

During the July 2006 TCB conference call review guidance was provided for Hearing Aid Compatibility reviews. It appears that additional work may be helpful to fully implement all aspects of the training. Please provide details (in text) of what further review has revealed to fully implement the training and what corrective action were thereafter made. Depending on your answer additional RTs may follow.

Applications for Clause 6 certification must clearly indicate testing and categorization HAC standard. PCTEST TCB is only certifying the latest standard: ANSI C63.19-2006 v3.12. Legacy handsets to be C2PC certified at PCTEST TCB for Clause 6 under v3.12 are required to have a Clause 4 Report under v3.12 on record or to be submitted with the application. Therefore, handsets that were previously tested and certified under Clause 4 at PCTEST under ANSI PC63.19-2005 v3.6 are required to be re-tested or re-evaluated (as appropriate) under the new standard per Page 13 of Review Guidance. In particular, handsets with GSM that were previously tested under v3.6 for compliance in the PCS band (with a cellular band waiver), were re-tested under v3.12 for both bands for Clause 6 C2PC certification purposes. Handsets with CDMA or UMTS that were previously tested under v3.6 are re-evaluated to the new limits specified under v3.12. For any handsets with Clause 4 Reports in C63.19 v3.6, their respective HAC RF Emissions Test Reports under C63.19 v3.12 are included in either a Class II Permissive Change for RF Emissions or within the Clause 6 application. The PCTEST Report for this application includes a line item on Page 1 of the report stating the HAC RF Emissions Rating referenced to the respective HAC standard version.

Per recommendation on Page 12 of Review Guidance, PCTEST TCB has adopted the grant comment line text for all HAC grants, "HAC Rating: M# T#". Such applications are required to fully reflect ANSI C63.19-2006 ratings per Page 5 of the Review Guidance. During the TCB review process an additional review is performed to check the Clause 4 report

on file with the FCC. The PCTEST Report for this application includes Clause 4 ratings on the test report cover page.

According to Page 15 of the Review Guidance, applications with measured signal quality ratios of 15 dB or less will be sent directly to the commission with permission from the applicant. PCTEST TCB has adopted an internal policy of issuing TCB grants with signal quality ratios of 20 dB or greater, in lieu of ANSI C63.19 and ATIS (industry) discussions toward a future amendment of the standard. The PCTEST Report for this application has a signal quality ratio of greater than 20 dB.

Applications with devices capable of simultaneous transmission are reviewed to confirm that secondary transmitters are disabled during HAC testing per Page 15 of Review Guidance. User manuals are checked to determine if user instructions exist to disable such secondary transmitters. Devices that employ special T-coil modes for frequency response compliance (per Clause 6 requirements) will be sent directly to the FCC according to Page 15 of the Review Guidance. Applications will be checked to ensure broadband input spectra are measured correctly if broadband procedures are used in Clause 6 compliance tests per Page 14 and Page 65 of the Review Guidance.

3G Technologies policy rules released by the FCC in June 2006 will be addressed during review of Clause 6 applications. In particular, the vocoder modes used during testing must be specified in the report, as well as ABM2 analyses of other vocoder modes available for use by the live networks per Page 32 of Review Guidance. Repeatability of ABM1 measurements are to be demonstrated in the measurements to assure ABM1

measurements are within acceptable linear vocoder regions per Page 32 and Page 63 of the Review Guidance. The PCTEST Report for this application includes 3G procedures page including 3G vocoder investigation for ABM2. Accuracy of ABM1 measurements are accounted for in system validation at 1kHz and across the test measurement band (100-10kHz). Methodologies for these measurements are to be documented in the applications. The PCTEST Report for this application includes validation and methodologies in Sec 6, IV.

Clause 4 reviews will include acceptance of new probe modulation factor measurements at 20 kHz VBW. If this VBW is used, the application will be checked for a 30 Hz validation of average power per Page 46 of Review Guidance. Also, system validations will be required to be performed using free-space HAC dipoles per Page 23 of Review Guidance. This has been confirmed in the PCTEST report for this application.

PCTEST TCB review of Frequency Response measurements will include the requirement for compliance in the axial, transverse and longitudinal radial orientations per C63.19-2006 Sec 7.3.2 according to Page 58 of Review Guidance. The data is included in Sec 6, II in the PCTEST Report for this application.

