Orange Belgium
Free Modem Choice
On Voo HFC Network
Network Termination Point Interface Requirements

Version July 5, 2024.

Acronyms

Abbreviation	Description
ACS	Autoconfiguration Server (TR-069)
ATDMA	Advanced Time Division Multiplexing Access= Docsis 3.0 Upstream Modulation
ATP	Acceptance Test Plan
BNG	Border Network Gateway
BSOD	Business Service Over Docsis (CableLabs Standard)
BIPT	Belgisch Instituut voor postdiensten en telecommunicatie
BBWF	Broadband World Forum
CCAP	Convergent Cable Access Platform (include Docsis DATA & Digital Video)

CM	Cable Modem
CMTS	Cable Modem Termination System
CPE	Customer Premise Equipment
CWMP	CPE Wan Management Protocol (from TR069 standard)
D-CCAP	Distributed CCAP (See above): Architecture based upon Remote (Mac)Phy Digital Fiber Node & Core (CMTS based)
DOCSIS	Data Over Cable System Interface Specifications
DS	Downstream
D3.0	Docsis 3.0 technology
D3.1	Docsis 3.1 technology
FOTA	Firmware Over The Air
HFC	Hybrid Fiber Coax (Network)
IoF	Internet Only Filter
IPR	Intellectual Property Right
L2vpn	Layer 2 VPN (Subset of BSOD standard)
MAC	Medium Access Layer
NDA	Non Disclosure Agreement
NetCo	Network Company (WholeSales Focus) or service provider
NTP	Network Termination Point
OBE	Orange Belgium
OFDMA	Orthogonal Frequency Division Multiplexing Access= Docsis 3.1 Upstream Modulation
OLO	Other Licensed Operator
Phy	Physical (Layer): include Ranging, Power Levelling, Modulation, …
ServCo	Service Company (Retail Focus) or Service Provider
SH	Shell (Command Line Interface enabled Software)
SSD	Secure Software Download
SW	Software
TLN	Telenet
TLV	Text-Length-Value, command line inside the CM configuration file
ToF	Telenet Only Filter (Formely Telenet was an ISP: internet service provider) only
TR-069/369	Broadband World Forum standards to manage CPE (Control & Services) from WAN
UDC	Upstream Drop Classifier
UI	User Interface
US	Upstream
USP	User Service Platform (from TR-369 Standard)
UX	User eXperience
V-CCAP	Virtual CCAP (see above): Architecture based upon Remote (Mac)Phy Digital Fiber Node & Core Servers

WAN	Wide Area Network
WHS	WholeSales

Introduction

Following the BIPT Decision of 26 September 2023 regarding the identification of the network termination point (NTP) for broadband services and TV services, OBE[1] defines in this NTP document the specifications that need to be fulfilled by a Private Modem for use on the footprint of the **VOO** cable network.

OBE offers fixed retail broadband services throughout Belgium (Flanders, Brussels and Wallonia) using the cable networks of VOO and Wyre. This document specifies the NTP for the footprint of the **VOO** HFC network only.

DISCLAIMER

The document is based on the current state of information and network specifications and is subject to change.

The specifications may change if deemed necessary and may break backward compatibility with previous versions. When a new version of the document is being published all previous documents become void, in line with any applicable delay period.

Major effort has been put into making this document as complete and accurate as possible, nonetheless OBE cannot be held liable for any direct, indirect, incidental, consequential or special damages arising out of the use of the information.

The present specifications rely on the Wholesale NTP specifications of VOO published by Feb 1,2024; the general disclaimers of the underlying network operators must be considered by the terminal equipment providers. OBE cannot be held liable for any damages (direct, indirect, incidental, consequential or special) arising from that information.

The interface specifications do not apply under abnormal operating conditions such as:

- Operating conditions resulting from the use of services other than DOCSIS 3.0/3.1 over the dedicated data RF interface.
- Operating conditions arising from faults, maintenance, construction work, or efforts to minimize service interruptions.
- Operating conditions resulting from force majeure or third-party interference.
- Operating conditions during test signal injection governed by regulation.
- Instances of non-compliance with the relevant standards by an End-user's installation, equipment, or technical requirements for connection, as established by this interface specification or public authorities, including the specified limits for electromagnetic compatibility.

The characteristics given in this interface specification are intended to be used to derive and specify requirements for equipment such as coaxial cables and cable modems to connect them to the dedicated data RF interface.

