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TESTING



**EuroDOCSIS, EuroPacketCable (Multimedia)
Certification/Qualification: General Guidelines
(Interop | ATP run | Certification Wave)**

--- Project Reference ---

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EuroDOCSIS, EuroPacketCable (Multimedia) Certification/Qualification: Certification Wave Guidelines (Interop | ATP run | Certification Wave)

1 Overview

The EuroDOCSIS/EuroPacketCable/EuroPacketCable Multimedia certification and qualification processes have been developed to provide a cable operator (or a retail distributor) with confidence that the EuroDOCSIS/EuroPacketCable/EuroPacketCable Multimedia certified/qualified equipment interoperates with other products made by other vendors.

Cable Modems (CM), Cable Gateways (CG), Embedded Multimedia Terminal Adaptors (E-MTA) and Embedded Digital Voice Adapters (E-DVA) will be applying for Certification under this program and CMTSSs, STB/CMs (Cable modems in a set-top box), STB/E-MTAs and STB/E-DVA (E-MTA and E-DVA in a set-top box), CMSs, IPATs, PSs (Policy Servers) and MGs (Media Gateways) will be applying for Qualification.

On behalf of the European cable operators, Excentis organises the certification and qualification process for EuroDOCSIS, EuroPacketCable and EuroPacketCable Multimedia products.

Prior to each certification wave, vendors are given the opportunity to participate in an Interop or an ATP run. The Interop offers a vendor the opportunity to test interworking/interoperability with other vendor's equipment and to gain confidence in their products towards succeeding certification testing. In the ATP run Excentis executes ATP tests as they're done during certification waves. Only the Interop is free of charge and participating in this Interop prior to the certification wave can be mandatory, depending on the product type. Participating in the ATP run is never mandatory. Chapter 4 gives more details on these events.

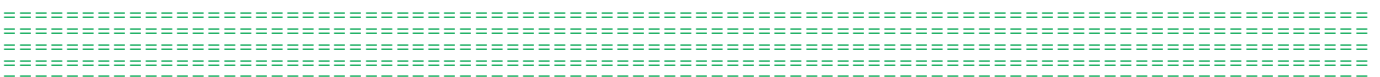
Excentis reserves the right to change these guidelines prior to subsequent Certification Waves, or to waive any of these guidelines.

For all enquiries related to the certification process, please contact Kristof Sercu at email testing@excentis.com.

Questions about administrative and financial procedures must be directed to Malcolm Taylor of EuroCableCertification at email eccsubmission@excentis.com.

All Registration forms for the Interop and ATP run and for the certification wave need to be emailed to eccsubmission@excentis.com and a signed copy need to be faxed to +32 9 329 31 74.

This document also contains further details on the quick procedure for qualification of a DVB-C STB with independent cable modem module, DVB-C STB with independent E-MTA module and the qualification of a device with pluggable CM module.



2 General Information

2.1 Certification/Qualification Wave

Certification testing is organized in so called 'certification waves'. Each certification wave consists of a testing period (testing start date - testing end date), a vendor meeting, a Certification Board meeting and a feedback session to the vendor. The schedule with actual dates for each event can be consulted on the Excentis website.

2.2 Certification/Qualification Submissions

A product **MUST** be submitted as "New" if any of the following conditions apply:

- x A product that has not achieved certified/qualified status for all requested specification(s), including products submitted for the first time for any of the requested specification(s) or products that did not achieved certified/qualified status for any of the requested specification(s) in previous submissions;
- x A product that has undergone major changes towards the state of the product since it received the certified/qualified status;
- x A product to which one or more physical interfaces have been added or removed;
- x OEM products in which the hardware and/or software has changed.
- x CM/E-MTA modules (independent or as part of DVB-C STB) that have not been qualified before (e.g., in combination with a different STB)

2.3 Re-Certification/Re-Qualification Submission

A special re-certification/re-qualification procedure can be used if a vendor wants to re-certify/re-qualify a certified/qualified product. The re-certification/re-qualification fee is lower than the normal submission fee to encourage re-certification/re-qualification. A product **MAY** be submitted for re-certification/re-qualification only if each of the following conditions is met:

- x The product is either a:
 - o EuroDOCSIS product (CM, STB/CM or CMTS);
 - o EuroPacketCable E-MTA, STB/E-MTA, E-DVA, STB/E-DVA or CMTS;
 - o EuroPacketCable Multimedia CMTS;
- x The product has achieved certification/qualification status for all requested specification(s);
- x The product contains only minor changes to the certified/qualified hardware and/or software. Any minor changes must be approved by the Euro Cable Certification Board and Excentis. ECNs as required for the certification wave must be implemented.

A vendor seeking re-certification/re-qualification for a product must submit the following information at least 14 days before re-certification/re-qualification submission are due:

- x A re-certification/re-qualification request containing the company's name, the model number and product and when the product was previously certified. The request, signed by the product manager and the quality assurance manager, must list all of the changes from where the product was last certified (hardware and software). Hardware changes not included in this request can be a reason for non-certification/qualification.
- x An impact analysis, signed by both the product manager and quality assurance manager, showing what functionality will change as a result of the minor changes to the product.

The information needs to be forwarded to eccsubmission@excentis.com. Vendors will be notified if their re-certification/re-qualification request is accepted on the Monday before re-certification/re-qualification submissions are due.



A re-certification/re-qualification submission can also be done by using a flexible submission, see the “Flexible submission” section below.

2.4 Qualification of a Cable Modem Module inside a DVB/C STB

A quick procedure MAY be used for the EuroDOCSIS qualification of a DVB/C Set-Top Box with an independent EuroDOCSIS Cable Modem module (“STB/CM”), on the condition that the STB/CM uses the same cable modem module as an STB/CM that was previously qualified. Further details on this procedure can be found in Appendix A of this document. If it’s the first time that a certain CM module (in a STB) is submitted, then the submission must follow the normal procedure for new products.

2.5 Qualification of an E-MTA Module inside a DVB/C STB

A quick procedure MAY be used for the EuroDOCSIS or EuroPacketCable qualification of a DVB/C Set-Top Box with an independent EuroPacketCable E-MTA module, on the condition that the STB/E-MTA uses the same E-MTA module as an STB/E-MTA that was previously qualified. Further details on this procedure can be found in Appendix B of this document. If it’s the first time that a certain E-MTA module (in a STB) is submitted, then the submission must follow the normal procedure for new products.

2.6 Qualification of an independent pluggable CM module

A quick procedure MAY be used for the EuroDOCSIS qualification of a device that has a user-pluggable cable modem module, on the condition that the device uses the same user-pluggable module as in a device that was previously qualified. Further details on this procedure can be found in Appendix C of this document.

2.7 OEM Product Submission

OEM (Original Equipment Manufacturer) product submissions of an existing certified product can be made at any time. If the OEM product is submitted outside a normal certification wave, the testing starts the first Monday after the submission. The results will be announced to the vendor within four weeks. If the submission of an OEM product is done at the start of the certification wave, the testing and announcement of the results follows the certification wave schedule.

OEM products can be submitted in the same certification wave as the original product.

In the case the OEM-rules are fulfilled, the OEM-product is certified/qualified and is added to the certified/qualified list with mentioning of the date when the original product was certified/qualified.

OEM product submissions must meet all of the following requirements:

- x The same software as the original product;
- x The same hardware as the original product, including the same docsDevSwCurrentVersion;
- x The same power supply as the original product.

Only accepted difference between the original product and the OEM submission:

- x Company logo, Colour, sysDescr and device certificate;
- x Housing can be different but must be from the same material and with the same number of connections, LEDs, ...

2.8 Flexible submission

Products can also be submitted at any time, not aligned with the published certification wave schedule.

The testing fee for flexible submissions is around 10% higher than for submissions within a certification wave. Please check the website for exact details.

For a flexible submission the same guidelines and requirements apply as for the last fixed certification wave that started before the testing start date of the flexible submission. The same registration forms must be used as for a submission within a certification wave. We request two weeks notice of intent to submit.



As this type of submission is not following the published certification wave schedule, all timelines will depend on date of submission. The testing will start as soon as the invoice is paid and all samples and documentation are available at Excentis. Excentis will test the product in maximum 8 weeks time (but typically less). As soon as the testing has finished, the Euro Cable Certification Board will decide on pass or fail within 1 week. After the decision has been taken, a fax will be sent to the vendor with the result, and also the test report will be sent. There will also be a possibility for the vendor to request for more details and information regarding certain failures that were found during testing, by means of a conference call or follow-up emails.

2.9 Invited re-submission

This is a special type of submission based on an invitation by the Certification Board.

When reviewing the test results on a product that has been submitted for certification, the Certification Board normally decides if the product gets the Certified or Qualified label or not.

However, there may be products for which the Certification Board does not decide on granting the Certified or Qualified label but for which the vendor may receive an invitation to re-submit its product by using the "Invited re-submission" procedure. The Certification Board grants this option based on its own judgment that the product fails are not strong enough to require a full re-submission.

When a product is failed by the Certification Board, it is not possible to appeal against the decision to not grant the invited re-submission.

When a vendor receives the invitation to make use of this procedure, it is up to the vendor to decide whether he wants to make use of this procedure or not. The advantage of this procedure is that the vendor does not need to go through a full new certification wave again, reducing the total cost and the time needed for certification/qualification.

