

Open Development Device Certification Process

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Revision History

Rev.	Revision History	Date
1.0	Initial ODIS Testing Document	March 2008
2.0	Modifications to add process details, LBS/aGPS and ENAP	June 2009
3.0	Modifications after technical review	
4.0	Modifications after legal review	June 2009
5.0	Adding requirements lock down process	June 2009
6.0	Adding language to address export control concerns Section 3.8	August 2009
7.0	Modifications to Device Introduction Process Flow Section	August 2009
8.0	Add MMS, Global and Telematics Device support	September 2009
9.0	RA process modifications and Vendor meeting agenda details	November 2009
10.0	Process updates	January 2010
11.0	Add unit requirements, 3 rd party contact name change, edits from review	February 2010
12.0	Add ODPT mailbox to Pre-submission process flow and to Device introduction process flow; Modifications to Unit requirements	March 2010
13.0	Replace Developer Agreement with Certification Agreement. Updated contact list.	April 2010
13.1	Added VzW owns the test reports (Section 3.2.4)	May 2010
13.2	Modifications to Device Introduction Process Flow Section (Section 3.4)	May 2010
13.3	Removed Authors names	May 2010
13.4	Added forecast worksheet to DLD	May 2010
13.5	Legal review additions	May 2010
13.7	Update DLD Agenda	May 2010
13.9	Updated per legal feedback	June 2010
14.0	General updates	June 2010
15.0	Removed section 3.10. Added VPS – Vertical Solutions Provider. Added ppt 1 pager to pre-submission forms. Added sample Device to DLD agenda and reqs. Changed photo in 3.3.	

	Changed available activations w/ approved module to 20.	
16.0	Updated SGS Contact Info to Johee from Dawn. Section 3.2.1 – Added Master Showcase to required docs and DLD agenda, added some clarity on how to register a new Device Section 3.5 – Mentioned new instructions on OD Portal uploads exist on the site.	
17.0	Section 3.3.3- updated the flow and requirement for MMSC Server Test. Replaced CPE with NDET	
18.0	Section 3.5 – updated the Device Introduction process	
19.0	Section 3.5 – Updated the Device CSV process	
20.0	Section 3.5 – Updated the wait window with cut off time Section 3.6 – Added sample Device requirements	
21.0	Section 3.7 – Updated the Certification Expiration	
22.0	Section 3.3.1 – Concession Accounts All sections – Changed LBS to LBS/aGPS	
23.0	Section 3.5 Updated IMEI/ICCID pair instructions	January 2013
24.0	Section 3.2 – Updated DLD agenda Section 3.3 – Updated testing process Section 3.4 – Updated time window for ESN upload Section 3.8 (former Section 3.9) – Added new ITL	December 2013
25.0	Section 3.1 – Updated export control link Section 3.2 – Added LTE M2M SIM to DLD agenda Section 3.4 – Removed recommendation for EDI Section 3.8 – Updated test lab information	July 2014
26.0	Section 3.1 – Added Software Update support for 4G devices	November 2014
27.0	Section 3.1 – OTA ID info Section 3.3.2 – Clarification on test results	August 2015

	Section 3.2 – Simplified DLD call agenda Section 3.8 – SGS address change and added Wireles Research Center	
28	Removed reference section, updated lab contact	October 2016
29	Updated acronyms Added overall flow Added new Required Agreement section Added additional testing sub-sections Updated links Updated Lab contacts Clarified other sections throughout the doc	May 2017
30	Removed ECCN link Updated Required Agreements section Clarified FOTA updates Updated EDI upload section, added EID Updated Lab contacts	March 2018

1 Objective

The purpose of this document is to define and describe the Open Development Device Certification process, Device testing and conformance requirements* that Devices must meet before they are certified for use on the Verizon Wireless Network. "Device(s)" means the product, equipment, parts, and components tested for OD Compliance.

This document describes the methods and procedures used to certify voice Devices, voice/data Devices, and data only Devices. This includes, but is not limited to, PDAs/Handhelds, data cards, M2M/IoT Devices, embedded PCs, and more.

*Available from web ODP under '[Requirement & Test Plan Documentation](#)' tab (login required).

