How to Get IoT Network Certified

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CTIA Certification LLC
1400 16th Street, NW
Suite 600
Washington, DC 20036

1.202.785.0081

programs@ctiacertification.org

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Section 1 Introduction

The IoT Network Certified™ certification program allows device vendors to demonstrate compliance with globally recognized standards for cellular network connectivity of IoT devices. The process is customized for IoT applications, providing a streamlined and cost-effective pathway to certification. This is through the use of certified Modules which take care of most of the requirements to achieve certification.

The program is built upon the PTCRB certification program which has been certifying cellular-enabled devices since 1997. PTCRB certification processes are leveraged including the certification database and fully certified Modules.

1.1 Purpose of this Document

This document describes the process to obtain IoT Network Certified certification for cellular-enabled IoT devices.

1.2 Eligible Devices

Devices eligible for certification must use a PTCRB certified Module or Embedded Modem (which contains a certified Module). The IoT Network Certified website provides a directory of fully certified Modules and Embedded Modems you may incorporate into your device. Browse the directory here to find one that meets your needs. You may wish to contact a manufacturer to get more information and advice.

Devices must also meet the following criteria:

- Serve its final intended use without any further hardware and software modifications. If an interface connection to a host is required for operation of the device, that connection can only be made through one of these physical control interfaces:
    - USB, PCMCIA, Compact Flash, MMC, RS-232 (DE9), IEEE-1394, RJ45 or OBD2.
    - No other physical control interfaces are allowed.
- Obtain power through the standardized physical control interface or have a provisioned power source (i.e. dedicated battery, or a dedicated power connector).
- Have a UICC interface (either a fully self-contained UICC slot or embedded UICC).
- Utilize a self-contained antenna or provide an external antenna connector (e.g. SMA, FAKRA, TNC).
- Utilize one or more cellular technologies defined by 3GPP for 5G, 4G, 3G or 2G.
- Be consistent with the terms of its FCC/Industry Canada type acceptance (e.g., type of antenna, distance from user). In all cases, the device shall not alter its antenna system in any way from that allowed by the associated type acceptance or other regulatory approval.

When connected to a host device through one of the above authorized interfaces no certification of the host device is required. Devices that require connection to the host device through PCIe, M.2 connectors, Surface Mount Technology or other non-standard or custom interfaces shall be treated as either an Embedded Modem or a Module (to be certified through the PTCRB certification program).

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1.3 Authorized Test Labs

A directory of test labs authorized to conduct certification testing is provided on the IoT Network Certified website. Browse the directory here. You may wish to contact one or more labs to determine which one best meets your needs. Many labs have the capability to assist you with the overall certification process as well.

The test lab will determine what testing is required for your device. Because you are using a fully certified component, the additional testing required to achieve certification is typically limited to network performance, SIM card interface and radiated spurious emissions. To assist with this, the Module manufacturer is required to provide to the test lab all test reports and PICS documentation associated with the PTCRB certification of the Module.

1.4 Acronyms and Terms

Table 1-1 Acronyms and Terms

Acronym/Term	Definition
3GPP	3rd Generation Partnership Project
A-GNSS/GNSS	Assisted Global Navigation Satellite System/Global Navigation Satellite System
AMR-NB/WB	Adaptive Multi-Rate Narrowband/Wideband
DL	Downlink
CTIS	Combined Total Isotropic Sensitivity
E-UTRA	Evolved UMTS Terrestrial Radio Access
ECO	Engineering Change Order
Embedded Modem	A device which provides WWAN radio functionality as a component intended to be integrated into a host device
eUICC	A removable or non-removable UICC which enables the remote and/or local management of Profiles in a secure way. The eUICC shall be compliant to either SGP.02 (M2M), SGP.22 V2 and V3 (Consumer Device) or SGP.32 (IoT devices). NOTE: The term originates from "embedded UICC".
FCC	Federal Communications Commission
FDD	Frequency Division Duplexing
FR1/2	Frequency Range 1/2
FUMO	Firmware Update Management Object
GERAN	GSM EDGE Radio Access Network
GSMA	GSM Association

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Acronym/Term	Definition
HAC	Hearing Aid Compatibility
HW	Hardware
IEEE	Institute of Electrical and Electronics Engineers
IMEI	International Mobile Equipment Identity
IMPS	Instant Messaging and Presence Service
Initial Certification	The first certification of a device
IoT	Internet of Things
ISED	Innovation, Science and Economic Development Canada
ISM	Industrial, Scientific, and Medical
MCX	Micro Coaxial Connector
MFF2	Miniaturised Form Factor 2
MMC	MultiMediaCard
MMCX	Micro-Miniature Coaxial Connector)
MMI	Multi Media Interface
MMS	Multimedia Messaging Service
Module	A finished WWAN radio device that does not directly connect to a host via a standardized external interface
NFC	Near Field Communication
NR	New Radio
NSA	Non-Standalone
OBD	On-Board Diagnostics
OMA	Open Mobile Alliance (DM: Device Management, POC: Push to talk over Cellular, SUPL: Secure User Plane)
OTA	Over-the-Air
PCB	Printed Circuit Board
PCIe	Peripheral Component Interconnect Express
PCMCIA	Personal Computer Memory Card International Association
PICS	Protocol Implementation Conformance Statement
PO	Purchase Order

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Acronym/Term	Definition
POC	Point of Contact
PSTN	Public Switched Telephone Network
RAT	Radio Access technology
RRM	Radio Resource Management
RSE	Radiated Spurious Emissions
SCOMO	Software Component Management Object
SA	Standalone
SMA	SubMiniature version A
SMS	Short Message Service
SVN	Software Version Number
SW	Software
TAC	Type Allocation Code
TIS	Total Isotropic Sensitivity
TNC	Threaded Neill–Concelman
TRP	Total Radiated Power
TTY	Teletypewriter
UICC	Universal Integrated Circuit Card
USB	Universal Serial Bus
USIM	Universal Subscriber Identity Module
UTRA	UMTS Terrestrial Radio Access
Variant Certification	Certification of a device similar to a previously submitted device
VoLTE	Voice over Long-Term Evolution
WAP	Wireless Application Protocol
WWAN	Wireless Wide Area Network

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Section 2 IoT Network Certified for Smart Connected Infrastructure®

2.1 Purpose

IoT Network Certified for Smart Connected Infrastructure provides confidence that devices will perform as expected in critical infrastructure applications (e.g., electric, water, gas). These devices require the highest levels of resiliency and security. Additional testing, beyond the standard requirements for IoT Network Certified, is added to provide this assurance for utility network operators. You may request this specific certification when submitting your certification request.