The submission deadline for invited re-submission is exactly two weeks following the day upon which the Certification Board decision and Excentis test report was sent out. It's not possible to make use of the invited re-submission after this deadline. The Certification Board decision and Excentis test report are sent out to the product manager by fax and email, respectively. This communication will include details on which blocking issue(s) must at least be fixed to be eligible for obtaining the certified/qualification label when using the invited re-submission procedure. When the vendor makes use of this procedure the vendor itself is responsible to upgrade all samples at Excentis that have been submitted to the certification wave (in case of small HW related issues it is also allowed to replace the samples by others). Suppose that the Certification Board decision and Excentis test report was sent out on Friday (which is typically the case), then all samples except two must be upgraded or replaced at latest on the Monday following this Friday + two weeks. The same deadline is applicable for delivery of a signed registration form (indicate 'Invited re-submission' on the certification wave registration forms) together with all usual certification wave documentation. Please provide a new CD (or via USB stick or FTP) with an update of the requested documentation (application forms, SW images - including for MAC.14 and BPI.23,...). If there are changes made in the SW then the new SW load must have a new version number. The product labels also need to get updated with updated <Product ID>: = <Vendor ID>-<Model>-ECW<Wave Number>-**B** and with updated SW and/or HW versions.

Excentis will then perform three weeks of additional testing to verify that the blocking failures have indeed been fixed and that no new issues were introduced. In case the blocking failures have indeed been fixed and no new issues were introduced, then the product will automatically receive the Certified or Qualified label. If not, then the Certification Board will need to review the test results.

An invited re-submission involves a new submission fee, which is lower than the submission fee for a full certification wave. The exact fee is available on the Excentis website.



3 Certification Wave Submission Requirements

3.1 Specification Compliance Requirements

Submitted products must be built to comply with specifications and ECNs as described in the separate Technical Requirements document which can be found on the Excentis website.

3.2 Schedule

Please consult the appropriate document on the Excentis website for the correct details for the certification wave planning. Changes on the schedule get announced on the EuroDOCSIS and EuroPacketCable announce reflectors.

3.3 Fees and Payment

The applicable fees can be found in the separate fee document which is also available on the website. Please note that the certification wave fee is not a “testing” fee and does not entitle the submitting vendor to a formal test report.

3.4 Products

Devices submitted for certification MUST be production quality. They MUST be as they would be sold and marketed (housing, labeling,...). If this is not the case, this could be a reason for failing certification/qualification.

The power supplies of the submitted products should fit into Belgian power outlets. If the samples come with power plugs matching a different power outlet, the vendor is required to ship the appropriate power adapters or convertors along with the samples.

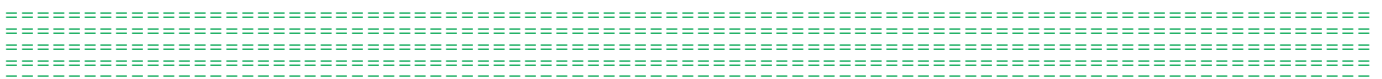
The table below shows the number of units that MUST be submitted for a certification wave. Also included in the table are the numbers of units that may be returned by Excentis following a successful certification wave (i.e. when certified, qualified or verified label was given).

For those products which certification/qualification is not granted, the Certification Board requires 1 CMTS, CMS, IPAT, MG, PS products and 5 STB/CMs, internal (PCI) modem, CMs, E-MTAs or STB/E-MTAs, E-DVAs or STB/E-DVAs to remain at Excentis for a period of one year.

Product	Units Required for Testing		Units Retained after Successful Testing	
	Certification Qualification	OEM Submission Re-Certification Re-Qualification	Short Term (units retained for 1 year)	Long Term (units retained indefinitely)
CPE submitted for EuroDOCSIS only (v)	23 units (incl. 3 test EDRCA)(i)	10 units (incl. 1 test EDRCA)(i)	All units	5 units
CPE submitted for EuroDOCSIS AND EuroPacketCable (v)	35 units (incl 3 test EDRCA (i) and 2 test SPRCA)	15 units (incl 1 test EDRCA (i) and 1 test SPRCA)	All units	5 units
CMTS	3 units (ii)	3 units	3 units	3 units
CMS / Media Gateway	2 units	1 unit (iv)	All units	1 unit
IPAT	1 unit	1 unit (iv)	All units	1 unit
Policy Server (EPMM)	2 units	1 unit (iv)	All units	1 unit

Notes

(i) Not applicable if the STB/CM uses a non-EuroDOCSIS mechanism for software upgrade of the CM. Not applicable for EuroDOCSIS 1.0 based products. (ii) At least two units can be re-used in a later submission. (iii) Up to three units can be used in a later submission. (iv) For EuroPacketCable CMS/MG/IPAT and EuroPacketCable Multimedia PS the special re-qualification procedure is not applicable. The product may be re-submitted as a new product. (v) If the CPE is submitted as Cable Gateway to include CM Router or CM Wi-Fi testing, no additional samples are required.



Vendors are responsible for all shipping costs, both directions, and must supply Excentis with valid shipping account information for return of product. All submitted CMs, STB/CMs, E-MTAs or STB/E-MTAs, E-DVAs or STB/E-DVAs that Excentis does not keep, including samples not receiving certification/qualification or samples kept after certification for longer than one year, can be returned to the vendor at his charge.

3.5 Labeling and Product ID

The Product ID is defined as follows:

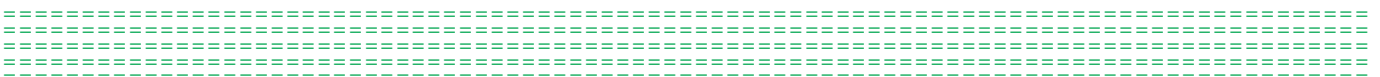
<Product ID> = <Vendor ID>-<Model>-ECW<Wave Number>

<Vendor ID> should be the first 4 characters of the vendor name, e.g. Exce for Excentis

<Model> is the product model as named by the vendor, e.g. ABC4321

All products must have a unique label according to the following rules:

Product Type	Example Label
CM, STB/CM, CG	<Product ID>, Unit: <unit number> CM MAC: xx:xx:xx:xx:xx:xx Router MAC: xx:xx:xx:xx:xx:xx (if applicable) Serial#: HW version: Remarks + Units 21, 22 and 23 MUST also be labeled as "TEST EDRCA" + The unit with console port access must be labeled with "CONSOLE PORT" + MAC-Addresses must correspond with the registration form
E-MTA, STB/E-MTA, CG (with embedded EMTA)	<Product ID>, Unit: <unit number> CM MAC: xx:xx:xx:xx:xx:xx MTA MAC: xx:xx:xx:xx:xx:xx Router MAC: xx:xx:xx:xx:xx:xx (if applicable) Serial#: HW version: Remarks + Units 31, 32 and 33 MUST also be labeled as TEST EDRCA + Units 34 and 35 MUST also be labeled as TEST SPRCA + The unit with console port access must be labeled with "CONSOLE PORT" + MAC-Addresses must correspond with the registration form
E-DVA, STB/E-DVA, CG (with embedded EDVA)	<Product ID>, Unit: <unit number> CM MAC: xx:xx:xx:xx:xx:xx DVA MAC: xx:xx:xx:xx:xx:xx Router MAC: xx:xx:xx:xx:xx:xx (if applicable) Serial#: HW version: Remarks + Units 31, 32 and 33 MUST also be labeled as TEST EDRCA + Units 34 and 35 MUST also be labeled as TEST SPRCA + The unit with console port access must be labeled with "CONSOLE PORT" + MAC-Addresses must correspond with the registration form
CMTS	<Product ID>, Unit: <unit number> MAC: xx:xx:xx:xx:xx:xx Serial#: Remarks + All relevant MAC-Addresses and serial numbers MUST be added to the label
CMS	<Product ID>, Unit: <unit number> Serial#: [all relevant serial numbers MUST be added to the label]
IPAT	<Product ID>, Unit: <unit number> Serial#: [all relevant serial numbers MUST be added to the label]
MG	<Product ID>, Unit: <unit number> Serial#: [all relevant serial numbers MUST be added to the label]
PS	<Product ID>, Unit: <unit number> Serial#: [all relevant serial numbers MUST be added to the label]



Power Supply	Each power supply MUST also be labeled with corresponding <Product ID>. AC power cords do not require labels.
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3.6 Shipping and Product Arrival

All products must be shipped free-of-charge to Excentis (the vendor is responsible for all customs, tax and handling charges). Products can also be hand-carried to Excentis offices. Please note that it might take a couple of days to get products through customs, please make sure the products are accompanied by correctly filled in paperwork.

Products that are hand-carried to Excentis without the correctly filled in papers from the custom office cannot be shipped back. Shipping back products from Excentis is at the cost of the vendor. The vendor is responsible for providing the correctly filled in paperwork. Additional shipping information (details, liability) can be found in Appendix D.

The products that are submitted for certification/qualification must be on-site by noon (12:00 CET) of the testing start date. Engineers have till 17:00 CET to get the products fully operational. Excentis provides access to the lab the week before the submission date to allow installation of headend equipment. Contact testing@excentis.com for further details or questions. Failing to have equipment on-site will be grounds for consideration of elimination for certification/qualification.

During the set-up, Excentis staff will provide access and support to an RF cable network, a CMTS and a provisioning server to be able to perform a software upgrade at Excentis premises. This allows a vendor to ship products well in time before the submission date and perform the final software upgrade on the testing start date.

If you would like to receive an invitation letter, please contact An Janssens (secretariat@excentis.com) well in advance.

3.7 Submission Documentation

All the information listed in this section is required for a valid submission.

In the event that additional documentation is required for the testing team to be able to perform all testing, Excentis reserves the right to request this information with vendor response within a 72-hour time frame at any time during the certification wave. Technical contact info must be provided on the registration form.

