Federal Communications Commission
Office of Engineering and Technology
Laboratory Division

HEARING AID COMPATIBILITY

Frequently Asked Questions

Q1. What is a manufacturer's responsibility for testing HAC compliance of over-the-top (OTT) – voice services operating over IP, installed on a wireless handset by the manufacturer, service provider, or end-user?

A1.
OTT is an IP based application for voice calls supported by an application included by the manufacturer with the sale of the handset. Common examples are Google Duo, Microsoft Teams and Apple Face Time. In these cases, the typical call box cannot be used to test calling capability for the handset being tested.

Considering the following five conditions for voice services (including OTT or any other voice service):
   a. Pre-installed (installed and delivered) by the manufacturer.

   b. Pre-installed (installed and delivered) by the manufacturer for the operating system manufacturer's software partner.

   c. Installed and delivered by the manufacturer at the direction of the service provider.

   d. Service provider installed (post–installed by the service provider after delivery from the manufacturer).

   e. Installed by the end-user after purchase.

For items (a) through (c), it is the responsibility of the manufacturer to test the handset that is reported to the FCC Wireless Telecommunications Bureau (WTB) as HAC compliant.

For item (d), the service provider cannot market or report this as HAC compliant (section 20.19). Optionally, the service provider can arrange for the manufacturer (grantee) to apply for a Class II Permissive Change to add the service provider's model number.

For item (e), testing is not required.

Q2. For the OTT voice applications installed by the service provider (post–installed by the service provider after delivery from the manufacturer), is the service provider required to arrange for the manufacturer to file a Class II Permissive Change, including a HAC test report, if the service provider added OTT voice service to a handset model, even if subscribers are not required to use it?
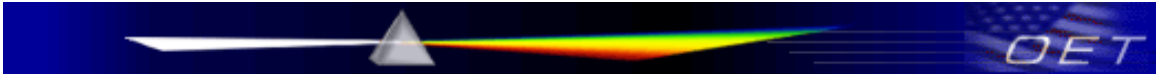
A2. Section 20.19 requires that if a handset is marketed, sold, and reported as HAC compliant by a service provider, and that handset contains alternative voice services that meet the definition of section 20.19(a), then all delivered voice services need to have been tested to demonstrate compliance. There is no provision in the rules that permits a service provider to continue to claim that the handset is HAC compliant only for certain voice services and not for others that qualify under section 20.19(a). The service provider and the manufacturer must cooperate to update the application filing under a Class II Permissive Change application.

Q3. What is the meaning of "voice services or voice applications," and the "specific applications which support voice calling," video, and other communications applications, in terms of those that are not ordinarily used with a device placed next to the ear verses devices that are designed to be held to the ear?

A3. The meaning of "all voice services or voice applications" applies to both: (a) voice applications that are used in delivery of a digital mobile service as defined in section 20.19(a); and (b) handsets as defined in FCC 10-145 (WT Docket No. 07-250, released August 5, 2010) at paragraph 20, "Handsets Covered by the Rule." *See also* Fourth Report and Order (FCC 15-155, released: November 20, 2015) at paras. 40-41).

In most cases the features of a product's design are intuitively obvious when providing an audio output not customarily intended to be held next to the ear versus a design for audio output to be held next to the ear. HAC testing is applicable for any device that has a feature designed to be held to the ear.

Q4. KDB Publication 285076 D01 Appendix B shows an example of a table with a column entitled "Name of Voice Service" that includes examples of air interfaces. Is it necessary to identify the non-VoIP modes that need to be listed as well?

A4. No, only voice services that are not defined in ANSI C63.19-2011 or C63.19-2019 need to be identified in this column. For all other services identified in ANSI C63.19-2011, use a single * symbol. Specific listing is not needed because legacy circuit-switched voice services are bound to the air interface in ANSI C63.19-2011 and ANSI C63.19-2019 which are identified in the Air Interface column. IP transporter voice services are independent of the air interface, only bound to the IP layer, and therefore the service needs to be identified by name.

