1200 G Street, NW
Suite 500
Washington, DC 20005

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

September 26, 2006

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. 01-309
Section 68.4(a) of the Commission's Rules Governing Hearing Aid Compatible Telephones

Dear Ms. Dortch:

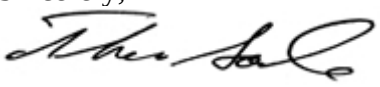
On September 25, 2006, representatives from the Alliance for Telecommunications Industry Solutions ("ATIS") Incubator Solutions Program 4 dealing with Hearing Aid Compatibility issues ("AISP.4-HAC") met with representatives from the Federal Communications Commission's ("FCC") Office of Engineering & Technology ("OET"). At the meeting, the HAC Incubator representatives discussed technical issues and clarifications relating the FCC's TCB training. This discussion was consistent with the written presentations attached to this letter.

In attendance, representing the OET were: Rashmi Doshi, Chief of the Laboratory Division; Martin Perrine, Electronic Engineer, Laboratory Division; and William Hurst, Chief, Technical Research Branch. The individuals representing the AISP.4-HAC were: Steve Coston, Technical Manager, Regulatory Project Office, Sony Ericsson Mobile Communications; David Dzumba, Senior Manager, Nokia; James Turner, Technical Coordinator, ATIS; Martha Ciske, Committee Administrator, ATIS; and Thomas Goode, General Counsel, ATIS.

One copy of this letter is being filed electronically for inclusion in the public record of the above-referenced proceeding.

If there are any questions regarding this matter, please do not hesitate to contact the undersigned.

Sincerely,



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Thomas Goode
General Counsel
The Alliance for Telecommunications
Industry Solutions
1200 G Street NW, Suite 500
Washington, DC 20005
Phone: (202) 434-8830

Attachments

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

Comments in Response to TCB Training Slides

Overview

- AISP.4-HAC Working Group #4 (WG-4) has concerns and questions regarding TCB Training Slides for T-Coil Compatibility measurement.
  - Would like to make these concerns known to the FCC, and understand the rationale for additional requirements used by the FCC in creating the Training Slides.
- This presentation will address the high priority issues.
  - Other issues and agreements reached are documented in a separate presentation.
- This presentation is organized to address:
  - The issue/question pertaining to the TCB slide
  - WG4's Rationale
  - WG4's Recommendation

High Priorities

- Special User Mode
- Simultaneous Transmission
- Video Bandwidth to Resolution Bandwidth
- Peak Envelope Power
- 80% AM Modulation
- Ambient Noise
- Probe Rotation

Issue - Slide 15, Special User Modes

FCC Rules and Policy

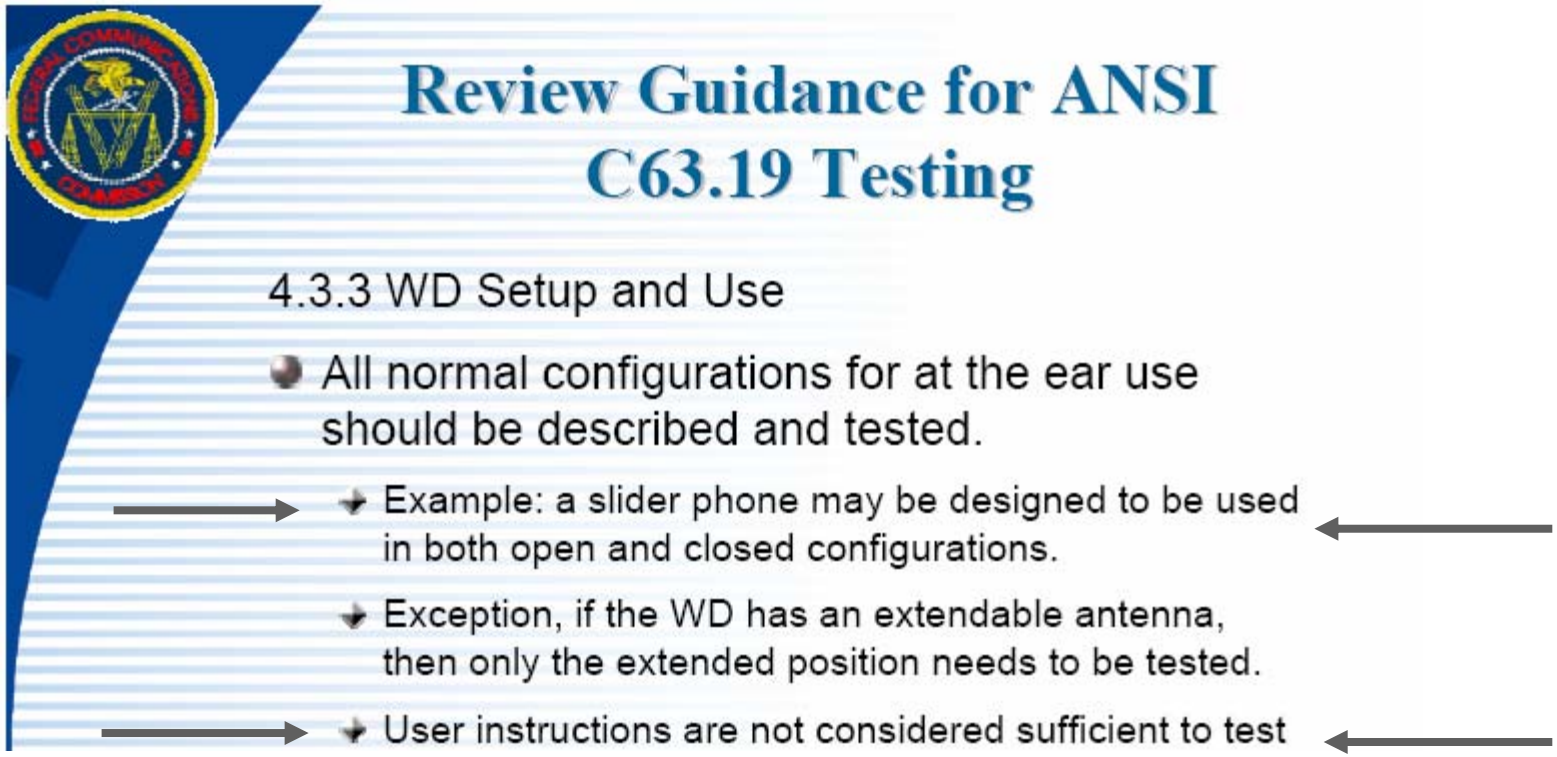
Administrative procedures

- The following applications should be submitted to the FCC.

New

  - Filings with Clause 6 data and
    - S/N is under 15 dB
    - Special user modes for frequency response compliance
  - Filings with RF evaluation of composite devices transmitting simultaneously.
  - Filings that use Mu shielding as mentioned in 6.3.4.2

Issue - Slide 29, Special User Modes



WG-4 Rationale - Slide 15, Special User Modes

- This added requirement conflicts with the intent of Section 4.3.3
  - "Therefore, when the category advertised can only be achieved in certain antenna position(s) or other user configuration instructions are required, these conditions shall be reported with the assigned category in the user documentation, label or other locations where the category information is communicated to the user."

WG-4 Rationale - Slide 15, Special User Modes

- In the foreseeable future, many or all phones will have special HAC modes for frequency response compliance.
- Today many, if not all, phones have audio (t-coil) setting modes.
  - By design these settings are intended to be intuitive and well documented for the consumer in the User Manuals.

WG-4 Recommendation - Slides 15 and 29, Special User Modes

- Remove the requirement to submit special user modes to FCC.
- Allow TCB Labs to review documented manufacturers intended use instructions.

Issue - Slide 15, Simultaneous Transmission

FCC Rules and Policy

Administrative procedures

- The following applications should be submitted to the FCC.