The values in this interface specification take precedence over requirements in equipment product standards and installation standards. The given characteristics are not intended to be used as electromagnetic compatibility levels or user emission limits in the HFC networks.

CPE Supplier must provide the right information, support and software updates to the end-customer when end-customers use their own terminal equipment (Private Modem). It is the CPE Supplier's responsibility to provide the End-user all required information to do the installation correctly, to ensure the End-user uses the most recent software updates (including security software) and to make sure that the Private Modem complies with the specifications described in this document. It is therefore required that the CPE Supplier provides the right information, support and software updates to the customers of its devices.

OBE cannot be held liable for any problems arising out of the use of a Private Modem which does not comply with the industry standards (e.g. for security) or with the present specifications. Moreover, OBE reserves the right (in line with the BIPT decision) to block any Private Modem which has a negative impact on the network.

OBE/VOO provides services over cable networks that are subject to technological evolution. Parts of the cable networks used for the OBE/VOO services will or may be replaced by fiber-based networks in the near and/or medium-term future. This implies that modems built for services over cable networks may no longer be usable at locations where a fiber network is deployed. As the speed and geographical scope of this evolution depends on a variety of parameters, OBE/VOO cannot provide guarantees regarding the duration during which a Private Modem based for services over cable networks can effectively be used at a given location. Suppliers of Private Modems based on these NTP specifications should warn customers of this uncertainty.

Should the end customer decide to change service provider while retaining his own Private Modem, OBE cannot guarantee that the services of the new service provider will be supported (Packet Cable VoIP, ...). It is the CPE Supplier's responsibility to inform its customers regarding the constraints applicable to its devices.

Similarly, when End-users move from one location to another while remaining a customer of OBE, OBE cannot guarantee that the services at the new location will be supported by the Private Modem. It is the CPE Supplier's responsibility to either ensure compliancy with the different services on different locations following the NTP requirements defined by the operators, either to inform its customers adequately and completely regarding the geographical and service constraints applicable to its devices. See also "Roles & Responsibilities" further in this document.

Specifications update

OBE Belgium will update the present specifications whenever:

- there is a significant network change that requires an evolution of the present specifications (V-CCAP, Docsis 4.0, new overlay model, new frequency plan, others ...)
- the present specifications have been found to not be sufficiently accurate or exhaustive to meet the aim of the present specifications. Amendments to the present specifications will be issued to address such inaccuracies or lacking elements.

The capitalized terms below have the following meaning in this document :

"MUST": This word means that the item is an absolute requirement of this specification.

"SHOULD": This word means that, except valid reasons in particular circumstances to ignore this item, this item is highly recommended.

"MAY": This word means that this item is optional.

The main definitions in these specifications are :

- **"Cable Operator"**: VOO HFC network Operator (in this document).
- **"Private Modem"**: modem, other than the modem provided by OBE, chosen by the End-user to make use of the OBE services via the Cable Operator network. This will be synonym of CMP ("Cable Modem Propriétaire"), third-party modem & proprietary modem.
- **"CPE Supplier"**: supplier of a modem intended for use as Private Modem, to whom these NTP specifications are addressed.
- **End-user :** a customer of the OBE retail services on the Cable Operator network.

Scope

The present NTP document is the implementation of the BIPT Decision of 26 September 2023 defining the NTP for broadband services related to OBE services provided over the VOO cable network.

The BIPT Decision defines the **NTP on location A** according to the scheme below, which means **the End-user must have the right to use the modem of his/her choice to make use of the OBE broadband services.**