2 Glossary and Definition of Terms

aGPS	Assisted GPS
AM	Account Manager
B2B	Business to Business
BIS	Bureau of Industry and Security
CDMA	Code Division Multiple Access
CCATS	Commodity Classification Automated Tracking System
CDG	CDMA Development Group
CA	Certification agreement
CE	<i>Conformité Européenne</i> , "European conformity"
COI	Certificate of Insurance
CSV	Comma-Separated Values
DLD	Device Lock Down
DMD	Device Management Database
DTO	Device Test Owner
EDI	Electronic Data Interchange
EID	eUICC ID (Embedded Universal Integrated Circuit Card) ID
ENAP	Early Network Access Program
ESN	Electronic Serial Number
ECCN	Export Control Classification Number
ICCID	Integrated Circuit Card Identifier
IMEI	International Mobile Equipment Identifier
FIT	Field Interoperability Testing
FOTA	Firmware Over The Air
GCF	Global Certification Forum
IOT	Interoperability Testing
IoT	Internet of Things
ITL	Independent Test Laboratory
LBS	Location Based Services
M2M	Machine to Machine
MEID	Mobile Equipment Identifier
MDN	Mobile Directory Number
MMS	Multi Media Messaging services

MMSC	Multimedia Messaging Service Center
NDET Lab	Network Device Evaluation Test Laboratory
NDRA	National Direct Revenue Assurance
NRB	Network Repair Bureau
NSRA	National SurePay Revenue Assurance
NWRA	National Wholesale Revenue Assurance
OEM	Original Equipment Manufacturer
OD	Open Development
ODP	Open Development Portal
ODPT	Open Development Product Team (Including Business Development, Certification Owners and Account management.)
ODS	Open Development Specification
OTA	Over The Air
PDI	Product Development and Integration
PM	Product Manager
RA	Revenue Assurance
RF	Radio Frequency
RN	Release Notes
SFN	Safe For Network
SUPL	Secure User Plane Location
TECC	Test Entrance Criteria Checklist (Test Campaign)
VSP	Vertical Solutions Provider
WS	Wholesale
VZW	Verizon Wireless

3 Device Compliance Process

3.1 Entrance Criteria and Certification Process

All Devices must be type approved and certified by the United States Federal Communications Commission (FCC) and classified by the Department of Commerce's Bureau of Industry and Security (BIS) before Open Development (OD) Conformance testing can commence.

OEMs or OD Device Developers (collectively, "DEVELOPER,") requesting Verizon Wireless' (VZW) certification for LTE capable Devices must receive GCF certification before OD Conformance testing can commence.

All LTE capable Devices must support radio layer Firmware Over The Air (FOTA) updates.

In order for DEVELOPER to access the OD web portal or OD documents, DEVELOPER must execute a Non-Disclosure Agreement (NDA).

Each DEVELOPER will receive a unique VZW-ID after completing NDA. The VZW-ID will be used in conjunction with the submitted Device to form the Device tracking ID. VZW and OD authorized Independent Test Laboratory (ITL) will identify individual Devices prior to Certification using only this Device tracking ID.

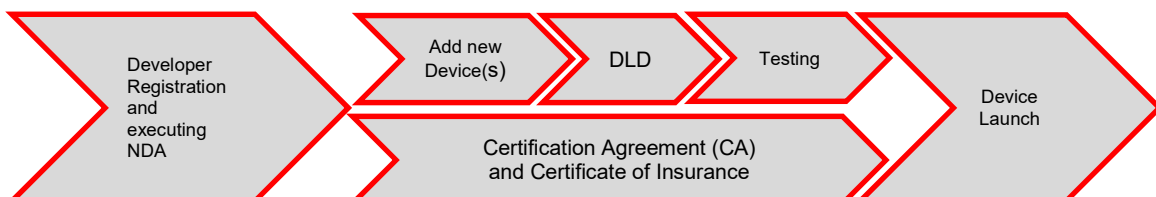
3.1.1 Device Entrance Criteria

The OD Device Tracking ID

- VZW-ID will be assigned for each DEVELOPER submitting a Device for Conformance
 - Example VZW01000001
- FCC-ID Required Prior to Open Development Conformance
 - FCC Grantee ID (First 3 Characters)
 - FCC Product Code (Remaining up to 14 Characters)
 - <https://www.fcc.gov/oet/ea/granteecode#block-menu-block-4>
 - Example "A1C0123456789012"
- BIS ECCN and CCATS Required Prior to Open Development Conformance
 - Example " 5A992, G0823456"