PCTEST TCB review of voltmeter accuracy over audio band will include an investigation of either calibration or specification of voltmeter used for measurements. Frequencies of operation must include the measurement audio band for Clause 6 tests per Page 58 of Review Guidance. Measurement system setup details will be checked to ensure a high impedance amplifier is used for probes to assure for impedance matching. System Validation measurements will be reviewed to confirm

proper impedance matching and accuracy of test systems employed. Applications shall include validations of all ABM1 measurements typically performed on the WD (1kHz intensity, frequency response). **A system calibration (Page 58, Review Guidance) must be included for each application** which will include the measurement system plus probe and amplifier combination (i.e., complete measurement system chain used to perform WD tests) using a Helmholtz Coil behaving according to the theoretical behavior for Helmholtz Coils described in C63.19 D.9.1. The PCTEST Report for this application includes the calibration of the measurement system in Sec 9, II and III.

The test process described in the test report of the Clause 6 applications must include a justification for the choice of channel used for testing (if 1 channel was chosen) per Page 61 of Review Guidance. The PCTEST Report for this application evaluated low, middle and high channels which sufficed to cover RF power variations across each band.

The test apparatus utilized in the application are required to include a verification of RF transparency of audio magnetic measurements per Page 60 of Review Guidance. This should be provided either as a statement through the system manufacturer or measurements taken with and without a high power (1W+ peak) RF dipole for CDMA, GSM and UMTS signals. The PCTEST Report for this application includes such an analysis in Sec 6, VI. The base station simulator used for the audio band magnetic testing must be properly calibrated for audio signals used for testing. Therefore audio base station simulator calibrations will be reviewed in the test reports. The PCTEST Report for this application included these details in Sec 5, II, 3. **Review will include**

determining if all signal types used in the evaluation are documented in the test report, and their application for ABM evaluation according to Page 63 of Review Guidance. Also, indication of the volume setting the same throughout the entire test must be identified in the report; the setting must be indicated in the supplied reports, per Page 61 of the Review Guidance. The PCTEST Report for this application included the volume setting in Page 18 and 19.

For broadband signals such as P.50, proper handling of such signals must be shown in the test report, including measurement of input spectra (Page 14 of Review Guidance) and correct method of integration of the signal in measurement (Page 62 and 65 of Review Guidance). Integration intervals must span whole integer multiples of the input signal duration. If one interval is used, justification of accuracy will need to be provided (i.e. repeated measurements, updated uncertainty, etc.). The PCTEST Report for this application includes integration details in Sec 5, II,4,b,i.

Methodology for finding the peak magnetic intensity will be reviewed, per Page 64 of Review Guidance. The PCTEST Report for this application includes the method in Sec 5, II, 3, a.

Both ABM1 and ABM2 validations will be reviewed for verification (See Page 64 of Guidance Review). System must verify power sum functions used in ABM2 and frequency response with A and HBI weighting functions appropriately.

Page 66 of Review Guidance suggests reviewing carefully applications applying any broadband to narrowband conversion for ABM1 measurements. PCTEST will require full justification for such adjustment factor use.

Applications will be reviewed comparing RF emissions plots with ABM axial location measurements to ensure RT categories reflect the measurement location of interest per Page 67 of Review Guidance. Numerical signal quality categories will not exceed RT categories in the final HAC Rating of the device per Page 67 of Review Guidance. Signal Quality Categories will be determined using axial, radial transverse and radial longitudinal configurations.

Details of Uncertainty budgets according to C63.19 procedures must be included in Clause 6 applications and be reviewed and justified by the test facility per Page 68 of Review Guidance. PCTEST uncertainty budgets are included on Page 21 of the PCTEST Report for this application.

Below is revision history of PCTEST reports from FCC guidance for Clause 6 compliance FCC applications:

Revision	Description	Release Date
v1.0		N/A
v1.2	FCC 3G Policy update	6.12.06
v1.3	FCC RT updates	6.30.06
v1.4	Added ABM2 validation block	7.18.06
v1.5	E and RO edits - TCB	7.21.06
v1.6	TCB Review Guidance Update	8.3.06