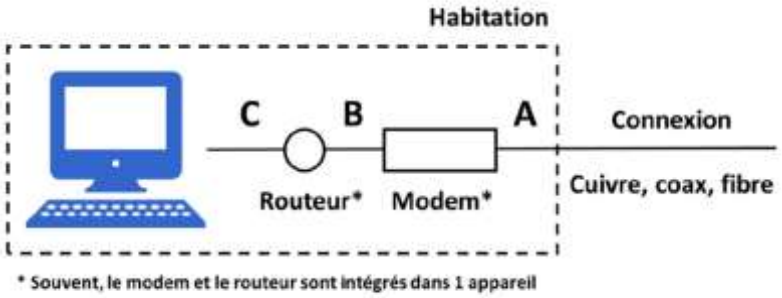
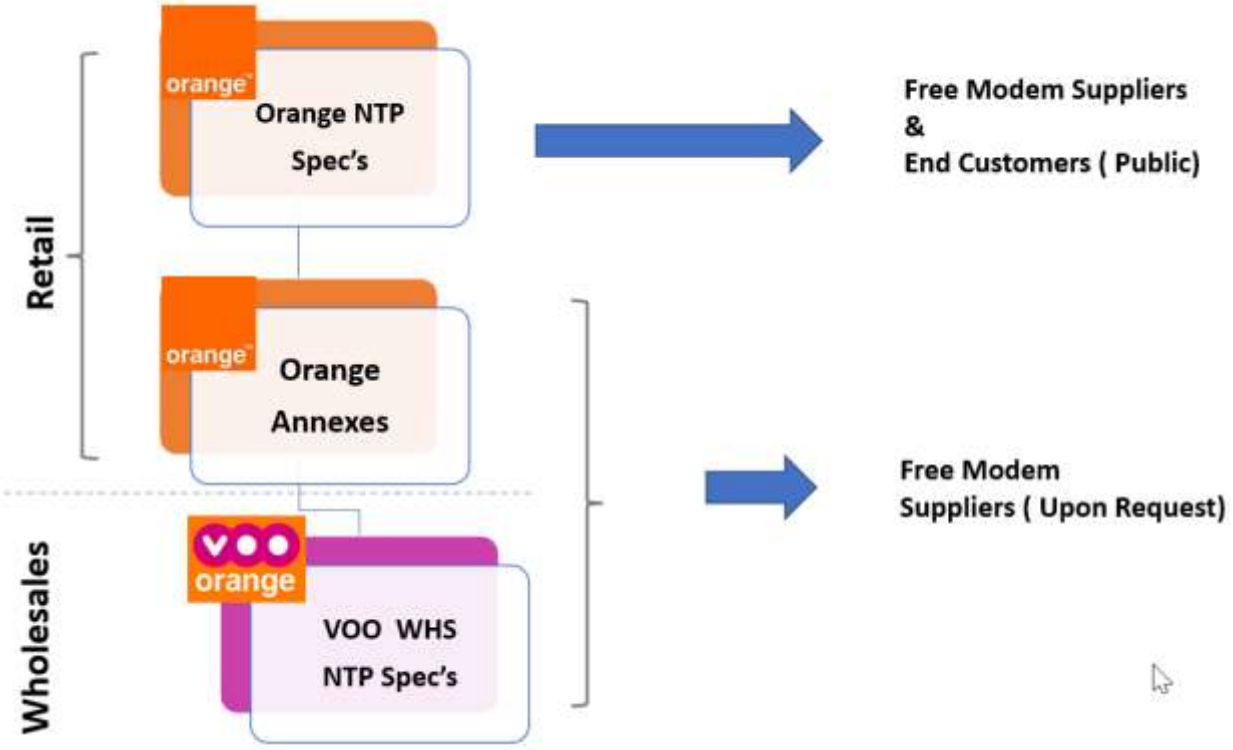


Figure 2 : Les différentes localisations possibles du NTP pour un service d'accès à l'internet.

This document specifies the NTP for the OBE services on the VOO network. Consequently, the wholesale specifications of the VOO network as defined for alternative operators such as OBE must be taken into account.

An overview of the set of documents that the Private Modem must comply with is below.



This retail NTP OBE Interface Specifications document for the VOO network includes :

1/ Orange Retail NTP specifications : the public document that defines the OBE retail NTP specifications. This document refers to the additional requirements which are available on request.

2/ Orange Annexes that provide the additional, more detailed, elements to ensure compliance with the OBE services on the VOO network and the way to validate them. This document is available on request.

3/ the wholesales NTP specifications for the VOO network, February 1, 2024:

- **« Caractéristiques techniques des Modems et Routeurs Propriétaires relatives à la décision du 26 septembre 2023 de l'IBPT dans le cadre d'une utilisation sur le réseau VOO «**

Private Modem requirements

To allow that End-users can make use of the OBE services on the VOO HFC network, a CPE Supplier must ensure that devices intended for use of the OBE services on the VOO HFC network support the requirements of the abovementioned documents and the evolutions of these documents.

OBE has defined the characteristics that are mandatory (<MUST>), highly recommended (<SHOULD>) or optional (<MAY>).

Compliance with the full set of specifications allows Private Modems to make use of the OBE DOCSIS broadband access service on the VOO network. Functioning of other features, such as WIFI, Erouter, Security Firewall, TR069, … are outside the scope of this document.