3.1.2 Overall Certification Process Flow:

Obtaining Device certification and launching a Certified Device on the VZW network involves fulfilling technical and the contractual requirements of the CA. The CA is a contract issued by Verizon and jointly signed by the DEVELOPER; review can occur in parallel to device registration and testing.



- Developer Registration and Executing NDA – This allows full access to ODP and detailed documents, such as requirements, test plans, etc.
- Add new Device(s) – This involves a five step process on the ODP
 - New Device Info
 - Marketing Info
 - Forecast
 - Release Notes
 - Attaching all Pre-submission Documents
- DLD - Review and lockdown documents
- Testing - Send device(s) to authorized lab for testing
- FOTA – DEVELOPER to provide FOTA update documentation on a test device.
- Completing Contractual Agreements – Fulfilling CA and COI documents are required prior to device certification.
- Device ID Upload and Launch – Loading Device IDs into Verizon Device Management Database (DMD) system.

3.2 Certification Process

- After the DEVELOPER executes a NDA, accounts will be created to access the ODP at <https://opendevdevelopment.verizonwireless.com/>
- DEVELOPER downloads and reviews the OD certification documentation.
- DEVELOPER adds information regarding the new Device and submits all required information on the ODP and notifies their supporting VZW representative. The registered device name/model number should reflect the marketing name/model number as it appears in any FCC filing or approval.
- A DLD review will be held between DEVELOPER and VZW team. The review will cover the following:
 - Submission Overview
 - Device Certification Agreements
 - Documentation Review
 - Review Test Campaign
 - Review Testing & Schedule
 - Review of Developer's Sample Devices - Besides ITL, DEVELOPER is required to send 2 samples to VZW ODPT.
 - Complete required compliance testing in Verizon authorized ITL
- Pending the successful completion of the DLD requirements, VZW will upload the Test Campaign (TECC) to the ODP and notify the DEVELOPER and selected ITL with Approve To Start test (ATS).
- A host device is certified using an approved module or chipset. A module or chipset is approved through the ODP. For module and chipset approval, refer to Module Guidelines from Requirement & Test Plan Documentation section of the ODP.

3.3 Required Agreements/Documents

All Open Development Agreements must be executed prior to Device Approval.

- **NDA** – Execution required prior to full access to ODP.
- **CA** – Must be executed before device can be fully certified. This will allow use of Verizon mark with a written request per Verizon Branded Guidelines.
- **COI** – Issued by the DEVELOPER and must be provided to Verizon as proof of valid insurance.

(NOTE: As of January 2018, Verizon Wireless and companies with a current Certification Agreement executed prior to then shall no longer execute an addenda for each newly certified device. Certification of devices will be memorialized in the OD Notice of Certification that contains any device specific requirements and will include the Certification Period for the device).

3.4 OD Compliance Testing

The following figure shows a high level view of the OD - required testing process known as OD Compliance Testing:



Any Device (including a test Device) must have a FCC ID before activation on the Verizon Network.

3.4.1 Early Testing Process Flow

DEVELOPER may request early testing if development is required prior to certification. The ODPT will review the request and approve it if there is a need for live network testing during development.

Early Network Access Program (ENAP)

- **If the DEVELOPER is using a VZW certified module, up to 20 activations can be allowed for developmental purposes.** Without a VZW certified module, up to 2 activations can be allowed for developmental purposes. Upon uploading of test Device IMEIs to the ODP, VZW will load the test Device(s) MEID/ESN/IMEI in DMD. The DEVELOPER should then work with their VZW sales representative to subscribe and activate lines to connect the test Device(s) with VZW network. The test MDNs must be disconnected no later than 60 day after testing is completed

Safe For Network (SFN) Testing

- **If the DEVELOPER completes SFN testing successfully, up to 500 activations per project can be allowed for further development purposes.** DEVELOPERS must submit the Device information for the ODPT's review and the SFN testing must be conducted at a VZW Authorized ITL.