New

  - Filings with Clause 6 data and
    - S/N is under 15 dB
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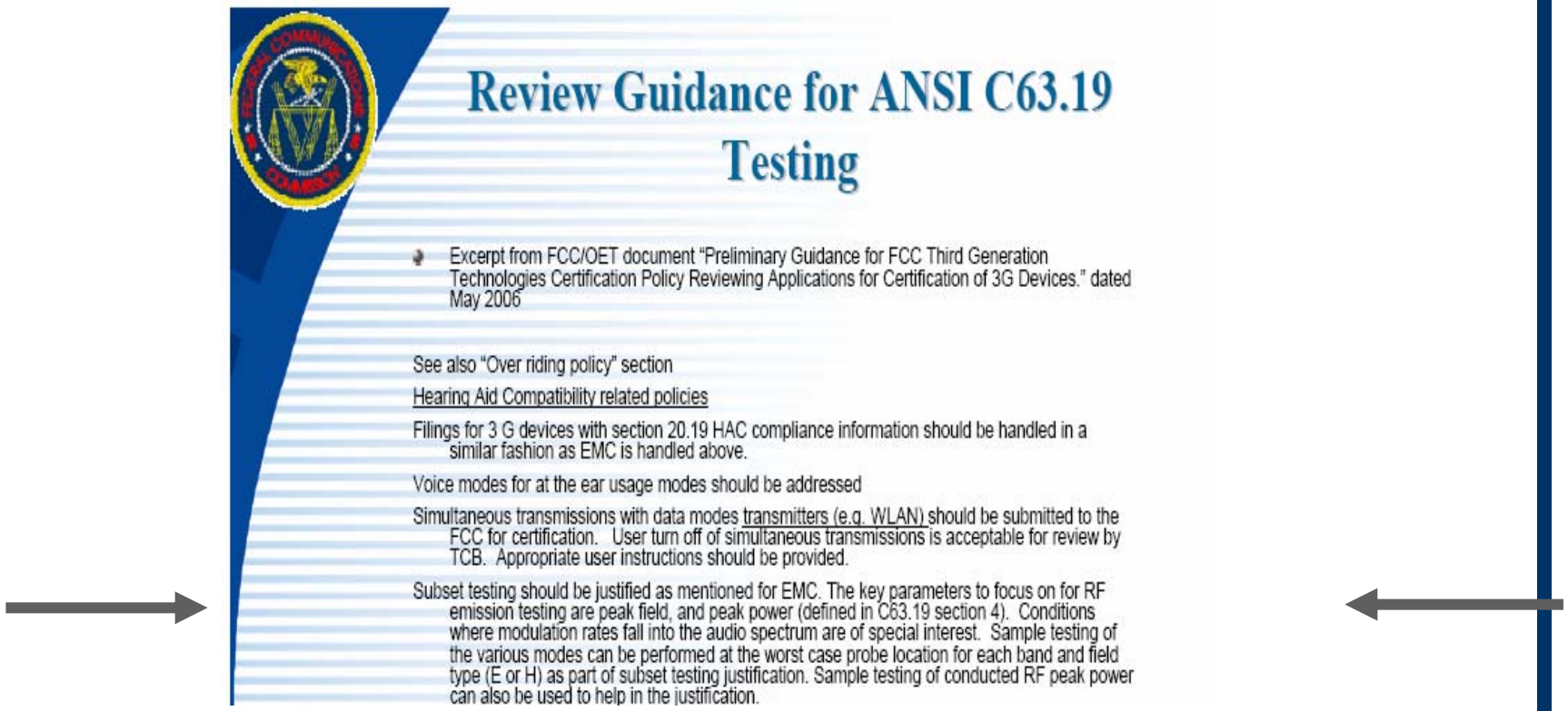
  - Filings that use Mu shielding as mentioned in 6.3.4.2

Issue - Slide 32, Simultaneous Transmission



Review Guidance for ANSI C63.19 Testing

- Excerpt from FCC/OET document "Preliminary Guidance for FCC Third Generation Technologies Certification Policy Reviewing Applications for Certification of 3G Devices." dated May 2006

See also "Over riding policy" section

Hearing Aid Compatibility related policies

Filings for 3 G devices with section 20.19 HAC compliance information should be handled in a similar fashion as EMC is handled above.

Voice modes for at the ear usage modes should be addressed

Simultaneous transmissions with data modes transmitters (e.g. WLAN) should be submitted to the FCC for certification. User turn off of simultaneous transmissions is acceptable for review by TCB. Appropriate user instructions should be provided.

Subset testing should be justified as mentioned for EMC. The key parameters to focus on for RF emission testing are peak field, and peak power (defined in C63.19 section 4). Conditions where modulation rates fall into the audio spectrum are of special interest. Sample testing of the various modes can be performed at the worst case probe location for each band and field type (E or H) as part of subset testing justification. Sample testing of conducted RF peak power can also be used to help in the justification.

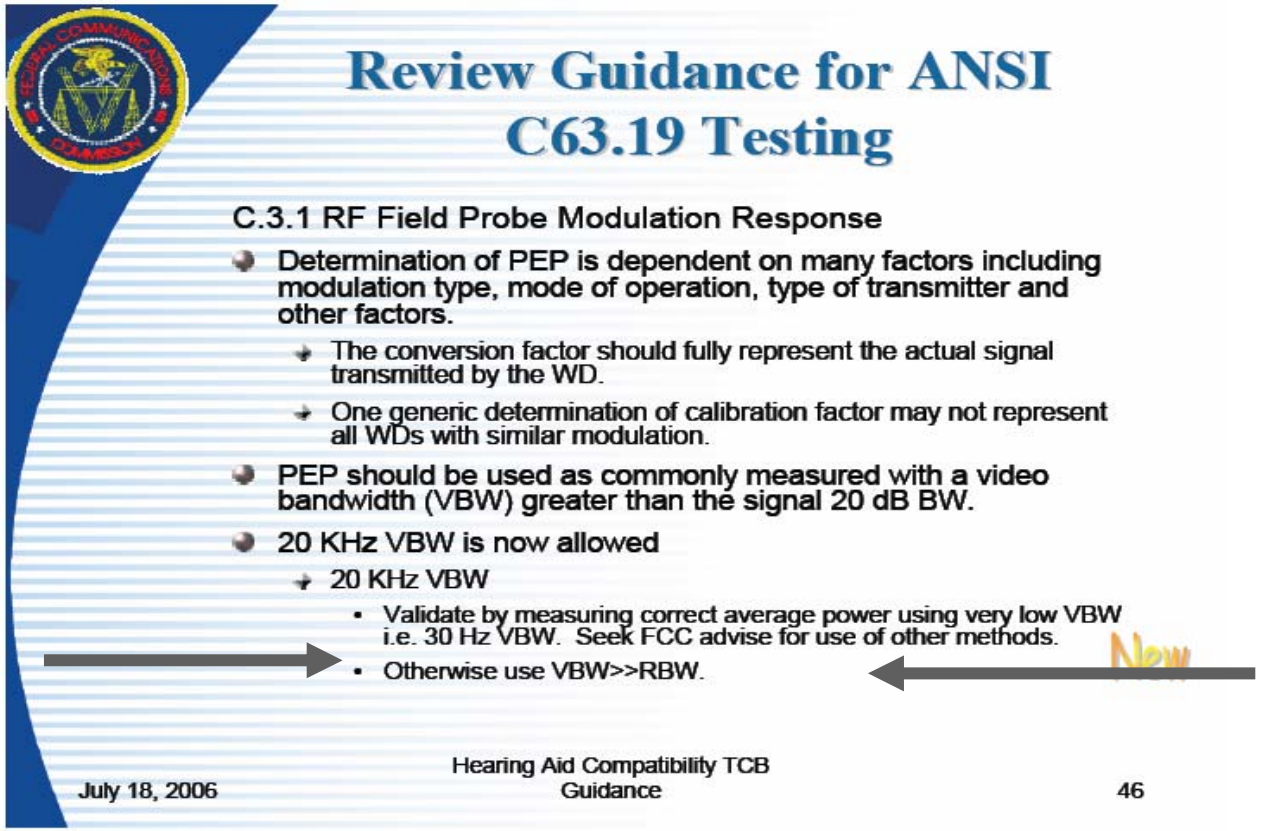
WG-4 Rationale - Slide 15, Simultaneous Transmission

- C63.19 does not address the composite devices like Bluetooth, and should be revised to reference these future configurations.
- Bluetooth **would not** be used for voice with the WD held to the ear (yet it is possible for a consumer to be on a voice call while on a data call connected, via Bluetooth).
- Testing all possible combinations instead of typical use case (especially with phones supporting 3rd party SW) may not be possible.

WG-4 Recommendation - Slides 15 and 32, Simultaneous Transmission

- Remove the requirement to submit simultaneous transmission devices to FCC for testing.
- Allow TCB Labs to test and evaluate devices with the review of documented manufacturers user instructions.

Issue - Slide 46, Video Bandwidth



Review Guidance for ANSI C63.19 Testing

C.3.1 RF Field Probe Modulation Response

- Determination of PEP is dependent on many factors including modulation type, mode of operation, type of transmitter and other factors.
  - The conversion factor should fully represent the actual signal transmitted by the WD.
  - One generic determination of calibration factor may not represent all WDs with similar modulation.
- PEP should be used as commonly measured with a video bandwidth (VBW) greater than the signal 20 dB BW.
- 20 KHz VBW is now allowed
  - 20 KHz VBW
    - Validate by measuring correct average power using very low VBW i.e. 30 Hz VBW. Seek FCC advise for use of other methods.
    - Otherwise use VBW>>RBW.

