

CAT-iq Certification Overview

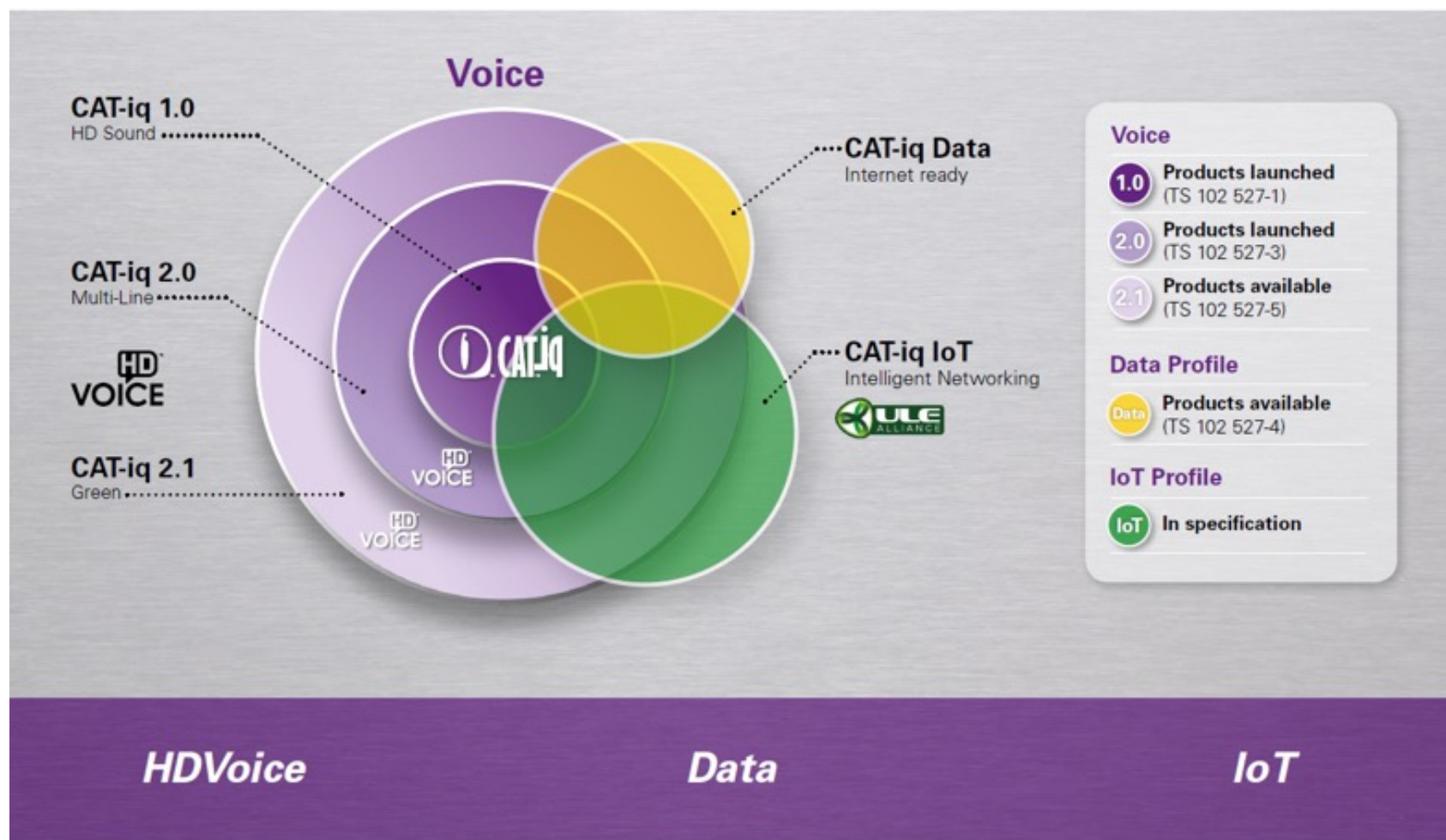


*Global Technology for Broadband
Home Connectivity*

CAT-iq Profiles Overview



Profile Overview



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.

Pre-conditions for Certification

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.