DEVELOPERS submit Device information on the ODP and send a test Device request with supportive reasons and test ESNs/MEIDs/IMEIs.

- RN, TECC, and Device Solution One Pager are required for SFN.
- ODPT and NDET team review and approve the request.

Upon successful completion of SFN, DEVELOPER can request up to 500 activations of test Devices.

- If the DEVELOPER plans to sell the test devices as commercial products after approval, the DEVELOPER must manage these test devices as commercial products and upload them again (e.g., Note: **Test Devices to be sold as production Devices shall be re-uploaded by DEVELOPER as certified Devices via ODP or EDI**).

3.4.2 OD Standard Lab Testing Process Flow

- DEVELOPER should work with ODPT to obtain a TECC.
- DEVELOPER works directly with IOT labs on schedule, payment and complete IOT testing prior to or in parallel with lab conformance testing.
- DEVELOPER chooses and contacts a Verizon authorized ITL from the VZW approved list (see Section 7).
- DEVELOPER submits required Devices and product documentation to the ITL.
- It is responsibility of the DEVELOPER to provide FOTA update documentation (either their own/proprietary solution, from Module vendor, or from Verizon/Motive solution). This can be submitted while the device is in testing, but required with final results.
- The ITL executes VZW approved test campaign based on the TECC.
- The ITL provides test results to ODPT.
- ODPT reviews the test results, along with FOTA solution documentation and either passes, conditionally passes or fails the device.
- After the Device successfully passes testing, ODPT will certify the Device and issue an official notification.

3.4.3 Additional Testing for Verizon Services (If features are supported by the device)

OD Standard Lab testing completion is a prerequisite to additional testing. Details for additional testing are available in the Requirement and Test Plan Documentation section of the ODP.

3.4.3.1 LBS/aGPS/SUPL Application Testing Process Flow

After OD Standard Lab Test completion, DEVELOPER may start the LBS/aGPS/SUPL process. Refer to “LBS/aGPS Certification Submission Package” for more information.

3.4.3.2 MMS Device Testing Process Flow

The MMS process must be completed before Device certification for Devices that are MMS capable and require the use of the Verizon MMSC server. Refer to the [‘VZW OD MMSC Server Test Process’](#) for more information.

3.4.3.3 Private Network Testing

Applicable to Devices using the Verizon Private Network. Refer to Private Network section on ODP.

3.4.3.4 Device Management Services

Refer to Verizon OMADM 1.2 Reference Client Package or Verizon light weight M2M (LWM2M) OTADM Reference Client Package on ODP.

3.4.4 Inactivity

If the testing status remains inactive for more than 2 months, the certification status will be changed to FAIL. The Device will be subject to re-evaluation or re-submission for certification and may require complying to most recent VZW Requirements.

4 Post Certification Device ID Upload Procedure

After the Device is approved and before the Device goes to market, the Device must be entered into the VZW DMD to allow future activation of a certified Device. This Process is known as the Device identification upload (ESN/MEID for 3G Devices or-IMEI for 4G Devices).

The DEVELOPER can upload the production Device identifications using one of the following approaches:

1. EDI
2. ODP

If one of the above two upload methods is not followed, the VZW' system will prevent activation of the Devices.

4.1 EDI

Electronic Data Interchange (EDI)

- Refer to the “Electronic Data Interchange (EDI) Document” section on the ODP for more information

4.2 OD ODP

- DEVELOPER captures all of the Device identifications (ESNs/MEIDs/IMEIs) in a CSV file or text file as followed:
 - The ESNs/MEIDs/IMEIs will start on the first line of the first column. For Devices with IMEI & ICCID pairings the IMEIs will be placed in column A and ICCIDs will be placed in column B
 - The name of the file should not contain any special characters (e.g. spaces, dashes, quotation marks, etc.) and must contain the make, model, and total number count of ESNs/MEIDs/IMEIs or IMEI/ICCIDs loaded).
 - Example of the CSV or .txt file:

