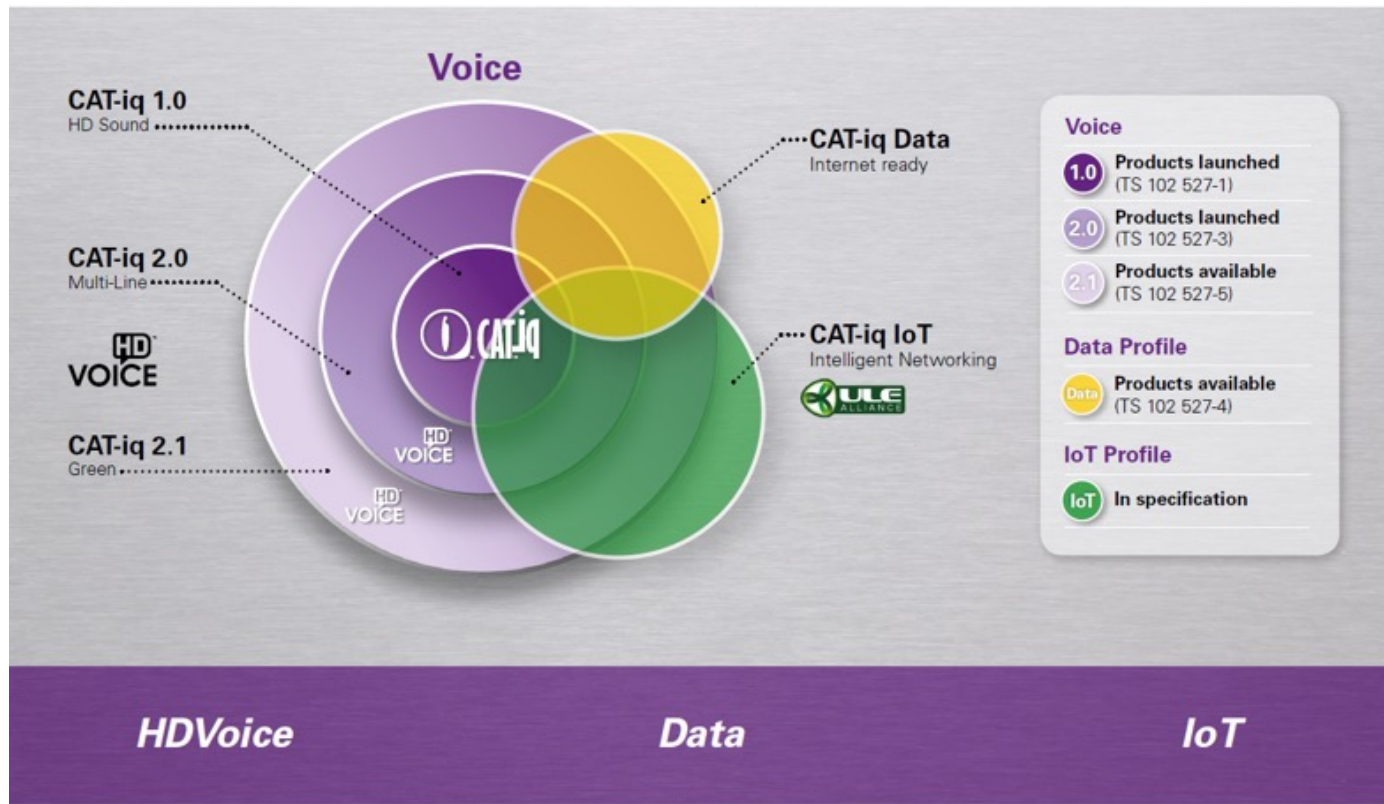# Overview 2019

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.

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.

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**
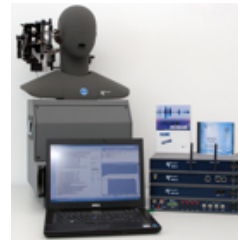 - FULL member of the DECT Forum

CAT-iq 2.0 Certification Test Equipment

dect forum

CAT-iq Certification Program

Interoperability Test (incl. GAP)