Q5. Are OTT IP voice services (e.g., Skype, Google Hangouts, etc.) a VD for Voice and Data type air interface for 3G data services (e.g., EDGE, HSPA, EVDO)?

A5. Yes, these are voice services, because EDGE, HSPA, and EVDO are IP packet transporters and as such they can transport IP voice services.

Q6. Does HSPA circuit-switched (CS) voice services over HSPA (CSoHS) need to be tested?

A6. Yes, if the handset has the capability to support VoHSPA or CSoHS, it needs to be tested to demonstrate compliance.
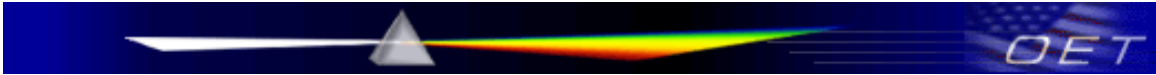
Q7. What is Wi-Fi calling, is it considered an OTT IP service, and what is the reference level that should be used for compliance testing referenced in Appendix B of KDB Publication 285076 D01 and in KDB Publication 285076 D02?

A7. Wi-Fi calling (or cellular-provider Wi-Fi calling) for the purpose of these publications are not considered an OTT service. It is an advanced calling or roaming feature provided by the licensed mobile-service provider (carrier) originating and terminating calls over their network infrastructure using Wi-Fi as the service drop connection instead of using the licensed service bands. *Wi-Fi calling is not just any voice service operating over Wi-Fi; it is a feature of the mobile service provider's network, for providing the carrier's voice service in areas where there is Wi-Fi coverage (such as in a home).*

Note that for Wi-Fi calling, the M-rating is primarily influenced by the air interface, while T-Coil (T-rating) is primarily influenced by the codec and basic handset magnetic-background noise.

Q8. What are the steps to get approval to use the Pre-Approval Guidance (PAG) Reuse procedures for VOIP OTT T-coil testing?

**A8**. VOIP OTT T-coil testing Pre-Approval Guidance (PAG) is no longer required.

Q9. Are there any interim procedures for testing VoLTE/OTT calls over 5G Sub 6 bands since current call boxes do not support simulated 5G calls or internet connections? Currently this procedure is under PAG HAC5GS.

A9. Currently, laboratories are having difficulty in establishing a voice connection for testing T-Coil over 5G Sub 6 air interfaces. The problem is the inability to establish 5G[1] sub 6 VoLTE or OTT voice calls over 5G NR F1 air interfaces using the current call boxes. Q9 interim procedure can only be used if the test lab does not have the capability to establish voice calls over 5G air interfaces. A statement to this effect is required in the test report indicting such. Below is an interim procedure[2]

1. This procedure is only applicable for 5G Sub 6 calls that use the same protocol, Codec(s) and reference level as VoLTE over LTE (i.e. -16 dBm0) or OTT calls (such as Duo or AppleTalk).
2. For LTE, establish the ABM1S65G value by using the ABM1LTE magnetic intensity for an LTE call in the same band as the 5G sub6 band under test as the ABM1LTE value.
3. For OTT, establish the ABM1S65G value by using an IP connection for magnetic intensity for a call in the same band as the 5G sub6 band under test as ABM1OTE value.
4. Note the previous actual ABM2LTE and or ABM2OTT value. Use the previous value to insure that both ABM1 LTE or ABM2OET comply with both ABM2 values (ABM2LTE and or ABM2OTT).
5. Establish an ABM2S65G value, using a 5G manufacture test mode over 5G Sub 6 channels for the same band under test.
6. Document in the test report matrix:

---

[1] Voice Over NR (VoNR)if referenced in the test report must define the codecs used and state that voice over NR is voice over IP incorporating the IP multimedia subsystem (IMS) infrastructure previously introduced in LTE.