2.2 Additional Testing

IoT Cybersecurity testing (Level 2 - Enterprise Devices) and Utility IoT Device testing are added. You may find the test plans detailing the test requirements here.

2.3 Logo

A distinct certification logo distinguishes devices that are IoT Network Certified for Smart Connected Infrastructure. The logo files can be accessed as described in Section 8 of this document.

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Section 3 Certification Requirements

3.1 NAPRD03 Version Applicability

NAPRD03 is the document defining the technical requirements for certification. The latest version can be found here.

The device will be subject to testing against the same version of NAPRD03 as that used to certify the integrated Module. The validity period of the NAPRD03 version used for certification of the Module is three years provided that the Module used in the device employs the same software version as that used for its PTCRB certification.

The three-year validity period begins on the date of the last certification applicable to the Module.

In order to use the Module for new devices, after three years the Module must re-certify to the latest NAPRD03 version. All new devices using the certified Module will be required to certify against this new NAPRD03 version.

If the Module is being re-certified due to expiration of the three-year NAPRD03 validity period and the Module has not changed, any “delta” test cases (e.g., test cases added since the previous certification) may be reported as Category E test cases even if they are Category A in the current version of NAPRD03.

Alternatively, if you are certifying a new device using a Module which has exceeded the three-year validity period, you may perform the delta test cases against the device and submit them as Category E test cases even if they are Category A in the current version of NAPRD03.

For RF Performance Evaluation per Section 2.9 of NAPRD03 and NAPRD03 Section 4 (Miscellaneous Certification Requirements), the latest version of NAPRD03 must be applied.

ECOs on the device due to changes in Module SW or HW are subject to the regular ECO requirements.

Rebranded devices shall apply the same rules as applied to the originally certified device.

3.2 IMEI TAC

The IoT device being certified may utilize the IMEI (International Mobile Equipment Identity) TAC (Type Allocation Code) of the PTCRB-certified integrated Module if the expected production of the device is not expected to exceed 100,000 over its life. If the production is expected to exceed 100,000 devices, then the manufacturer shall obtain a unique TAC range for the device.

The device manufacturer may request a unique TAC for use across multiple devices that are certified using the Variant process if these devices contain exactly the same Module. The unique TAC cannot be shared with other devices.

If the device is intended for use only on a specific network operator, the manufacturer should consult with the network operator to determine whether a unique TAC is required.

The Software Version Number (SVN) shall be the same as the Module’s SVN.

The device manufacturer shall maintain a complete model number to IMEI mapping, which shall be made available to network operators upon request.

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3.3 Technologies and Frequency Bands

It is recommended that the device support the same PTCRB Bands, as defined in Section 2.8 of the NAPRD03, and radio access technologies supported by the integrated Module. The device shall not enable any frequency band or radio technology that was not certified on the integrated Module. The device manufacturer shall check with their target operators to ensure bands and technologies meet the target deployment.

The device may declare support for a subset of PTCRB Bands supported by the Module. Those bands shall be tested. Bands not utilized by the device shall be disabled. The device manufacturer shall use the Variant Certification process to certify additional subsets of band support required to support different operator or country requirements.

The device may disable radio access technologies that are not required for the application. When disabling a radio access technology, the device shall obtain a unique TAC and will not be permitted to use a TAC from an embedded Module. Disabling 5G in either all FR1 bands or all FR2 bands of a Module that supports both frequency ranges will also require obtaining a unique TAC. For a device using a Module that supports both LTE-M and NB-IoT, it is permissible to disable either LTE-M or NB-IoT without the need for a unique TAC.

3.4 Feature Set

The device's feature set must accurately reflect its capabilities and not just the Module's capabilities.

The feature list of the device shall match the Module integrated in the device with the possible exception of the following:

- A-GNSS/GNSS
- AMR-NB
- AMR-WB
- Band 30 and/or n30 DL Only
- Bluetooth
- Circuit-Switched Voice
- FUMO
- HAC
- IMPS
- ISM
- MMS Release
- Multi-SIM Support
- OMA Browsing
- OMA DM
- OMA POC
- OMA SUPL
- Remote SIM Provisioning
- SCOMO
- TTY
- UICC-Based NFC
- External vehicle-mounted antennas
    - **Note:** *The test lab shall verify that E-UTRA FDD band 30 and/or 5G NR FR1 band n30 transmit/uplink is disabled in the device.*

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- VoLTE – Requires device to obtain a unique TAC and not reuse the Module TAC
  - **Note:** *The test lab shall verify that VoLTE is disabled in the device.*
- VoNR – Requires device to obtain a unique TAC and not reuse the Module TAC
  - **Note:** *The test lab shall verify that VoNR is disabled in the device.*
- WAP Version
- Wi-Fi

3.5 Certification Request Type

3.5.1 Initial

An Initial Certification is the first certification of the device.

3.5.2 Variant

A Variant Certification is certification of a device similar to a previously submitted device. The manufacturer shall submit a Variant declaration (see Appendix A of this document) to the test lab defining the device's relationship to the parent device. This declaration will become an integral part of the approval documentation for the device Variant. The test lab will validate the relationship and assess the testing required to be categorized into one of two possible designations below. Devices that do not meet the criteria of one of these categories shall be treated as an Initial Certification. The following are examples of types of changes that do not qualify:

- Change of device board layout and/or placement of any hardware components in the device's cellular circuit
- Changes to the device's power circuitry beyond cabling and battery (input voltage, current draw, power conditioning circuitry, etc.)
- Module change between Modules that were not approved as a Variant family of the Module in the parent
- Module change between Modules where the form factor of the Module has changed thus requiring modifications to accommodate the new Module

3.5.2.1 No Testing Required

The following types of changes between devices qualify for a declaration-only certification. The test lab shall upload a justification for this decision.

- Cosmetic and/or case change and/or paint change that does not have electrical impact to the performance of compliance of the device (including paint properties)
- A new device that is hardware identical to an existing certified device, with software-only changes at the device, which do not impact the bands or features of the device as declared in the certification database. No Module changes are permitted. This is a new model name/number, not an ECO to an existing device.

