PTCRB: Understanding certification requirements and processes

Introducing PTCRB

Leading wireless network operators in North America established the PTCRB (previously known as PCS Type Certification Review Board) certification program in 1997. It verifies compliance with industry standards for mobile wireless devices to assist device interoperability on global wireless networks. The wireless association, CTIA, previously known as the Cellular Telephone Industries Association, manages and administers PTCRB programs.

What is an IoT device?

In PTCRB, an Internet of Things (IoT) device, also known as an integrated device, integrates a PTCRB-approved cellular module. The PTCRB certifies such devices under the IoT Network Certified program.

IoT Network Certified program

IoT Network Certified is a custom certification program for cellular-enabled IoT devices. It simplifies and streamlines the process of certifying IoT devices for manufacturers. The certification program provides assurances to both device manufacturers and network operators of a product's readiness to connect to cellular networks within and outside North America.

Designing a device around a certified wireless module allows a manufacturer to certify their IoT device using a process that takes advantage of the rigorous testing already done on the module.

PTCRB testing requirements

Regulatory approval is a prerequisite for PTCRB certification.

PTCRB certification is a prerequisite for certification from North American mobile network operators (MNOs), i.e., AT&T, T-Mobile, etc.

When a module is integrated into an end product, the module's RF performance may change, which impacts the end device's performance. Therefore, even devices that already use a PTCRB-certified module still need their own PTCRB certification.
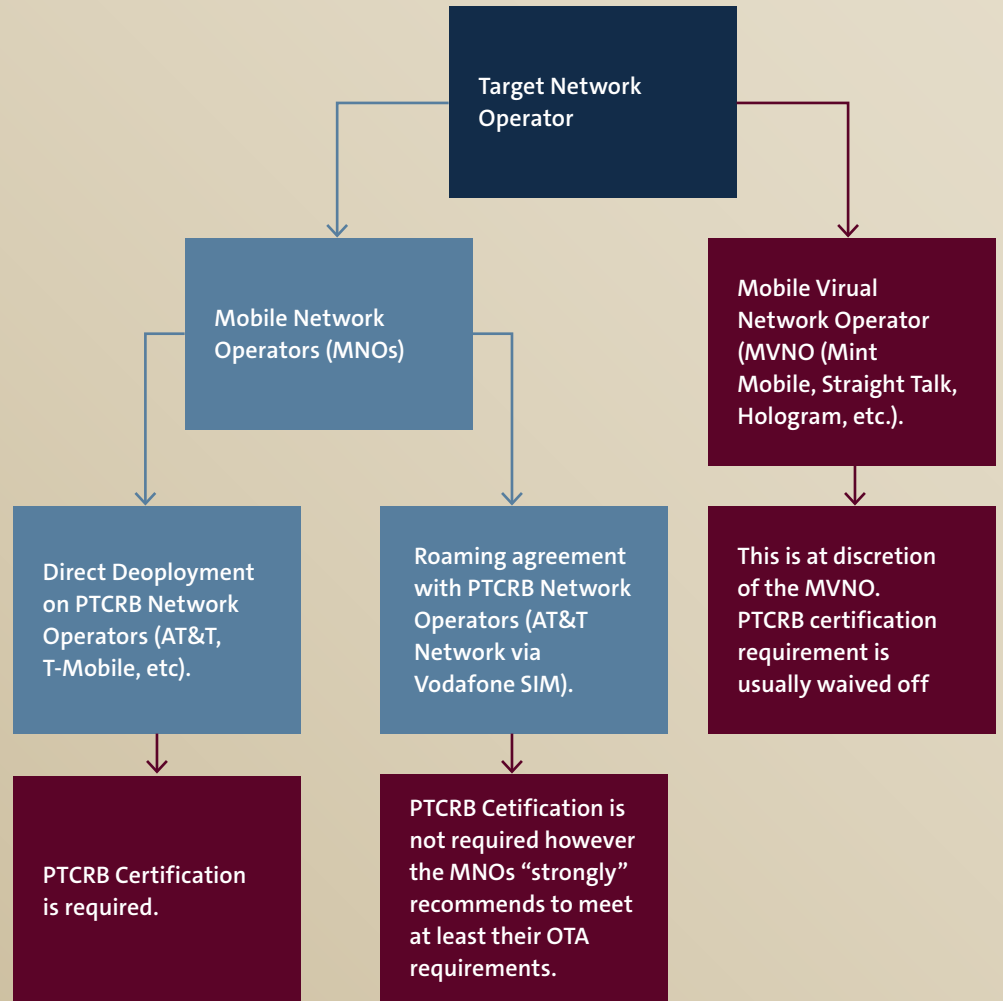
Because integrations utilizing PTCRB-approved modules can reuse the data from the module, this approach reduces the necessary testing for integrated devices significantly and, in turn, reduces testing and certification costs. These test cases typically apply to the subscriber identity module (SIM) and antenna interfaces. Depending on the type of device and its classification, an IoT device may require:

