Overview 2019

Profile Overview

HDVoice  Data  IoT

CAT-iq 1.0
HD Sound

CAT-iq 2.0
Multi-Line

CAT-iq 2.1
Group

HD Voice

CAT-iq Data
Internet ready

CAT-iq IoT
Intelligent Networking

Voice
1.0
Products launched (TS 102 627-1)

2.0
Products launched (TS 102 627-3)

2.1
Products available (TS 102 627-6)

Data Profile

Products available (TS 102 627-4)

IoT Profile

IoT In specification
Certification Goals

The CAT-iq Certification Program

- promotes CAT-iq to market stakeholders, e.g. end users, carriers, retailers as a technically credible implementation of **conformity to a set of standards** that will add value to their industry/lives.

- ensures **interoperability** of devices from multiple manufacturers for functionalities defined in CAT-iq. (Being compliant with CAT-iq standards tested comprehensively according to the functionalities defined as mandatory by the CAT-iq standards).

- ensures a mandatory level of **quality requirement** for specific product parameters to achieve **consistent user experience** of the different stakeholders.
CAT-iq is a registered trademark owned by the DECT Forum, it references features and procedures.

Only end products can be approved through the certification program (fixed part and/or portable part).

CAT-iq Certification Program

Only FULL MEMBERS of the DECT Forum can apply for certification*

Note*: Presenting company must be a Full Member of DECT Forum.
A semiconductor chip-set supplier, design house or an operator member cannot be claimed as the FULL member.
Regulations

- **To enter certification program**
  - Must be a FULL member of the DECT Forum, cannot use supplier e.g. chipset supplier, design partner or end customer e.g. operator as the member company

- **Rights to use the logo on end product**
  - FULL member who applied for and achieved certification
  - Manufacturer/brand placing the product in the market, with a certificate from a FULL member in their supply chain. Said manufacturer/brand must be an Associate or FULL member of the DECT Forum
  - Operator placing the product in the market, with a certificate from a FULL member in their supply chain. Said operator must be an Associate or FULL member of the DECT Forum

- **Right to use the logo on promotional material**
  - FULL member of the DECT Forum
CAT-iq 2.0 Certification Test Equipment

Interoperability Test (incl. GAP)

CAT-iq Certification Program

RF Test (incl. long slot)

Acoustic Test

<table>
<thead>
<tr>
<th>CAT-iq 2.0 Protocol Tester EU/US</th>
<th>photo</th>
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<tr>
<td>Hardware: DA1220(EN/US)</td>
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<tr>
<td>Identno. 1220.2200.20</td>
<td></td>
</tr>
<tr>
<td>Release V1.72</td>
<td></td>
</tr>
<tr>
<td>Manufacturer: DOSCH&amp;AMAND (Germany)</td>
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<tr>
<th>CAT-iq 2.0 RF Tester</th>
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<tr>
<td>RTX2012 HS</td>
<td></td>
</tr>
<tr>
<td>Firmware: V.9.58 or newer</td>
<td></td>
</tr>
<tr>
<td>Software: V.3.1.0 or newer</td>
<td></td>
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<tr>
<td>Manufacturer: RTX (Denmark)</td>
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<td><a href="http://www.rtx.dk">www.rtx.dk</a></td>
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<table>
<thead>
<tr>
<th>CAT-iq 2.0 Audio Test System</th>
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<tr>
<td>ACQUA Compact CAT-iq 2.0 Test System</td>
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<tr>
<td>Code: 6860.17</td>
<td></td>
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<tr>
<td>Manufacturer: Head Acoustics (Germany)</td>
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<td><a href="http://www.head-acoustics.de">www.head-acoustics.de</a></td>
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CAT-iq Application Guidelines

• Goal is to improve usability in a retail handset market
• Guideline generated from intensive series of tests with existing CAT-iq 2.0 devices

• An Application Test Suite has been derived from the guideline and will become an additional part of the CAT-iq certification program

• Test Laboratory will issue certification report as previously for the Protocol/RF & Audio
• Application tests will be run on a test bed basis, with an additional test report issued
• Both test reports will be required to confirm CAT-2.1 certification listing
Steps to CAT-iq 2.1 Certification

1. Request for certification
2. Confirm DF Full Membership status
3. Certification testing required?
   - Yes: Download Certification Handbook, Application Test Suite report
   - No: Certification checklist: TCF
4. Certification Qualification Body
5. Request to DF for Certification
6. DECT Forum
7. Certificate issued/published
Certification Checklist