3.5.2.2 Spot Check Testing Required

The following types of changes between devices qualify for a spot check. The test lab shall upload a justification for this decision.

Modification to the device in areas not directly related to cellular components such as:

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- Addition or removal of non-cellular board components (Ethernet, USB, Video, Audio, GPS, Wi-Fi, Bluetooth, etc.)

  Note: Addition of some features may cause the device to be tested for that feature.
- Addition or removal of a feature from the allowed list of features in Section 3.4 of this document
- Change of power cable and/or battery type/capacity – no change to power characteristics (input voltage, current draw, power conditioning, power rating, etc.)
- Cosmetic and/or case change and/or paint change that has an electrical impact on the device
- Module change only, to a Module from within the same Variant family as the certified Module used in the parent device. No other HW changes are allowed in the device.

3.5.3 ECO

An ECO is a certification of a new HW/SW combination of a device. See Section 6.2 of this document for more information.

3.5.4 Spot Check

The verification spot check method is utilized to establish on-going device compliance, generally when the test lab has some engineering confidence that the device still meets the specification requirements.

The test lab shall reference the parent test results/report to determine whether the device being evaluated as a Variant meets the requirements defined by the spot check criteria.

Where a different test lab is used for the Variant assessment from that used for the parent assessment, the test lab is permitted to perform the spot checks on the parent device to use for this comparison. Where the delta of the measurements between the device and its parent are outside the limits defined by the spot check rules then the device does not qualify as a Variant and shall be treated as an Initial Certification.

3.5.4.1 RF OTA Spot Check

The test lab shall perform a subset of OTA tests and reference back to the parent test results. The delta for OTA TRP and TIS shall be within 2 dB from the parent while still remaining within the current specification/test plan limits.

For any band where the device's TRP or TIS delta is not within 2 dB from the parent, the standard TRP/TIS testing (or TRP/C-TIS, as applicable) shall be performed for that band.

The OTA spot check shall consist of the following test requirements:

- TRP for mid channel
- C-TIS or TIS (as applicable) for mid channel
- Intermediate channel across the subset of the band from the mid channel

Testing shall be performed for each PTCRB band supported by the device in the two-highest RATs supported on each band.

3.5.4.2 RSE Spot Check

The test lab shall perform a subset of RSE tests.

The RSE spot check plan shall consist of:

- RSE test of carrier harmonics for each band supported by the device
- RSE Idle mode sweep in a single PTCRB band

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RSE testing shall be performed in the highest-order RAT for each band supported by the device, as per NAPRD03 Section 2.9.7.

3.6 Embedded Modem Certification

An Embedded Modem is a device which provides WWAN radio functionality as a component intended to be integrated into a host device.

- An Embedded Modem does not need to be finished or enclosed in a housing.
- An Embedded Modem shall contain a UICC or a UICC Connector.
- An Embedded Modem shall incorporate an antenna or an antenna connector. Internal or external antennas and antenna connectors are permissible (e.g., MCX, MMCX, SMA).
- An Embedded Modem may contain voltage leveling on-board or may receive a dedicated fixed input voltage from host device or external power source.

3.6.1 NAPRD03 Version Applicability

3.6.1.1 Embedded Modems

Embedded modems shall be subject to testing against the same version of NAPRD03 as that used by the Module itself. Reference Section 3.1 of this document for further details.

3.6.1.2 Devices using an Embedded Modem

Due to the limited scope of testing required, devices using an Embedded Modem shall be subject to the latest version of NAPRD03.

3.6.2 RAT, Frequency bands and Feature Set

3.6.2.1 Embedded Modems

Embedded modems shall follow the Technology and Frequency Bands requirements in Section 3.3 of this document as well as the Feature Set requirements in Section 3.4 of this document.

3.6.2.2 Devices using an Embedded Modem

Devices using an Embedded Modem shall be required to support the same Radio Access Technologies, Frequency Bands and Feature Set as for the certified Embedded Modem.

3.6.3 IMEI TAC

3.6.3.1 Embedded Modems

Embedded modems shall obtain a unique TAC and are not permitted to share the TAC of the Module integrated. It shall be permitted for Embedded Modems that are linked through the Variant process to leverage the same unique TAC range across those Variants.

3.6.3.2 Devices using an Embedded Modem

Devices using an Embedded Modem may share the TAC range of the Embedded Modem.

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3.6.4 Scope of Testing

3.6.4.1 Embedded Modems

Embedded modems shall be tested in accordance with Section 4 of this document.

3.6.4.2 Devices using an Embedded Modem

The review and assessment of devices using an Embedded Modem will be limited to RF Performance:

1. Devices using a different antenna than that certified with the Embedded Modem, or if the Embedded Modem was not certified with an antenna, shall be required to perform standard RF Performance testing.

2. Devices using the same antenna as certified with the Embedded Modem, but where the antenna is installed in a housing with a significant dielectric constant change, shall be required to perform the RF OTA Spot Check procedure (see Section 3.5.4.1 of this document). Examples of such change could be associated with installation in or on a metallic structure or housing that is metallic, silicon, coated with metallic paint etc.

3. Devices using the same antenna as that certified with the Embedded Modem and without any housing or installation changes (see number 2 above), shall not be required to perform further OTA testing.

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Section 4 Test Requirements

4.1 UICC Terminal Interface Testing

If full UICC testing was successfully performed on the PTCRB certified, integrated Module, the following scenario shall be taken into consideration:

- If the device's UICC Terminal interface configuration (including electrical connectors, wires, wire lengths, PCB material, PCB layout, etc.) as well as all relevant interface power supply parameters are identical to that of the integrated Module, then electrical UICC Terminal interface retesting will not be required for the device.
- In all other cases, regression tests (at least all electrical tests) shall be performed for the UICC Terminal interface, unless the device manufacturer provides evidence of test data which unambiguously proves compliance of the modified interface configuration and/or modified power supply parameters to the test lab.
- For Terminals supporting non-removable form factor UICCs
    - If it's possible to grant access to all contacts of the Terminal-UICC interface by providing a suitable connector (e.g. MFF2) respecting physical and electrical characteristics defined in ETSI TS 102 221, then Electrical characteristics test cases are applicable.
        - For other testing purpose such as RSE, the non-removable UICCs should provide a mechanism to load test profiles i.e. GSMA TS.48 GTP.
    - In all other cases, the Electrical characteristics testing is not applicable.