- Over-the-air (OTA) antenna performance testing
- Radiated spurious emission (RSE) testing
- SIM electrical testing

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PTCRB and carrier certification applicability

PTCRB certification is mandatory if the device is deploying on a major network. However, not all IoT/integrated devices require PTCRB certification testing. The process chart below provides more information on decision criteria.

- PTCRB certification: Device type and category dictates amount of testing
- Full testing for initial device, i.e., OTA, RSE and SIM
- Spot-check testing for variant or engineering change order (ECO)
- No testing for variant or ECO (documentation only)

Target Network Operator

Mobile Network Operators (MNOs)

Mobile Virual Network Operator (MVNO (Mint Mobile, Straight Talk, Hologram, etc.).

Direct Deoployment on PTCRB Network Operators (AT&T, T-Mobile, etc).

Roaming agreement with PTCRB Network Operators (AT&T Network via Vodafone SIM).

This is at discretion of the MVNO. PTCRB certification requirement is usually waived off

PTCRB Certification is required.

PTCRB Cetification is not required however the MNOs "strongly" recommends to meet at least their OTA requirements.

PTCRB certification process

Getting ready

01 Manufacturer selects a PTCRB-certified module that works for their product and application

02 Manufacture discusses module selection with their MNO or MVNO to make sure the selected module meets the carrier's requirements

03 Manufacturer integrates the module into the host device

Testing

04 Manufacturer makes sure the device complies with government regulations, i.e., FCC, ISED

05 Manufacturer registers and requests certification through PTCRB.com

06 Manufacturer selects and works with a CTIA Authorized Test Laboratory (ATL) to get the necessary testing performed

Application

07 Upon successful completion of relevant certification data, ATL prepares PTCRB documentation package and submits it to the primary laboratory for final review and entry into the PTCRB database

08 Manufacturer uploads necessary documents and pays certification fees

Approval

09 If submitted test results and documents meet PTCRB specification requirements, CTIA issues a product certificate to the applicant

PTCRB testing at UL Solutions

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Customer fills out product information form (PIF) and sends it to UL Solutions

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UL Solutions evaluates PIF and consults with primary laboratory as needed to create a test plan

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Test plan and quote proposal shared with customer

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Customer reviews and accepts the proposal

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Project is established

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Sample preparation meeting

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PTCRB database request creation and AT&T device record creation meeting if needed

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Testing performed

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Reports review and application preparation

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Application submission to the primary laboratory and eventually to the PTCRB

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UL Solutions performs network testing as applicable

PTCRB testing and certification through UL Solutions

UL Solutions is a PTCRB Associate Laboratory. We support PTCRB testing and certification at our Fremont, California, location.

Aside from PTCRB certification for IoT devices, UL Solutions Fremont also offers:

- CTIA OTA testing (learn more)
- CTIA battery life testing
- CTIA cybersecurity testing

Together with North American Regulatory Services, UL Solutions is a comprehensive service provider with laboratories for wireless cellular product certification.

Let's get this conversation started.

Solutions

Safety. Science. Transformation.™