File Name: CompanyXYZ_ProductABC_5.csv

	A
1	A00000028BC821
2	A00000028BC822
3	A00000028BC823
4	A00000028BC824
5	A00000028BC825

ESN/MEID/IMEI:

	A	B
1	A1234567890123	1234567890123450
2	B1234567890123	1234567890123451
3	C12345678901234	1234567890123452

- IMEI/ICCID pair:
- IMEI/EID pair (txt or csv):

```

TEST_IMEI_EID_PAIR_UPLOAD.txt - Notepad
File Edit Format View Help
359271090000005 8903302331133000000000227XXXXXX
35927109000000XX 8903302331133000000000227XXXXXX
35927109000000XX 8903302331133000000000227XXXXXX
35927109000000XX 8903302331133000000000227XXXXXX
35927109000000XX 8903302331133000000000227XXXXXX
35927109000000XX 8903302331133000000000227XXXXXX
35927109000000XX 8903302331133000000000227XXXXXX
    
```

	A	B	C
1	3.59271E+14	8.9033E+31	
2	3.59271E+14	8.9033E+31	
3	3.59271E+14	8.9033E+31	
4	3.59271E+14	8.9033E+31	
5	3.59271E+14	8.9033E+31	
6	3.59271E+14	8.9033E+31	

- DEVELOPER logs into ODP, clicks on the “Upload ESN/MEID” link/tab next to the approved Device.
- On the upload screen, select the format of the serial numbers that will be uploaded. The format must be one of the following:
 - IMEI (15) numeric or alpha
 - MEID (14) alpha numeric only
 - ESN HEX (8) alpha numeric only
 - IMEI/ICCID Pair- IMEI(15) numeric or alpha & ICCID (20) alpha only
 - IMEI/EID Pair – IMEI(15) numeric or alpha & 32 alphanumeric hexadecimal

- Once the DEVELOPER uploads the CSV or txt file, an email is automatically sent to the DEVELOPER providing notice that an ESN/MEID/IMEI file has been uploaded and automatically approved.
- The Device identification (ESNs/MEIDs/IMEIs or IMEI/ICCID pairs) provided in the CSV approved file will take up to 15 minutes to load into the VZW DMD system and will be ready for activation then.
- **Test Devices to be sold as production Devices shall be re-uploaded by DEVELOPER as certified Devices via ODP or EDI.**

5 OD Certification Agreement Violation Process Flow

Upon knowledge of any Rogue Devices (unapproved Device or approved Device harming the network), Applications or Violations to the CA with VZW the following will take place:

- ODPT notifies DEVELOPER of Device compliance issue (rogue Devices or applications detected, CA violations)
- Developer will ship 2 sample Devices within 48 hours upon receiving the formal request from Verizon for network evaluation.
- VZW retains the right to restrict or deactivate the OD Device if VZW has determined the Device to be harmful to the Network and its end users and de-certify it if necessary.

If a Device fails to comply with the OD Specification, Verizon may de-certify the Device or take any necessary steps to protect the Network and its end-users, including, but not limited to, (a) no provisioning of additional units of the Device on the Network, (b) removal of the Device from the OD website that lists current certified devices, (c) notification to Device end-users of Network issues related to the failure to comply with the OD Specification that impact the Device end-users' service on the Network.

6 Device Evolution, Maintenance & Regression Testing Process Flow

6.1 Device Evolution:

At any time, in case of any updates to the certified software or hardware, DEVELOPER must notify ODPT and provide all submission documentation to the ODPT

- DEVELOPER provides all submission documents with the Device changes in detailed descriptions
- ODPT/NDET determines the level of testing required based on the updated Device.
- DEVELOPER initiates Device Maintenance Release Testing Flow

6.2 Device Maintenance & Regression Testing Process

- DEVELOPER submits updated submission documents to the ODPT/NDET Lab for evaluation, and coordinates with the OD Authorized ITL to execute regression testing (in coordination with VZW NDET Lab).
- After the regression test criteria are completed for the Device, the OD authorized ITL forwards the results to the VZW (ODPT & NDET Lab) to verify that the Device is compliant.
- After the Device successfully passes testing, the ODPT will certify the Device Maintenance Release and issue official notification.