Recommended Certification checklist:

- Pre-condition of DF full membership (supplier and chain)
- Product has achieved Country approval? CE passed?
- GAP test: (optional In house) Has product ensured GAP-compliance on official tester?
- Protocol test: (Optional in house) Has product been tested on official CAT-iq tester? (all mandatory features supported?)
- Audio test: Have all audio tests been carried out?
- Have all required RF tests been carried out?
- Application Test Suite (incl. Report)

Certification tests:

- Arrange certification test with official certification house (suggest 1 week for testing and min. 1 week for certification. Cost estimate @ test houses)

Certification:

- After successful test result, cert body will validate TCF/test reports and ensure all pre-conditions met
- Assuming all conditions are met, certification house applies to DECT Forum for certification.
- DECT Forum issues Certificate upon license fee payment
- Product listing added to DF website
CAT-iq 2.1 Certification Test Equipment

**Interoperability Test (incl. GAP)**
- CAT-iq 2.1 Protocol Tester EU/US
  - Hardware: DA1220(EN/US)
  - Identno. 1220.2200.20
  - Release V1.8
  - Manufacturer: Dosch&Amand (Germany)
  - www.dosch-amand.com
- CAT-iq 2.0 RF Tester
  - Hardware: RTX2012 HS
  - Firmware: V.9.58 or newer
  - Manufacturer: RTX Denmark
  - www.rtx.dk
- CAT-iq 2.0 Audio Test System
  - Hardware: ACQUA Compact CAT-iq 2.0 Test System
  - Software V3.1.0 or newer
  - Code 6860.17
  - Manufacturer: Head Acoustics (Germany)
  - www.head-acoustics.de

**RF Test (incl. long slot)**

**Acoustic Test**

**Application Guidelines**
Aspects of Testing CAT-iq 2.0/2.1

- CAT-iq 2.0 certification consists of a number of different component parts
  - RF Requirements
    - testing for long slot operation
  - Acoustic Requirements
    - including TBR 10 – using HATs methodology
  - Interoperability Requirements
    - PC-based tester environment will be provided (incl. TBR 22 tests)
    - Scripting mechanism, with the ability to select appropriate tests

- CAT-iq 2.1 certification consists of a superset of CAT-iq 2.0 certification with additional testing requirements:
  - Successful completion of the CAT-iq Application Test Suite is necessary for CAT-iq 2.1 certification
  - Based on the CAT-iq Application Guideline, this set of tests will improve product usability in a retail handset market

- Devices will still be able to certify to CAT-iq 1.0 for the foreseeable future
CAT-iq 2.1 Certification Handbook

Part 1: DF_CAT-iq Qualification Program Regulation, V1.4
   No: DF_CAT-iq_1905_V1.4_2013_03_15
   Approved 2013_03_15

Part 2: DF_CAT-iq Measurement Specifications
   CAT-iq 1.0 Measurement Specification V1.3
   No: DF_CAT-iq_1903_V2.0_2006_02_19
   No: DF_CAT-iq_1901_V1.0_2010_08_31
   Approved 2010_08_31

Part 2: DF_CAT-iq Feature Requirements V1.8
   No: DF_CAT-iq_T_499_V1.0_2010_04_08
   Approved 2010_04_08

Part 2: DF_CAT-iq Licensing Agreement V1.8
   No: DF_CAT-iq_1906_V1.0_2012_09_07
   Approved 2012_09_07

Part 5: DF_CAT-iq Certification_V1.0
   No: DF_CAT-iq_1901_V1.0_2006_03_23
   Approved 2006_03_23

Part 6: DF_CAT-iq Testing Agreement
   Independent Laboratories_V1.1
   No: DF_CAT-iq_1902_V1.0_2005_11_10
   Approved 2005_11_10
   No: DF_CAT-iq_1906_V1.0_2009_10_10
   Approved 2009_10_10

Part 6: DF_CAT-iq Certification Agreement_V1.2
   No: DF_CAT-iq_1904_V1.2_2010_05_30
   Approved 2010_05_30

DECT NGPart 5: Profile Text Specification (PT) & Test Case Library (TCL)
   No: STI T S 190201_V1.0.1

DECT NGPart 5: Profile Test Specification
   No: DF_CAT-iq_T_499_V1.0_2010_04_08
   Approved 2010_04_08