- **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



CAT-iq 2.0 Protocol Tester EU/US

[photo](#)

Hardware: DA1220(EN/US)
Identno. 1220.2200.20

Release V1.72
Manufacturer: DOSCH&AMAND (Germany)

www.dosch-amand.com

CAT-iq 2.0 RF Tester

[photo](#)

RTX2012 HS
Firmware: V.9.58 or newer

Software: V.3.1.0 or newer
Manufacturer: RTX (Denmark)

www.rtx.dk

CAT-iq 2.0 Audio Test System

[photo](#)

ACQUA Compact CAT-iq 2.0 Test System
Code: 6860.17

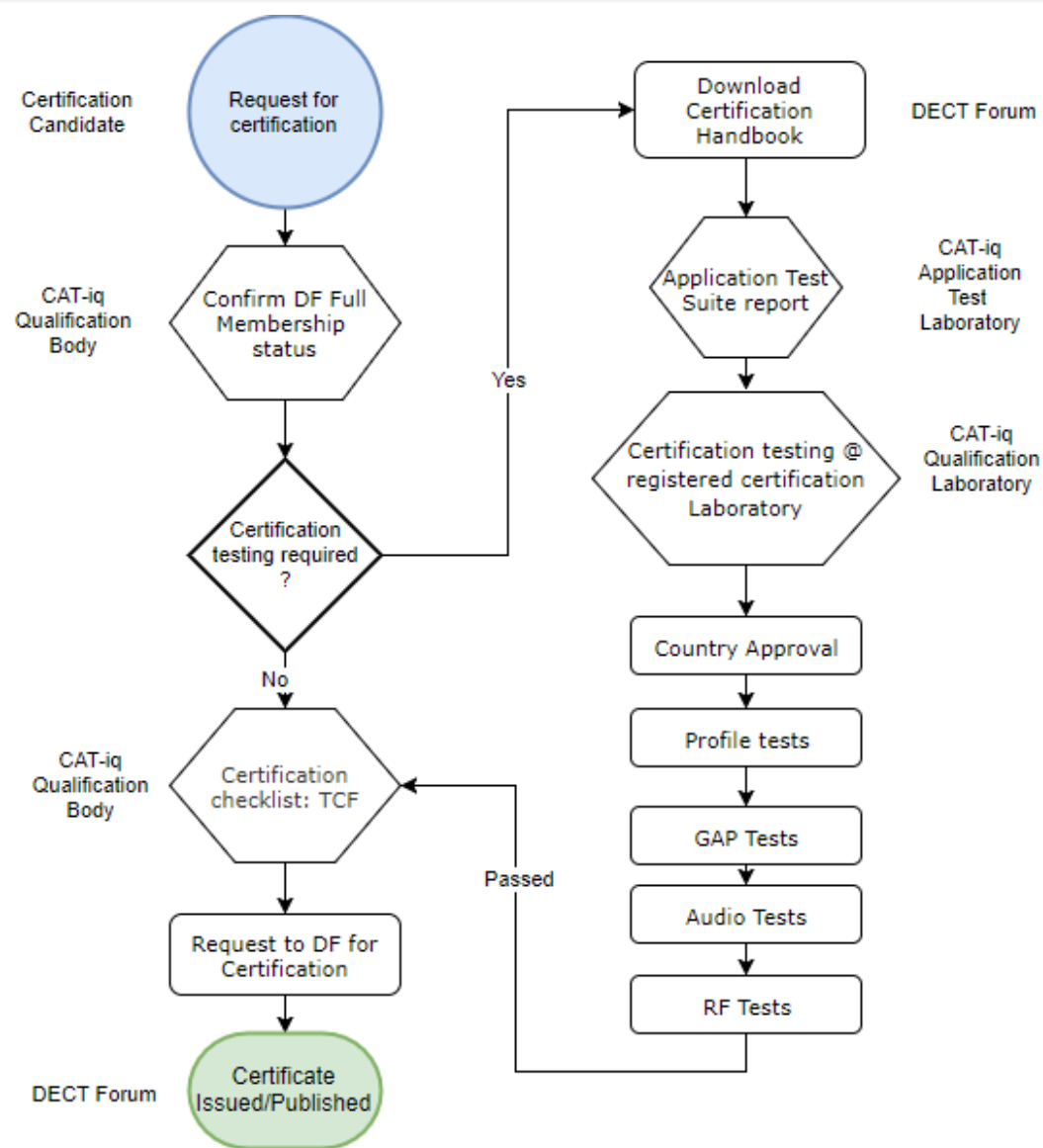
Manufacturer: Head Acoustics (Germany)

