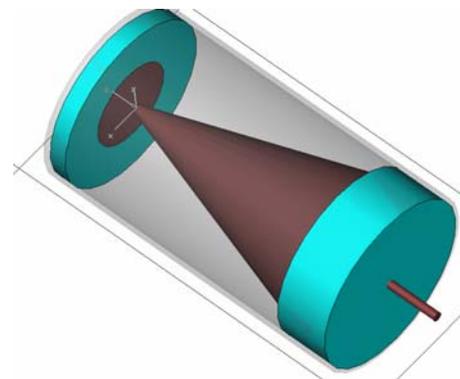
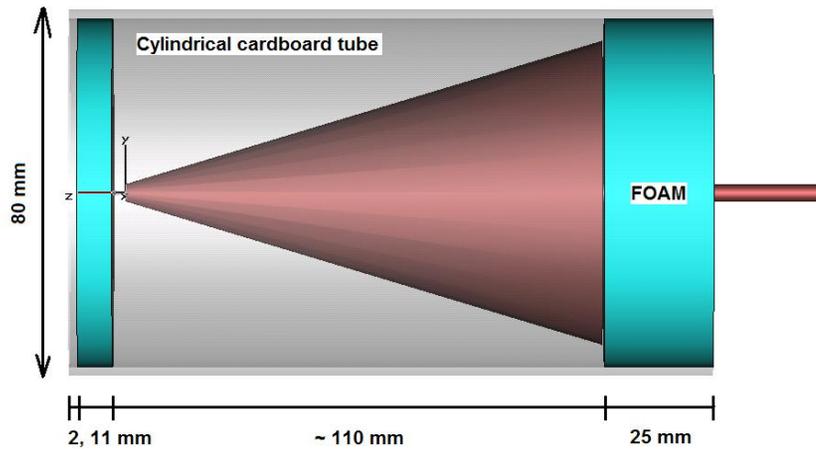
House Ear Institute (HEI) Studies

- **HAC is a very complex issue**
 - ┆ Many variables
 - ┆ Technology evolution → moving targets
 - ┆ RF exposure, provocation design, psychoacoustic tests, acoustic transfer must be properly controlled
- **Robust HAC limits / rules benefit ALL stakeholders**
 - ┆ HA users, HA / wireless manufacturers / carriers, Advocacy Groups (HLAA), ANSI ASC C63®, FCC
- **Funding and support from many stakeholders**
 - ┆ MMF, GSMA, BT SIG, [WFA], [HIA], [WiMax Alliance]
- **NAS Report (through FDA CRADA)**
 - ┆ “... need to conduct human volunteer studies to investigate potential health implications arising from interaction of cell phones with hearing aids and cochlear implants”
- **Approach:**
 - ┆ SCIENCE BASED
 - ┆ OPEN standards structure
 - ┆ ACCEPTED standards process
 - ┆ PREDICTABLE limits and rules





Prototype Research Antenna (Discone)



FCC HAC Meeting



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700 MHz Pickup pattern of bicone

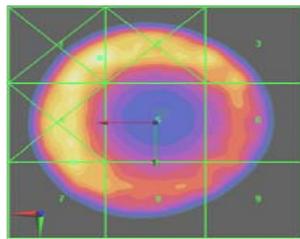
Input Power(W) 35

MEASUREMENTS

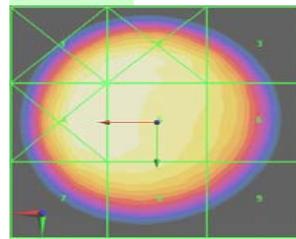
Distance	10mm	15mm	20mm	30mm
E(V/m)	2355.373		1505.643	1160.475
H(A/m)	1.332965		1.029891	0.853659
SAR_1g				
SAR_10g				

Over the surface of DISCONE
-2dB values for H(A/m)= 10mm 15mm 20mm
1.058812 0 0.818072

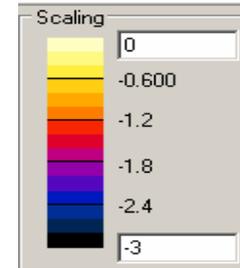
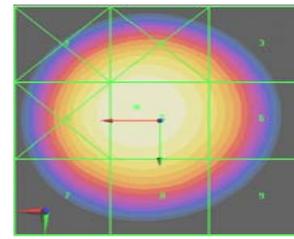
Area 10cmX10cm
Distance 10 mm
E(V/m)