New

July 18, 2006 Hearing Aid Compatibility TCB Guidance 46

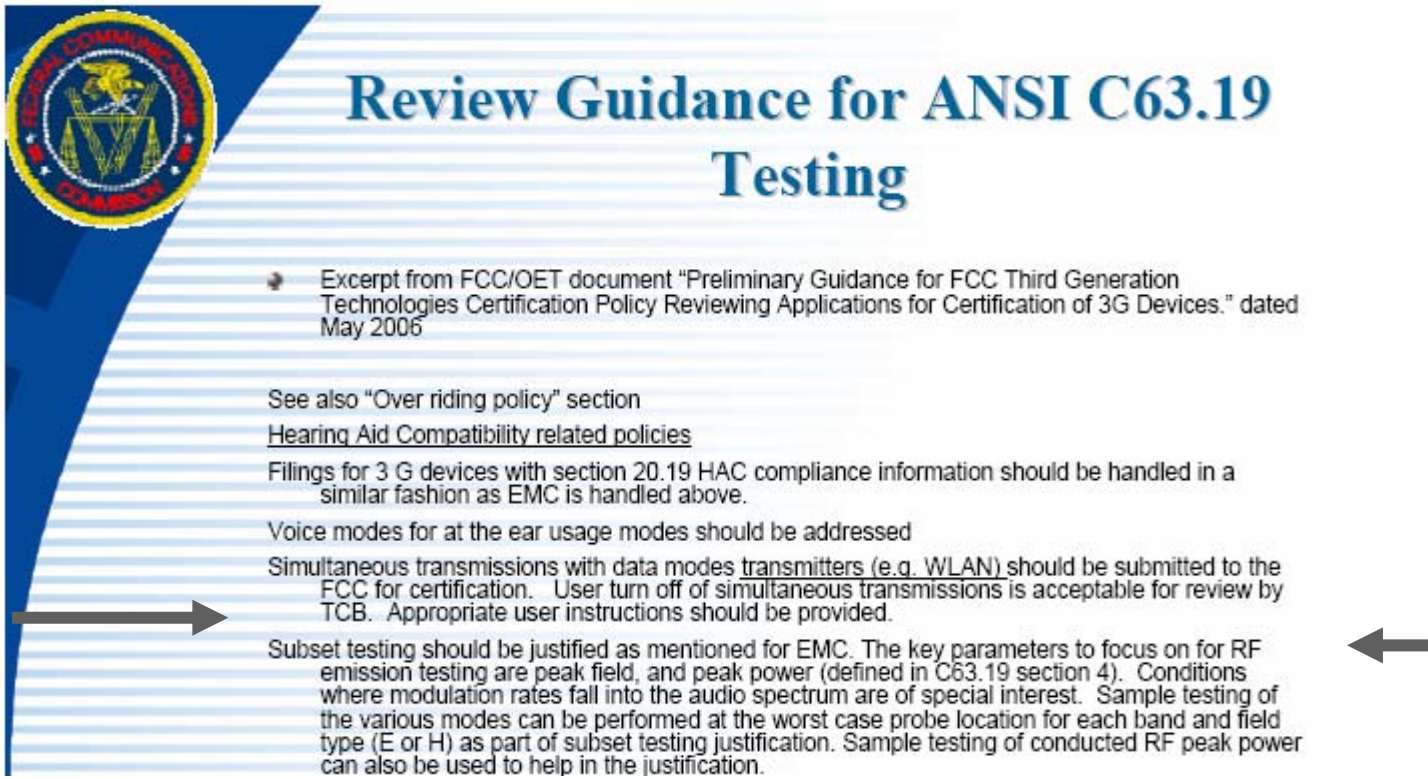
WG-4 Rationale - Slide 46, Video Bandwidth

- Video Bandwidth should be 3 times the Occupied Bandwidth, or 20KHz

WG-4 Recommendation - Slide 46, Video Bandwidth

- WG-4 requests that the FCC clarify the reference to the Slide 46 regarding VBW>>RBW.

Issue - Slide 32, Peak Envelope Power



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See also "Over riding policy" section

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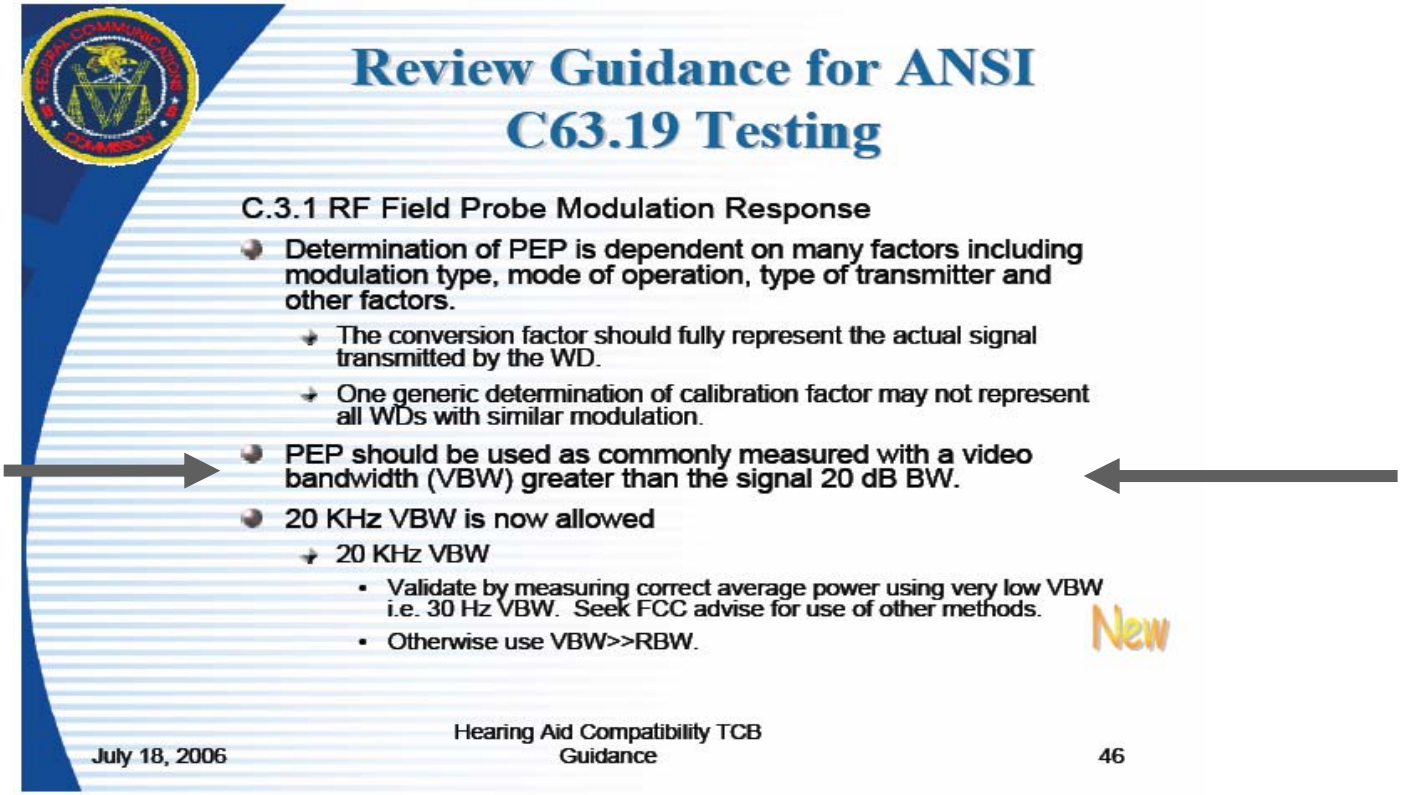
Subset testing should be justified as mentioned for EMC. The key parameters to focus on for RF emission testing are peak field, and peak power (defined in C63.19 section 4). Conditions where modulation rates fall into the audio spectrum are of special interest. Sample testing of the various modes can be performed at the worst case probe location for each band and field type (E or H) as part of subset testing justification. Sample testing of conducted RF peak power can also be used to help in the justification.

Issue - Slide 46, Peak Envelope Power



Review Guidance for ANSI C63.19 Testing

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- Determination of PEP is dependent on many factors including modulation type, mode of operation, type of transmitter and other factors.
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- 20 KHz VBW is now allowed
  - 20 KHz VBW
    - Validate by measuring correct average power using very low VBW i.e. 30 Hz VBW. Seek FCC advise for use of other methods.
    - Otherwise use VBW>>RBW.

New

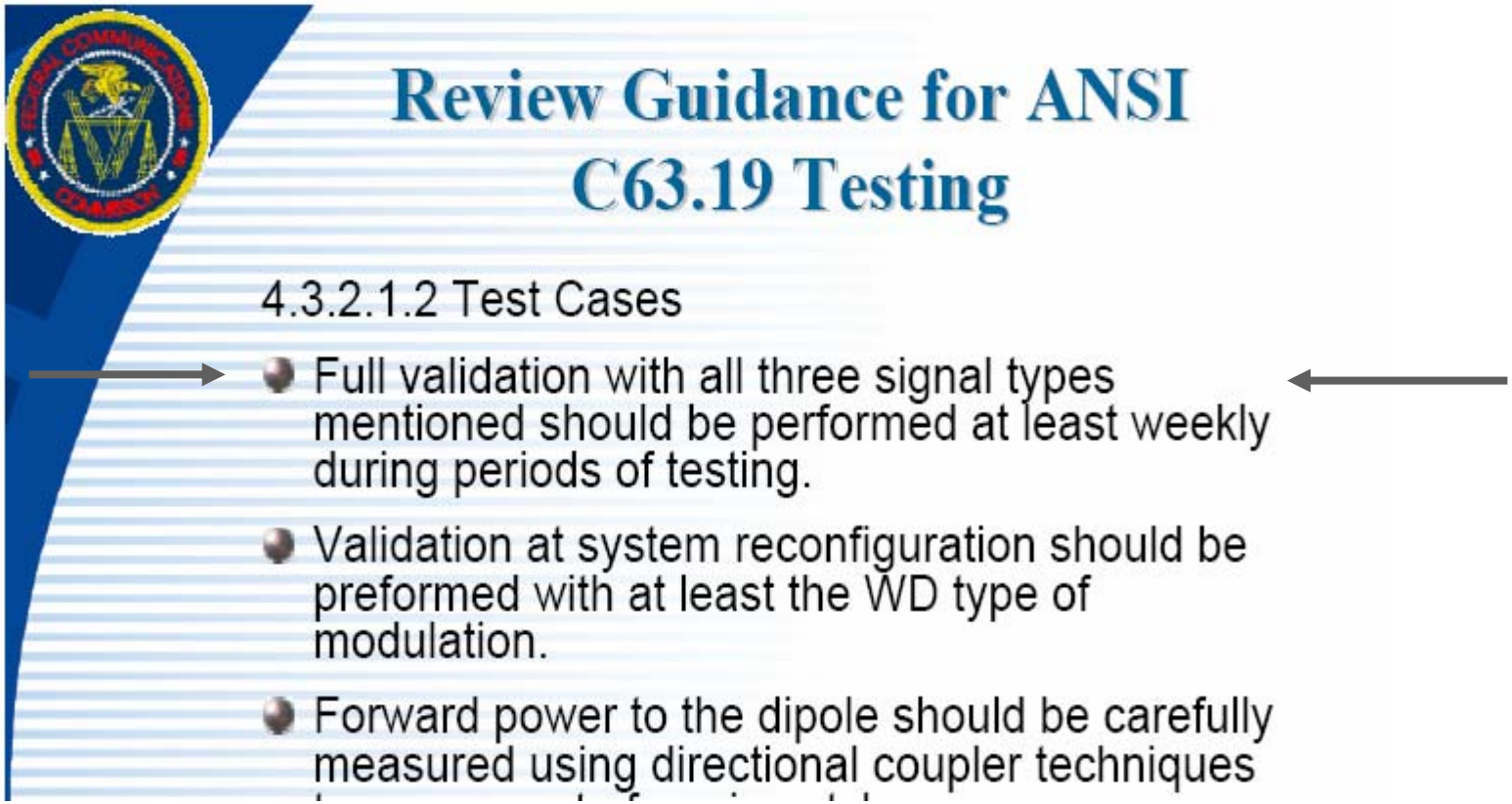
WG-4 Rationale - Slides 32 and 46, Peak Envelope Power

