

Measurement Specification for CAT-iq 2.0 Testing

VERSION 1.5

STATUS Board approved

LAST EDIT: 2013-08-28

OWNER DECT Forum

This document contains information that is confidential and proprietary to DECT Forum and its members. The information may not be used, disclosed or reproduced without the prior written authorisation of DECT Forum, and those so authorised may only use this information for the purpose consistent with the authorisation.

VERSION	DATE	EDITOR	REMARKS
1.0	10-Feb-10	Ruth Wilson	Initial draft based on CAT-iq 1.
1.2	26-Feb-10	Marco Lenjoint	Adding Annex A
1.3	15-Mar-10	Ruth Wilson	Added reference to TBR22
	23-Apr-10	Roland Schmidt	DF Board Approval
1.4	06-Dec-10 22-Dec-10	Patrick Rivoal Roland Schmidt	Editorial changes

1.5	17-Jul-13	Ruth Wilson	Adding support for US frequencies, updating references for audio test
	28-Aug-2013	Roland Schmidt	Board approval

Measurement Specification for CAT-iq 2.0

The DECT Forum concluded to establish a certification program for CAT-iq to ensure sufficient interoperability of devices from different vendors for the functionalities defined in CAT-iq and to ensure superior audio and RF quality levels.

Therefore all CAT-iq devices claiming to be compliant with CAT-iq standards and desiring certification must be tested according to the functionalities defined as mandatory by the CAT-iq standards.

Note that the device may also consider implementing the optional features of the specification, and where implemented, these features shall also function and be tested according the CAT-iq specification.

CAT-iq 2.0 is a registered trademark owned by the DECT Forum, it references features and procedures to corresponding ETSI Specifications, this specification references to ETSI TS 102 527-3 V1.3.1, and as revised from time to time

The scope of this document is to define the measurement requirements for the CAT-iq compliance tests for CAT-iq 2.0 profile. Details regarding overlaying framework of the CAT-iq certification programme and to relevant costs regarding certification are defined in separate documents. Note that this specification does not cover the certification of CAT-iq 1.0 devices, although it has some test cases which are provided for ensuring backwards compatibility.

1 References

Reference documents as part of the measurement requirements meet the requirements as follows:

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

2 RF Requirements

The test requirements can be found in the associated test specification:

DF_CAT-iq RF Specifications V1.1
(Doc.No. DF_CAT-iq T_005_V1.1_2013-07-17)

The certification will cover

- CAT-iq 2.0 Handset
- CAT-iq 2.0 Basestation
- CAT-iq 2.0 Headset

The test coverage will include RF characteristics for all CAT-iq 2.0 slot formats (full slot and long slot).

3 Audio Requirements

The test requirements for Audio can be found in the associated test specification:

DF_CAT-iq Audio Specifications_V1.19.
(Doc.No. DF_CAT-iq T_004_V1.19_2014-02-26)

The certification will cover

- CAT-iq 2.0 Handset and supporting Handsfree mode
- CAT-iq 2.0 Headsets.
- Some advisory requirements for CAT-iq 2.0 Basestations

The separate table CAT-iq 2.0_Certification_AudioResultTemplate_V1.3.xls (document is part of the handbook) defines for each requirement a number of points which can be achieved if this requirement is fulfilled. The minimum number of points necessary to achieve the overall certification is defined by the DECT-Forum and can be adapted over the time. Additionally some measurements are defined in this document as mandatory.

Compliance :

In order to fulfill the CAT-iq 2.0 audio certification, the device must fulfill Pass criteria 1 **and** Pass criteria 2.

- Pass criteria 1 : all mandatory measurements defined as "CRITICAL" shall be PASS
- Pass criteria 2 : the score shall be greater than or equal to the minimum score defined by DECT Forum above. The score is the sum of all passed measurements weighted with 1,2 or 3 (3=highest possible weight of a measurement). The minimum score is defined by DECT Forum and can be adapted from time to time.

Example : If the minimum score defined by DECT-Forum is 150 and the maximum score is 184 (i.e. allowed weight of failed = 34), then up to 11 measurements of weight 3 are allowed to be "FAIL" in order to still fulfill pass criteria 2. If 12 or more measurements of weight 3 are "FAIL" then pass criteria 2 is "FAIL".

4 Interoperability Requirements

The tests requirement for interoperability includes CAT-iq protocol testing and GAP backward compatibility testing.

4.1 CAT-iq protocol testing

The test requirements for interoperability can be found in the associate test specification:

ETSI document TS 102-841 v1.2.1 and as revised from time to time

The certification will cover:

- CAT-iq 2.0 Handset
- CAT-iq 2.0 Basestation
- CAT-iq 2.0 Headset
- Multiple Handset scenarios
- Backwards compatibility tests with CAT-iq 1.0 'Golden Devices'

Note that a consequence of carrying out the CAT-iq 2.0 basestation tests will result in some test cases with full end-to-end test with the 'operator like' network. Some flexibility for network connectivity is permitted (see Annex A.2.1).

