



Telecom New Zealand Ltd Device Integration

CDMA Device Telepermit

Overview of Compliance Testing and Certification Process.

PTC 256

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Device Integration
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In particular, it must be recognised that the standards for CDMA may be subject to change. At least some change is also expected in Telecom's network equipment as a result of standards developments. In view of these factors Telecom reserves the right to amend this specification.

It should also be noted that there is no guarantee of full or continued interoperability between Telecom's network and devices granted PTC. In addition any interoperability cannot be guaranteed under all operating condition likely to be encountered on the Telecom network.

1. General

1.1 Purpose

All CDMA devices to be connected to Telecom New Zealand Ltd's (Telecom) CDMA network must be tested and granted a Telepermit, also known as Permit to Connect (PTC), before being activated.

This document provides an overview of Telecom's Acceptance Testing processes for the certification of new CDMA wireless devices to be connected to the CDMA network.

The reader should ensure that they have an up to date copy of this document. All documentation can be requested from mobileptc@telecom.co.nz

1.2 Intended Audience

The intended audience for this document is manufacturers, importers, distributors, developers and suppliers of CDMA wireless devices wishing to seek certification of a CDMA device for connection on Telecom's CDMA network

1.3 Definitions

Throughout this document:

- Telecom New Zealand Limited is referred to as "Telecom".
- The CDMA wireless device being submitted for testing is referred to as "the Device".
- The supplier, importer or manufacturer submitting the Device is referred to as the "Applicant".
- The testing and certification process is referred to as "PTC".

1.4 Limitations

For operational or other reasons the requirements outlined in this document, and Network functionality, are subject to change without notice.

2. PTC Overview

2.1 Permit to Connect

Telecom's acceptance testing and certification process for CDMA devices is commonly referred to as Permit to Connect (PTC).

Section s.106 of New Zealand's Telecommunications Act 2001 states that "a person may only connect equipment to a network, or to anything connected to a network, that is owned or operated by an operator who has agreed to the connection"

Telecom provides agreement for connection of a device by granting of a "Telepermit" to any supplier who submits satisfactory evidence that the device concerned 'matches' the Telecom network. Thus, the supplier enters into a contract with Telecom and agrees to satisfy Telecom's requirements. When a customer applies for service, a contract is established with Telecom whereby the customer agrees to connect only Telepermitted equipment to their lines. The customer is liable for any damage or service problems caused by the connection of non-Telepermitted equipment and may even be called upon to pay for the costs incurred by Telecom in determining the cause of such problems.

Under New Zealand customer protection legislation, any goods supplied are expected to be suitable for the customer's intended purpose. A sale is, in Law, a contract between the supplier and the customer. Thus, any supplier advertising or selling equipment which is not Telepermitted, but is clearly intended or offered for connection to the Telecom network, is likely to be in breach of the Fair Trading Act 1986, the Consumer Guarantees Act 1993, or the Sale of Goods Act 1908. Under this consumer protection legislation, a customer may have grounds for a claim against the supplier for reimbursement of the cost of the device, and also for any charges levied by Telecom.

These three inter-related contracts help ensure that Telecom's network, together with the equipment connected to it, operates effectively and meets customers' expectations.

2.2 Telepermit

Upon completion and certification an applicant will be issued a Telepermit certificate and number for the approved device. Only upon issue of the Telepermit can the device be connected to Telecom's CDMA network.

The Telepermit grant may contain conditions relating to the connection of the device to Telecom's networks. These conditions may include such stipulations as:

- the maximum number of devices that may be connected to the network
- Specific parameters that must be included in the devices set-up
- Processes that the applicant must follow to enable connection of the device

2.3 Overseas Certification

Overseas certification does not apply in New Zealand. All CDMA devices intended for connection to Telecom's CDMA network must be submitted to Telecom for certification and have been issued a valid Telepermit.

2.4 Imported CDMA devices

CDMA devices purchased from other countries are generally incompatible with Telecom's network and are not able to be connected to our network unless "Roaming" from a partner Carrier.

Even where an imported CDMA device is identical in hardware aspects to that already Telepermitted Telecom is unable to provide connection of that device. This is due to the software of the device being incompatible with that approved by Telecom. Telecom is unable to assist in connecting such devices as these devices are "locked" by the original carrier to prevent them being exported.

As the PTC process is expensive and time consuming Telecom will not accept PTC applications for one off devices or small quantity of devices.

2.5 Manufacturers authority

Where a device is being submitted for PTC by a party other than the original manufacturer, Telecom requires written confirmation from the device manufacturer that the applicant is authorised to submit, distribute and supply the device, and that the applicant has the technical support of the manufacturer to make changes, where deemed necessary by Telecom, to that device.