- WG – 4 has noted that the consumer does not hear the peaks as was shown with the *i*DEN waveform example provided in an earlier ex-parte
- The intent should be to determine if a WD will be compatible with a HA wearer and not require test methods to operations that do not represent typical performance.
- Peak Power adds over 5 dB in some air interfaces, yet consumers are not effected by this added requirement.

WG-4 Recommendation - Slides 32 and 46, Peak Envelope Power

- WG-4 recommends that the FCC allow average power during the (active slot) pulse.

Issue - Slide 24, 80% AM Signal Type



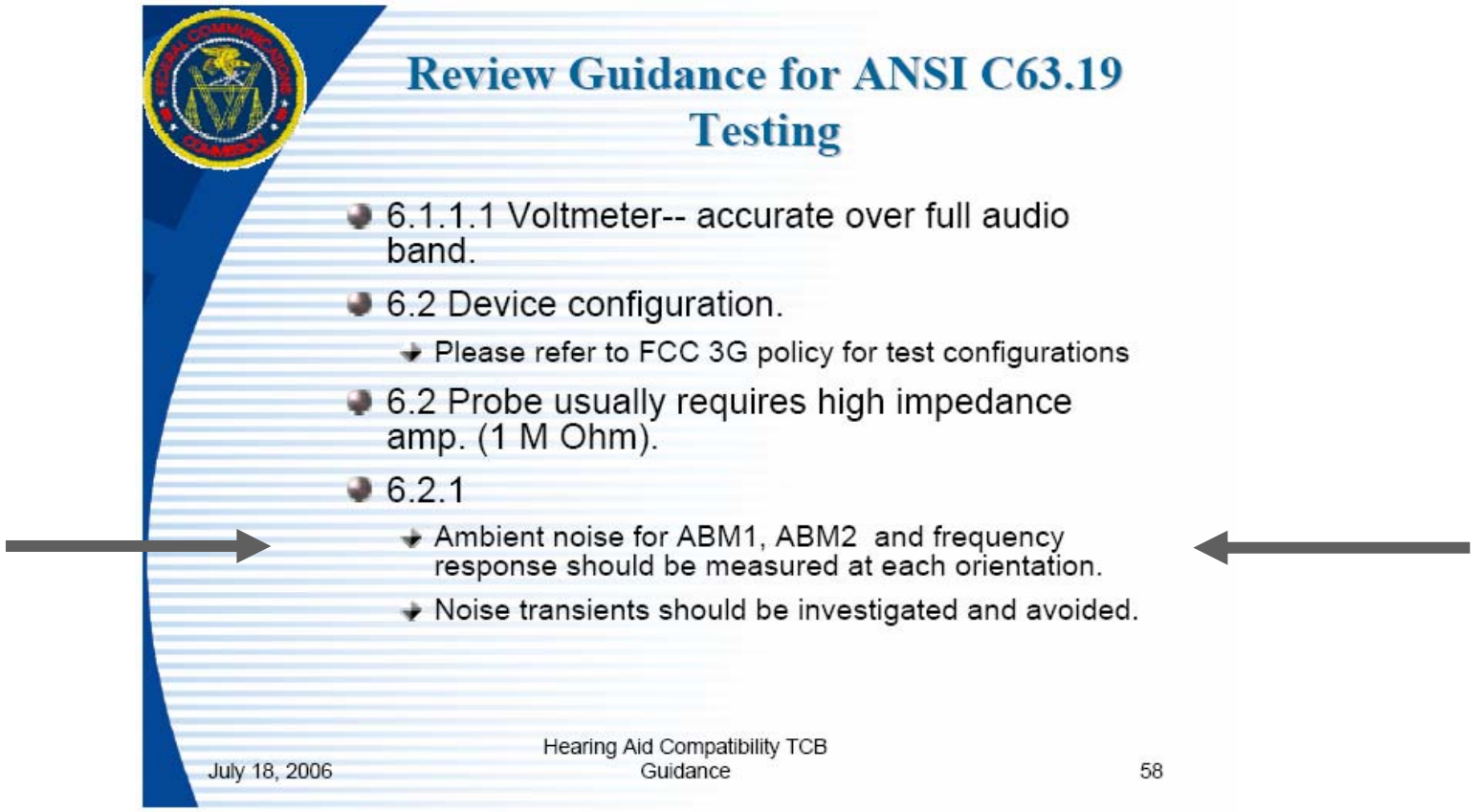
WG-4 Rationale - Slide 24, 80% AM Signal Type

- Additional requirement forces (weekly) full validation including the third signal - 1 kHz 80% AM.
- 80% AM is never used for WD testing (only for HA devices)
- Section 4.3.2.1.2 only recommends, but does not mandate all three signal types.
- This requirement adds significantly to the test time.

WG-4 Recommendation - Slide 24, 80% AM Signal Type

- Recommend that the FCC not mandate the 80% AM requirement; and
- Remove it from the validation requirement.

Issue - Slide 58, Ambient Noise



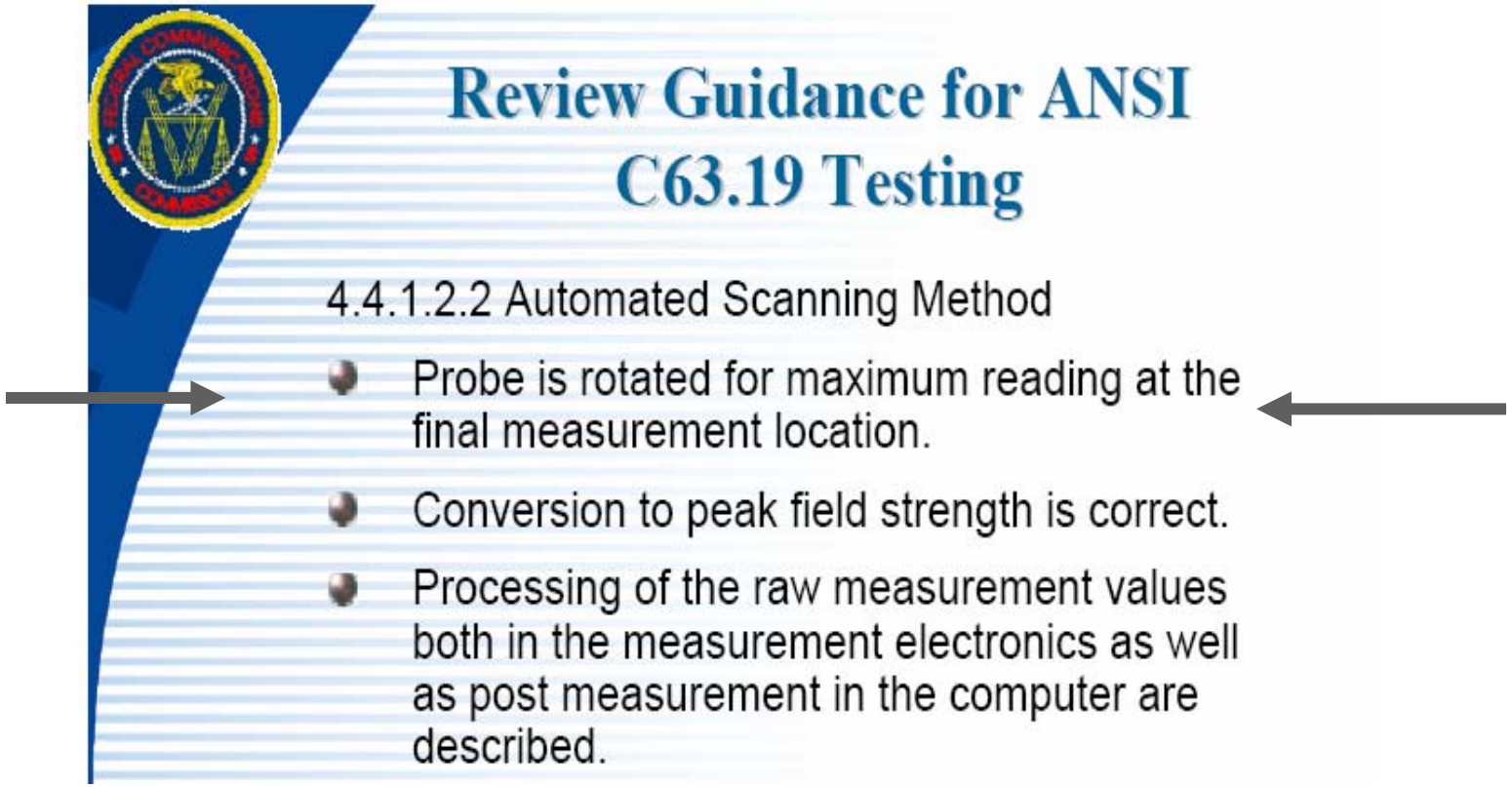
WG-4 Rationale - Slide 58, Ambient Noise

- Why measure a second Ambient noise for ABM2?
- What are the orientations – Vertical and Horizontal?