Before running the CAT-iq 2.0 interoperability tests, the supplier needs to declare:

- the optional features which are supported (see TS 102 841 A.1.1 for handset and A.2.1 for basestation).
- some extra information for testing (see TS 102 841 A.1.2 for handset and A.2.2 for basestation)
- the optional or conditional procedures which are supported (see TS 102 841 A.1.3 for handset and A.2.3 for basestation).

4.2 GAP backward compatibility testing

CAT-iq 2.0 devices shall be fully compliant to DECT GAP and as such will be expected to conform to ETSI TBR22/A1.

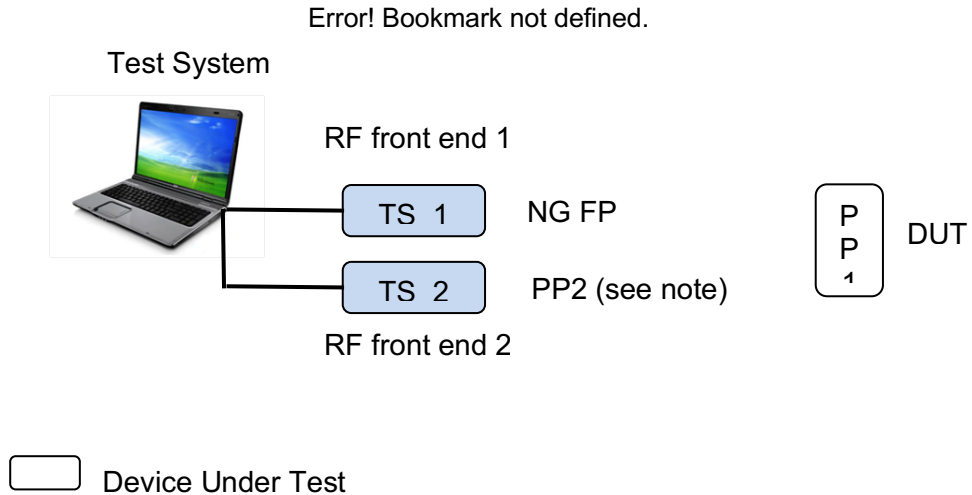
In addition, some optional or conditional GAP features became mandatory in TS 102 527-3. These features, and corresponding test cases that shall be fulfilled, are specified in TS 102 841 Annex D.1.

Note that the test equipment must be able to handle the new NG-DECT Part 1 and 3 capability bits.

Annex A – Description of Test Environment

A.1 Description of CAT-iq 2.0 handset test environment

The PP test platform is depicted on figure 1.