DF_CAT-iq_R2 Specifications
   No: DF_CAT-iq_T858_V1.0_2017_02_05
   Approved 2017_02_05

DF_CAT-iq_3 Specifications
   No: DF_CAT-iq_T853_V1.0_2016_03_26
   Approved 2016_03_26

DF_CAT-iq_Application Test Suite_V1.0
   No: DF_CAT-iq_T_2008_V1.0_2016_06_24
   Approved 2016_06_24

Product listing can be found on www.dect.org/cat-iq-certification.aspx
Regional Variants

• Acoustic & protocol testing will use the same test setup as for CAT-iq 2.0

• Acoustic Requirements
  ▪ including TBR 10 – using HATs methodology

• Protocol Requirements
  ▪ PC-based tester environment will be provided (incl. TBR 22 tests)
  ▪ Scripting mechanism, with the ability to select appropriate tests

• The RF requirement will change
  ▪ testing for long slot operation, and regional variant (different RF tester option)

• New products which have not previously been certified will have to run for certification process with appropriate certification fee

• Products which have already been certified for European DECT will be able to apply for a re-testing license. In this case, will be required to re-run only the RF test component

• Regional variant available for DECT 6.0 for US/Canada

• Future anticipated variants for J-DECT
• CAT-iq 2.0 is mature, and with certified gateway products deployed, consideration needs to be given to the handling of firmware upgrades on certified products.

• CAT-iq Data profile can be used.

• Implement procedure as a “recommendation”.

• Note: Could also be applied for upgradeable handsets.
Certification License Structure

• License Fee is payable to the DECT Forum prior to issuing the certificate.
• DECT Forum will use the fees generated from the Qualification Program to contribute to the protection of the CAT-iq trademark.
• Note that this license fee is independent of any certification fee payable to the test house.

• **Original license**
  • 3,000 CHF Per set
  • 2,000 CHF Per device, e.g. base or handset
  • Full tests to be run, covering RF, Acoustic & Profile

• **Product variant license**
  • Original ODM/OEM Product has been certified already.
  • Product is sold in SAME housing and SAME PCB/Components under a DIFFERENT product name.
  • Colour variations are defined as same housing.
  • No software changes other than in MMI/GUI allowed (icons or text)
  • 1,000 CHF per variant

• **In-line upgrade license**
  • Original ODM/OEM Product has been certified already.
  • Product is in market deployed
  • Firmware upgrade roll-out
  • 1,000 CHF re-testing per single device
Certification License Structure

- **Re-testing license**
  - Original ODM/OEM Product has been certified already.
  - Product is sold in
    - DIFFERENT housing or
    - DIFFERENT PCB (Size or components)
    - DIFFERENT software.
  - Only the parts of the system which are affected by the effective change require re-testing e.g. change in housing (and no software changes other than MMI/GUI) only the acoustic test has to be re-tested
  - 1,500 CHF re-testing per set
  - 1,000 CHF re-testing per single device

- **Logo usage license**
  - Original ODM/OEM Product has been certified already.
  - Product is sold in SAME housing and SAME PCB/Components under a DIFFERENT product name.
  - Colour variations are defined as same housing.
  - No software changes other than in MMI/GUI allowed (icons or text)
  - No additional fee

- Note that in the case where a Full member of the DECT Forum submits a product for certification on behalf of a brand/manufacturer or operator who is an Associate or Full member, then said brand/manufacturer or operator can select to be shown on the public product certification listing
HD Voice Logo License

• HD voice is a logo, licensed by GSMA, with the intention of supporting one HD Voice logo, that can become a universally recognised symbol which easily identifies HD Voice enabled services and devices, across both mobile and fixed networks.

• The DECT Forum has entered into a cooperation agreement with the GSM Association (GSMA), where CAT-iq 2.0 certified devices will be able to benefit from the use of the GSMA HD Voice logo.