The Test cases for Electrical characteristics of the UICC-Terminal interface are defined in ETSI TS 102 230-1, Section 5.x.

Note: An example such test data would be measurement results (for the Module, performed by a PTCRB Authorized Test Lab) from electrical UICC Terminal interface testing for different external PCB topologies that might be used to ensure compliance.

4.2 RF Interface (RSE) Testing

If integration of the Module will not result in any changes to the RF layout, components, or RF shielding characteristics of the Module, then retesting of the RF conducted part is not required. However, in all cases a spot check of the RF radiated part shall be performed. All RSE spot checks shall remain within the current specification/test plan limits.

The RSE spot check plan shall consist of:

- An RSE test of all harmonics of the carrier for each band supported by the device
- An idle-mode RSE sweep performed in a single PTCRB band

Testing shall be performed in the highest order RAT for each band supported by the device, as per NAPRD03 Section 2.9.7.

The frequency bands to be tested are the PTCRB Bands, as defined in Section 2.8 of the NAPRD03. See Table 4-1 for the applicable test cases.

If the device is intended to support an externally mounted vehicular antenna, the manufacturer shall select the "External vehicle-mounted antenna" and "Band 30 and/or n30 DL Only" feature checkboxes when submitting the certification request. RF radiated in Table 4-1 could be exempted for E-UTRA FDD band 30 and/or 5G NR FR1 band n30. The test lab is required to verify the device does not support uplink transmission.

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Table 4-1 RF Interface Test Requirements

Technology	Test Standards	Test Cases
GERAN (Deleted)		
UTRA-FDD (Deleted)		
E-UTRA-FDD	3GPP TS36.124	Sections:8.2 as applicable
5G NR FR1	3GPP TS 38.124	Sections: 8.2 as applicable

4.3 RF Performance (OTA) Testing

As described in NAPRD03, Section 2.9.2, RF performance test applicability shall be determined as described in the *CTIA Certification Test Plan for Wireless Device Over-the-Air Performance* in conjunction with the following device characteristics identified when submitting the certification request:

- In its intended application, does the IoT device transmit more than 100 Kbytes in a transaction?
- On average, is the IoT device expected to send more than 24 transactions per day?
- Is the IoT device and its antenna intended for installation in a fixed orientation relative to the horizon?

See NAPRD03, Section 2.9.2, for additional information.

4.4 Speech Performance Testing

Speech performance testing is necessary for devices supporting voice and held to the ear. It is also required when the device utilizes a new housing with acoustic characteristics which differ from those of the Initial Certification request. The test lab will determine if the device needs to be tested against the CTIA Certification Speech Performance Test Plan based on the associated changes.

Retesting of the device's emergency call functionality is required whenever the device includes an audio interface (acoustic or electrical) intended for supporting calls to and from the PSTN, regardless of the device 's form factor. See Table 4-2 for the applicable test cases.

Table 4-2 Emergency Call Retesting Requirements

Technology	Test Standards	Test Cases
UTRA-FDD	3GPP TS 34.123-1	Sections: 6.1.2.6 13.x as applicable
E-UTRA-FDD	3GPP TS 36.523-1	Sections: 11.2.x as applicable

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4.5 Power Interface Testing

If the voltage supplied to the integrated Module is different than that used during the Module certification testing, then all test cases related to voltage extremes shall be re-executed. See Table 4-3 for the applicable test cases.

Table 4-3 Power Interface Test Requirements

Technology	Test Standards	Test Cases
GERAN (Deleted)		
UTRA-FDD	3GPP TS 34.121-1	Sections: 5.x 6.x 8.x as applicable where extreme testing is specified
E-UTRA-FDD	3GPP TS 36.521-1 3GPP TS 36.521-3	Sections: 6.x 7.x Sections: 6.x 9.x as applicable where extreme testing is specified
5G NR SA FR1	3GPP TS 38.521-1 3GPP TS 38.533	Sections: 6.x 7.x Sections: 6.x as applicable where extreme testing is specified
5G NR NSA FR1	3GPP TS 38.521-3 3GPP TS 38.533	Sections: 6.x 7.x Sections: 4.x as applicable where extreme testing is specified

4.6 MMI Testing

In cases where the manufacturer provides an MMI for the Module, the device shall complete any tests of features supported by the Module which were not completed for the Module's certification due to requiring availability of an MMI. Additionally, all MMI-related test cases within Supplementary Services, SIM Toolkit, Emergency Call and SMS shall be re-tested. See Table 4-4 for the applicable test cases.

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Table 4-4 MMI Test Requirements

Technology	Test Standards	Test Cases
UTRA-FDD	3GPP TS 34.123-1	Sections: 6.1.2.6 13.x 16.x
E-UTRA-FDD	3GPP TS 36.523-1 3GPP 31.124	Sections: 11.x Sections: 27.22.x
5G NR FR1	3GPP TS 31.124	Sections: 27.22.x as applicable

4.7 Application Enabler Testing

If the manufacturer has added or modified any application enablers, then Application Enabler Conformance Tests shall be executed.

4.8 Cybersecurity Testing

Cybersecurity testing, according to the *CTIA Cybersecurity Certification Test Plan for IoT Devices*, may optionally be performed. The testing is required for IoT devices requesting IoT Network Certified for Smart Connected Infrastructure™.

See NAPRD03, Section 4.2, for additional information.

4.9 Utility IoT Device Testing

Devices requesting IoT Network Certified for Smart Connected Infrastructure™ shall be tested to the *CTIA Certification Utility IoT Device Test Plan*.

See NAPRD03, Section 4.4, for additional information.

4.10 Use of External Antennas

The following definition for external antennas is generic and is meant to apply to devices without integrated antennas but are FCC or ISED-certified to support a defined antenna system. The following shall also apply to devices with no specific antenna or antenna system.

Antenna systems shall comply with all regulatory requirements as defined by the governing bodies relevant to the device and shall include (but shall not be limited to) the following criteria:

- The antenna system, as used in this section, refers to antennas that have similar in-band and out-of-band radiation characteristics as that which was used for the Initial Certification
- A device may be operated only with the antenna or antenna system with which it is authorized by the device's relevant governing bodies. If an antenna is marketed with the device, it shall be of a

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type which has been authorized with that device. In some cases, the device may be authorized with multiple antenna systems.