New Private Modem Software Submission

OBE strongly recommends that CPE-Suppliers notify OBE when new devices and software updates for Private Modems for use of the OBE services on the VOO HFC network are introduced.

In case a Private Modem is not compliant with the NTP requirements or if a Private Modem is causing harm to the services or the network, OBE will block the access of such Private Modem to the network. OBE reserves the right to obtain compensation from a CPE Supplier for any damage incurred by non-compliant Private Modems.

OBE, CPE supplier and End-user Roles and Responsibilities

Cable Operator & OBE Responsibilities

- Cable Operator regularly adapts the HFC network by introducing new hardware and software and shall not be responsible for any service degradation following these network evolutions (Node split, CCAP chassis SW/HW upgrade, Amplifier replacement, Fiber cut repair...)
- Cable Operator & OBE shall NOT be responsible to make any statements of compliance to the specifications contained in this document for CPE that OBE does not provide itself. OBE cannot assume any such responsibility in the most explicit sense possible.
- OBE will not provide End-users support or information regarding the functioning, characteristics, troubleshooting, … associated with a Private Modem.
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CPE Supplier Roles and Responsibilities

- The CPE supplier shall be the prime responsible for making statements of compliance to the specifications contained in this document on request of End-users or on request of any legal entities that sell or intend to sell said CPE onto the Belgian CPE retail market. OBE cannot be held liable for any wrong information provided by the CPE Supplier.
- The CPE Supplier, directly or via its distributors, will ensure that interested buyers of a Private Modem are accurately and precisely informed regarding the exact services provider(s) for and network(s) on which a given Private Modem is able to provide services. When applicable, the CPE Supplier, directly or via its distributors, will inform interested buyers of a Private Modem accurately and precisely about the geographical areas where a given Private Modem will be able to provide services and/or about any publicly known changes applicable to these services or networks impacting the use of the Private Modem in such areas.
- The CPE Supplier will not refer to OBE or its services, in writing or otherwise, for End-users or parties looking for support or information regarding the functioning, characteristics, troubleshooting of a Private Modem.

End-user Roles and Responsibilities

- According to the BIPT decision §97:
  "... Il convient de souligner que si la localisation du NTP est définie au point A, la responsabilité du bon fonctionnement des équipements terminaux se situe d'abord chez l'utilisateur final qui le raccorde au réseau, sauf s'il s'agit d'équipements terminaux fournis par l'opérateur concerné lui-même..."
- The End-user shall be the sole responsible for selecting its Private Modem and software compliant to the present specifications.
- The End-user shall be the sole person responsible for making sure that its Private Modem hardware and software is compliant with any evolution of the present specifications.
- The End-user shall strictly adhere to the processes and procedures to connect its selected Private Modem to the network.
- The End-user shall be the sole person responsible for upgrading the software of its Private Modem.

- The End-user shall only use software approved by the CPE Supplier and shall not modify it.
- The End-user shall install Private Modem software patches recommended for security reasons by the CPE-supplier.

Modem Technology

The modem DOCSIS technology authorized is Euro-DOCSIS 3.0 or DOCSIS 3.1.

Contact

Company	Name	Title	Mail address
	OBE Cable Broadband	Free Modem Choice task force	Cable.engineering@orange.be

OBE positioning

On the VOO HFC network, OBE is a service provider making use of the wholesale services of VOO and as such it depends on the requirements, possibilities and restrictions imposed and/or provided by VOO for making use of its HFC network.

OBE will provide part of the generic config file. This config file may include some supplier specific info per private modem type.

OBE will not support Docsis Secure Software Download (SSD) for Private Modems on the VOO HFC Network. CPE suppliers must propose to the End-users a Firmware Over the Air (FoTA) infrastructure based upon TR-369 /069 CWMP (CPE WAN Management Protocol) -USP (User Service Platform) protocols.

Generic Configuration File

The generic configuration file will be common to all the Private Modems. OBE is willing to consider to accept, upon specific demand from a CPE Supplier, to add some specific info as part of the generic configuration file for each new Private Modem type with as strict minimal condition that it is guaranteed that such change is not impacting other Private Modems on the network and that, as a minimum, the at that time applicable constraints are adhered to. This can be under the form of:

- TLV-11 (SNMP Proprietary OID based)
- Cable modem Supplier Specific Information: TLV 43
- E-Router Supplier Specific Information TLV: TLV 202.43
- Private event (>2XXXX)

Minimum applicable constraints :

1/ TLV 202.2.2 <eRouter TR-069 Management Server URL> is not authorized. Such info must be delivered using the other alternative defined above.