Submission Information

A vendor seeking to participate in a Certification Wave must provide:

- x (two weeks before the testing start date)
An email, with a copy of Part 1 of the admission application form to eccsubmission@excentis.com (the form can be downloaded from the Excentis website. A signed copy needs to be faxed to +32 9 329 31 74.
- x (at latest on the testing start date)
A copy of the certification documentation in accordance with the next sections (this may be provided on USB stick, CD, DVD,...). The documentation shall include:
 - o Admission Application Forms: soft copy in .doc format including the MAC address list, + soft copy of signed version (in pdf or any other standard format). A Corporate Officer and the Quality Assurance Manager of the vendor company must sign the Admission Application forms to verify the accuracy of the contents of both the Executive Summary and the application.
 - o Executive Summary
The Executive Summary should not exceed four pages. The summary should provide further details on the capabilities of the product and an overview of the effort to prepare the product for submission to Excentis. It should also include additional information that a vendor believes the Certification Board should know to clarify operations, test results, or documentation. It should briefly describe any exceptions used by the vendor to the applicable specification and the reason for such exceptions. For example, if new ECNs are implemented that are not yet applicable for this certification wave, it must



be mentioned in the executive summary. It should also describe which optional features are supported, and to what extent (e.g., in case of ED2.0 + IPv6 submission it should be described if DPM, APM, UDC, Multicast, classifiers are supported, as these are optional in the 2.0+IPv6 specifications).

- o A completed Conformance Checklist (PICS)

The Conformance Checklist should be a completed version of the latest PICS Checklist. "Completed" means each line item is clearly marked with a 'Yes' or 'No'. Each PICS line item must refer to a given test procedure that was used to verify that specific PICS item. The Conformance Checklist is a vendor's formal affidavit to the level of the product's conformance to the specification. The PICS Checklists can be found on the website.

- o Detailed Interoperability and ATP test reports

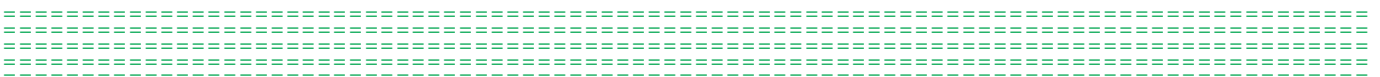
The Interoperability Test Report should contain an overview of interoperability testing performed at different locations. The hardware and software testing performed and summarized in the Interoperability Test Report should demonstrate that the product for which certification is applied interoperates with other equipment.

Each vendor is responsible for its own product to verify each item of the Requirements Checklist. The actual data gathered for each test should be included in the submitted product documentation in order to prove product compliance. The various sources of test procedures may include: (1) Silicon vendors (for chipset conformance to the specifications); (2) Commonly used or widely available ATPs for the cable industry; and (3) The vendor's internally-developed test procedures. Note that Excentis also offers ATP testing services.

- o For CM, STB/CM, E-MTA, STB/E-MTA, E-DVA, STB/E-DVA, CG products:

- Image files (Original, MAC.14 image + 2 BPI.23 images) and the appropriate digital certificates and signatures (further details can be found in the following chapters).
- Login and password for the web admin page on the CM (web page on 192.168.100.1)
- For products with USB: USB or other drivers required for equipment operation
- Operating manual for the unit with console access
- For products with Wi-Fi support: wireless interface information (username, passwords, SSIDs); instructions on howto enable/disable the Wi-Fi interface (Wi-Fi must by default be disabled)
- For STB devices: MPEG stream together with configuration settings, and instructions on howto enable the echo application

- o MIB definitions of all supported MIBs (e.g., proprietary MIBs to configure the Wi-Fi)
- o Other supporting data or equipment (Please see Appendix E)
- o One hardcopy of the Admission Application forms and the Executive Summary.



4 Interop and ATP run Requirements

The goal of the **Interop** is to ensure that each vendor has an opportunity to conduct basic interoperability tests with other vendors' equipment in a controlled laboratory environment similar to that used during product certification and qualification. Basic tests like ranging and registration, DHCP, data passing, stability, and voice quality testing will be the base of the Interop.

The Interop is open for all EuroDOCSIS 1.0/1.1/2.0/3.0, EuroPacketCable 1.0/1.5/2.0, EuroPacketCable Multimedia and Cable Gateway products (CM, STB/CM, E-MTA, STB/E-MTA, E-DVA, STB/E-DVA, CG, CMTS, CMS, IPAT, Media Gateway, Policy Server).

Products that were submitted in the certification wave preceding this Interop are also welcome in the Interop in order to reproduce certain failures or in order to verify fixes for failures that were found in the certification wave. No other ATP testing will be done during the Interop.

Unless announced otherwise, Interop and ATP Run events are not meant for marketing or any other commercial purposes, and as of such, only the registered vendor participants may be present during these events.

Participating in the Interop is free of charge and can be mandatory for some products before they can be submitted for certification (see section 4.2).

The purpose of the **ATP run** is to ensure that vendors have the opportunity to have a selection of acceptance tests executed by Excentis similar to those executed during product certification and qualification. Participating in the ATP run is not mandatory for any product and involves a fee.

Another possibility to have a selection of acceptance tests executed by Excentis is by making use of the ATP testing service. More information about this can be found on the Excentis website.

4.1 General Requirements

Supporting Engineers

No more than two engineering representatives per vendor company per product type will be allowed in Excentis during the Interop or ATP run week. If the vendor wants to participate with two different product types (e.g., CM and CMTS), then a total of four engineers may attend.

If a participating engineer needs an invitation letter (e.g., to obtain a visa), please contact An Janssens (secretariat@excentis.com) well in advance.

Vendors participating in an Interop or ATP run must not:

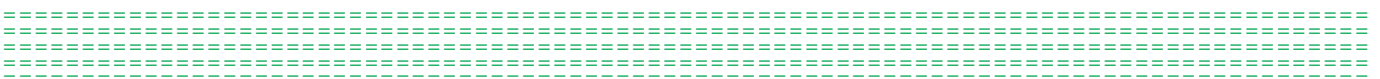
- x Access competitor's equipment
- x Access facilities at Excentis without permission from Excentis personnel
- x Share or copy confidential information;
- x Reveal other vendor's test results.

Excentis will advise such vendor's legal department if there is a violation of these rules and Excentis also reserves the right to bar from participation in the Interop or ATP run and Certification/Qualification process specific vendor personnel who engage in serious violations of these rules.

Shipping and Product Arrival

All products must be shipped free-of-charge to Excentis (the vendor is responsible for all customs, tax and handling charges). Products can also be hand-carried to Excentis offices. Please note that it might take a couple of days to get products through customs, please make sure the products are accompanied by correctly filled in paperwork.

Products that are hand-carried to Excentis without the correctly filled in papers from the custom office cannot be shipped back. Shipping back products from Excentis is at the cost of the vendor. The vendor is responsible for providing the correctly filled in paperwork. Additional shipping information (details, liability) can be found in Appendix D. Please read also the waiver of liability is Appendix D.



Equipment provided by Excentis

Excentis provides the following equipment during the Interop and ATP Run:

- x Racks for mounting equipment;
- x Tabletop workspace for CPE products and laptop;
- x 10BaseT/100BaseT Ethernet connectivity;
- x 230 VAC power with standard Belgian connectors;
- x Internet access for PC communication;
- x RF distribution of CMTS signals;
- x RF and Ethernet cables for system connection;
- x Traffic generation equipment (ByteBlower);
- x Utility server (DHCP, ToD, TFTP).

Vendors should provide their own means of communication (e.g. mobile phone) between visiting engineers and the home office. Excentis cannot support free international telephone access (a GSM phone is recommended). Internet access will be provided free-of-charge.

Opening hours Excentis

Excentis labs are open 9AM-5PM. During the weekends Excentis is closed.

4.2 Interop specific Requirements

Product participation

Participation in an Interop prior to a certification wave submission is a requirement for some products that will be submitted to the Certification Wave. A vendor may of course participate in an Interop or ATP run and still opt not to submit for product Certification/Qualification.

Product	Recommended amount of units for Interop	Participation required (1)
EuroDOCSIS only CPE CM, STB/CM, E-MTA, STB/E-MTA, E-DVA, STB/E-DVA, CG	6	NO
EuroPacketCable CPE E-MTA, STB/E-MTA, E-DVA, STB/E-DVA, CG	6 (2)	NO
EuroDOCSIS CMTS (4)	1	YES for new EuroDOCSIS 3.0 CMTS products that did not yet participate successfully in an Interop before
ED+EP/EPMM CMTS (4)	1	YES (3)
EuroPacketCable CMS/MG (4)	1	YES
EuroPacketCable IPAT (4)	1	YES
EuroPacketCable Multimedia PS (4)	1	YES

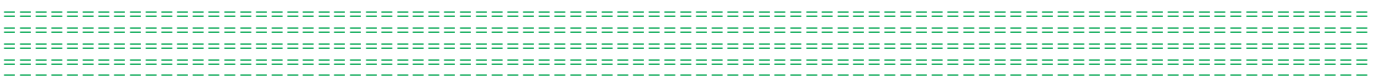
Notes:

(1) It is most beneficial for both the vendor and Excentis if the participation is in the Interop immediately preceding the submission date.

(2) The submitting vendor must bring their own phone sets for testing purposes.

(3) The products must participate in both EuroDOCSIS and EuroPacketCable (Multimedia) Interop activities.

(4) The submitting vendors that have not previously set up equipment at Excentis should be on site prior to the beginning of Interop. Contact testing@excentis.com for further details.



Because the testing conducted at Interop or ATP run is non-binding, hardware and software substitutions may be made during the course of the Interop or ATP run. However, more valuable information may be obtained by prolonged testing of a stable product.

Applications

A vendor must notify Excentis of its intention to participate in the Interop by submitting the registration form that is available online.

4.3 ATP Run Specific Requirements

Fees and Payment

Please consult the appropriate documents on the Excentis website for details on participation fees and payment.

Product

A vendor may participate in the ATP run and still opt not to submit for product Certification/Qualification. For the same ATP run, a product can only be submitted once.

Product	Units required per submission type			
	EuroDOCSIS	EuroPacketCable	EuroDOCSIS and EuroPacketCable	Mixed EuroDOCSIS/ EuroPacketCable
CPE Device (1) (CM, E-MTA, STB/CM, STB/E-MTA, CG)	10	10	15	10
CMTS (2)	3	3	5	3
EuroPacketCable CMS/MG/IPAT (2)	NA	2	NA	NA
EuroPacketCable Multimedia PS (2)	NA	2	NA	NA

Note:

(1) The submitting vendor must bring their own phone sets for testing purposes.