WG-4 Recommendation - Slide 58, Ambient Noise

- Request the FCC clarify the requirement to state Ambient noise and Frequency Spectrum should be measured at each orientation.

Issue - Slide 36, Probe Rotation



WG-4 Rationale - Slide 36, Probe Rotation

- Rotation is not necessary when using a 3D probe.
- WG-4 tests show less than .3dB difference between positions when using an isotropic probe (with orthogonal elements).
- Differences from an ideal isotropic probe can be represented in the uncertainty budget calculation.

WG-4 Recommendation - Slide 36, Probe Rotation

- Change requirement to specify that the “Probe rotation is not required for 3-dimensional probes."

WG-4 Summary and Recommendations

- Concerns with high priority issues are noted.
- Incorporation of recommendations will remove controversy between FCC TCB Training slides and Agreements Reached through AISP.4-HAC Members.
- Recommends that the FCC endorse the following *AISP.4-HAC Agreements Reached* for clarification of C63.19 Measurement Standard.
- Questions or requests for additional discussion will be honored.

WG-4 Recommendation - AISP.4-HAC Agreements Reached

- When performing C63.19 Sections 6.3 & 6.4, no CW signal should be used for CDMA or GSM devices for ABM1.
- When performing C63.19 section 6.3.2.1 and other relevant sections time averaging should be used with an artificial speech based signal when setting the input reference level. The averaging period needs to be adequate to cover the signal period and the averaging method should be the same for setting the reference level and performing the measurement.

WG-4 Recommendation - AISP.4-HAC Agreements Reached (cont'd)

- When performing C63.19 section 6.4 and other relevant sections some calculation is always going to be required if a broadband signal is used, but the calculation can be limited to a 1KHz amplitude correction if special techniques' are utilized.
- When performing C63.19 sections 6.3 & 6.4, the same vocoder rate that is used in section 4. 4.2.2.1 should be used during the measurement.

If you have any questions regarding this matter, please contact:

Thomas Goode
ATIS General Counsel
tgoode@atis.org

James Turner,
ATIS Technical Coordinator
jturner@atis.org

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

Comments in Response to TCB Training Slides

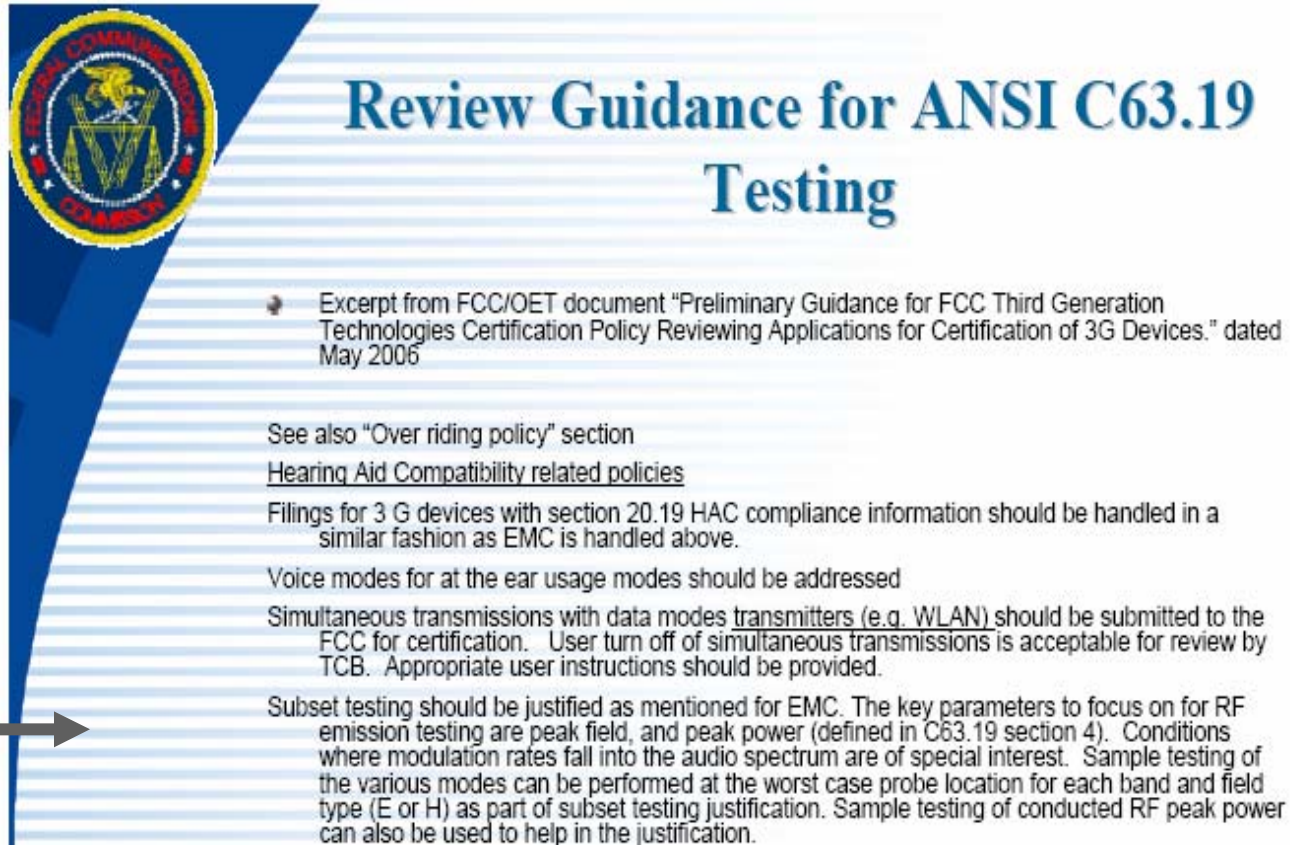
Overview

- This presentation lists the AISP.4-HAC Working Group #4's (WG4) lower priority issues regarding the TCB Training Slides and additional issues concerning C63.19 methods.
  - Other issues are documented in a separate presentation
- Presentation organized to address:
  - The issue/question pertaining to the TCB slide
  - WG4's Rationale
  - WG4 Recommendations

Additional Issues

- Vocoder Modes
- FCC Policy for 3G Configuration of Device
- 8kHz vs.10 kHz Range
- Input Spectrum Requirements
- T-coil and RF Channel
- Sum of Ratings
- Probe Cable Wording
- Adjustment Factor Wording
- Manual Scanning

Issue - Slide 32, Vocoder modes



Review Guidance for ANSI C63.19 Testing

- Excerpt from FCC/OET document "Preliminary Guidance for FCC Third Generation Technologies Certification Policy Reviewing Applications for Certification of 3G Devices." dated May 2006

See also "Over riding policy" section

Hearing Aid Compatibility related policies

Filings for 3 G devices with section 20.19 HAC compliance information should be handled in a similar fashion as EMC is handled above.

Voice modes for at the ear usage modes should be addressed

Simultaneous transmissions with data modes transmitters (e.g. WLAN) should be submitted to the FCC for certification. User turn off of simultaneous transmissions is acceptable for review by TCB. Appropriate user instructions should be provided.

Subset testing should be justified as mentioned for EMC. The key parameters to focus on for RF emission testing are peak field, and peak power (defined in C63.19 section 4). Conditions where modulation rates fall into the audio spectrum are of special interest. Sample testing of the various modes can be performed at the worst case probe location for each band and field type (E or H) as part of subset testing justification. Sample testing of conducted RF peak power can also be used to help in the justification.