Acoustic Test

RF Test (incl. long slot)

| CAT-iq 2.0 Protocol Tester EU/US photo	CAT-iq 2.0 RF Tester photo	CAT-iq 2.0 Audio Test System photo
Hardware: DA1220(EN/US) Identno. 1220.2200.20 Release V1.72 Manufacturer: DOSCH&AMAND (Germany) www.dosch-amand.com	RTX2012 HS Firmware: V.9.58 or newer Software: V.3.1.0 or newer Manufacturer: RTX (Denmark) www.rtx.dk	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
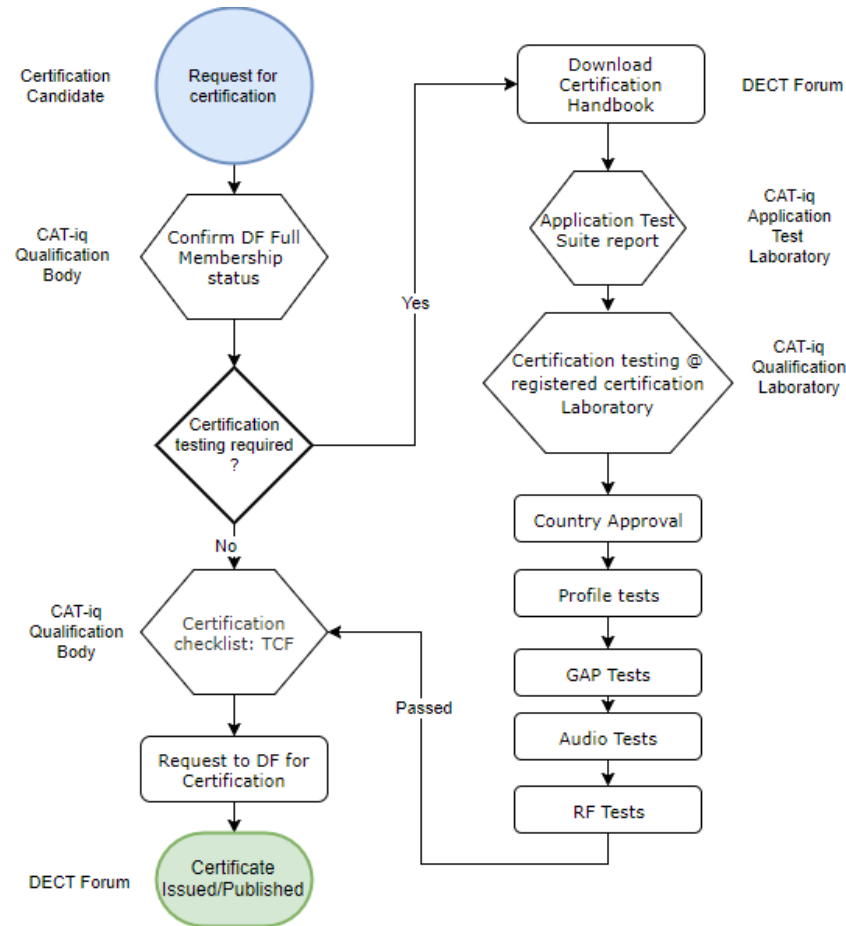
Certification Checklist

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 <u>1 week</u> 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

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

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

CAT-iq 2.1 Certification Handbook

Part 1:
DF_CAT-iq Qualification Program Regulation_V3.4
No. DF_CAT-iq_L001_V3.4_2013_05_10
Approved 2013_05_15

Part 2:
DF_CAT-iq Measurement Specifications

Part 3:
DF CAT-iq Feature Requirements_V1.8.
No DF_CAT-iq_T_001_V1.8
2018_01_31
Approved 2018_01_31

Part 4:
DF_CAT-iq License Agreement_V9.0.
No DF_CAT-iq L_005_V9.0
2013_10_05
Approved 2013_05_15

Part 5:
DF CAT-iq Certificate_V1.0.
No DF_CAT-iq L_005
Approved 2009_04_10

Part 6:
DF CAT-iq Testing Agreement_
Independent Laboratories_V6.1
No. DF_CAT-iq_L002_V6.1_2009-11-18
Approved 2009_11_18

Manufacturer Laboratories_V6.4
No. DF_CAT-iq_L003_V6.4_2009-12-04
Approved 2009_12_04

CAT-iq 1.0 Measurement Specification V2.0
No: DF_CAT-iqT_002_V2.0_2008-12-19

CAT-iq 2.0 Measurement Specification V1.5
No: DF_CAT-iqT_003_V1.5_2013-08-28

CAT-iq 2.1 Measurement Specification V1.0
No: DF_CAT-iq_T_006_V1.0_2017-09-11
Approved 11/09/17

DF_CAT-iq_Application Guideline V1.0 No. DF_CAT-iq_
T_007_V1.0_2018-01-31
Approved 31_01_18