NOTE: PP2 behaves either as a NG PP or a legacy GAP PP according to test case

Figure 1: PP test platform

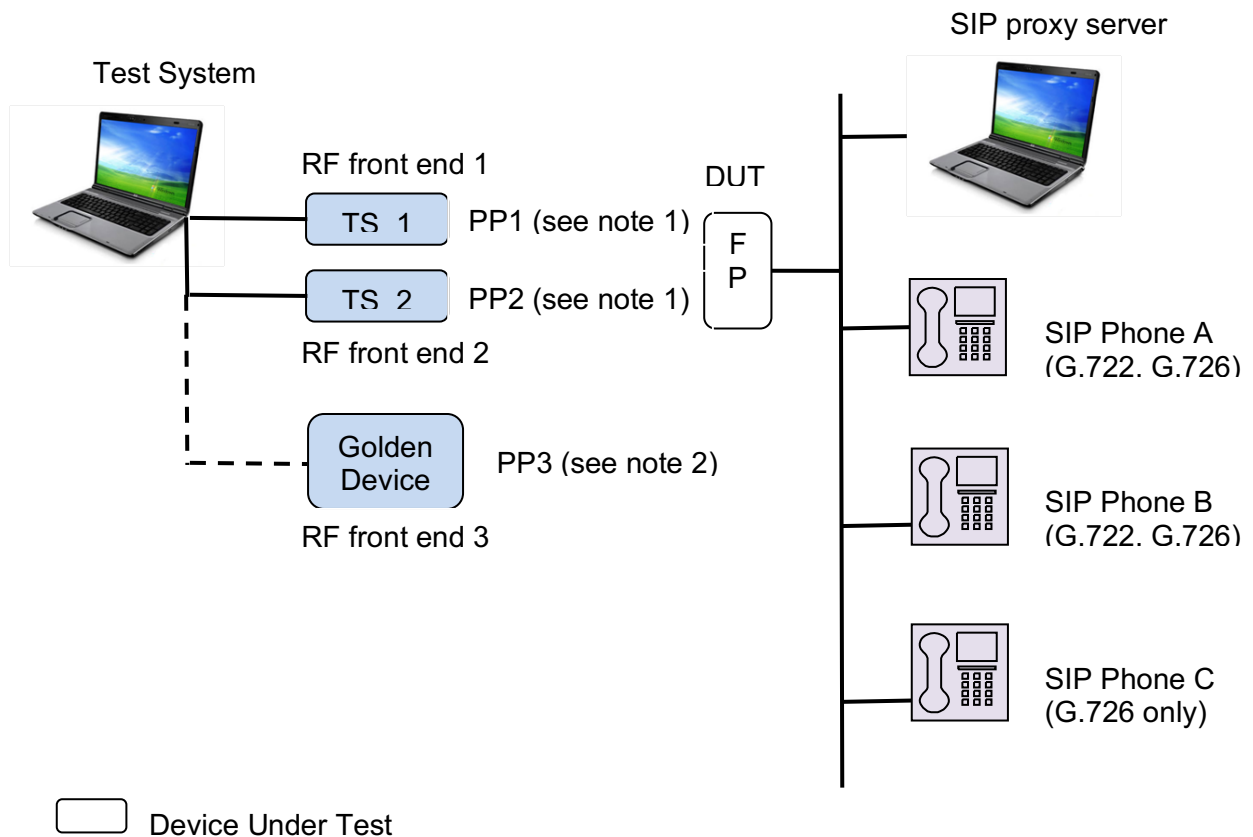
The first RF front-end of test system "TS_1" plays the role of a NG FP to which the tested PP is paired.

The following devices are needed to perform parallel call test cases: either a NG PP or a GAP legacy PP. The second RF front-end of test system "TS_2" plays the role of one of these PPs according to test case condition.

A.2 Description of CAT-iq 2.0 Basestation test environment

A.2.1 Example of FP test platform including SIP Server

The fixed part under test shall be connected to a network when running the tests suite. It shall be ready to initiate an outgoing call and to receive an incoming call. An example of the FP test platform including SIP-Server is depicted on figure 2.



NOTE 1: PP1 and PP2 behave either as a NG PP, a legacy GAP PP, or a headset PP according to test case.

NOTE 2: Golden device A needed for NG-DECT Part 1 backward compatibility tests is re-used here for convenience. Very few NG-DECT Part 3 test cases need a third PP.

Figure 2: Example of FP test platform including SIP Server

The first RF front-end of test system "TS_1" plays the role of a NG PP or a GAP PP paired on the tested FP.

The following devices are needed:

- One other PP for internal call test cases: a NG PP and a GAP legacy PP (see note 1).
- One call server (e.g. a SIP server).
- A first phone 'Phone A' (e.g. SIP phone supporting G.722 and G.726 codecs) for first call test cases (see note 2).
- A second phone 'Phone B' (e.g. SIP phone supporting G.722 and G.726 codecs) for parallel call test cases (see note 2).
- A third phone 'Phone C' supporting only G.726 codec for narrow band calls and call deflection test cases.
- A handset PP for headset call test cases (see notes 1 and 3).
- A third handset is needed for few test cases (internal general call and call transfer): any GAP PP can be used.

NOTE 1: The second RF front-end of test system "TS_2" plays the role of one of these PPs according to test case condition: NG PP, GAP PP or headset PP.

NOTE 2: When running "Multiple lines" test cases, phone A is on line 0 and phone B on line 1. These line identifiers values are generic identifier values standing for the line identifiers defined by the system.

NOTE 3: To behave like a headset, the TS has just to set the corresponding terminal capability bit "Support of the "Headset management" feature and to send a "call interception request from HPP" command in {CC-SETUP} message.

This platform is based on SIP protocol exchanges between the FP and the network. It must be considered as an example as the FP under test may not be designed for SIP network (e.g. H323, PBX, etc.). However, no matter which network is used, it shows the minimum devices needed to run the FP test cases.

A.2.2 Features of SIP Server configuration

To make it easier for manufacturers and test houses, only one SIP Server configuration will be described as main solution to cover most of the DUTs supported interface (see figure 2). For other interfaces, the manufacturer has to provide an individual setup to the test house. Special environments required by operators have to be discussed separately and probably lead to an on site testing at their facilities.

A.2.3 Description for SIP interface:

- Hardware: PC with Linux operation system and Ethernet interface
- Software: Asterisk 1.4 or SIPp*
- Parameters: tbd

Note*: for features which are not covered by Asterisk