3.0 DEVICE FUNCTIONALITY

3.1 General

This section provides an overview of Telecom's technical requirements and specifications for a CDMA device.
Note: these requirements are subject to change without notice and care should be taken to ensure you are referring to the latest functionality requirements.
 Detailed technical requirements will be discussed with applicants once an application is received.

3.2 Required Network Parameters

It is expected that a CDMA device presented for certification complies with the Specifications summarised below, unless a special exemption is granted.

Aspect	Standards / Interoperability
Network	IS-2000, IS98
RF Band	850Mhz mandatory, Dual band 850/ 1900Mhz preferred
Voice	IS-127, EVRC
SMS/EMS	TIA/EIA-637-A Both MO & MT (Min Support 7 bit ASCII)160 characters both directions
OTA	IS-683A OTAF(OTAPA, OTASP SSPR & PRL update)
MMS	3GPP2 X.S0016-310 MM1/WSP/WTP OMA based
Java Virtual Machine	MIDP1.0 OTA or MIDP2.0 OTA
Channel selection	Primary A: 283, B: 384 Secondary A: 691, B:777 The ability to program primary & secondary access channels
G.S.R	Global Service Redirection messages as per IS-95A
Packet Data	IS-707 Compliant - Simple IP Packet data with dormancy as the default setting.
Packet Data	TSB58-C Service Options 15, 33. RC_3 (Supported speeds of 9.6K, 14.4K, 19.2K, 33.4K, 76.8K, 153.6K)
WAP	WAP1.x WML/WSP/WTP OR WAP2.0 xHTML
Circuit switched Data (CSD)	14.4Kbps Data Rate (SO12) TSB58-C
QNC	QNC (Quick Net Connect) supported Service Option 33 default
RUIM	Not supported
BREW	Not supported
SPC & OTKSL	Codes as specified by Telecom
Dynamic volume	Testing will be completed to ensure that the submitted device performs satisfactorily on the network during voice calls.

3.3 Other Requirements

Following are additional requirements that the applicant should be aware of:

Aspect	Standards / Interoperability
Emergency Calling	The device must support emergency number dialling for New Zealand and have the ability to initiate emergency calls on a negative system when it is the only system available to the device or when the device is locked. The New Zealand emergency dialling number is 111.
Calling Plan	The device must operate correctly with the NZ calling plan and allow access to all applicable number formats.
MIN - MDN relationship	Support of separate MIN to MDN Directory Number
PRL Memory size	4k required / 8k desired
Roaming	Roaming indication available on handset screen

3.4 Regulatory Compliance

Following are the regulatory requirements that the applicant should be aware of:

Aspect	Standards / Interoperability
Electromagnetic Compatibility	The Device, and any mains power plug pack, must be compliant with the Radiocommunications Regulations 2001 and any relevant Notices issued by the Ministry of Economic Development, with respect to EMC standards.
RF Emissions	The devices out of band emissions must not exceed a radiated level of -50dBW and shall not interfere with or endanger any radio navigation service, or essential radio service providing protection for life or property. All emissions shall comply with all international Radio regulations and relevant standards.
Specific Absorption Rate	The device must comply with the New Zealand Standard NZS2772.
Electrical Safety	Any mains power plug pack supplied with the device must be certified to IEC60950 or AS/NZS60950 standards, and labelled with the appropriate compliance mark and supplier code.

The applicant must provide to Telecom independent qualified test reports and certificates showing compliance with all applicable standards. The following is an indication of those documents required.

- FCC RF report CFR part 22& 24 or CISPR22 compliant test report
- FCC EMC report CFR47 part 15
- FCC SAR test results CFR47 part2
- FCC Certificate of Grant
- Power Supply compliance certificate (Electrical Safety & EMC)

4.0 APPLICATION FOR PTC

4.1 Application Process

Applicants wishing to apply for a Permit to Connect for a CDMA device can complete the application form available from Telecom. Once received Telecom will contact you and discuss the relevant requirements for your submission.

Applicants will be required to submit all relevant documentation as detailed, unless otherwise waived by Telecom, prior to Acceptance testing commencing.

4.2 Supporting documentation

To ensure that a submitted device can progress smoothly through the compliance testing process, there are a number of documents that may be required. The list below is an example of the documentation that Telecom may request. Applicants will be advised upon submission of a device which documentation is required to support the application.

- A signed Permit To Connect agreement
- A detailed product specification
- Compliance documentation as detailed in section 3.4
- Service manuals and programming guides
- Details of Quality Assurance procedures and methods
- Letter Of Authorisation
- Customer user guide
- Installation instructions
- PRI documentation

4.3 Test device requirements

The applicant will be required to provide Telecom a quantity of the devices being submitted for approval. These devices must be of commercial quality and contain the firmware and software that is being submitted for approval.

The applicant shall also provide any software, cables, test jigs, or developers boards required to test the device, in the quantity specified, as requested by Telecom.