7 Test Lab Contact information

Authorized ITL Information

ITL Name	7 Layers Inc.
Technology Supported	LTE Only
Address	15 Musick, Irvine, CA, 92618
Website URL	www.7layers.com
Business Contact	David Trevayne-Smith
Phone	+1 949-735-5748
Email	David.Trevayne-Smith@7Layers.com
Technical Contact	Sabine Dickhut
Phone	+1 949-297-8004
Email	Sabine.Dickhut@7Layers.com

ITL Name	CETECOM Inc
Technology Supported	LTE Only
Address	411 Dixon Landing Road, Milpitas CA 95035
Website URL	www.cetecom.com
Business Contact	David Sherve
Phone	+1 (408) 586 6310
Email	David.Sherve@cetecom.com
Technical Contact	George He
Phone	+1 (408)586 6224
Email	George.He@cetecom.com

ITL Name	Intertek Labs
Technology Supported	2G/3G, LTE Only, LTE Multimode
Address	731 Enterprise Drive Lexington, KY 40510
Website URL	http://www.intertek.com/wireless-mobile/Devices/
Business Contact	Robbie Payne
Phone	+1 859-388-4951
Email	Robbie.Payne@intertek.com
Technical Contact	Gwyn McNew
Phone	+1 859-582-8731
Email	Gwyn.Mcnew@intertek.com

ITL Name	PCTEST Engineering Laboratory, Inc.
Technology Supported	2G/3G, LTE Only, LTE Multimode
Address	6660-B Dobbin Road, Columbia, MD 21045
Website URL	www.pctest.com
Business Contact:	Steven G. Coston
Phone:	+1 410-292-6680
Email:	steve.coston@pctest.com
Technical Contact:	Andrea Zaworski
Phone	+1 410-290-6652
Email	andrea.zaworski@pctest.com

ITL Name	SGS Wireless U.S., Inc.
Technology Supported	2G/3G, LTE Only, LTE Multimode
Address	15150 Avenue of Science, Suite 300, San Diego, CA 92128
Website URL	http://www.sgs.com/
Business Contact:	Ben Kuo
Phone:	+1 858- 304-9141
Email:	ben.kuo@sgs.com
Technical Contact:	Gerardo Berrelleza
Phone	+1 858-592-7100
Email	Gerardo.Berrelleza@sgs.com

ITL Name	Tech Mahindra (Americas)
Technology Supported	2G/3G, LTE Only, LTE Multimode
Address	STE 203, 1001 Durham Avenue, South Plainfield, NJ 07080
Website URL	www.techmahindra.com
Business Contact:	Arunav Roy
Phone	469-600-7846
Email	arunav.roy@techmahindra.com
Technical Contact:	Upesh Kumar
Phone	732-310-0285
Email	upeshku@techmahindra.com

ITL Name	Wireless Research Center
Technology Supported	OTA
Address	3331 Heritage Trade Dr. Suite 101, Wake Forest, NC 27587
Website URL	http://wirelesscenter-nc.org/
Business Contact:	Larry Steffann
Phone	919-435-1051 x112
Email	larry.steffann@wirelesscenter-nc.org
Technical Contact:	Jordan Stearns
Phone	919-435-1051 x102
Email	jordan.stearns@wirelesscenter-nc.org

Inter-Operability (IOT) Test Labs

IOT Test Lab Name	Nokia
Business Contact	Liza Ottesen
Phone	+1 908-582-6861
Email	Liza.ottesen@nokia.com
Technical Contact	Jessica Portilla George, Manager
Phone	+1 908-582-6726
Email	jessica.george@nokia.com

IOT Test Lab Name	Ericsson
Contact	William Beebe
Phone	+1 972-583-1417
Email	william.beebe@ericsson.com

Verizon Approved Motive Lab (for FOTA)

Test Lab	Nokia
Address	Nokia, 600-700 Mountain Ave, Room 6H-424 Murray Hill, NJ 07974
Contact	Nick Didenko
Phone	+1 908-723-7052
Email	nikolai.didenko@alcatel-lucent.com