2/ on TLV 43 or TLV 202.43, Vendor ID 0xFFFFFF, to all devices is not authorized. Vendor ID must reflect the OUI (Organization Unique Identifier) of the vendor present in the 3 first bytes of the mac address.

3/ Common private MIBS to create TLV Type 11 are not authorized, OID in use must be unique and specific to each modem type. Here below a non-exhaustive list of not authorized vendor pivate OID:

ID	Description	Value
1	Cablelabs	4491
2	RDK-B	17270
3	BroadCom	4413

Further technical details regarding this aspect are available on request.

4/Orange is currently using a BCM MIB (4413) with Orange Extension (+1368). The Orange Second Syslog Server is unique.

As reminder from OSSIv3,§8.2.4.1 -4

TLV -11	St andard	ORANGE Recommendation
Illegal	(1) = CM does not register	CM ignores, log & connect
Unknown	(2) = CM ignore	CM ignores, log & connect
Duplicate	(3) = CM rejects cfg file	CM ignores , log & connect

(1) $ 8.2.4.4: illegal:

"If any CM configuration file generated SNMP PDU varbind performs an illegal set operation (illegal, bad, or inconsistent value) to any MB OID/instance supported by the CM, the CM MUST reject the configuration file. ***The CM MUST NOT proceed with CM registration*** *if it fails to download and process the configuration file. In our case, we recommend the modem to attach anyway and log the faulty illegal item.*

(2) $ 8.2.4.2: unknown:

"If any configuration file TLV-11 elements translate to SNMP MIB OIDs that are not MIB OIDF elements supported by the CM, then the CM MUST ignore those SNMP varbinds, and treat them as if they had not been present, for the purpose of CM configuration. This means that the CM will ignore SNMP MIB OIDs for other vendors' private MIBS as well as standard MIB elements that the CM does not support."

(3) §8.2.4.1: Duplicate

"The CM configuration file MUST NOT contain duplicate TLV-11 elements (duplicate means SNMP MIB object has identical ODI). If the configuration file received by the CM contains duplicate TLV-11 elements, ***the CM MUST reject the configuration file****." In our case, we recommend the modem to attach anyway and log the faulty duplicate item.*

Possible Proprietary info:

ID	Description
1	Second Syslog (via config file in place of DHCP option 7)
2	Iperf3 speedtest
3	A BBWF[5] TR069/369 SSD/ FOTA SW upgrade
4	MTA disable (as additional security to DHCP option 122.1:0.0.0.0 & is not considered for MAX CPE.
5	NTP servers
6	Proprietary events (> 2XXXX)
7	Others (troubleshooting….)

Secure Software Download (SSD) – Firmware Over the Air (FOTA)

Any secure SW download must take place via the WAN IP Erouter interface and must be controlled by the CPE Suppliers as a regular Firmware Over the Air (FOTA). A BBWF[1]

[1] BBWF: BroadBand World Forum

TR069/369 standards approach must be applied. This approach will not be applicable in bridge mode[2].

Harm to network

By definition a coax line is said to cause harm to the network when it:

- Disturbs any of the neighboring customers behind the same fiber node such that the service of neighboring customers is impaired or seriously risks being impaired
- Leads to disproportional operational burden compared to average users of the service. A not exhaustive set of examples of disproportional operational burden is the following:
    - creating excessive customer support calls
    - flooding the HFC network and / or operational systems (including the OBE & Cable operators monitoring systems) with e.g.:
        - Modem flapping
        - Too many errors on the modem
        - Modem sending interferences upstream (wrong timeslot/frequency)
- Causes security issues or serious security risks.

OBE has / claims the right to take measures, reactively as well as proactively, regarding any service making use of a Private Modem:

- For which it has been established that it causes harm to the network
- For which it is strongly suspected that it causes harm to the network
- For which there is a high risk that it will cause harm to the network
- That is not compliant with the present specification.