- Manufacturers shall supply a list of acceptable antenna systems to the integrator.

4.11 Devices with an NSA FR2 Capable Module

A device with an FR2 Module shall be required to perform the type of testing listed in Table 4-5 as part of the final integration.

Table 4-5 Devices with NSA FR2 Supported Module

Type of Testing	Test Standards	Test Cases
Radio Frequency (RF)	3GPP TS 38.521-3	NSA FR2 test cases
Performance	3GPP TS 38.521-4	NSA FR2 test cases
Radio Resource Management (RRM)	3GPP TS 38.533	NSA FR2 test cases

If the device utilizes an NSA FR2-capable Module which has previously executed the NSA FR2 protocol tests specified by 3GPP TS 38.523-1 in Section 11.9.2, Table 11.9-1, the Module's FR2 protocol test results shall be provided to the test lab and these test results shall be considered for certification of the device.

If the device utilizes an NSA FR2-capable Module which has not executed the NSA FR2 protocol tests specified by 3GPP TS 38.523-1, the device shall be required to execute NSA FR2 protocol testing specified by 3GPP TS 38.523-1 in addition to RF, RRM and Performance testing as listed in in Table 4-5.

4.12 Mission Critical Services

If the devices support Mission Critical Services, then Mission Critical Services shall be executed.

Table 4-6 Devices with Mission Critical Services

Test Standards	Test Cases
3GPP TS 37.579-2	Mission Critical Push to Talk

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Section 5 Certification Database

The process to obtain certification is managed by the PTCRB certification database. The database also stores the records of certified devices. You will need a database user account to get started.

5.1 Requesting Access

To get access to the PTCRB certification database go to https://certify.ptcrb.com/, select “New User Registration” and complete the form. The registration must be for a specific individual and the email address used to register must be from a valid company domain.

After the Certification Database Administrator verifies your access request with your company’s primary point of contact for the PTCRB certification database, you will receive your username and password by email. If this is the company’s first certification database access request, you will be appointed as the primary point of contact.

5.2 Navigating the Database

Once you have gained access to the PTCRB certification database and logged in with your username and password, you will see the “Certification Database” tab in the menu header. Within this menu the following items are relevant:

5.2.1 Submit New Request

For submitting new certification requests.

5.2.2 Check/Update Request

For checking and updating certification requests already submitted.

5.2.3 Certified Devices

For viewing all your certified devices. And for viewing all certified Modules that you have the option to incorporate into your device.

5.2.4 Withdrawn Requests

For viewing any certification requests you have withdrawn.

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Section 6 Submitting a Certification Request

Before submitting a new certification request, make sure you have collected some key pieces of information ahead of time:

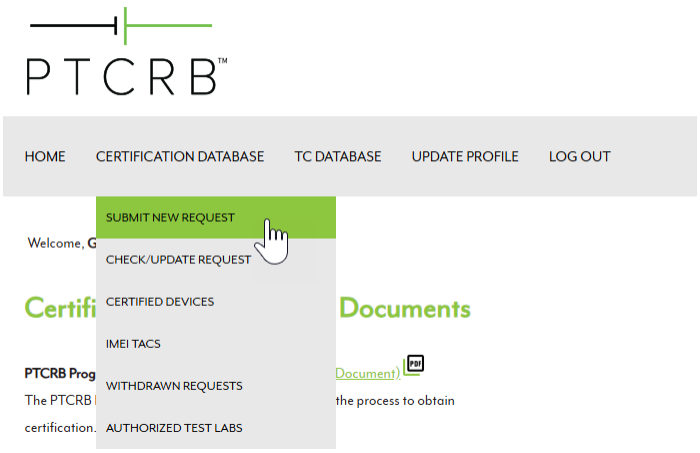
- Talk to your Module or Embedded Modem manufacturer to confirm the configuration you should select for your certification:
    - Model name/number
    - HW and SW version
    - SVN
- Establish which test lab will be performing the certification testing
    - Make sure you are aware of the lab costs and certification timelines before assigning a certification request to the lab
- Make sure you have determined the model name/number of the device you will enter into the database
- Generate a PO number if your organization requires CTIA Certification to put that on the certification fee invoice
    - The certification fee is $1,500 for an Initial Certification request and $1,000 for a Variant Certification request. If you are getting IoT Network Certified for Smart Connected Infrastructure, the fees are $2,500 for an Initial Certification request and $2,000 for a Variant Certification request.
        - There is a $500 discount for a rebranded device, which is defined as certifying again a device under a new manufacturer and model name/number. A product equality letter and authorization of use letter are required to leverage the test results of the originally certified device. Contact CTIA Certification at support@ctiacertification.org for details on the process.

Every effort should be made to enter correct and accurate information into the database when submitting a certification request. Once the test lab accepts the certification request you will be unable to modify the information entered. If you find later that there are mistakes, first contact your test lab, as they are able to update much of this information as they process the certification request.

For any additional updates to your certification request information, please contact CTIA Certification at support@ctiacertification.org.

6.1 New Model

- From the Certification Database tab, select “Submit New Request”



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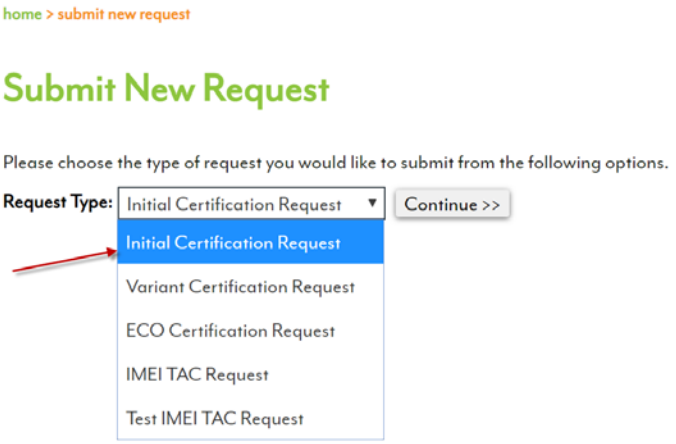
- Select “Initial Certification Request” from the drop-down menu and then select “Continue”
    - If your device is similar to a previously submitted device, you may be able to leverage test results from that device and submit it as a “Variant Certification Request”. See Section 3.5.2 of this document.