Part 7:
DF CAT-iq Certification Agreement_V6.2.
Bodies.
No. DF_CAT-iq_L004_V6.2_2010_07_02
Approved 2010_07_02

DECT NG(Part 3) Profile Test Specification(PTS) & Test Case Library(TCL)
No. ETSI TS 102841 V1.5.1

DECT NG(Part 5) Profile Test Specification (PTS) & Test Case Library(TCL)
No. ETSI TS 102843 V1.1.1
Approved 01/14

DF CAT-iq_RF_Specifications
No. DF CAT-iq_T005_V1.5 2017-03-15
Approved 15_03_17

DF CAT-iq_Audio_Specifications
No. DF CAT-iq_T004_V1.19 2014-02-26

DF_CAT-iq_Application Test Suite V1.0
No. DF_CAT-iq_T_008_V1.0_2018-06-06
Approved 06_06_18

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

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
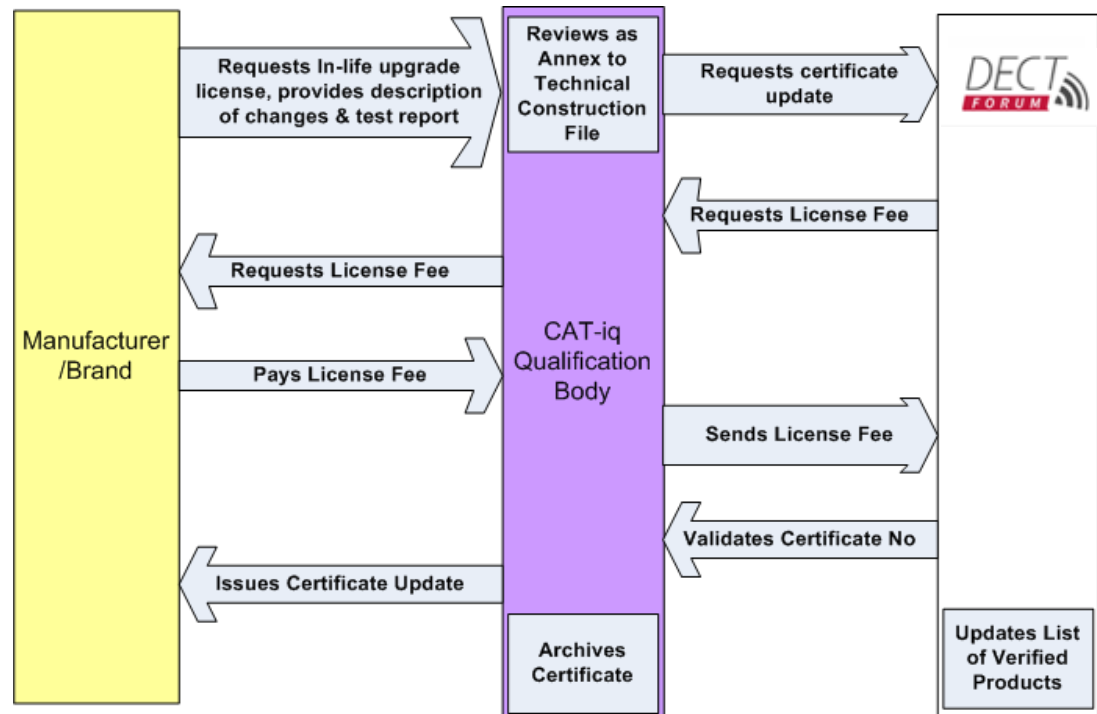
Certification License Structure

- 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

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

CTC advcanced	Marco Lenjoint CTC advanced GmbH Untertuerkheimer Str. 6-10 66117 Saarbruecken - Germany Marco.Lenjoint@ctcadvanced.com
Arendi AG	Thomas Rupp Arendi AG Eichtalstrasse 55 8634 Hombrechtikon - Switzerland thomas.rupp@arendi.ch
Nemko	Nemko AS Frode Sveinsen Instituttveien 6, 2007 Kjellet - Norway frode.sveinsen@nemko.com
HEAD acoustics	Dr. H.W. Gierlich HEAD acoustics GmbH Ebertstr. 30a 52134 Herzogenrath - Germany h.w.gierlich@head-acoustics.de
RTX	Per Oestergaard Nielsen RTX Telecom A/S Stroemmen 6, 9400 Noerresundby - Denmark, pni@rtx.dk +
Dosch & Amand Research	Dr. Franz Dosch Dosch & Amand Research GmbH Co. KG Neumarkter Str. 18, 81673 Munich - Germany info@da-research.de