[2] Note, if the procedure was taken off of the PAG list the procedure is still required.
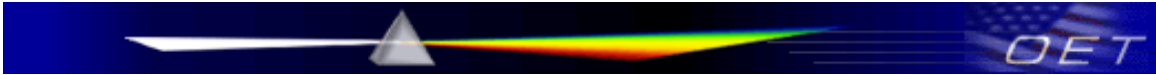
        i. Include columns for both ABM2LTE and ABM2S65G for comparison.

       ii. Establish the S+N1/N2 for the rating.

           1. Use ABM1LTE/ ABM2S65G for 3GPP over 5G interfaces

           2.   Use ABM1OTT/ ABM2S65G for OTT over 5G interfaces.

           3.   Or both if applicable.

           4.   Subtract 3 dB from S+N1/N2.

      iii. Show rating based on (ABM1LTE/ ABM2S65G) -3dB, ABM1OET/ ABM2S65G) -3dB or both if applicable.

7. Manufacture must provide an attestation (cover letter) confirming that the results using ABM1 values obtained from VoLTE connections over LTE bands and ABM2 values for 5G sub 6 connections over the same bands provide a reasonable representation of the HAC rating over the 5G sub 6 connections.

8. A grant note comment "T-coil 5G sub 6 bands appraised as equivalent LTE connections."

9. Manufacture must also comply with section 20.19 (f)(2(v) Disclosure requirements relating to handsets treated as hearing aid-compatible over fewer than all their operations.

10. In the test report provide a statement indicating that the test lab requires this procedure because of limitations of test box.

11. This procedure is currently under PAG and qualifies for Reuse (HAC5GS) as defined section 5. PAG REUSE LIST 388624 D02 Pre-Approval Guidance List procedures. For the initial PAG and each notification a statement that test lab requires this procedure because of limitations of test box. In the PAG and notification of reuse statement from the lab shall include some estimation or indication when they expect not to require this feature in the future

12. Please note this is an interim procedure to accommodate short falls in call box features. When this feature becomes more available it will be removed and no longer acceptable as an alternative,

Q10. Can A handset have sperate selections for Volume Control compliance and another for RF Interference and T-Coil compliance.

A10. NO. Only one selection is permitted. When selected the handset must meet all the HAC requirements of C63.19-2011 (M&T rating) if certified under C63.19-2011 or C63.19-2019 (HAC and Volume Control) if certified under C63.19-2019. The handset instructions, quick guide and handset settings search functions (i.e. typing "Hearing") shall reveal how to select the HAC capability mode. Multiple selection are not permitted.

Change Notice:

04/06/2020 285076 D03 HAC FAQ v01r01 replaces 285076 D03 HAC FAQ v01. V01r01 added Question 8 to provide guidance for PAG reuse policy of Publication 388624.

07/29/2020 285076 D03 HAC FAQ v01r02 replaces 285076 D03 HAC FAQ V01r01. Added Question 9 to provide guidance for PAG testing a 5G Sub6 interim procedure.

10/13/2020 285076 D03 HAC FAQ v01r03 replaces 285076 D03 HAC FAQ v01r02. V01r03 added to Question 9 to provide interim guidance for PAG testing a 5G Sub6 interim procedure to include OTT voice service.
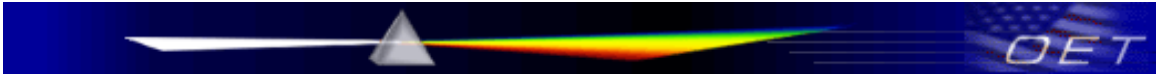
04/20/2021 285076 D03 HAC FAQ v01r04 replaces 285076 D03 HAC FAQ v01r03 to remove PAG requirement HAC5GS OTT procedure.

02/23/2022: D03 HAC FAQ v01r05 replaces 285076 D03 HAC FAQ v01r04 to edit out reference for PAG requirement HAC5GS OTT procedure no longer required.

07/20/2022: D03 HAC FAQ v01r06 replaces 285076 D03 HAC FAQ v01r05. v01r06 added question 10 for clarification.