• The GSMA license program, through its technical annex, will refer to CAT-iq 2.0 specifications as minimum requirements for fixed HD devices

• FULL DECT Forum members, who have CAT-iq 2.0 certified products can apply to the GSMA for use of the logo via the license agreement. There is no additional fee applied. Relevant documents can be found here:
  • The Minimum Requirements document
  • The Licence Agreement
  • The HD Voice Logo Usage Guidelines and FAQ
# Certification Contacts

<table>
<thead>
<tr>
<th>Company</th>
<th>Contact Person</th>
<th>Address</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTC advanced</td>
<td>Marco Lenjoint</td>
<td>CTC advanced GmbH</td>
<td><a href="mailto:Marco.Lenjoint@ctcadvanced.com">Marco.Lenjoint@ctcadvanced.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Untertuerkheimer Str. 6-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>66117 Saarbruecken - Germany</td>
<td></td>
</tr>
<tr>
<td>Arendi AG</td>
<td>Thomas Rupp</td>
<td>Arendi AG</td>
<td><a href="mailto:thomas.rupp@arendi.ch">thomas.rupp@arendi.ch</a></td>
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<tr>
<td></td>
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<td>Eichtalstrasse 55</td>
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<tr>
<td></td>
<td></td>
<td>8634 Hombrechtikon - Switzerland</td>
<td></td>
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<tr>
<td>Nemko</td>
<td>Nemko AS</td>
<td>Frode Sveinsen</td>
<td><a href="mailto:frode.sveinsen@nemko.com">frode.sveinsen@nemko.com</a></td>
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<tr>
<td></td>
<td></td>
<td>Instituttveien 6, 2007 Kjellet - Norway</td>
<td></td>
</tr>
<tr>
<td>HEAD acoustics</td>
<td>Dr. H.W. Gierlich</td>
<td>HEAD acoustics GmbH</td>
<td><a href="mailto:h.w.gierlich@head-acoustics.de">h.w.gierlich@head-acoustics.de</a></td>
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<tr>
<td></td>
<td></td>
<td>Ebertstr. 30a 52134 Herzogenrath - Germany</td>
<td></td>
</tr>
<tr>
<td>RTX</td>
<td>Per Oestergaard Nielsen</td>
<td>RTX Telecom AVS</td>
<td><a href="mailto:pni@rtx.dk">pni@rtx.dk</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stroemmen 6, 9400 Noerresundby - Denmark</td>
<td></td>
</tr>
<tr>
<td>Dosch &amp; Amand Research</td>
<td>Dr. Franz Dosch</td>
<td>Dosch &amp; Amand Research GmbH Co. KG</td>
<td><a href="mailto:info@da-research.de">info@da-research.de</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neumarkter Str. 18, 81673 Munich - Germany</td>
<td></td>
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</table>
• Other useful documents:
  • Certification Overview
  • Certification Q & A
  • Enhanced Voice Services
  • CAT-iq: Creating Value with Certification. 2019

• For direct enquires:
  DECT Forum Secretariat
  CH-3007 Bern, Wabernstr. 40
  secretariat@dect.org

• Please visit the DECT Forum website: www.dect.org
• Follow DECT Forum on: @DECT_Forum (Twitter) and LinkedIn
<table>
<thead>
<tr>
<th>Title</th>
<th>Document Reference</th>
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<tr>
<td>DECT : Generic Access Protocol</td>
<td>EN 300 444, v2.2.8 (2017-07)</td>
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<td>DECT; Common Interface (CI); Part 1: Overview.</td>
<td>EN 300 175-1, v2.6.6 (2017-06)</td>
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<td>DECT; Common Interface (CI); Part 2: Physical Layer (PHL).</td>
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<td>DECT; Common Interface (CI); Part 3: Medium Access Control (MAC) Layer.</td>
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<td>DECT; Common Interface (CI); Part 7: Security Features.</td>
<td>EN 300 175-7, v2.6.7 (2017-06)</td>
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<td>DECT; Common Interface (CI); Part 8: Speech coding and transmission.</td>
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<td>DECT; New Generation DECT; Overview and Requirements</td>
<td>TR 102 570, v1.1.1 (2007-03)</td>
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<td>DECT; New Generation DECT; Part 4: Light Data Services</td>
<td>TS 102 527-4, v1.3.1 (2015-11)</td>
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<td>DECT; New Generation DECT; Part 5: Additional Feature set NG Extended</td>
<td>TS 102 527-5, v.1.2.1 (2014-01)</td>
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## ETSI Test Specifications

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<td>DECT; New Generation DECT; Part 1: Wideband Speech.</td>
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<td>(DECT); New Generation DECT; Extended wideband speech services; Profile Test Specification (PTS) and Test Case Library (TCL)</td>
<td>TS 102 841, v.1.5.1 (2014-01)</td>
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<td>(DECT); New Generation DECT; Light Data Services; Software Update Over The Air (SUOTA); Profile Test Specification (PTS) and Test Case Library (TCL)</td>
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Certification Process Flow (1)
Certification Process Flow (2)