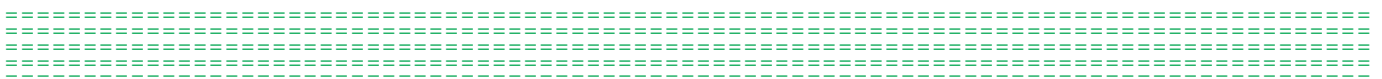
(2) The submitting vendors that have not previously set up equipment at Excentis should be on site prior to the beginning of the Interop or ATP run week. Contact testing@excentis.com for further details.

Basic compliance with the EuroDOCSIS, EuroPacketCable and EuroPacketCable Multimedia specifications is required; failure to have such might result in a limitation of the testing that will be executed. The decision to limit the tests that can be executed due to lack of basic interoperability can be made by the Excentis responsible or his designated.

Software substitutions can be made on the products during the ATP Run, and should be made on the different samples before 9 am of each working day, except for the first day. For the first day all samples must have the right software before 12 am. Failure to have the products ready in time results in a pro-rata reduction of the number of test-points that will be executed

Test point criteria

For each product that participates in the ATP Run Excentis will perform a set of tests that are selected out of a list by the vendor. Each test counts for a number of test points, and is part of a group. The number of total test points that will be executed is limited to at maximum 120, and at minimum 80. Excentis will select the tests that will be executed based on the prioritized list that the vendor submits together with the submission form. The tests corresponding with the most prioritized 40 test points will be executed by Excentis. For the remaining test points Excentis will make a selection taking into account the prioritization of the vendor and the available resources. For the first 40 test points, the number of tests that can be executed may also be limited by limiting



the number of tests within one group. The groups of tests and the maximum number of tests within one group are identified in the list of tests that can be selected.

Applications

A vendor must notify EuroCableCertification and Excentis of its intention to participate in the ATP run well in advance. A completed copy of the registration form and the prioritized requested list of tests to be executed must be provided before the published registration deadline. Registration form and test point list can be found online.

Submission refusal

If there would be too many vendors submitting in the same ATP Run so that Excentis cannot accommodate the requests of all interested parties in this one week, due to resource limitations, it may be possible that Excentis needs to refuse the participation of a certain product(s). If that would be the case, submissions will be treated in a first come first serve order, in the order of registration arrival at Excentis by fax.



5 EuroDOCSIS Submission Requirements

5.1 EuroDOCSIS Products

Overview granted label if product passes

Product Type	Label
CM, E-MTA, E-DVA, CG	EuroDOCSIS <1.0/1.1/2.0/3.0> CERTIFIED
STB/CM, STB/E-MTA, STB/E-DVA, CMTS	EuroDOCSIS <1.0/1.1/2.0/3.0> QUALIFIED

EuroDOCSIS 1.0 Cable Modem (CM, STB/CM)

Each EuroDOCSIS 1.0 cable modem certification wave submission must contain 23 units. Each cable modem, power supply and additional required equipment must be labeled as indicated in section 3.5 of these guidelines. Test EDRCA units are not applicable for EuroDOCSIS 1.0.

EuroDOCSIS 3.0/2.0/1.1 Cable Modem (CM, STB/CM)

Note: also E-MTA, STB/E-MTA, E-DVA, STB-EDVA and CG devices can be submitted for ED testing only.

Each EuroDOCSIS cable modem submission must contain 23 units. Each cable modem, power supply and additional required equipment must be labeled as indicated in section 3.5 of these guidelines.

Unit 21, 22 and 23 must be test EDRCA cable modems and must be labeled accordingly. The Test EDRCA CMs differ from normal CMs in the way that they must contain the Test EDRCA certificate/public key. The current image for Test EDRCA products is digitally signed by a test manufacturer CVC issued from the Test EDRCA (available on the Excentis website from the participants portal).

For EuroDOCSIS 3.0 submissions, one additional unit with same HW and SW but with console port access should be made available (to be used for diagnostic purposes only), and the submitted documentation should contain an operating manual.

STB/CM without external Ethernet interface

In the situation of an STB/CM product that will be brought in production without any external Ethernet port the following additional requirements are applicable.

Of the 20 normal samples (i.e. non test EDRCA samples) samples #1-5 must be production ready samples (i.e. without CPE interface) and the other 15 samples (sample # 6-20) must have an external Ethernet interface (so that all certification tests can be executed).

The ifTable structure MUST NOT differ between products without Ethernet interface and products with external Ethernet interface.

In case the external Ethernet interface is provided through an extra interface on the eCM, then this interface MUST have ifIndex 1. For the samples without Ethernet interface the ifAdminStatus for the Ethernet interface (ifIndex 1) MUST then be set to "down" and the ifOperStatus MUST then be set to "notPresent".

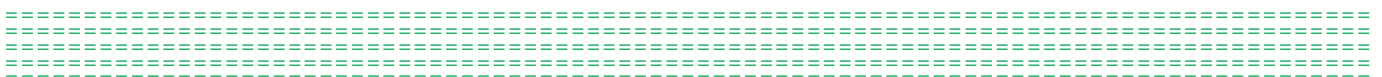
Wireless Devices

For CPE products that contain a 802.11x wireless interface, this interface must by default be configured in disabled mode on all samples. Detailed instructions must be provided on how to enable/disable the Wi-Fi and how to configure all settings (SSID, username/password, security, etc). The default SSID for an 802.11x wireless device submitted should be the Product ID concatenated with the unit number, concatenated with _2G or _5G depending on the radio. Default signal strength must be as they will also be rolled out. Dynamic Frequency Selection (if supported) must be disabled by default.

Cable Gateway (CG)

Some further notes on CPE products that are submitted as Cable Gateway, to include CM-Router testing:

- Submission of a Cable Gateway / CM-Router always includes a EuroDOCSIS submission
- The standard EuroDOCSIS CM ATPs are executed with the router in bridged mode
- Additional CM-Router ATPs are executed to verify the routing functionality



- Cable Gateway devices may also be submitted for ED testing only (as bridge only)
- A product that fails the CM-Router testing may still get ED certification status, if the ED portion of tests passes. A product that fails ED testing cannot get certified for the CM-Router part.

Similar rules are applicable in case a CG is submitted with CM Wi-Fi support.

EuroDOCSIS 3.0/2.0/1.1/1.0 CMTS

EuroDOCSIS 3.0 CMTSs can also be submitted using a “feature based” approach. This is further described in Chapter 7 of this document.

Please note that having participated in the Interop event can be mandatory before the product may be submitted for certification (see section 4.2).

Each EuroDOCSIS CMTS submission must contain 4 units. CMTS vendors must also submit the completed CMTS Special Instructions documentation (see Appendix E.1). Further, a CMTS vendor must submit the following additional items:

- x A labelled console cable for each unit;
- x A CMTS Operations manual;
- x The CMTS must be submitted with at least a 1000Base-T NSI interface.

All submitted units must be pre-configured with the EuroDOCSIS Root CA certificate. The CMTS must be capable of supporting the EuroDOCSIS test Root CA certificate and the CMTS must be either pre-configured with the EuroDOCSIS test Root CA certificate in addition to the EuroDOCSIS Root CA certificate or capable of replacing the pre-configured EuroDOCSIS Root CA certificate in the CMTS with the special EuroDOCSIS test ROOT CA certificate.

In order to support “CMTS Load Balancing and DCC Operation” testing, a EuroDOCSIS 3.0 or 2.0 compliant product must support a rule/policy that demonstrates load balancing operations in the conditions defined in the ATP, either by default or via a vendor specific rule/policy. If the latter, instructions for configuring this rule/policy must be included in the CMTS Special Instructions document.

For a CMTS that supports more than one downstream in a single unit, at least one of the four CMTS units submitted for qualification must be configured with at least two active downstream ports. For a chassis/blade based CMTS, this could be done with multiple blades, or with multiple downstream ports on the same blade. However, all cards/blades in the CMTS must be consistent from unit to unit (i.e., it is not permissible for one CMTS to have a blade with two downstreams, and all others to have different blades with a single downstream). The unit that has multiple downstreams active must be labelled appropriately to indicate this.

A EuroDOCSIS 3.0 CMTS or a CMTS that supports multiple downstream channels per RF port must support the requirements in the DRFI specification.

5.2 Software Images and Digital Certificates

EuroDOCSIS 3.0/2.0/1.1/1.0 Cable Modems

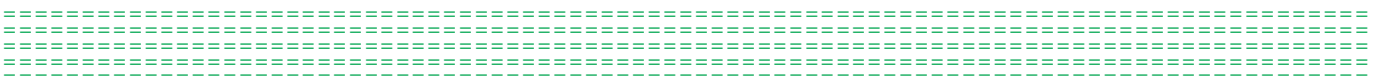
Please provide two image files to Excentis. One is the image for the current wave and the second is a test image that is a duplicate of the current image except that it is named differently.

- x Original software image: <Product ID>.img
- x Second identical software image: <Product ID>-mac-14.img

This MAC.14 test image must contain special text in the following fields:

- x System descriptor:
iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).system(1).sysDescr(1): “MAC-14 test image of CW X”
- x Software version: reference to MAC.14 test image
1.3.6.1.2.1.docsDev(69).docsDevMibObjects(1).docsDevSoftware(3).docsDevSwCurrentVers(5)

In the case of a submission of a EuroDOCSIS 1.1, 2.0 or 3.0 cable modem or STB/CM that uses a EuroDOCSIS software upgrade mechanism, 2 additional software images must also be provided on the submission CDs.