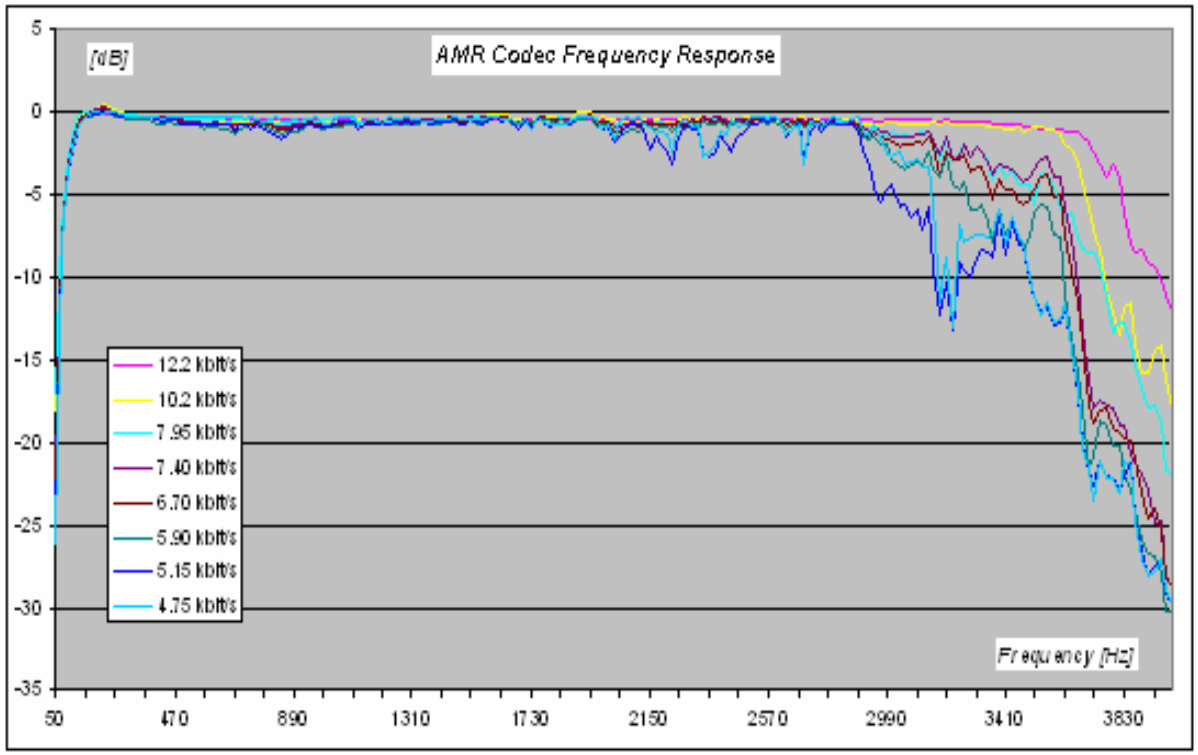
WG-4 Rationale - Slide 32,Vocoder Modes

- Most vocoder modes will not pass HAC T-Coil frequency response requirements.
- Many vocoders are not intelligible (used to hold a call up during periods of silence, conserving band width). An example is CDMA 1/8 rate.
- GSM, *i*DEN, and UMTS vocoder rates have no impact on HA interference. GSM (EFR), utilizes best speech quality
- Vocoder voice quality degradation is the same for all. HAC devices should meet same requirement.

WG-4 Rationale - Slide 32,Vocoder Modes

- Significant time is added to test time when requiring all vocoders.
- AISP.4-HAC Agreement
  - **“When performing C63.19 sections 6.3 & 6.4, the same vocoder rate that is used in section 4.4.1.2.2. should be used during the measurement.”**

Frequency Response Of The AMR Codec



AMR Codec Modes [kbit/s]	Attenuation @ freq=302 Hz [dB]	Attenuation @ freq=3410 Hz [dB]
12.2	-0.28	-0.76
10.2	-0.18	-1.02
7.95	-0.11	-3.87
7.4	-0.23	-3.32
6.7	-0.32	-4.66
5.9	-0.45	-7.38
5.15	-0.30	-8.65
4.75	-0.24	-8.11

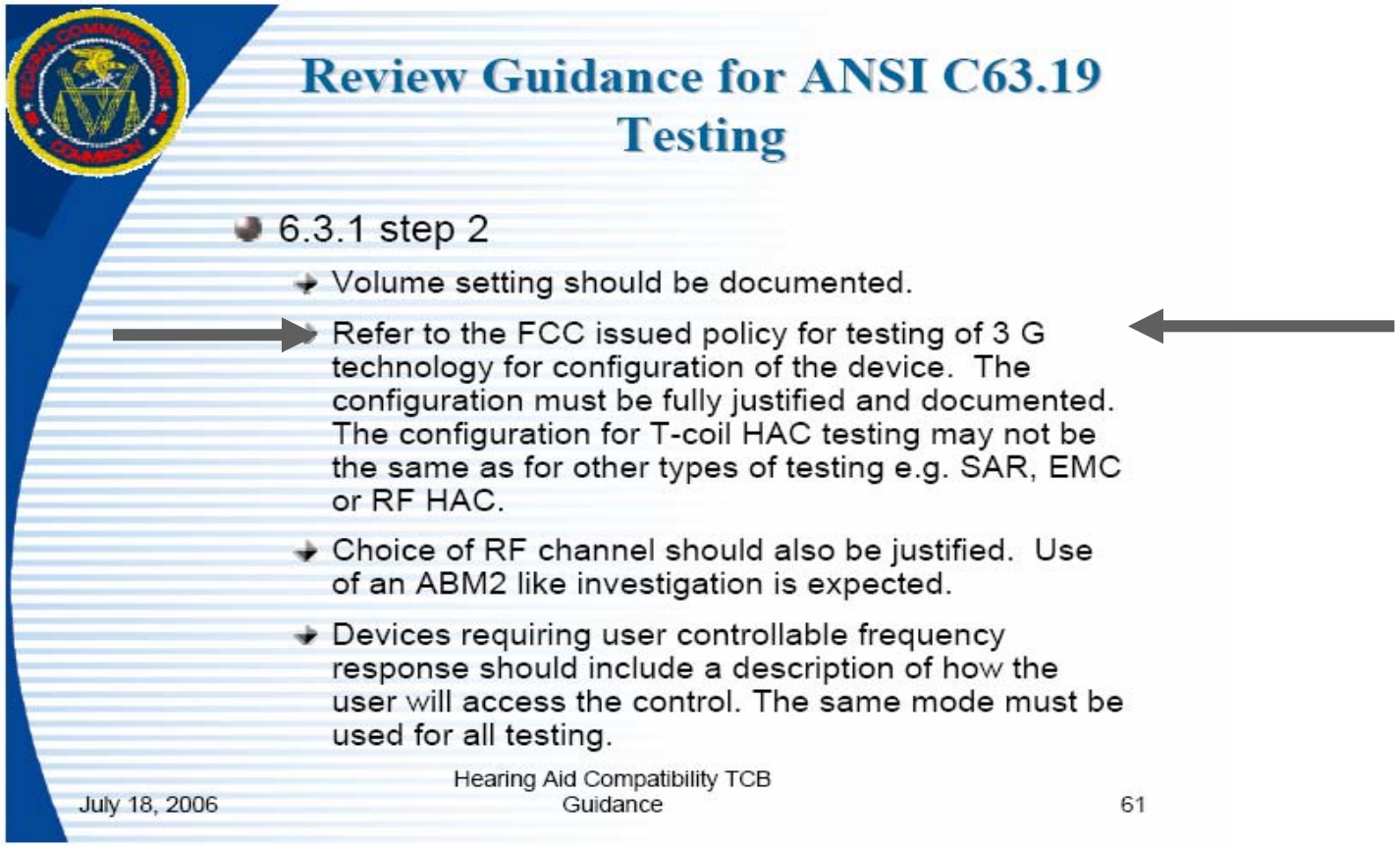
SOURCE: 3GPP TR 26.975

http://www.3gpp.org/ftp/Specs/html-info/26975.htm

WG-4 Recommendation - Slide 32, Vocoder Modes

- Adopt the AISP.4-HAC agreement reached regarding evaluation and testing vocoder modes for hearing aid compatibility.