These measures include, but are not limited to:

- Reducing the spectrum configured for the modem (attribute mask) to which said modem is connected[3].
- Remotely locking the network WAN port of the modem (Network Access=off) after modem reboot
- Physically disconnecting the drop line:
    - Either at the network side

[2]For instance, - cf. BIPT decision item 85.5 - the user would select a profile from the modem user interface that will activate the right software check & update the software from the correct TR-069 ACS server, or such parameters can be hardcoded in the software itself, or any other solution. OBE will ask to explain the solution to demonstrate that such a solution is fully secure. Should the CPE Supplier propose bridge mode, the CPE Supplier must propose a solution e.g customer may download the SW itself and push it via the local web interface or fallback temporarily to e-Router mode to get a WAN IP and download the SW.

[3] Often this sufficiently mitigates harm to the network and this way the End-user can still enjoy a basic connectivity service.

- Or at the customer (End-user) premises side (NIU)
- Maintaining a blacklist of Private Modems.

Any of the above 3 measures (reduce the spectrum, remotely lock the port, physically disconnect the line) shall apply whenever a blacklisted Private Modem is connected to the OBE network. The blacklist entry and exit criteria will be defined at a later stage.

Note: while OBE has/claims these rights, it will exercise these in a reasonable way, balancing the benefits of all the End-users that use the OBE service, whether they use a Private Modem or a modem provided by OBE.[4]

OBE Compliance List Overview

The list includes 21 tests. Details are part of annexes which can be obtained under simple request.

Nbr	ID	Category	Description	Status	Comments
1	OBE-1-1	RF	Gold Channel List (D3.x)	SHOULD	Faster CM Initial Attachment, can be selectable via profile on UI
2	OBE-1-2	RF	SNR–RX downstream levels (D3.0/D3.1)	MUST	Both the RX & SNR levels reported by SNMP from 3 units of different production batch must reflect the correct values within the following range both for D3.0 & D3.1 signals: • D3.0: RX levels: - 20 dBmV to -6 dBmV SNR levels: 25 dB (MDD loss) to 35 dB (256QAM clean) • D3.1 (PLC or 6 MHz): RX levels: - 15 dBmV to -6 dBmV SNR levels: 27 dB to 41.5 dB Must be compared with calibrated RF field testers like Veex CX310 or VIAVI ONX220 or other reference testers; Standard deviation must be less than 1 dB.

[4] For instance, OBE will reserve the right to disconnect a Private Modem, should the Private Modem be running a non-valid software and act as a rogue modem. OBE might automatically check the Private Modem SW version based on SNMP MIB (docsDevSwCurrentVers;.1.3.6.1.2.1.69.1.3.5.0) and/or DHCP 43.6 option fields on the CM IP address DHCP request.

3	OBE-2-1	SW	TR069-369	MUST	Firmware Over the Air (FOTA) as Secure Software Download (USP). The CPE Supplier must present the solution & confirm it is secure. Such a solution will permit easy remote diagnostics for troubleshooting (CWMP).
4	OBE-3-1	CFG	Smart Parser	MUST	CM must connect even if: unrecognized TLV 11(OID), or duplicate TLV 11 (OID) present. Unrecognized TLV must be ignored. Duplicate TLV may not be skipped. Supplier Specific TLV with Irrelevant Supplier ID must be ignored. Such an event or parsing error must be logged (local, syslog).
5	OBE-3-2	CFG	CFG file will include System Name OID .1.3.6.1.2.1.1 .5.0 as Config Version	MUST	There must be no conflict to use System Name to define the config file version. Such a field must be programmable by Config file TLV. OBE will track the changes of the generic config file after new private modem info inclusion.
6	OBE-4-1	DOCSIS	DOCSIS IP Filter	MUST	Still in use even if D3.1, incompatible with UDC [9]
7	OBE-4-2	DOCSIS	DOCSIS UDC + CMIM Mask	SHOULD	To be future proof, filtering combining both source CPE index port based upstream & Bogon destination (10./8,172.16./12,192.168./16) & official IPv4 multicast (224.1.1.1-32) by default (generic filter)