The third file is the current image for the Test EDRCA cable modems (see above), with a file name according to the following convention:

x <Product ID>-TestEDRCA.img

The fourth file is a test image that is a duplicate of the current image for the Test EDRCA cable modems except that it is named differently:

x <Product ID>-TestEDRCA-BPI-23.img

This BPI.23 test image must contain special text in the following fields:

x System descriptor:

iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).system(1).sysDescr(1): "BPI.23 test image of CW X"

x Software version: reference to BPI.23 test image

Digital Certificate Files

In the case of submission of a EuroDOCSIS 1.1, 2.0 or 3.0 cable modem or an STB/CM that uses a EuroDOCSIS software upgrade mechanism, the two image files for MAC.14 (<Product ID>-MAC-14.img and <Product ID>.img) for the product cable modems must contain the identical CVC (Code Verification Certificate) issued by the EuroDOCSIS Root CA. Additionally, the signingTime values of the CVS (Code Verification Signature) in these two images must be identical. For further information on the CVC issuance by the EuroDOCSIS Root CA, see the Excentis website: www.excentis.com.

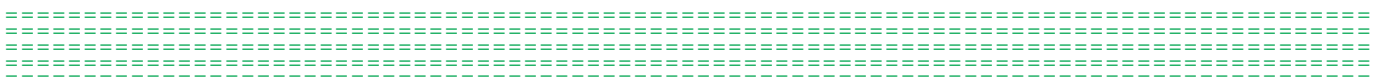
This CVC must also be provided in the submission CDs, with a file name according to the following convention:

x <Product ID>-CVC.der

In order to download the two image files for BPI.23 (<Product ID>-TestEDRCA.img and <Product ID>-TestEDRCA-BPI-23.img) to the Test EDRCA cable modems alternatively, these two image files must contain the identical CVC (Code Verification Certificate) signed by the Test EDRCA private key, and the signingTime values of the CVS (Code Verification Signature) in these two images must also be provided in the submission CDs, with a file name according to the following convention:

x <Product ID>-TestEDRCA-CVC.der

Additionally a vendor must supply a copy of all configuration files used to execute the BPI-23 and MAC-14 tests.



6 EuroPacketCable (Multimedia) Submission Requirements

6.1 EuroPacketCable (Multimedia) Products

Overview granted label if product passes

Product Type	Label
E-MTA, E-DVA, CG	EuroPacketCable <1.0/1.5/2.0> CERTIFIED
STB/EMTA-EDVA, CMTS, PS, IPAT, MG, CMS	EuroPacketCable <1.0/1.5/2.0/Multimedia> QUALIFIED

EuroPacketCable E-MTA/E-DVA

Note: also CG devices can be submitted for ED+EP testing only (in bridged mode).

Each EuroPacketCable 2.0 E-DVA or EuroPacketCable 1.5/1.0 E-MTA submission must contain 35 units.

Each submission also contains a EuroDOCSIS 3.0, 2.0 or 1.1 submission.

Each sample, power supply and additional required equipment must be labeled as indicated in section 3.5 of these guidelines.

Units 31, 32 and 33 must be Test EDRCA E-MTA/E-DVAs and must be labeled accordingly. Further info on Test EDRCA samples can be found in section 5.1 of this document.

Units 34 and 35 must be Test SPRCA E-MTA/E-DVAs and must be labeled accordingly. The only difference with normal E-MTA/E-DVAs is that the Test SPRCA E-MTA/E-DVAs must have the Test Service Provider Root certificate (available on the Excentis website from the participants portal).

Details on the EuroDOCSIS configuration and requirements can be found in the previous section.

EuroPacketCable CMTS, IPAT, MG and CMS

Please note that having participated in the Interop event can be mandatory before the product may be submitted for certification (see section 4.2).

Each EuroPacketCable CMTS submission must contain 3 units and includes a EuroDOCSIS 3.0, 2.0 or 1.1 submission. Each EuroPacketCable MG and CMS submission must contain 2 units. Each EuroPacketCable IPAT submission must contain 1 unit.

Details on the EuroDOCSIS configuration and requirements can be found in the previous section. Details on the EuroPacketCable CMTS special instructions can be found in the Appendix.

Each EuroPacketCable submission must also include a detailed 'operations manual' with details on configuration. Each EuroPacketCable CMS, IPAT and MG must also contain the additional tools to configure and monitor the CMS, IPAT or MG to successfully complete certification testing.

EuroPacketCable Multimedia CMTS and PS

Please note that having participated in the Interop event can be mandatory before the product may be submitted for certification (see section 4.2).

Each EuroPacketCable Multimedia CMTS submission must contain 3 units and includes a EuroDOCSIS 3.0, 2.0 or 1.1 submission. Each EuroPacketCable Multimedia PS submission must contain 2 units.

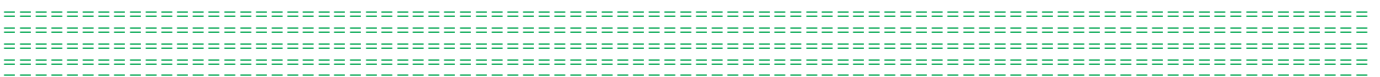
Details on the EuroDOCSIS configuration and requirements can be found in the previous section. Details on the EuroPacketCable Multimedia CMTS special instructions can be found in the Appendix.

Each EuroPacketCable Multimedia submission must also include a detailed 'operations manual' with details on configuration. Each EuroPacketCable Multimedia PS must also contain the additional tools to configure and monitor the PS to successfully complete certification testing.

EuroPacketCable and EuroPacketCable Multimedia CMTS

Please note that having participated in the Interop event can be mandatory before the product may be submitted for certification (see section 4.2).

Each combined EuroPacketCable and EuroPacketCable Multimedia CMTS submission must contain 3 units and includes a EuroDOCSIS 3.0, 2.0 or 1.1 submission.



Details on the EuroDOCSIS configuration and requirements can be found in the previous section. Details on the EuroPacketCable and EuroPacketCable Multimedia CMTS special instructions and operations manual can be found in the Appendix.

7 Feature based ED3.0 CMTS testing

7.1 Introduction

The current situation in Europe is that many European cable operators are deploying CMTS-equipment that only implements a subset of the full EuroDOCSIS 3.0 requirements. Since these CMTSs can currently not be submitted for certification/qualification testing (the requirements for submission require more features to be implemented) operators have no visibility on the level of compliancy of the CMTS.

This feature based approach allows manufacturers to submit products based on the features they have implemented. Furthermore, the published results will give visibility to the operators on which features have been tested and found to be implemented correctly.

All CMTS features are subdivided in a base feature group and an amount of other feature groups. Features that are mandatory part of any testing are put in the base group.

So a minimum submission for a CMTS is for the base group, but the manufacturer can select which other feature groups are also part of the submission. It is clear that the selection of the feature groups will be driven by the operators that demand the implementation of the features by the manufacturer.

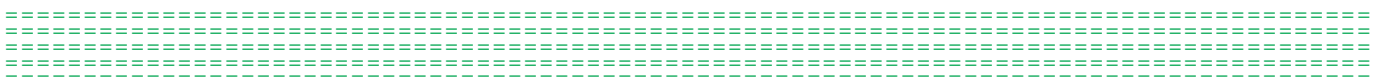
CMTSs that pass the requirements will get the label "verified for" together with the list of feature groups that they have passed for. Passing for the base group is always a minimum requirement, so no product can pass other feature groups if the base group is failing.

This feature based testing approach is not intended to be a full replacement of the full ED3.0 CMTS submission program. It is to be seen as another option. Besides, products that implement (and pass) all feature groups get the label "ED3.0 Qualified", as if the product had been submitted against the full EuroDOCSIS 3.0 standard.

7.2 Feature set definitions

The feature sets are described below.

Feature set	Description
Base feature set	Topology resolution, SG discovery, Fiber node configuration,... Cable Modem (re-) initialization (in IPv4) Downstream Channel Bonding, DSIDs Dynamic Channel Change CM-STATUS Legacy modem support All MIBs to support the above features
UCB	Upstream Channel Bonding, TCC assignment, Continuous Concatenation and Fragmentation, Queue Depth Requesting, Multiple Requests Outstanding, SID clusters, all MIBs to support the above features
DBC	Dynamic Bonding Change operations, DBC based load balancing. If the UCB feature module is not supported then



	only the downstream related DBC operations will be verified. All MIBs to support the above features
IPv6	CM provisioning (IPv6 only, dual stack, Alternate Provisioning Mode), CPE traffic, IPv6 SF classifiers and Upstream Drop Classifiers All MIBs to support the above features
Multicast	Multicast per 3.0 spec: Multicast DSID Forwarding, Source Specific Multicast, Multicast QoS, Authorisation,... If the IPv6 feature module is not supported then only the tests in IPv4 will be done. All MIBs to support the above features
Security	Early Authentication and Encryption, AES, Certificate Revocation Lists, Online Certificate Status Protocol, TFTP proxy, Config file (name) learning, TFTP Options, Extended MIC,... All MIBs to support the above features
S-CDMA	All S-CDMA functionality All MIBs to support the above features
OSS	Diagnostic Log, Enhanced Signal Quality Monitoring, IPDR All MIBs to support the above features
LI	Lawful Intercept functionality

In case of any questions on the feature set definitions please send an email to testing@excentis.com.
On the EuroDOCSIS participants portal of the Excentis website a document is available that provides a mapping of the 3.0 ATPs to the different feature sets.

7.3 Submission requirements

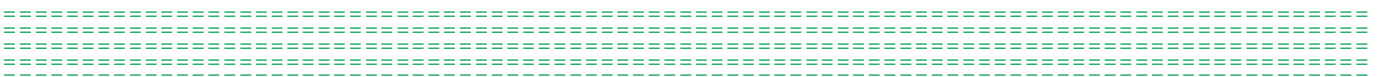
Feature based submissions must follow the certification wave schedules.

All requirements regarding the requested amount of samples, required documentation, etc. (as specified in other parts of this document) still apply for feature based CMTS submissions.

All units that were submitted using the feature based approach may be upgraded for full ED3.0 submissions or other feature based submissions.

7.4 Submission fees

See separate document on certification fees and conditions.