Issue - Slide 61, Policy for 3G



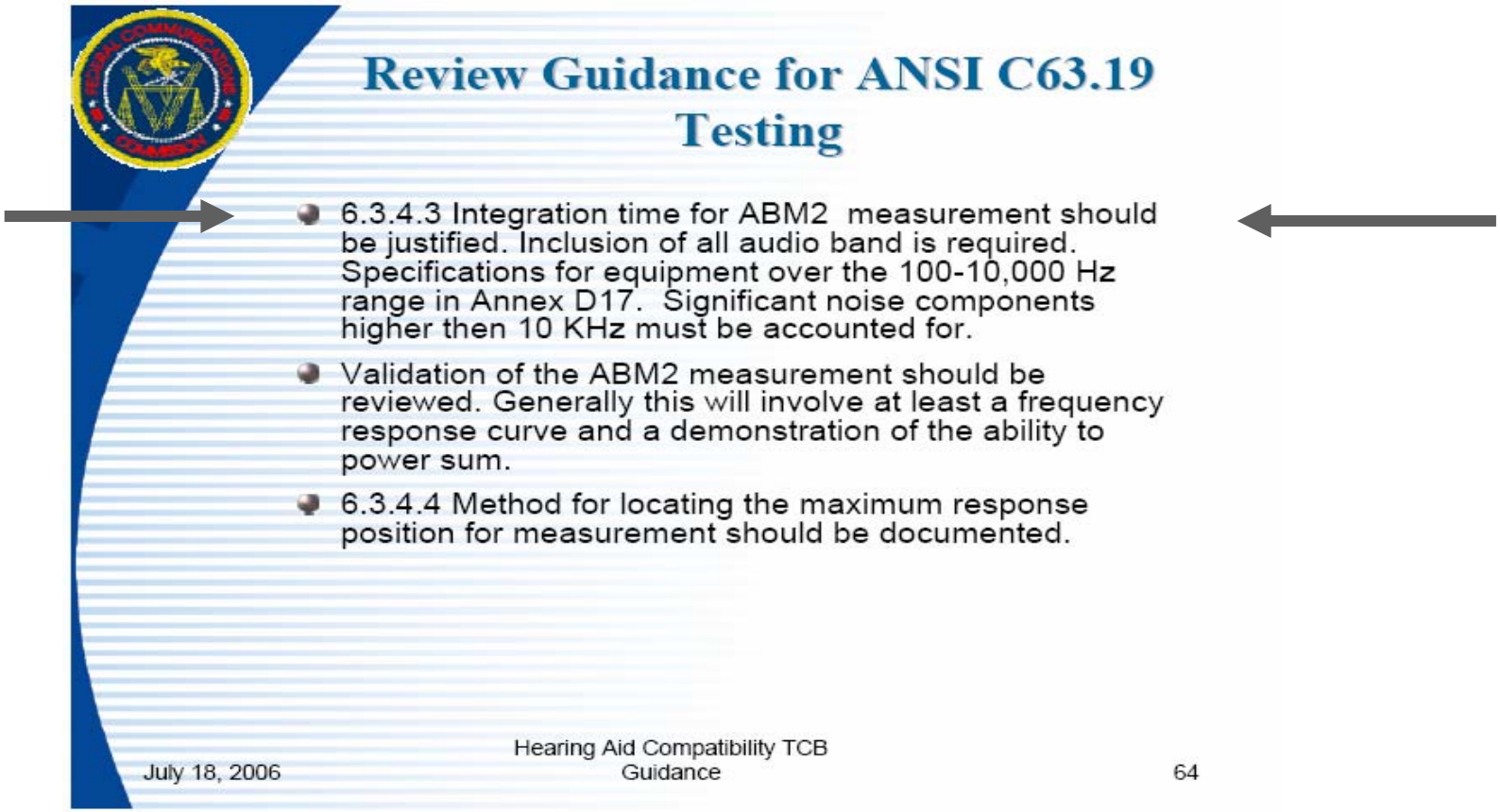
WG-4 Rationale - Slide 61, Policy for 3G

- Additional detail is needed regarding ‘special FCC policy for 3G technology for configuration of the device’

WG-4 Recommendation - Slide 61, Policy for 3G

- Request clarification to what is meant by special FCC policy for 3G technology for configuration of the device.

Issue - Slide 64, 8 kHz vs. 10 kHz



WG-4 Rationale- Slide 64, 8 kHz vs. 10 kHz

- HA response drops off at 8 kHz per Audiologist Association America information (AAA).
- HLAA testing verified the 8 kHz high end limit.
- The HA specification ANSI 3.22 stops at 8 kHz.
- This AISP.4-HAC agreement reached was developed when 20 KHz was being proposed:
  - **The ABM2 measurement bandwidth is between 100 Hz and 10 kHz.**

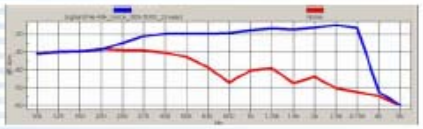
WG-4 Recommendation- Slide 64, 8 kHz vs. 10 kHz

- Recommend FCC to update TCB Guidance slides to reflect 8 kHz as the upper limit.

Issue - Slide 65, Input Spectrum

Review Guidance for ANSI C63.19 Testing

- 6.4.1 step 4 Measurement of the input spectrum is expected. TCB review of other procedures mentioned should be done only after seeking FCC advise.



- 6.4.1 step 7 When time integration is required it generally should be performed over the same length of time as used to measure the input signal and synchronized with the file.

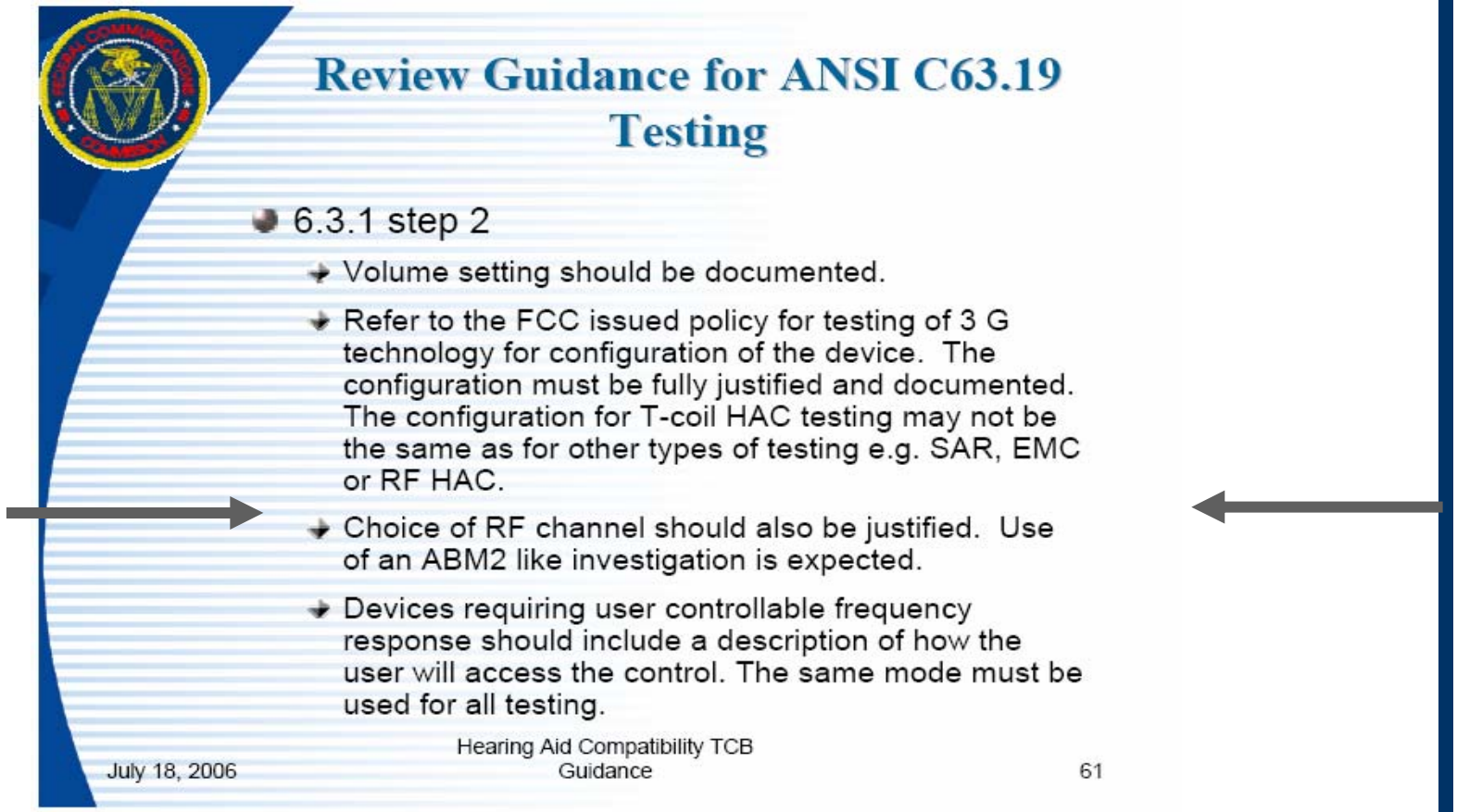
WG-4 Rationale - Slide 65, Input Spectrum

- 6.4.1 Measurement of the input spectrum will be supplied for Test Set Up, and anytime a calibration is changed.

WG-4 Recommendation - Slide 65 Input Spectrum

- This measurement should only be required during calibration or when equipment is changed in the set-up.
- Request FCC update the TCB Guidance slides to reflect the recommendations for input spectrum.

Issue - Slide 61, T-coil & RF Channel



Review Guidance for ANSI C63.19 Testing

- 6.3.1 step 2
  - Volume setting should be documented.
  - Refer to the FCC issued policy for testing of 3 G technology for configuration of the device. The configuration must be fully justified and documented. The configuration for T-coil HAC testing may not be the same as for other types of testing e.g. SAR, EMC or RF HAC.
  - Choice of RF channel should also be justified. Use of an ABM2 like investigation is expected.
  - Devices requiring user controllable frequency response should include a description of how the user will access the control. The same mode must be used for all testing.

July 18, 2006 Hearing Aid Compatibility TCB Guidance 61

WG-4 Rationale - Slide 61, T-coil & RF Channel

- This is not a requirement of C63.19 Measurement Standard.
- Differences between channels in the same frequency band have been noted to be minimal.

WG-4 Recommendation - Slide 61, T-Coil & RF Channel

- Please explain rationale for additional requirement.

Issue - Slide 18, Sum of Rating

C63.19 Testing

A brief overview

- Phones/WDs are also rated for quality of desired signal in T coil mode.
  - Tcoil mode ratings are based on measurement of audio band magnetic signal strength, signal to noise, and frequency response.
- Sum of hearing aid and phone ratings gives a measure of performance for the hearing aid and WD pair.

WG-4 Rationale - Slide 18, Sum of Rating

- HA's are not labeled and HLAA testing data does not correlate to C63.19 expectations
- C63.19 is a measurement standard and is not a predictor of usability.

WG-4 Recommendation - Slide 18, Sum of Rating

- Recommend that the FCC remove this reference from the TCB Guidance Slides since the HA industry does not label their products.

