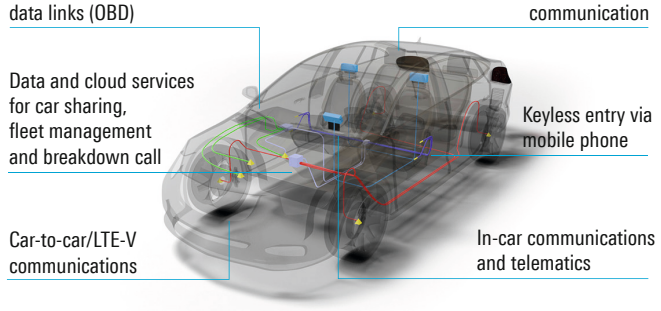
Audio performance testing solution for the connected car

The audio performance measurement solution for the R&S®CMW500 platform identifies audio and speech performance issues over a wireless connection.

Connected car



Your task

Verify audio quality telematics units for CS voice and VoLTE in line with the 3GPP or operator-specific specification.

Unlike a conversational rating where impairments such as round-trip delay are judged for their impact on a conversation, the POLQA® and PESQ® speech test methods rate the quality of a speech signal.

T&M solution

The R&S®CMWrun software is the right overall automation tool for audio/speech performance testing of VoLTE and legacy technologies. In this setup, the R&S®CMW500 callbox tester acts as a 2G/3G and LTE network emulator.

It provides integrated IMS service support plus an audio board with the standard-specific speech codecs for voice calls. The R&S®UPV audio analyzer supports PESQ/POLQA algorithms for objective audio analysis.

Research and development testing

With just a few mouse clicks, the user can define a testing campaign that includes the key signaling parameters and conditions in an LTE network with their possible impact on the audio quality and user experience. Signaling parameters integrated into the R&S®CMW500 that can be configured via R&S®CMWrun include an integrated IMS server to establish a voice or video call, RoHC, SPS, TTI bundling, dedicated bearer and QoS, IP delay (IPv4 and IPv6), jitter, packet losses and fading profiles.

The audio testing solution is available in the following standard-specific R&S®CMWrun packages:

- R&S®CMW-KT053: for WCDMA and GSM
- R&S®CMW-KT055: for LTE/VoLTE
- R&S®CMW-KT058: for CDMA2000®

The following option is mandatory:

- R&S®CMW-KT051: to remotely control the R&S®UPV audio analyzer

Audio/speech performance testing solution with R&S®CMW500 callbox tester, R&S®UPV audio analyzer and the R&S®CMWrun sequencer software.

ROHDE&SCHWARZ

Carrier acceptance testing

R&S®CMWrun also covers carrier acceptance testing, extending R&D test coverage beyond the test plans specified in industry standards.

The following R&S®CMWrun packages are available as turnkey solutions for audio performance acceptance testing:

- VZW, requires R&S®CMW-KTF11
- AT&T, requires R&S®CMW-KTF12
- CMCC, requires R&S®CMW-KTF13 (validation ongoing)
- CHU, requires R&S®CMW-KTF15

The Rohde&Schwarz VoLTE power consumption test solution consists of a network emulator (R&S®CMW500), audio analyzer (R&S®UPV), multi-channel power probe (R&S®RT-ZVC02/R&S®RT-ZVC04) and the R&S®CMWrun test sequencer software.

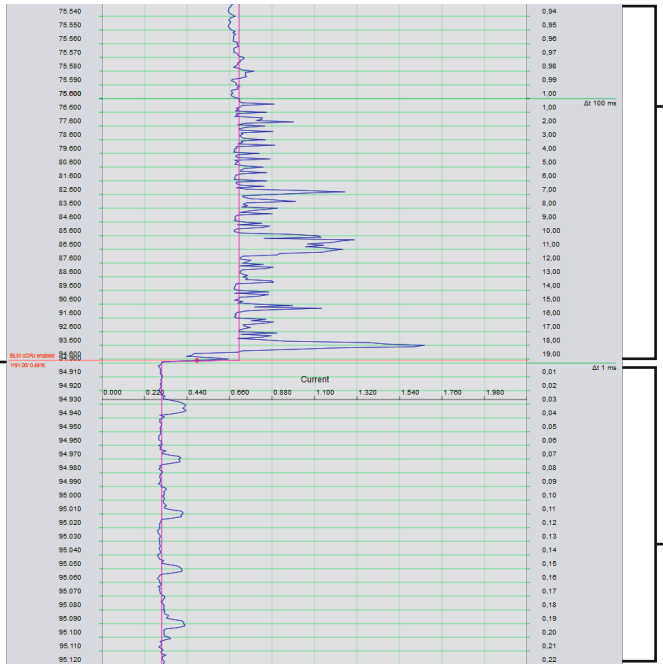
The network emulator must be capable of emulating an LTE network in line with the latest standards and specifications and also provide IMS functionality. The base station emulator has to provide the required audio functionality, including audio codecs such as the adaptive multirate (AMR), wideband (AMR-WB) and narrowband (AMR-NB) codecs.

To test audio quality during a VoLTE call, an audio generator and analyzer is required that is able to generate and analyze audio waveforms using the latest methodologies in accordance with PESQ or POLQA. The R&S®UPV audio analyzer is the instrument of choice for testing audio quality independently of the underlying methodology because it supports both PESQ and POLQA.

See also

www.rohde-schwarz.com/CMW
www.rohde-schwarz.com/product/UPV

Audio quality testing



Event marker indicating LTE/cDRX active

AMR-WB @23.85 kbps, UL Speech Quality MOS (POLQA SWB), Mean > 3.5

UPV_SpeechQualityMeasurement: POLQA Measurement

Start Measurement: POLQA - Uplink, Super-Wide, Single-Mode
1 / 5 . . .
<-- MOS=4.3380
2 / 5 . . .
<-- MOS=4.4141
3 / 5 . . .
<-- MOS=4.3305
4 / 5 . . .
<-- MOS=4.3871
5 / 5 . . .
<-- MOS=4.2495

Verification of audio quality and power consumption compared to a standard LTE/VoLTE call with the cDRX power save mode enabled; POLQA values before and after, including power consumption monitoring

AMR-WB @23.85 kbps, UL Speech Quality MOS (POLQA SWB), Mean > 3.5

UPV_SpeechQualityMeasurement: POLQA Measurement

Start Measurement: POLQA - Uplink, Super-Wide, Single-Mode
1 / 5 . . .
<-- MOS=4.4302
2 / 5 . . .
<-- MOS=4.3532
3 / 5 . . .
<-- MOS=4.4029
4 / 5 . . .
<-- MOS=4.4368
5 / 5 . . .
<-- MOS=4.3533

Rohde&Schwarz GmbH&Co. KG
Europe, Africa, Middle East | +49 89 4129 12345
North America | 1 888 TEST RSA (1 888 837 87 72)
Latin America | +1 410 910 79 88
Asia Pacific | +65 65 13 04 88
China | +86 800 810 82 28 | +86 400 650 58 96
www.rohde-schwarz.com
customersupport@rohde-schwarz.com

R&S® is a registered trademark of Rohde&Schwarz GmbH&Co. KG
Trade names are trademarks of the owners
PD 5215.3004.92 | Version 01.03 | August 2017 (ja)
Audio performance testing solution for the connected car
Data without tolerance limits is not binding | Subject to change
© 2017 Rohde&Schwarz GmbH&Co. KG | 81671 Munich, Germany

5215300492

5215.3004.92 01.03 PDP 1 en