8 Guidelines for the EuroDOCSIS and EuroPacketCable Certification Boards

The delivery of the documentation package and the products submitted to Excentis, while required to participate in the certification process, does not mean a vendor is automatically certified/qualified. The Certification Board will verify the completeness and accuracy of the reports and data provided by each vendor and the results of the tests conducted during the certification process.

The Certification Board's activities will be limited to interpretation of the specifications and certification/qualification of conformance to the specifications and interoperability. The Board's activities will not extend to pricing of equipment under certification/qualification. The Board will not make "purchase/do not purchase" recommendations. Cable operators may make purchasing decisions independently based on test results, their individual system needs, and their overall requirements.

Upon completion of the Certification Wave, the EuroCableCertification Board will meet to assess the suitability of each product for EuroDOCSIS/EuroPacketCable (Multimedia) certification or qualification. Each vendor will be notified in writing of the decision of the boards. Excentis personnel will schedule a phone conference during which time results of the certification wave may be briefly reviewed.

The website of Excentis will be used to list all vendors who have received EuroDOCSIS, EuroPacketCable and/or EuroPacketCable Multimedia certification/qualification and are deemed to be compliant with the EuroDOCSIS 1.0/1.1/2.0/3.0, EuroPacketCable 1.0/1.5/2.0 and/or EuroPacketCable Multimedia specifications.

For each product also the MD5 hash of the firmware is added to this list. As MSOs sometimes get firmware from their vendors with the same version as the certified version (although it's not the certified version), MSOs can verify this by comparing the hash.



A Quick procedure for Qualification of STB with Independent CM Module

This appendix describes the quick procedure for the EuroDOCSIS qualification of Set-top Boxes with an independent EuroDOCSIS cable modem module. The goal of the procedure is to ease qualification of an STB/CM that uses the **same cable modem module as in an STB/CM that was previously qualified**.

If the STB/CM of Vendor A gets qualified, and later Vendor B wants to qualify another STB/CM with the same CM module, then Vendor B can also take advantage of the quick procedure.

If it's the first time that a STB with a certain CM module is submitted, then the submission must follow the full qualification process, with the same requirements regarding the number of products and fees.

A.1 Applicability of the procedure

This procedure is only applicable for an STB/CM in which the cable modem functionality is clearly separated from the STB functionality (independent cable modem module). This means the following technical requirements must be fulfilled:

- x Software upgrade for the independent cable module is performed using the EuroDOCSIS mechanism as defined in the relevant EuroDOCSIS specifications (TFTP-mechanism).
- x The cable modem functionality uses a dedicated CPU.
- x The only parts of the STB/CM that can be shared between CM-functionality and STB-functionality are the power supply, the RF-path, flash memory, the printed circuit board, the casing and visual indicators. It is allowed that the external RF connector is from a different type (IEC, F, ...); as long as the different connectors are mounted on the PCB in the same way (no changes to PCB layout).
- x Rebooting the cable modem using docsDevResetNow does not result in a reboot of the STB.
- x The digital certificate is stored according to the requirements for a standalone data-only cable modem.

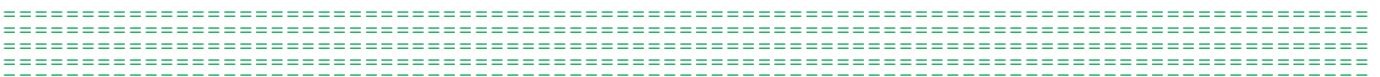
A.2 Qualification process

An STB/CM can follow this easier qualification process if an STB/CM fulfils the requirements defined in the previous section and uses the same cable modem software (same software image) as the STB/CM that was previously qualified in a certification wave. Excentis will verify if the same cable module is used as in the previously qualified STB/CM. This means the cable modem components (including layout) must be the same on the new PCB as on the original PCB of the qualified STB/CM. A set of tests and visual inspections will be performed by Excentis to verify that the STB/CM has the same level of compliancy as the originally qualified product and that all requirements specified in section 2 of these documents are fulfilled. These additional tests will be selected based on compliance requirements that could depend on the potential different RF-behavior and other characteristics.

When the new STB/CM fulfils all requirements it will automatically be granted qualification and will be mentioned on the website as being qualified with the date referring to the date that the original product was qualified.

A submission for this type of qualification can be made at any time; Excentis will perform the testing within three weeks starting from the first Monday after product arrival. Decision of qualification is communicated to the vendors within a week after completion of the testing.

It is also possible to make one full submission of an STB/CM in a certification wave and multiple STB/CMs in the same wave with an identical cable modem module as the "fully" submitted STB/CM. Irrespective of the outcome of the test-results, the fees need to be paid and cannot be used for any future submission. If the "fully" submitted STB/CM is not qualified the other STB/CMs will also be automatically non-qualified; if the "fully" submitted STB/CM is granted qualification, and the other STB/CMs fulfill all necessary requirements, the other STB/CMs are granted qualification as well. Remark that communication of the qualification results of the fully submitted STB/CM and the other STB/CMs is done at the same time i.e. after the certification wave.



The number of required product samples submitted under this procedure is 3 (of which all 3 will be retained after testing). The submitted documentation must contain the original product submission along with any additional testing done on the new STB/CM. The executive summary must contain proof that the cable modem module of the new submitted product and the original submitted product has the same hardware and software.



B Quick procedure for Qualification of STB with Independent E-MTA Module

This document describes the quick procedure for the EuroDOCSIS and EuroPacketCable qualification of Set-top Boxes with an independent EuroPacketCable E-MTA module. The goal of the procedure is to ease qualification of an STB/E-MTA that uses the **same E-MTA module as in an STB/E-MTA that was previously qualified**.

If the STB/E-MTA of Vendor A gets qualified, and later Vendor B wants to qualify another STB/E-MTA with the same E-MTA module, then Vendor B can also take advantage of the quick procedure.

If it's the first time that a STB with a certain E-MTA module is submitted, then the submission must follow the full qualification process, with the same requirements regarding the number of products and fees.

B.1 Applicability of the procedure

This procedure is only applicable for an STB/E-MTA in which the E-MTA functionality is clearly separated from the STB functionality (independent E-MTA module). This means the following technical requirements must be fulfilled:

- x Software upgrade for the independent module is performed using the EuroDOCSIS mechanism as defined in the relevant EuroDOCSIS specifications (TFTP-mechanism).
- x The E-MTA functionality uses a dedicated CPU.
- x The only parts of the STB/E-MTA that can be shared between E-MTA functionality and STB-functionality are the power supply, flash memory, the RF-path, the printed circuit board, the casing and visual indicators.
- x Rebooting the E-MTA using docsDevResetNow does not result in a reboot of the STB.
- x The digital certificates are stored according to the requirements for a standalone E-MTAs.

B.2 Qualification process

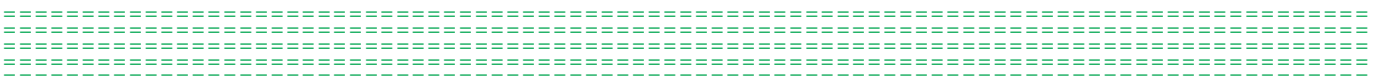
An STB/E-MTA can follow this easier qualification process if an STB/E-MTA fulfils the requirements defined in the previous section and uses the same E-MTA (EuroDOCSIS and EuroPacketCable image) software (same software image) as the STB/E-MTA that was previously qualified in a certification wave. Excentis will verify if the same module is used as in the previously qualified STB/E-MTA. This means that the E-MTA components (including layout) must be the same on the new PCB as on the original PCB of the qualified STB/E-MTA. A set of tests and visual inspections will be performed by Excentis to verify that the STB/E-MTA has the same level of compliancy as the originally qualified product and that all requirements specified in section 2 of these documents are fulfilled. These additional tests will be selected based on compliance requirements that could depend on the potential different RF-behavior and other characteristics.

When the new STB/E-MTA fulfils all requirements it will automatically be granted qualification and will be mentioned on the website as being qualified with the date referring to the date that the original product was qualified.

A submission for this type of qualification can be made at any time; Excentis will perform the testing within three weeks starting from the first Monday after product arrival. Decision of qualification is communicated to the vendors within a week after completion of the testing.

It is also possible to make one full submission of an STB/E-MTA in a certification wave and multiple STB/E-MTAs in the same wave with an identical module as the "fully" submitted STB/E-MTA. Irrespective of the outcome of the test-results, the fees need to be paid and cannot be used for any future submission. If the "fully" submitted STB/E-MTA is not qualified the other STB/E-MTAs will also be automatically non-qualified; if the "fully" submitted STB/E-MTA is granted qualification, and the other STB/E-MTAs fulfill all necessary requirements, the other STB/E-MTAs are granted qualification as well. Remark that communication of the qualification results of the fully submitted STB/E-MTA and the other STB/E-MTAs is done at the same time i.e. after the certification wave.

The number of required product samples submitted under this procedure is 3 (of which all 3 will be retained after testing). The submitted documentation must contain the original product submission along with any



additional testing done on the new STB/E-MTA. The executive summary must contain proof that the E-MTA module of the new submitted product and the original submitted product has the same hardware and software.



C Quick procedure for Qualification of Independent Pluggable CM Module

This document describes the quick procedure for the EuroDOCSIS qualification of a device that has a user-pluggable cable modem module. The goal of the procedure is to ease qualification of another device that uses the **same user-pluggable module as in a device that was previously qualified**.

If the device of Vendor A gets qualified, and later Vendor B wants to qualify another device with the same CM module, then Vendor B can also take advantage of the quick procedure.

The initial qualification must use the full qualification process, with the same requirements regarding the number of products and fees. The original qualification must also adhere to the requirements specified in the next section of this document.