- Select “No” in response to whether a PTCRB TAC Request has been submitted for this device
- Select the type of device you are submitting.
- Indicate whether you are integrating a Module or Embedded Modem.
- If you are integrating a Module and your device contains more than one cellular (WWAN) Module, select “Yes” for the question, “Does this device contain multiple WWAN modules?” Otherwise, select “No”.
- You may download the IoT Network Certified license agreement for review. Later, you will need to accept the terms and conditions of the agreement before the device can be certified.
- Select “Continue”.

6.1.1 Model Name/Number and Module Configuration

- Enter the model name/number for your device. This is the reference by which the device will be certified.

    Note: this model name/number shall identify a single device; wild-card digits are not permitted for naming a device.

- Optional: You may enter additional marketing name(s) in the optional Marketing Name field. Please enter each name as a separate entry and click “Add” to list each marketing name. Note that multiple marketing names shall all reference back to the same model name/number.
- Search for or select the Module or Embedded Modem which is integrated into the device. And then select the radio button corresponding to the version of that component.

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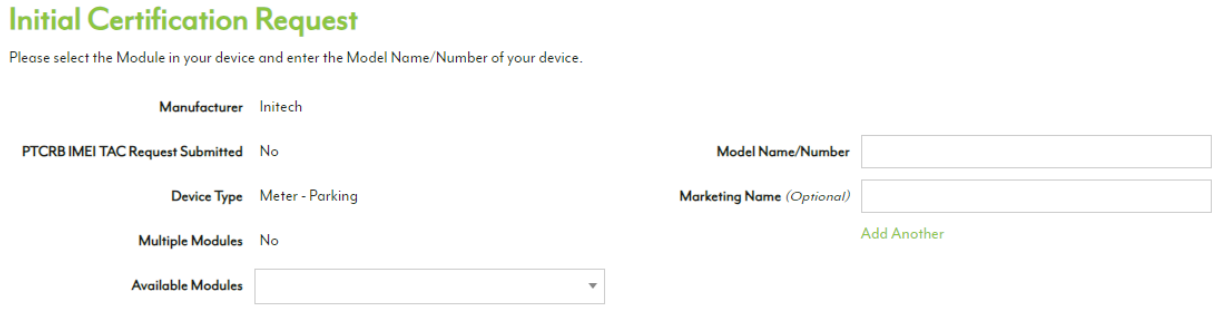
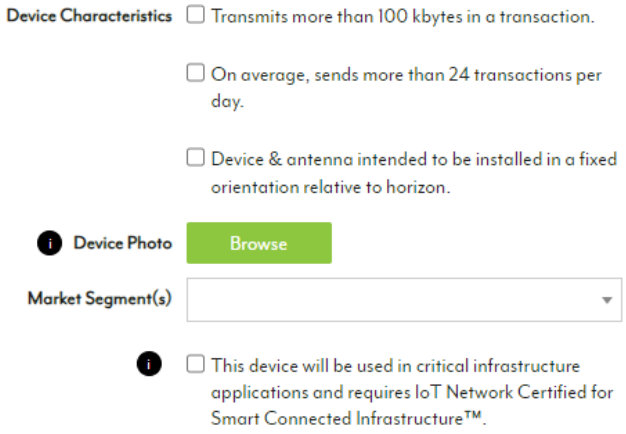
- Select “Continue”.



6.1.2 Device Details

- Review the “Device Characteristics” and check any that apply.
- Upload a photo of your device to appear in the certified devices directory on the IoT Network Certified website. The image size should be under 200 KB and in jpg, jpeg or png format.
- Identify the target market segments for your device. Multiple market segments may be selected by holding down the “Ctrl” key and selecting multiple options.
- Check the box if the device requires IoT Network Certified for Smart Connected Infrastructure (see Section 2 of this document)



- Select “Continue”.

- Review the technologies and bands information, which is inherited from the Module or Embedded Modem you selected. Clicking on each technology will show the bands supported for that technology.

  You may uncheck any bands not supported by your device. However, it is not possible to enable any band that was not certified in the Module or Embedded Modem.

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Example:

- Identify whether your device is using the integrated component's regulatory approval ID or has its own regulatory approval ID covering cellular operation. If using your own regulatory approval ID, enter the ID and select "Add".

- Enter the HW and SW versions of your device
  - Note that the SW and HW versions of the device should not be the same as the Module versions.
  - If your device does not have integration-level SW, indicate a SW version of "0".

- The POC will auto populate based on the user entering the request. Add the billing contact information for the certification fee.
- If a PO number is required in order to process the certification fee invoice and payment, enter a PO number and this will be listed in the invoice. If the PO number is not available yet, this can be added later after the request is submitted.
- Once the invoice is generated, CTIA Certification will send a notification email to the POC and the listed billing contact.

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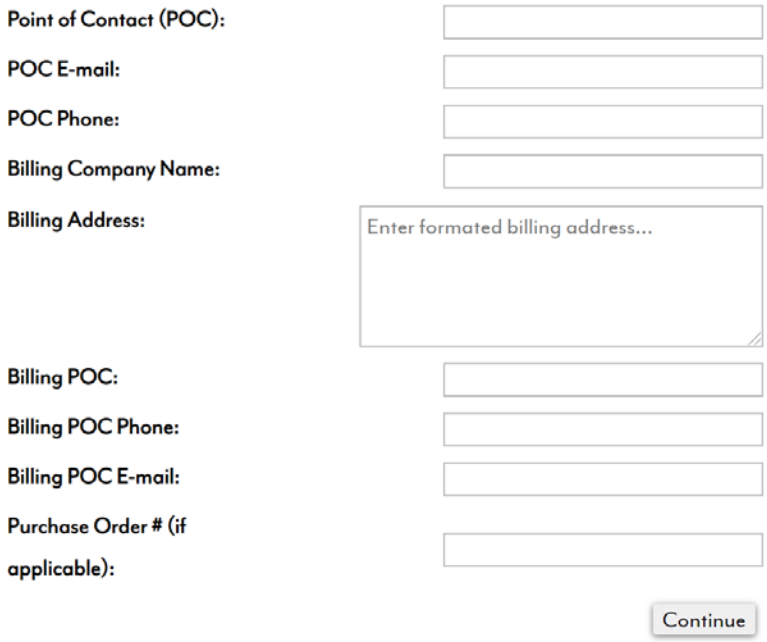
- Select “Continue”.