CAT-iq More Information

- <u>Other useful documents:</u>
  - Certification Overview
  - Certification Q & A
  - Enhanced Voice Services
  - CAT-iq: Creating Value with Certification. 2019

- <u>For direct enquires:</u>

  DECT Forum Secretariat

  CH-3007 Bern, Wabernstr. 40

  secretariat@dect.org

- Please visit the DECT Forum website: <u>www.dect.org</u>
- Follow DECT Forum on: *@DECT_Forum (Twitter) and LinkedIn*

ETSI Specification - DECT

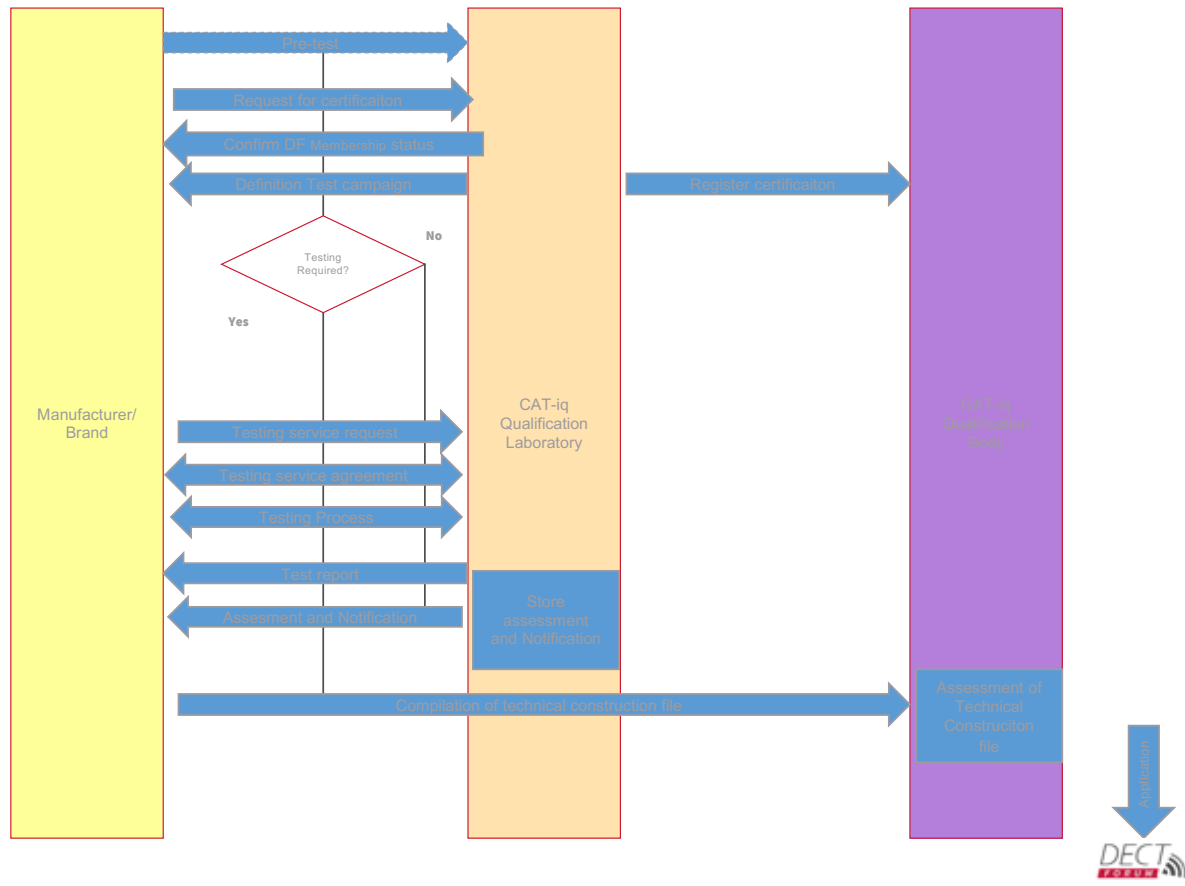| Title	Document Reference
DECT : Generic Access Protocol	EN 300 444, v2.2.8 (2017-07)
DECT; Common Interface (CI); Part 1: Overview.	EN 300 175-1, v2.6.6 (2017-06)
DECT; Common Interface (CI); Part 2: Physical Layer (PHL).	EN 300 175-2, v2.6.6 (2017-06)
DECT; Common Interface (CI); Part 3: Medium Access 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)

ETSI Specifications – NG DECT

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 (1)

Certification Process Flow (2)