C.1 Applicability of the procedure

This procedure is only applicable for a device in which the cable modem functionality is clearly separated from any other functionality of the device. The following conditions must be met:

- x The module can be changed from one device to another without the need to open the device (externally pluggable)
- x No type of any connection (power, data, ...) must be made manually, all connections must be made automatically by insertion of the module
- x The customer accessible RF-connector must be part of the module
- x Software upgrade for the independent cable modem module is performed using the EuroDOCSIS mechanism as defined in the relevant EuroDOCSIS specifications (TFTP-mechanism).
- x The cable modem functionality uses a dedicated CPU.
- x The only parts of the device that can be shared between CM-functionality and the other device functionality are the power supply, the casing and the internal data-connection between module and the rest of the device.
- x Rebooting the cable modem using docsDevResetNow does not result in a reboot of the device.
- x The digital certificate is stored according to the requirements for a standalone data-only cable modem.
- x The first interface of the cable modem module in the Interface table must be named "internal CPE".

The manufacturer must provide a means to Excentis to verify the data-forwarding capabilities of the device/CM combination.

C.2 Qualification process

A device/CM combination can follow this easier qualification process if the combination fulfills the requirements defined in the previous section and uses the same cable modem software (same software image) as the device/CM that was previously qualified in a certification wave.

A device/CM combination consists of:

- x Hardware of chassis-like device
- x Software on chassis-like device
- x Cable modem module hardware
- x Cable modem module software

Excentis will verify if the same cable modem module works correctly on the new device. A set of tests and visual inspections will be performed by Excentis to verify that the device/CM has the same level of compliancy as the originally qualified product and that all requirements specified in section 2 of these documents are fulfilled. These additional tests will be selected based on compliance requirements that could depend on the potential different RF-behavior and other characteristics.

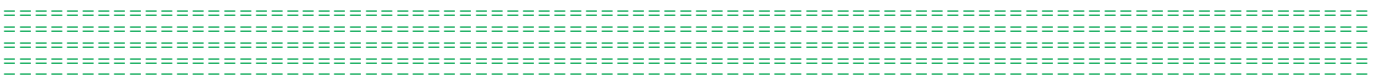
When the new device/CM fulfills all requirements it will automatically be granted qualification and will be mentioned on the website as being qualified with the date referring to the date that the original product was qualified.



A submission for this type of qualification can be made at any time; Excentis will perform the testing within three weeks starting from the first Monday after product arrival. Decision of qualification is communicated to the vendors within a week after completion of the testing.

It is also possible to make one full submission of a device/CM in a certification wave and multiple device/CMs in the same wave with an identical cable modem module as the "fully" submitted device/CM. Irrespective of the outcome of the test-results, the fees need to be paid and cannot be used for any future submission. If the "fully" submitted device/CM is not qualified the other device/CMs will also be automatically non-qualified; if the "fully" submitted device/CM is granted qualification, and the other device/CMs fulfill all necessary requirements, the other device/CMs are granted qualification as well. Remark that communication of the qualification results of the fully submitted device/CM and the other device/CMs is done at the same time i.e. after the certification wave.

The number of required product samples submitted under this procedure is 3 (of which all 3 will be retained after testing).



D Shipping

Shipment of all products and documentation must be arranged and paid by the vendor, using the following shipping address:

Excentis, attn Kristof Sercu
 Gildestraat 8
 B-9000 Gent
 Belgium

D.1 How to fill in an Air Waybill

To send a product with a shipping company, you will need to prepare an Air Waybill (See D.5). The Air Waybill is your shipment's ticket and passport. To be sure your package reaches its destination without any hassles, it is important to fill in the Air Waybill accurately.

- x It tells the shipping company where to bring the package, what service you require and how you are intending to pay.
- x It gives you the terms and conditions of the service of the shipping company, and proof of consignment, with a number you can use on the website of the shipping agency to track your shipment's progress.
- x It tells what you are shipping, so that it can get cleared through customs without any difficulties.

Please pay attention to fill in the payment method correctly.

8a Payment Bill transportation charges to:
 Enter FedEx Acct. No. or Credit Card No. below.

Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash Check/ Cheque
FedEx Use Only

FedEx Acct. No. _____
 Credit Card No. _____
 Credit Card Exp. Date _____

8b Payment Bill duties and taxes to: [†]FedEx cannot estimate Customs charges.
 Enter FedEx Acct. No. below.

Sender Acct. No. in Section 1 will be billed. Recipient Third Party

FedEx Acct. No. _____

D.2 General Remarks

If products are sent for certification / qualification to Excentis, it is preferable to import the goods on **permanent** base; it makes the administrative procedures afterwards easier.

Excentis **MUST** receive a **copy of the import clearance papers** of the products that were sent to Excentis

It is requested to mention on the Admission Application forms, for participation in a certification wave, the name of the shipping company as well as the account number of the vendors company.

The vendor is responsible for all payments related to shipping, including payment of all taxes and handling charges.

D.3 Waiver of Liability

In the event that a vendor company imports products, whether or not for own name and account, in and/or exports outside the European Union and in the event that Excentis is considered as an addressee of the aforementioned products in one of these transactions, the vendor company is obliged, for own name and account, to appoint a professional custom agent (list of agents available at first request) to fulfill all necessary,

national and international, legal and regulatory formalities in this respect. The vendor company shall provide him with all relevant information and documentation in due time.

Excentis is entitled, at any time, to request the vendor company to provide it within a reasonable period of time with a copy of all documents, which accompany or should accompany the import and/or export of the products.

If the vendor company fails or neglects to appoint such agent, Excentis is entitled, without prejudice to the above, to appoint an agent at the expenses of the vendor company, with whom the vendor company shall be obliged to cooperate for purpose of the import in the European union and/or the export of products outside the European Union.

The vendor company is always and solely liable for the payment of all taxes, rights, contributions, levies, regardless their name or description, which become legally due as a result of the import in the European union and/or the export of products outside the European Union and for the payment of any late payment interests, tax increase, penalty or fine related hereto. The vendor company is obliged to pay these amounts directly or indirectly (through his agent) to the competent tax authorities within the delay foreseen by law.

Excentis is entitled, at any time, to request the vendor company to demonstrate within a reasonable period of time that aforementioned amounts have been paid in due time.

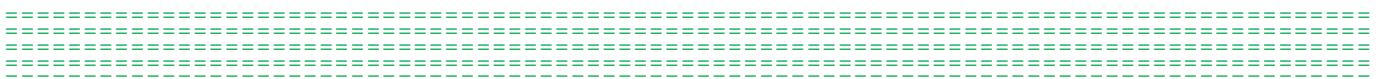
In the event that the vendor company fails, neglects or refuses to pay the aforementioned amounts and that Excentis in its capacity of addressee of the products should subsequently be held liable by the competent tax authorities for the payment of any of the amounts mentioned above, the vendor company will always safeguard and indemnify Excentis, at its first request, for any damage suffered and reimburse all amounts paid by Excentis, including all fees of external tax consultants or lawyers appointed to represent Excentis in this matter.

In the event of failure, negligence or refusal to comply with customs, tax or legal formalities, Excentis is entitled at any time to refuse any order of instruction from the vendor company and to retain any products of the vendor company until such time that the vendor company complies with these formalities.

D.4 More Information

For more information about the import of products, please contact:

Mrs. An Janssens | Tel: +32 9 269 22 91 | Fax: +32 9 329 31 74 | secretariat@excentis.com



D.5 Air Waybill Example

Sender's Copy

FedEx International Air Waybill

For all international shipments

1 From Please print and press hard! Sender's FedEx Account Number

Date MM/DD/YY

Sender's Name _____ Phone _____

Company _____

Address _____

ZIP Postal Code _____

2 Your Internal Billing Reference Please do not write in this space.

3 To Recipient's Name _____ Phone _____

Company _____

Address _____

City _____ State/Province _____

ZIP Postal Code _____

4 Shipment Information All shipments are subject to Customs charges.

Commodity Description _____ Harmonized Code _____ Country of Manufacture _____

Total Packages _____ Total Weight _____

For EU Only: Tick here if goods are not for sale in the destination country.

No 2D required per destination No 2D required per destination

No 2D required per destination No 2D required per destination

5 Express Package Services Packages up to 150 lbs./68 kg are eligible for Express services.

FedEx Int. Priority FedEx Int. Flat Rate Available to select locations.

FedEx Int. Economy Available to select locations.

6 Packaging This section applies to all air shipping performed by FedEx.

FedEx Envelope/Flatboard FedEx Pak Other Pkg. Specify: _____

Special Handling HOLD at FedEx Location SATURDAY Delivery Available to select locations.

7 Shipper's Declaration Shipper must check/tick.

This shipment does not contain Dangerous Goods. Dangerous Goods cannot be shipped using this Air Waybill.

8a Payment 800 transportation charges are:

Sender's Account No. Recipient Third Party Credit Card Cash/Check/Debit FedEx uses only.

8b Payment 800 duties and taxes are:

Sender's Account No. Recipient Third Party

9 Required Signatures

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this agreement does not require a U.S. State Department License. Certain international treaties, including the Warsaw Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract. **Signature:** _____

This is not authorization to deliver this shipment without a recipient signature.

361 PART 1002346-100 1/06 67044-00 FedEx PRINTED IN U.S.A.

0402

Form 1, No.

For Completion Instructions, see back of fifth page.

8259 3419 2962

Questions?
In the U.S., call (800)247-4747
Outside the U.S., call your local FedEx office
or
Visit our Web site at www.fedex.com

The terms and conditions of service may vary from country to country. Consult our local office for specific information.
Non-Registerable International Air Waybill • ©1994-99 Federal Express Corporation

E Special Instructions

E.1 EuroDOCSIS CMTS

For all kinds of CMTS submissions, part 4 of the admission application must be completed. As well, the following instruction documents **must be provided** on the submission CDs.

For EuroDOCSIS submissions the same CMTS Special Instructions documentation is asked as is asked for DOCSIS® submissions at CableLabs®. Vendors may submit the same document. For the DRCA Certificate Setup Instruction the instructions must refer to EuroDOCSIS certificates instead of the DOCSIS® ones.