All devices must be submitted with all applicable accessories such as:

- Power supplies
- Data cables (USB and Serial)
- Car-kits
- Personal Handsfree kits
- Any other accessory as deemed appropriate by Telecom

All devices, software, test jigs and accessories supplied to Telecom shall be at the expense of the Applicant. The devices will remain the property of Telecom during and post testing and certification. Any such equipment submitted for testing will not be returned to the applicant.

4.4 Charges

Charges apply to testing and certification of a CDMA wireless device. These charges are payable by the applicant in advance of testing and are regardless of whether or not a Telepermit is issued.

Indicative charges are:

Preliminary Assessment	NZ\$1000
Acceptance Testing	NZ\$5000
Re-assessment	NZ\$1000

Specific charges will be advised upon submission of an application.

5.0 DEVICE CERTIFICATION PROCESS

5.1 Preliminary Assessment

Prior to the commencement of the testing an Applicant may submit a sample of the CDMA device to Telecom for Preliminary Assessment. Telecom will perform a cursory test and inspection of the device to determine its "initial" suitability for connection and certification.

The Preliminary Assessment is intended to only provide feedback to the applicant as to whether the device is appropriate and suitable for full testing. It provides the Applicant with an opportunity to consider withdrawing an application before full PTC charges are incurred.

The Applicant will be required to supply a sample of the device and appropriate documentation as advised by Telecom.

Please note that passing a Preliminary Assessment does not in any way guarantee final PTC certification.

5.2 Pre-Testing

Telecom at its sole discretion may grant limited approval to the applicant to connect a device for Pre-testing. This is intended to provide the applicant an opportunity to develop the device further before submitting for PTC. Before granting approval the Applicant will be required to supply samples of the device and appropriate documentation as advised by Telecom.

5.3 Acceptance Testing

Telecom will test each device submitted by performing a number of automated and manual test scripts. Each aspect of the device will be examined to ensure it interacts with Telecom's networks appropriately and fully complies with all technical specifications. There are a number of areas of testing to be completed, some of which may overlap. The main aspects of testing are:

- Radio frequency
- Safety/Compliance
- CDG1 and CDG2 level automated test script
- CDG3 field testing
- Network interaction
- OTAF, OTAPA, IOTA
- WAP, Data , FAX
- SMS, MMS, EMS
- Audio Levels
- Dynamic Testing
- Battery Standby
- Functionality
- Number/Calling Plan

5.4 Functionality Testing

Telecom will also perform Functionality testing on the device. This is intended to provide feedback to the applicant on the usability of the device and ensure it is fit for purpose. Functionality testing covers such aspects as:

- User interface
- Usability
- Accessory
- Durability

Where Telecom is considering distributing and marketing a device they may also require a device to undertake a Qualitative Testing procedure.

5.5 Issues

During testing, performance issues may arise that need to be resolved before further progress can be made with approving the device. Telecom will maintain an Issues Register particular to the device submitted and containing all issues identified and arising from the various tests undertaken. This register will be provided to the Applicant from time to time and upon request so that the applicant can track and resolve all required issues.

Depending on the number and nature of issues, Telecom may decide not to progress any further with the testing of a device in its current form. In this case the applicant will be required to resubmit the device once improvements have been made with supporting documentation. Telecom may at its discretion apply charges for a resubmitted device

5.6 Quality Inspection

Telecom will require the applicant to supply a sample device from the initial shipment of devices intended to be connected to Telecom's CDMA network. This sample device will be inspected to ensure that the devices manufactured and shipped meet the hardware and software specification certified by Telecom. In the event that the shipped devices do not match the specification Telepermitted, connection of the devices will be withheld until the devices are made to match the approved specification.

The sample device shall be supplied to Telecom at the expense of the Applicant will remain the property of Telecom post inspection. Devices submitted for inspection will not be returned to the applicant.

Telecom may also require that the Applicant supply a sample device from each subsequent shipment intended for connection to Telecom's network. If deemed necessary the Applicant shall provide Telecom with a sample device at no charge. The device will be returned to the Applicant upon completion of this inspection.

6.0 CERTIFIED DEVICE

6.1 Software /hardware changes

Once a device is certified any changes to the software or hardware of that device must be notified to Telecom before any modified devices will be permitted connection to the network. The Applicant must supply Telecom the modified software along with full supporting documentation detailing the changes made. New software and/or hardware for existing certified devices will be tested to ensure that compliance has not been effected by the modifications and will be re-certified for connection.

6.2 Failure to comply

If an applicant fails to comply with the certification process for modifications or the conditions pertaining to the Telepermit granted, it may result in the Permit to Connect for that device being revoked and connection of that device to the network being declined.

6.3 Network Changes

Telecom is continually updating and developing its CDMA network. From time to time these changes may potentially impact on the operation of certified devices. Telecom may require the applicant to undertake upgrades to the operation of the devices to ensure continued operation of the device on the network.

