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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

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Introduction

Testing of speech transmission quality and delay through the UE headset electrical interface is a common practice in the industry for troubleshooting and benchmarking of network and UE performance. The UE headset electrical interface provides a convenient access point for testing that removes acoustic interface related aspects from the measurement. Test equipment (TE) solutions designed to connect to the UE headset electrical interface are commercially available and target both "drive-test" as well as lab environment testing applications. However, the lack of a standardized test methodology causes difficulties in interpreting results between different TEs, leading to possibly misleading conclusions on both network and UE performance. The present document attempts to address this problem by providing a unified test procedure methodology.

1 Scope

The present document provides guidance on testing of speech quality and delay through a UE headset electrical interface, including both analog and digital headset interfaces. The present document includes test set-up configurations, measurement scenarios and an indication of a range of results that can be expected in measurements. It is envisioned that the present document will serve as a reference for UE vendors and Mobile Network Operators wishing to conduct such tests.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
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[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 26.445: "Codec for Enhanced Voice Services (EVS); Detailed algorithmic description".

[3] IEC Publication 61672-1 (2013): "Sound Level Meters - Part 1: Specifications".

[4] ITU-T Recommendation P.501 (01/2012): "Test signals for use in telephonometry".

[5] ITU-T Recommendation P.56 (12/2011): "Objective measurement of active speech level".

[6] 3GPP TS 26.131: "Terminal acoustic characteristics for telephony; Requirements".

[7] 3GPP TS 26.132: "Speech and video telephony terminal acoustic test specification".

[8] ITU-T Recommendation P.381 (07/2016): "Technical requirements and test methods for the universal wired headset or headphone interface of digital mobile terminals".

[9] ITU-T Recommendation P.863 (09/2014): "Perceptual objective listening quality assessment".

[10] ITU-T Recommendation P.501 Amendment 3 (06/2015): "New Annex D – Speech files with male/female sentences prepared for use with perceptual based objective speech quality prediction".

[11] 3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception."

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].