As an overview the following instructions and information must be provided: Internal Clock Instructions, DRCA Certificate Setup Instructions, (Encrypted) IP Multicast Provisioning Instructions, Dynamic Service related instructions, General CMTS Operation, Modulation Profiles, Logical Channels, DCC and Load Balancing, IPDR Service Definitions, EuroDOCSIS 3.0 Specific Questions, Programmable CMTS features, support for DOCSIS® Testing MIB.

E.2 EuroPacketCable CMTS

If the submission includes a EuroPacketCable submission, the vendor is required to submit a separate document (provided on the submission CD) with special instructions needed for EuroPacketCable testing. A list with the required instruction and configuration guidelines is available on the Excentis website.

E.3 EuroPacketCable Multimedia CMTS

If the submission includes a EuroPacketCable Multimedia submission, the vendor is required to submit a separate document (provided on the submission CD) with special instructions needed for EuroPacketCable Multimedia testing. A list with the required instruction and configuration guidelines is available on the Excentis website.

E.4 CMS

The vendor is required to submit a separate document (provided on the submission CD) with the special instructions. A list with the required instruction and configuration guidelines is available on the Excentis website.

E.5 IPAT

The vendor is required to submit a separate document (provided on the submission CD) with the special instructions. A list with the required instruction and configuration guidelines is available on the Excentis website.

E.6 E-MTA, E-DVA, STB/E-MTA or STB/E-DVA

The vendor is required to submit a completed part 4 of the admission application forms.

E.7 PS

The vendor is required to submit a separate document (provided on the submission CD) with special instructions needed for EuroPacketCable Multimedia testing. A list with the required instruction and configuration guidelines is available on the Excentis website. The vendor is also required to submit a completed part 4 of the admission application forms.

E.8 MG

The vendor is required to submit a separate document (provided on the submission CD) with the special instructions. A list with the required instruction and configuration guidelines is available on the Excentis website.



F Submission Checklist

F.1 CPE Devices

EuroDOCSIS CM, STB/CM, E-MTA, STB/E-MTA, E-DVA, STB/E-DVA

- Admission Application (email to eccsubmission@excentis.com, fax to +32 9 329 31 74) two weeks before testing start date
 - Payment of Fee to EuroCableCertification (contact for this is Malcolm Taylor at email eccsubmission@excentis.com)
 - Delivery of required number of samples (with label as required) and power supplies (if needed with adapters/convertors so they fit Belgian power outlets) to Excentis
- Required documentation (can be provided on USB stick, CD, DVD, ...):
- + Admission Application Forms: soft copy in .doc format including the MAC address list, + soft copy of signed version (in pdf or any other standard format)
 - + Executive summary
 - + PICS
 - + Detailed Interoperability and ATP test reports
 - + Image files (Original, MAC.14 test image, 2 BPI.23 images)
 - + Code Verification Certificates (CVCs)
 - + Login and password for the web admin page on the CM
 - + For ED3.0 CMs: operating manual for the unit with console access
 - + For STB devices: MPEG stream together with configuration settings
 - + For STB devices: instructions to enable echo application
 - + For products with USB support: drivers required for equipment operation
 - + For products with Wi-Fi support: wireless interface information (username, passwords, SSIDs); instructions on howto enable/disable the Wi-Fi interface (Wi-Fi must by default be disabled)
 - + MIB definitions of all supported MIBs (e.g., proprietary MIBs to configure the Wi-Fi)
 - + If applicable, Import papers
-

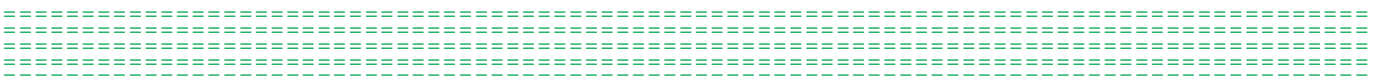
F.2 Headend Devices

CMTS (EuroDOCSIS, EuroPacketCable and EuroPacketCable Multimedia)

- Admission Application (email to eccsubmission@excentis.com, fax to +32 9 329 31 74) two weeks before testing start date
 - Payment of Fee to EuroCableCertification (contact for this is Malcolm Taylor at email eccsubmission@excentis.com)
 - Delivery of required number of products (including power supply) to Excentis
 - Console cable for each unit
- Required documentation:
- + Admission Application Forms: soft copy of signed version (in pdf or any other standard format)
 - + MAC-Addresses and serial numbers
 - + Executive summary
 - + PICS
 - + Detailed Interoperability and ATP test reports
 - + Software images to rebuild the systems
 - + CMTS Special instructions and operations manual
 - + If applicable, Import papers
-

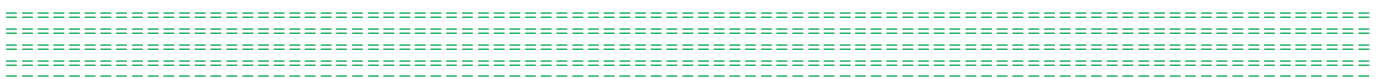
PacketCable CMS, IPAT, MG and EuroPacketCable Multimedia PS

- Admission Application (email to eccsubmission@excentis.com, fax to +32 9 329 31 74) two weeks before testing start date
 - Payment of Fee to EuroCableCertification (contact for this is Malcolm Taylor at email eccsubmission@excentis.com)
 - Delivery of required number of products (including power supply) to Excentis
 - If applicable supporting hardware/software
- Required documentation:
- + Admission Application Forms: soft copy of signed version (in pdf or any other standard format)
 - + Executive summary
 - + PICS
 - + Detailed Interoperability and ATP test reports
 - + Software images to rebuild the systems
 - + Special instructions and operations manual
 - + If applicable, Import papers
-



G Revision history

17 April 2008	Added requirement for technical support within 72h during a certification wave.
26 May 2008	Made clear that also pre-3.0 EuroDOCSIS products are still welcome at the Interop for interoperability testing.
26 June 2008	To be able to submit a EuroDOCSIS 3.0 based product for certification, this product must at least once have participated successfully in a dry-run.
15 July 2008	Added reference to additional guidelines and requirements for EuroDOCSIS 3.0 submissions, which is only available on the private sections (NDA) of the Excentis website.
1 September 2008	<ul style="list-style-type: none"> • Now also possible to submit EuroPacketCable products with a flexible submission. • Clarified that from now on an MD5 hash of the firmware will also be added to the list of certified/qualified products.
20 October 2008	From now on the quick procedure for qualification of an STB with independent cable modem module now also allows that the flash memory is shared between STB and CM.
Rev 15	<ul style="list-style-type: none"> • Several editorial changes. Renamed Dry-Run 1 with Interop, renamed Dry-Run 2 with ATP Run. • CPE products not required any more to participate in Interop to be able to submit.
Rev 16	<ul style="list-style-type: none"> • S-CDMA also optional for ED3.0 CMTSs. • ED3.0 CM submissions should include one additional unit with console port access. • Only registered vendor participants may be present during Interop and ATP Run events.
Rev 17	<ul style="list-style-type: none"> • Made clear that if a product is compliant to an optional feature, then this will be part of the public certification/qualification statement.
Rev 18	<ul style="list-style-type: none"> • Defined "Product ID" to be used on labels, in image file names, SSIDs,... • Updated instructions for products that have a wireless interface (SSID broadcast must be disabled or else complete interface should be disabled) • Added requirements for STB/CM without external Ethernet interface • Moved the requirements concerning optional features to the Cert-Technical-Requirements document
Rev 19	<ul style="list-style-type: none"> • Further clarifications (no changes with respect to content) • Made clear that if an STB with CM module of Vendor A gets qualified, and later Vendor B wants to qualify another STB with the same CM module, then under certain conditions Vendor B can take advantage of the quick procedure.
Rev 20	<ul style="list-style-type: none"> • Few updates in sections 3.4 (Product retention) and 3.5 (Labelling)
Rev 21	<ul style="list-style-type: none"> • Added some further clarifications on the test EDRCA samples. • Added new section on the Invited re-submission procedure.
Rev 22	<ul style="list-style-type: none"> • Requested amount of samples for the quick procedure for CM/STB, E-MTA/STB and pluggable CM module have been set to 3. • Described ifTable requirements for STB products without external Eth interface. • Requested amount of samples for EuroPacketCable E-MTAs has been lowered from



	<p>45 to 35 samples.</p> <ul style="list-style-type: none"> • Some further clarifications on the invited re-submission procedure were made. • Added guidelines for feature based ED3.0 CMTS testing
Rev 23	<ul style="list-style-type: none"> • Flexible submissions now also possible for ED3.0 based CPE
Rev 24	<ul style="list-style-type: none"> • Part 4a was removed from the registration forms. This guidelines document is now also not referencing it anymore. • Some editorial changes. • Requested amount of CMTS chassis per submission: 3 instead of 4. Chassis can be re-used for later re-submissions.
Rev 25	<ul style="list-style-type: none"> • Invited re-submission procedure: in case of small HW issues it is also allowed to replace the samples • Added some more info about Test EDRCA and Test SPRCA samples.
Rev 26	<ul style="list-style-type: none"> • Updated the requested submission documentation and submission checklist • When a CMTS product receives a 'Verified against...' label, then the same product retention rules apply as when a certified or qualified would have been given. • For CM/E-MTA products with support for Wi-Fi: Wi-Fi must by default be disabled, and instructions must be provided on howto enable & configure the Wi-Fi interface. • Several editorial changes
Rev 27	<ul style="list-style-type: none"> • Added clarification on expected power plugs • Updated requirements on products without external Ethernet interface
Rev 28	<ul style="list-style-type: none"> • Added EuroPacketCable 2.0 E-DVA submission guidelines
Rev 29	<ul style="list-style-type: none"> • Added option to submit a Cable Modem with router functionality (as Cable Gateway or CG)
Rev 30	<ul style="list-style-type: none"> • Some further clarifications on Cable Gateway (CM Router and CM Wi-Fi) testing • Some editorial changes