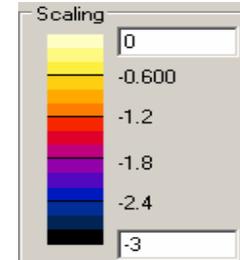
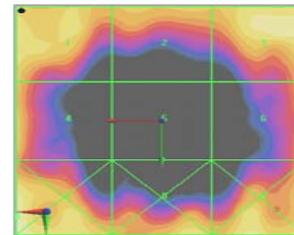
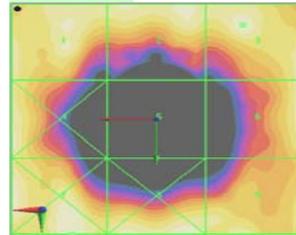
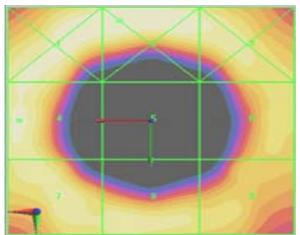
20mm



30mm



H(A/m)



xFDTD SIMULATION

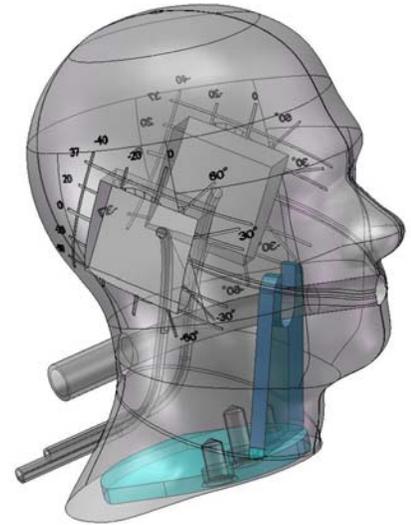
Distance	10mm	15mm	20mm	30mm
E(V/m)	1933.647	1563.257	1344.178	1051.891
H(A/m)	1.278056	1.097127	0.962437	0.775216
SAR_1g	4.88635	6.7102	5.59195	4.88635
SAR_10g		5.1653	4.48035	3.9452

CST SIMULATION

Distance	10mm	15mm	20mm	30mm
E(V/m)				
H(A/m)				

Carbon Impregnated Silicone Head Phantom

Shows loading effect of head on phone transmitted signal



FCC HAC Meeting

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700 MHz/ Wi-Fi report

Dave Case



Dave Case
Cisco
Presentation to the FCC
April 8th, 2008

700 MHz / Wi-Fi Report



- Define the actual technology that will be used in this band (EV-DO, W-CDMA, WiMAX, LTE).
- Availability of actual hardware to perform testing may impact schedule of development.
- Determining the correct Articulate Weighting Factors (AWF) for the technology
- Reviewing probe calibration and test dipole issues
- Keeping the FCC informed on progress

Addressing Wi-Fi Technology



- Limited or no HAC data on Wi-Fi handsets to current version of standard
- Need to address Articulate Weighting Factors for Wi-Fi modulation
- Probe calibration issues for Wi-Fi broadband signals
- Need to address HAC issues for testing above 3 GHz for U-NII and Public Safety radios
- Issues being addressed by task group

Testing Refinements

Stephen Berger



Stephen Berger
TEM Consulting
Presentation to the FCC
April 8th, 2008

Refinements goals



- Adequate testing for HAC with no under testing nor over setting
- Write standard that can be understood and used by testers
- Accommodate where possible improvements in techniques
- Provide research to support any change
- Keep up the pace

Summary / Timeline



- ANSI ASC C63® is determined to provide timely information to address key needs of the FCC
 - 700 MHz by mid-2009
 - WiFi data within 3-6 months
 - New revision of ANSI C63.19 by end-2009
 - Include both laboratory studies and predictive models
- Efforts are also ongoing to streamline and improve the current testing protocol
- We have broad representative stakeholder participation
- A science-based approach to the standard and HAC regulation, as opposed to a position-based approach, is in the best interest of all stakeholders, including ANSI ASC C63® and the FCC

ANSI ASC C63®



- Questions?

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