www.head-acoustics.de

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

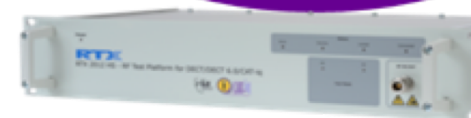


CAT-iq 2.1 Certification Test Equipment

**Interoperability
Test
(incl. GAP)**



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



**CAT-iq 2.1
Certification
Program**



Acoustic Test

Application Guidelines



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

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)



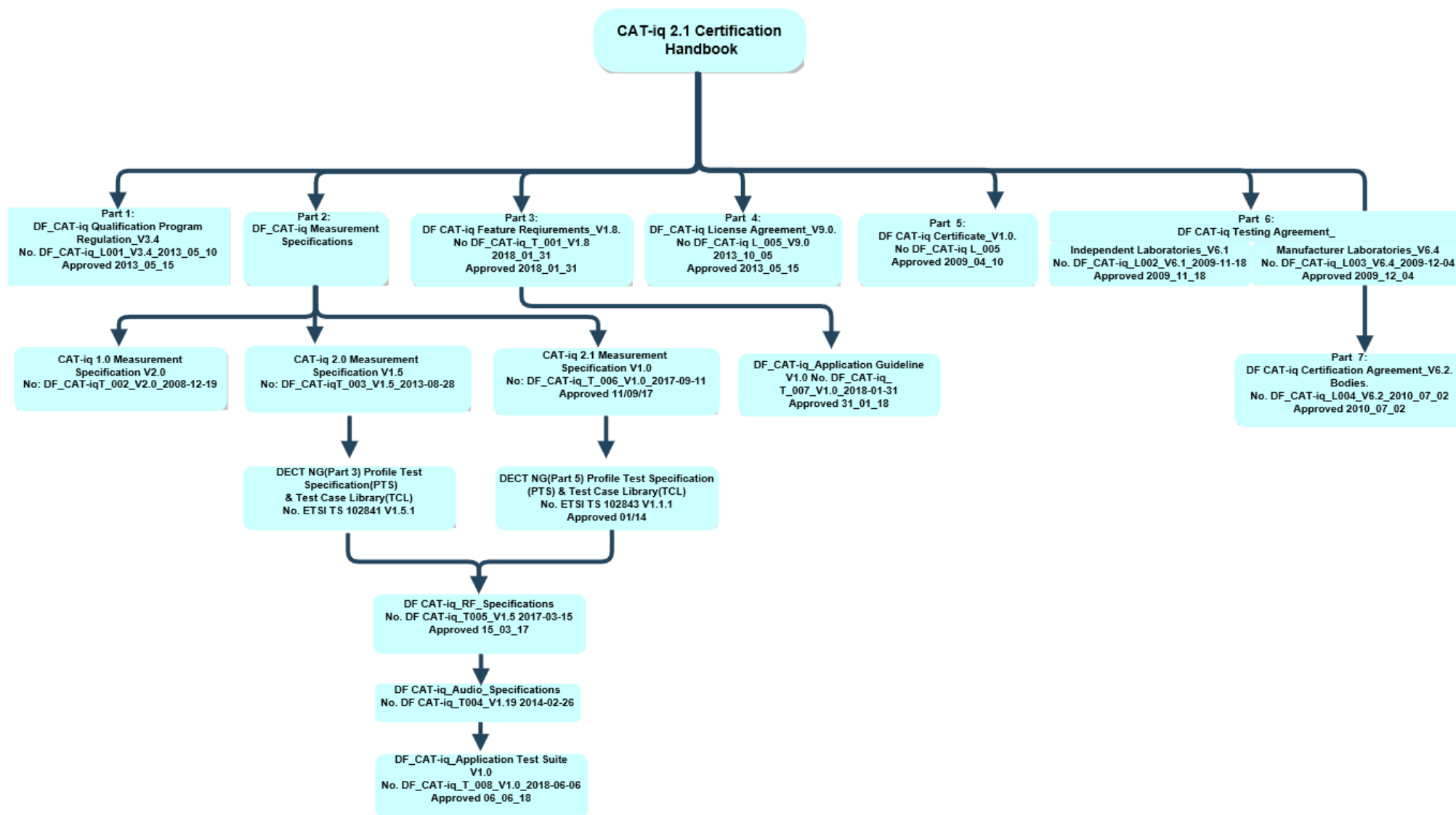
Certification :