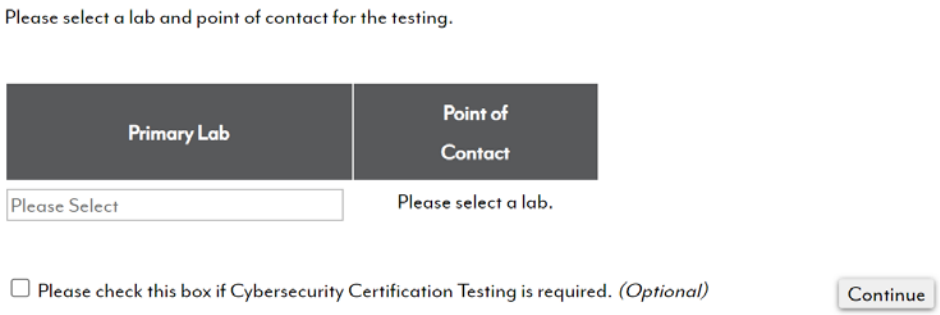


6.1.3 Feature Support

- Features supported by the integrated component shall already be checked when you reach this page.
- Many features must carry over to the IoT device; those are shown with shaded text.
- Select from the remaining any additional features supported by the device.
- Select “Continue”.

6.1.4 Selecting the Test Lab

- From the drop-down list, select the test lab who will be performing the certification testing. Contact should have been made with lab prior to entering the certification request in the database.
- Select the point of contact at the lab if known, otherwise select “All”
- If you are not getting IoT Network Certified for Smart Connected Infrastructure, you may add the optional cybersecurity certification testing by checking the associated box at this time.
- Select “Continue”.



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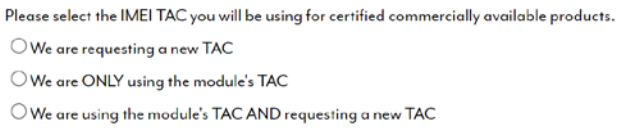
6.1.5 Specifying the IMEI TAC Information

- In most cases, you may use the integrated component's IMEI TAC. In this case, select the option for using the integrated component's TAC and select the appropriate TACs from the list displayed.

- However, a unique IMEI TAC is required if your production will exceed 100,000 units, if your device disables a radio technology (for example, disabling all 3G or all 4G bands), or if your device integrates a voice-capable component but does not utilize voice functionality. In this case, select from one of the other options and then identify the TAC issuing body. If selecting PTCRB as the issuing body, please complete the additional information requested. There are GSMA fees for TAC allocation. Please see https://imeidb.gsma.com/imei/tacallocation-termsandconditions for details.

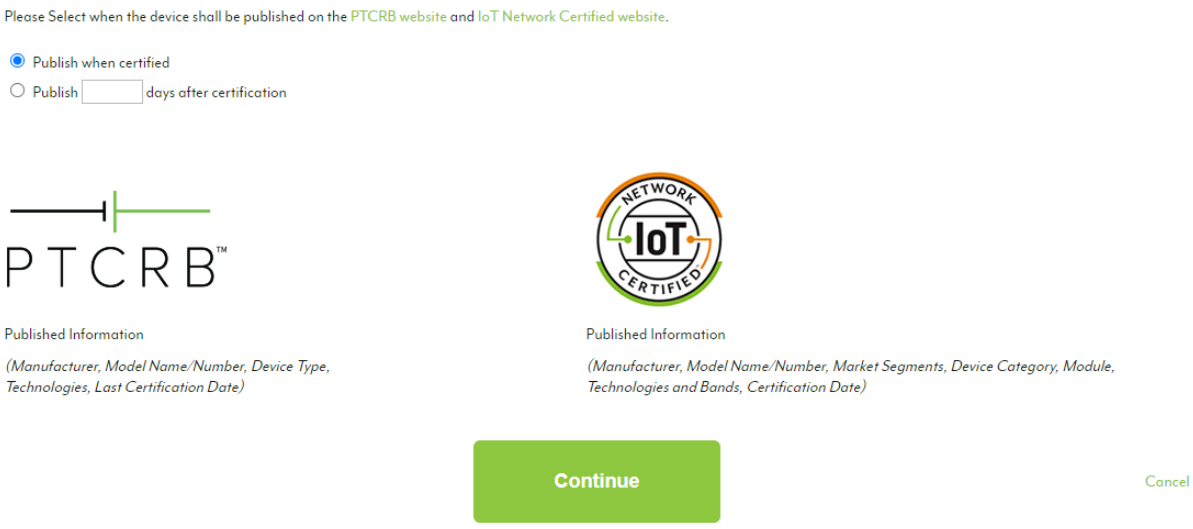


- Select "Continue".

6.1.6 Selecting the Publish Options

- Once certified, your device will be published on both the IoT Network Certified website and the PTCRB website. You may choose to publish the device when it is certified, or to defer publication for up to 365 days after certification.

- Select "Continue".



6.1.7 Sharing the Certification Request with an Operator

- On the next screen, you will be able to check the box next to any operator(s) you would like to grant access to view your certification request (and any subsequent ECOs of this device model) while the submission is in pending status (prior to being certified).

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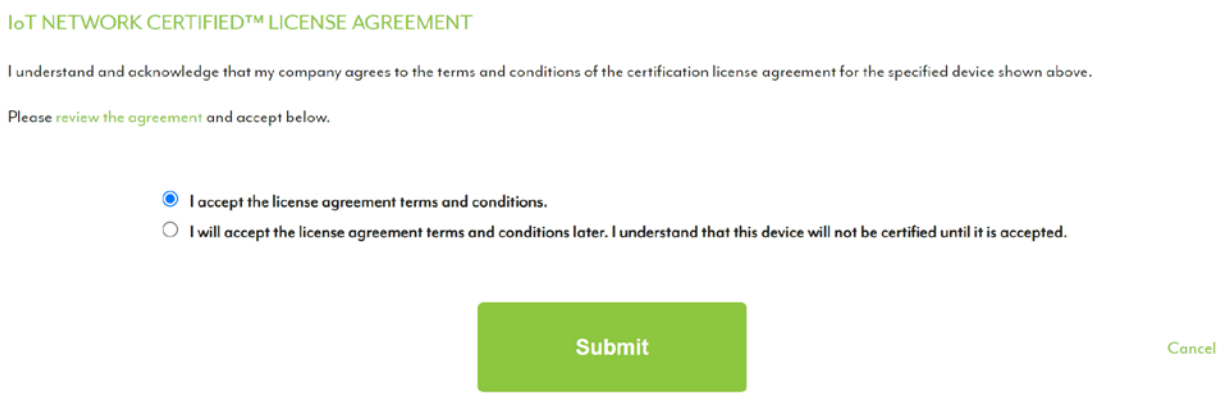
- You may also modify this selection at any time once you have submitted your certification request.