8	OBE-4-3	DOCSIS	ToF/IoF[10] Filters	MUST	After digital switchover, analog spectrum is reused for Docsis. But some obsolete internet filters can still be present and filter some new DOCSIS channels (D3.0 or D3.1). Modem during registration must be up & operational even running downstream partial service. Must be tested against CISCO CCAP.
9	OBE-4-4	DOCSIS	Intensive US partial Service ATDMA	MUST	Create an intermittent strong ingress with a clock rate of 1 per minute over a 30 min period, 50% duty cycle, validate no data interrupt upstream & no modem reboot/re-init. Must be tested against CISCO CCAP.
10	OBE-4-5	DOCSIS	Intensive US partial Service OFDMA	MUST	Create an intermittent strong ingress with a clock rate of 1 per minute over a 30 min period, 50% duty cycle, validate no data interrupt upstream & no modem reboot/re-init. Must be tested against CISCO CCAP.
11	OBE-4-6-V	DOCSIS	DOCSIS US CM attribute Mask	MUST	Permit to not run D3.1 OFDMA if in-Home network is not D3.1 ready (VOO, need new NIU & validation)
12	OBE-4-7-V	DOCSIS	DOCSIS Cable DS resiliency	MUST	CM must be running gracefully "Downstream Resiliency Bonding Group"[5] defined by CISCO Cable.
13	OBE-4-8-V	DOCSIS	D3.1 OFDM Profile	MUST	See Details in ATP, on CISCO CCCAP.

[5] CM must be running gracefully "Downstream Resiliency Bonding Group" [1] defined by CISCO Cable. [1]Downstream Resiliency Bonding Group: https://www.cisco.com/c/en/us/td/docs/cable/cbr/configuration/guide/b_docsis_cbr_full_book_xe16_9/b_docsis_cbr_full_book_xe16_9_chapter_010001.html

			Management (Pro/Demotion)		
14	OBE-5-1	IpV6	IPv6 Prefix Delegation /56	MUST	Policy defined by Orange Group.(not /64) to be future proof. In Home networks split in /64 (Wifi, Wifi Guest, Ethernet Lan,...).Must be tested against CISCO CCAP.
15	OBE-5-2	IpV6	IPv6, no incoming session to the HOME LAN	MUST	By default, no incoming IPv6 session. Policy defined by Orange Group. Possibility via Web User interface defining specific ipV6 forwarding rules. OBE declines all responsibility in case of attack.
16	OBE-6-1	CGN	CGNAT optout	SHOULD	Permit to get public IP based upon DHCP option 12 (Hostname=OPT-IN by default=CGNAT) modification by the User modem interface to OPT-OUT to get public IP & define port-based forwarding. WAN Remote Access, DMZ are not available by default (CGNAT).
17	OBE-7-1	Log	Second Syslog	MAY	Permit the OBE to detect a mal function. Should include DOCSIS (embedded) event and important Erouter Event like no ipV4 or IPv6 provisioning.
18	OBE-8-1	Bridge	Bridge Mode (legal obligation)	MUST	In bridge mode, only one ethernet port (index 1) must be enabled to allow OBE to collect data consumption (legal obligation). WIFI must be disabled. User will receive public IP.
19	OBE-9-1	SNMP	DOCSIS Monitoring	MUST	The following MIBS must be supported and operational, even under stress conditions: 1. IF-MIB/ifXTable (64 Bit counters) 2. Docs-Cable-Device-Mib

					3. Docs-IfMib 4. Docs-If3Mib 5. Docs-If31Mib 6. Docs-PnmMib 7. CableLabs/esafeErouter SoftReset Stress conditions means loop every 5 minutes combining snmpget & snmpwalk over about 20 Mibs with 3 retries. Python Script is defined in test document.
20	OBE-10-1	SPEED	Built-In Iperf3 TCP client on WAN interface	SHOULD	SpeedTest iperf3 Client must be: -programmable via TLV11 or Erouter/Supplier Specific TLV in config file - must include: enable/Server IP adress/ Service Port/test period/DS +US/Nbr of // sessions, TCP mode,) - must be HW accelerated on TCP-IP socket to get Downstream Speed > 2 Gbps and Upstream Speed > 1 Gbps - must be interoperable with OBE Iperf3 servers (details in ATP) -Customer interface or Back office (SNMP) must be able to trigger a speed test to troubleshoot DOCSIS issue and decouple from home Lan issue.
21	OBE-11-1	Voice	MTA disable	MUST	Using CM DHCP option 122.1=0.0.0.0 must disable MTA.

Annexes

Annexes can be asked by simple request to OBE. The pack of Annexes include:

Annex	Description
Annex 0	VOO-CMP_Specifications-240129_Psa
Annex 1	Details
Annex 2	Set-up
Annex 3	Generic Config File (CM)
Annex 3 bis	Example binary file : “FreeModemVOO-v1.cfg “
Annex 4	Checklist

Assistance

At the time of writing, next to OBE (see “Contact”), we inform that Excentis has provided modem test services for OBE in the past.