6.4 Revocation of PTC

Telecom may, at its discretion, by notice in writing, immediately suspend or revoke a PTC if any part of Telecom's network is modified in any way so that, in Telecom's opinion, the PTC is no longer appropriate, or if any aspect of the Device is modified in any way, including without limitation by a modification to hardware or software or you otherwise breach any term of the PTC Agreement or Telepermit grant.

6.5 ESN File

All CDMA devices connected to and operating on Telecom's CDMA network are validated at an ESN level to ensure the authenticity of that device. As such all **new** devices must have specific information pre-loaded into Telecom's Business Support Systems prior to those devices being shipped and distributed in country.

To facilitate this process Telecom requires the applicant or the manufacturer of a Telepermitted device to provide a file containing device information such as Electronic Serial Number (ESN), Authentication Key (A-key) and Service Programming Code (SPC). This file will be known as a "Mobile Station File" or 'MSFile'. For further details of this process please refer to the document "CDMA MSFile definition".

Failure to supply this information to Telecom will prevent connection of the device to the network.

6.6 Special conditions for Embedded Data modules

Telecom recognises the need for Embedded CDMA Data modules to be made available to the IT community for the development of wireless data applications.

Where an applicant is submitting an Embedded CDMA Data module for PTC they should note that the following conditions will apply to the grant of a Telepermit.

- A limited number of devices will be permitted connection to the network. Once the specified limit is reached the applicant will be required to apply to Telecom for an extension to the limit. Telecom may at its discretion withhold any such extension.
- The applicant will be required to supply details of whom each Embedded CDMA Data module is being supplied to, along with a detailed description of its intended purpose. Specifications should be provided. Failure to provide this information or incorrect information will result in either refusal to connect the device and/or withdrawal of the Telepermit.
- Any changes to the characteristics of the Embedded CDMA Data module, including any changes to the way it utilises network resources (RF, IP etc) will invalidate the Telepermit.
- Telecom will, at no charge, verify that any solutions based on an Embedded CDMA Data module don't breach the Telepermit conditions.
- Telecom may at its discretion require a solution based on an Embedded CDMA Data module to be submitted for a full and separate PTC.

APPENDIX 1: Glossary of terms

The following list describes some of the terms used in this document.

Term	Description
1xRTT	1x Radio Transmission Technology
3GPP	3rd Generation Partnership Project – includes European/Japanese/US bodies
3GPP2	3rd Generation Partnership Project 2 –includes US/Taiwan/Korean bodies
ANSI	American National Standards Institute
AuC	Authentication Centre
A-key	Authentication key. 20 digit integer plus a 6 digit integer checksum.
BREW	Binary Runtime Environment for Wireless
CDMA	Code Divisional Multiple Access
DM	Download Manager
ESN	Electronic Serial Number - 11 digit integer decimal format, or 8 character hexadecimal.
EVRC	Enhanced Variable Rate Coder
HLR	Home Location Register
HTML	Hyper Text Mark-up Language
HTTP	Hypertext transfer Protocol
IM	Instant Messaging
IMSI	International Mobile Station Identity; globally unique, variable length up to 15 digits.
IN	Intelligent Network
IP	Internet Protocol
J2ME	Java 2 Micro-Edition
J2SE	Java 2 Standard Edition
JPEG	Joint Picture Experts Group
JVM	Java Virtual Machine
MDN	Mobile Directory Number; 10 digit integer.
MIDP	Mobile Information Device Profile
M-IMAP	Mobile Internet Mail Access Protocol
MMS	Multimedia Messaging Service
MIN	Mobile Identification Number; unique 10-digit integer number
MO	Mobile Originated (SMS)
MS	Mobile Station
MSfile	Mobile Station File- a file containing ESN details about a device
MSC	Mobile Switching Centre
MT	Mobile Terminal
MT	Mobile Terminated (SMS)
OSA	Open Service Architecture
OSS	Operational Support Systems
OTA	Over-the-air Activation
OTAPA	Over-the-air Parameter Activation
OTASP	Over-the-air Service Provisioning
PAP	Password Authentication Protocol
PDP	Packet Data Protocol
PPP	Point to Point Protocol
PRI	Product Release Instructions
PRL	Preferred Roaming List
PSTN	Public Switched Telephone Service
PTC	Permit to Connect
RUIM	Removable Universal Identity Module
SAR	Specific Absorption Rate
SID	System Identification
SIP	Simple Internet Protocol
SMPP	Short Message Point-Point Protocol
SMS-C	Short message service –Message centre
SMTP	Simple Mail Transfer Protocol
SPC	Service Programming Code; 6 digit integer
TNZ	Telecom Corporation New Zealand Ltd
USIM	Universal Subscriber Identity Module
WAP	Wireless Application Protocol