6.1.8 Accepting the License Agreement

- The certification license agreement must be accepted prior to certification. You may choose to accept the agreement now or come back later to accept it.



- Select “Submit” to submit your certification request.
  - Your selected test lab will be notified that they have a certification test request to review and accept. Once accepted, they may begin testing the device.
  - The Module manufacturer will also be notified that a certification request has been submitted for a device incorporating the Module.

6.1.9 Uploading Documents

- A product description is required for the certification request. This can be any document, such as a product brochure, describing the device and referencing the manufacturer name and model name/number of the device. You may upload the document now or come back later to do so.

- If you indicated that your device contains multiple radio (WWAN) Modules, a “Description of Multiple Modules Implementation” is also required. This document shall:

  - Identify how many Modules are in the device

  - Identify the Module makes, model names/numbers, and SW versions

  - Indicate whether the Modules have a dedicated antenna or share one or more antennas

  - Indicate whether any of the Modules can transmit simultaneously and, if so, which Modules can do so and under what conditions

6.2 Updates to a Model

Certification applies to a specific combination of HW and SW versions for the device. If you would like to certify a different combination of HW and SW an ECO certification request should be submitted.

- From the Certification Database tab, select “Submit New Request”
- Select “ECO Certification Request” from the drop-down menu

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- Select “Continue”

If only the software version of the device is changing, select the “Check this box if only the integration’s SOFTWARE is changing and therefore no testing will be required.” Please upload HW/SW Change Release Notes in the Required Documents section of the certification request.

Certified devices shall be reassessed for continual compliance. Device changes applicable to this requirement include (but are not limited to):

- Any change to the device’s hardware/hardware version
- Any change of the device’s radio/protocol stack resulting in a change to the SVN
- Any recompiling of the device’s radio/protocol stack

Implementation Examples:

Example 1: If the device’s operating system/applications software and the radio/protocol stack are integrated into a single software, with one version number visible to the user, then an ECO certification would be required.

Example 2: If:

1. The device’s operating system/applications software and the radio/protocol stack are in separate software Modules (with individual version numbers for the separate Modules and an overall bundle version number,) and
2. The device’s radio/protocol Module has not changed or been recompiled

Then an ECO certification would NOT be required.

Example 3: If the device's software component(s) which contain the radio/protocol stack has changed only with security related patches, then a unique SVN would NOT be required.

Example 4: If device's MMI version is updated only with changes which do not affect radio/protocol function, then a unique SVN would NOT be required.

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Section 7 Checking Status of a Certification Request

After your certification request is submitted, you can check its status by logging into the certification database. From the Certification Database tab, select “Check/Update Request”. Select the appropriate request # to view the request.

7.1 Modifying Information

- Once the test lab accepts the request for testing, you will be unable to modify the certification request information. If you find that there are mistakes, first contact the test lab, as they are able to update much of this information as they process the certification request.
- For any additional updates to your certification request information, please contact CTIA Certification at support@ctiacertification.org.

7.2 Test Results

- The test lab will upload completed test results to the certification database. You can see the test results on the first page of the certification request. Once all required test results are upload and approved by CTIA Certification you will see “TEST REPORT(S) APPROVED” marked as complete on the Requirements Checklist located on the second page of the certification request.

7.3 Required Documents

- If you have not yet uploaded the required documents, you may do so at any time on the second page of the certification request.

7.4 Certification License Agreement

- If you have not yet accepted the certification license agreement terms and conditions, you may do so at any time on the second page of the certification request.

7.5 Certification Fee Payment

- The invoice for the certification fee will be automatically generated as soon as the test lab accepts the request for testing. Once the invoice is available, you will receive a notification via email. The invoice can be downloaded from the PAYMENT RECEIVED section of the Requirements Checklist. Please contact CTIA Certification at support@ctiacertification.org with any questions.
- Lab testing fees are not included in this invoice and are determined independently by the test lab.

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Section 8 Certification

Once all certification requirements are met your device will be certified. You can check status of the requirements by viewing the Requirements Checklist as described in Section 7 of this document.

Once certified, you may download a certification certificate and certification logo files. From the Certification Database tab, select “Certified Devices”.

Congratulations!

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Section 9 Questions

If you have any questions, please contact CTIA Certification at support@ctiacertification.org and one of the certification team members will be happy to assist. If your question is about a specific certification request, please provide the request number in your email to locate it more quickly.

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Appendix A Variant Declaration

Please complete this declaration when submitting a Variant Certification request and provide to the test lab.

Device Details	
Company name	
Parent device model name/number	
Parent certification request #	
Parent Module manufacturer, model name/number	
Parent Module certification request #	
Variant model name/number	
Variant Certification request #	
Variant Module manufacturer, model name/number	
IoT device Variant Module certification request #	
Description of Change from Parent	
Compliance Declaration	
DECLARATION (signature)	
Date of declaration	
Contact name	
Email address	

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Appendix B Revision History

Date	Version	Description
December 2021	1.0	Initial release
April 2022	1.1	Added Module directory located on website Added Variant Certification process
September 2022	1.2	Updated device photo requirements Updated device categories
December 2023	1.3	Added IoT Network Certified for Smart Connected Infrastructure Added ability to select an Embedded Modem for a device Updated device categories Added rebranding process
October 2024	1.4	Updated certification submission process Clarified that Level 2 IoT Cybersecurity testing is required for Smart Connected Infrastructure
October 2025	2.0	Added Certification Requirements and Test Requirements sections
December 2025	2.1	Removed GERAN RSE and UTRA RSE in Table 4-2 and Table 4-4 Added TAC requirements for a device using a Module that supports both LTE-M and NB-IoT
June 2026	2.2	Added NAPRD03 version for RF performance evaluation in Section 3.1
October 2026	2.3	Replaced the term “UICC-UE” with “UICC-Terminal” Added Section 4.12 for Mission Critical Services

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