- ✓ After succesful 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

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

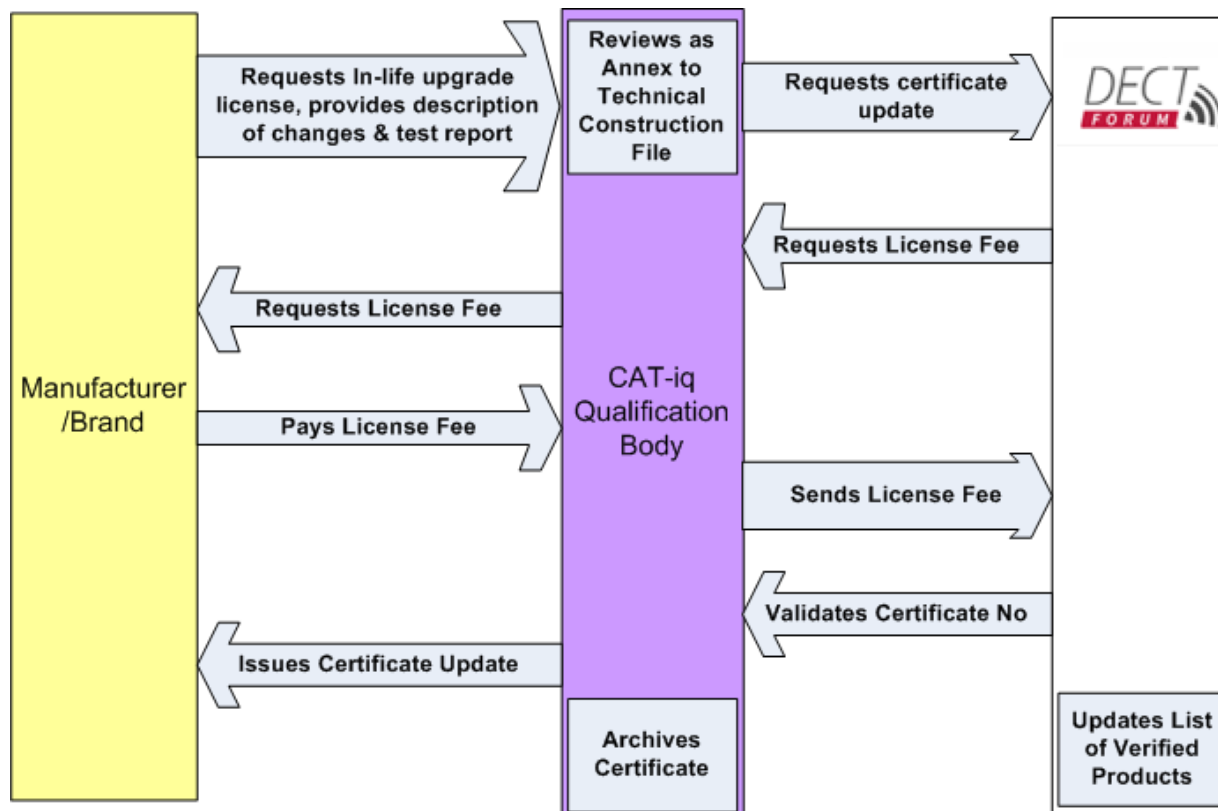


Regional Variants

- 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 US/Canada
- Future anticipated variants for J-DECT