Issue - Slide 28, Probe Cable Wording

4.3.2.1.3 and 4.3.2.1.4
Procedure using … Dipoles

- Orientation of the probe relative to the dipole is critical. In general the probe tube should be parallel to the dipole fee coax with the dipole off the end of the probe.

Hearing Aid Compatibility TCB

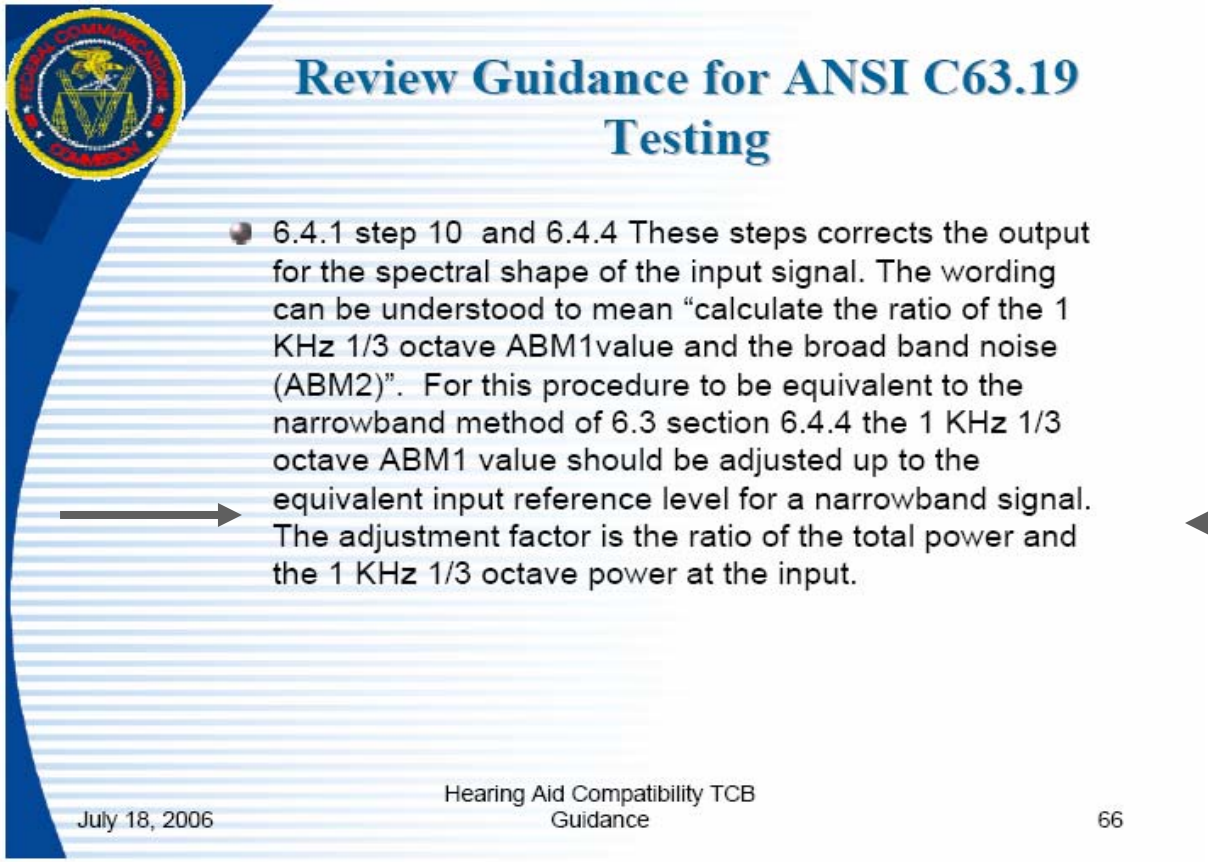
WG-4 Rationale - Slide 28, Probe Cable Wording

- The wording is not correctly stated regarding the alignment.

WG-4 Recommendation- Slide 28, Probe Cable Wording

- Recommend that the FCC correct the reference wording in the slide to state:
  - **The probe cable and electronics should be orthogonal with the dipole.**

Issue - Slide 66, Adjustment Factor



Review Guidance for ANSI C63.19 Testing

- 6.4.1 step 10 and 6.4.4 These steps corrects the output for the spectral shape of the input signal. The wording can be understood to mean "calculate the ratio of the 1 KHz 1/3 octave ABM1value and the broad band noise (ABM2)". For this procedure to be equivalent to the narrowband method of 6.3 section 6.4.4 the 1 KHz 1/3 octave ABM1 value should be adjusted up to the equivalent input reference level for a narrowband signal. The adjustment factor is the ratio of the total power and the 1 KHz 1/3 octave power at the input.

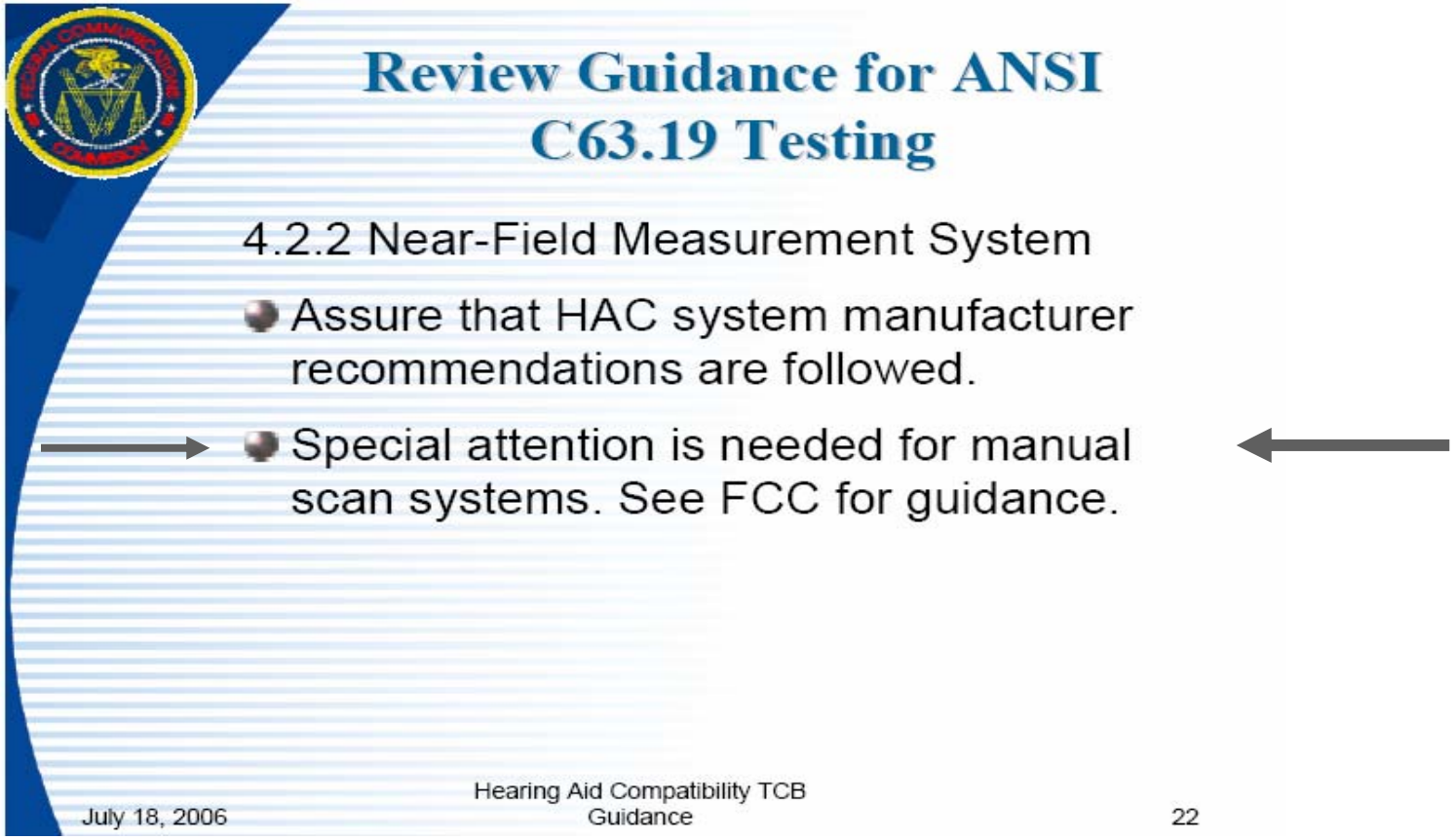
WG-4 Rationale - Slide 66, Adjustment Factor

- The filter has energy components outside of the ABM1 passband and must be accounted for.
- The present wording can only be understood after having studied the standard.

WG-4 Recommendation - Slide 66, Adjustment Factor

- The proposed changes should be inserted in the TCB Guidance slides, stating:
  - ....Section 6.3, change the end of the sentence:
    - **FROM; “at the input“**
    - **TO; “of the input signal”**

Issue - Slide 22, Manual Scan



WG-4 Rationale - Slide 22, Manual Scan

- The manual scanning method was developed before the FCC had the ability of automated, robotic systems.

WG-4 Recommendation - Slide 22, Manual Scan

- Manual scanning should not be endorsed by the FCC.
- The Manual Scan should be removed from the TCB Guidance slides.

If you have any questions regarding this matter, please contact:

Thomas Goode
ATIS General Counsel
tgoode@atis.org

James Turner,
ATIS Technical Coordinator
jturner@atis.org