Implementing Software updates on CAT-iq

- 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

HDVoice 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

CETECOM ICT Services	<p>Marco Lenjoint CTC advanced GmbH Untertuerkheimer Str. 6-10 66117 Saarbruecken - Germany Marco.Lenjoint@cetecom.com +49 (0) 0681 568 8317</p>
Arendi AG	<p>Thomas Rupp Arendi AG Eichtalstrasse 55 8634 Hombrechtikon, Switzerland thomas.rupp@arendi.ch Phone +41 55 254 30 30</p>
Nemko	<p>Nemko AS Frode Sveinsen Instituttveien 6, 2007 Kjellet - Norway sveinsenfr@nemko.com +47 22 960 335</p>
HEAD acoustics	<p>Dr. H.W. Gierlich HEAD acoustics GmbH Ebertstr. 30a 52134 Herzogenrath – Germany h.w.gierlich@head-acoustics.de +49 (0) 2407 577 0</p>
RTX	<p>Per Oestergaard Nielsen RTX Telecom A/S Stroemmen 6, 9400 Noerresundby - Denmark, pni@rtx.dk +45 96 32 27 48</p>
Dosch & Amand Research	<p>Dr. Franz Dosch Dosch & Amand Research GmbH Co. KG Neumarkter Str. 18, 81673 Munich – Germany info@da-research.de +49 (89) 3589 85 0</p>

CAT-iq – More Information

- Other useful documents:
 - Certification Overview
 - Certification Q & A
 - Enhanced Voice services. 2016
 - CAT-iq: Creating Value with Certification. 2016
- For direct enquires:

DECT Forum Secretariat
3007 Bern, Wabernstr. 40
Switzerland
secretariat@dect.org
- For more information about CAT-iq please visit the DECT Forum website:
 - www.dect.org

- Follow DECT Forum on:



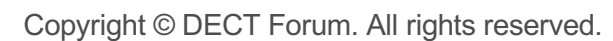
ETSI Specification - DECT

Title	Document Reference
DECT : Generic Access Protocol	EN 300 444, v2.2.8 (2017-07)
DECT; Common Interface (CI); Part 1: Overview.	EN 300 175-1, v2.6.6 (2017-06)
DECT; Common Interface (CI); Part 2: Physical Layer (PHL).	EN 300 175-2, v2.6.6 (2017-06)
DECT; Common Interface (CI); Part 3: Medium Access Control (MAC) Layer.	EN 300 175-3, v2.6.6 (2017-06)
DECT; Common Interface (CI); Part 4: Data Link Control (DLC) Layer.	EN 300 175-4, v2.6.6 (2017-06)
DECT; Common Interface (CI); Part 5: Network (NWK) Layer.	EN 300 175-5, v2.6.6 (2017-06)
DECT; Common Interface (CI); Part 6: Identities and addressing.	EN 300 175-6, v2.6.6 (2017-06)
DECT; Common Interface (CI); Part 7: Security Features.	EN 300 175-7, v2.6.7 (2017-06)
DECT; Common Interface (CI); Part 8: Speech coding and transmission.	EN 300 175-8, v2.6.6 (2017-06)

Title	Document Reference
DECT; New Generation DECT; Overview and Requirements	TR 102 570, v1.1.1 (2007-03)
DECT; New Generation DECT; Part 1: Wideband Speech.	TS 102 527-1, v1.4.1 (2014-04)
DECT; New Generation DECT; Part 3: Extended Wideband Speech Service	TS 102 527-3, v1.6.1 (2014-01)
DECT; New Generation DECT; Part 4: Light Data Services	TS 102 527-4, V1.3.1 (2015-11)
DECT; New Generation DECT; Part 5: Additional Feature set NG Extended	TS 102 527-5, v.1.2.1 (2014-01)

ETSI Test specifications

Title	Document Reference
DECT; New Generation DECT; Part 1: Wideband Speech.	N/A
(DECT); New Generation DECT; Extended wideband speech services; Profile Test Specification (PTS) and Test Case Library (TCL)	TS 102 841, v.1.5.1 (2014-01)
(DECT); New Generation DECT; Light Data Services; Software Update Over The Air (SUOTA); Profile Test Specification (PTS) and Test Case Library (TCL)	TS 103 159-1, v1.1.1 (2014-04)
(DECT); New Generation DECT; Additional feature set nr.1 for extended wideband speech services; Profile Test Specification (PTS) and Test Case Library (TCL)	TS 102 843, v.1.1.1 (2014-01)



CERTIFICATION PROCESS FLOW (2)

