

## 4483 RAPID! Mobile/Carrier Test Software for CDMA



User's guide  
Version 3.33



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# About This Guide

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## Purpose and scope

The purpose of this guide is to help you successfully use the 4483 RAPID! Mobile/Carrier Test Software for CDMA features and capabilities. This guide includes task-based instructions that describe how to install, configure, use, and troubleshoot the 4483 RAPID! Mobile/Carrier Test Software for CDMA. Additionally, this guide provides a description of Willtek's warranty, services, and repair information, including terms and conditions of the licensing agreement.

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## Assumptions

This guide is intended for novice, intermediate, and experienced users who want to use the 4483 RAPID! Mobile/Carrier Test Software for CDMA effectively and efficiently. We are assuming that you have basic computer and mouse/track ball experience and are familiar with basic telecommunication concepts and terminology.

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## Related information

Use this guide in conjunction with the following information:

4464 CDMA2000 System Option user's guide, ordering number M 292 010

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## Technical assistance

If you need assistance or have questions related to the use of this product, call one of Willtek's technical assistance centers. You can also contact Willtek by e-mail at [customer.support@willtek.com](mailto:customer.support@willtek.com).

**Table 1** Technical assistance centers

Region	Phone number	Fax number
Europe, Middle East, Asia, Africa	+49 (0) 89 996 41 386 +49 (0) 89 996 41 227	+49 (0) 89 996 41 440
Americas	+1 973 386 9696	+1 973 386 9191
China	+86 21 5836 6669	+86 21 5835 5238

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## Conventions

This guide uses naming conventions and symbols, as described in the following tables.



Table 2 Typographical conventions

Description	Example
User interface actions appear in this <b>typeface</b> .	On the Status bar, click <b>Start</b> .
Buttons or switches that you press on a unit appear in this <b>TYPEFACE</b> .	Press the <b>ON</b> switch.
Code and output messages appear in this typeface.	All results okay
Text you must type exactly as shown appears in this <b>typeface</b> .	Type: a : \set.exe in the dialog box.
Variables appear in this <typeface>.	Type the new <hostname>.
Book references appear in this typeface.	Refer to <b>Newton's Telecom Dictionary</b>
A vertical bar   means "or": only one option can appear in a single command.	platform [a b e]
Square brackets [ ] indicate an optional argument.	login [platform name]
Slanted brackets < > group required arguments.	<password>

Table 3 Keyboard and menu conventions

Description	Example
A plus sign + indicates simultaneous keystrokes.	Press <b>Ctrl+s</b>
A comma indicates consecutive keystrokes.	Press <b>Alt+f,s</b>
A slanted bracket indicates choosing a submenu from menu.	On the menu bar, click <b>Start &gt; Program Files</b> .

Table 4 Symbol conventions






	This symbol represents a general hazard.
	This symbol represents a risk of electrical shock.
	<b>NOTE</b> This symbol represents a note indicating related information or tip.

Table 5 Safety definitions

	<b>WARNING</b> Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	<b>CAUTION</b> Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

# Overview

## 1

This chapter provides a general description of the 4483 RAPID! Mobile/Carrier Test Software for CDMA. Topics discussed in this chapter include the following:

- ["About the 4483 RAPID! Mobile/Carrier Test Software for CDMA" on page 2](#)
- ["What's new in version X" on page 2](#)
- ["Features and capabilities" on page 2](#)

## About the 4483 RAPID! Mobile/Carrier Test Software for CDMA

Automatic service tests written under RAPID!, the 4400 series programming language for test automation. Test allows for the configuration of mobile manufacturer, model, carrier, limits and test selection. Default test includes single- and dual-band tests of CDMA 800/1900 mobile phones.

The software is pre-installed on the 4400 and needs to be enabled with an option code before first-time usage.

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## What's new in version X

If this is an update to an existing document, provide a list of added or updated features and capabilities. If this is a first release, hide this conditional text so that you can update this section when updating your next release.

---

## Features and capabilities

Briefly list the features and capabilities of the instrument or software.

# Installation

## 2

This chapter describes how to install the 4483 RAPID! Mobile/Carrier Test Software for CDMA. The topics discussed in this chapter are as follows:

- ["Scope of delivery" on page 4](#)
- ["Software requirements" on page 4](#)

## Scope of delivery

The 4483 RAPID! Mobile/Carrier Test Software for CDMA comes pre-installed on your 4400 Series Mobile Phone Tester.

If not already activated on the 4400, you will receive an option code to enable the software option.

## Software requirements

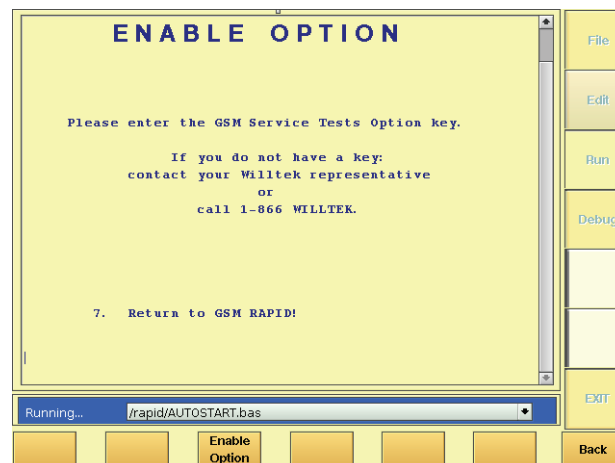
The 4483 RAPID! Mobile/Carrier Test Software for CDMA requires 4400 software version 3.32 or higher to be installed on your 4400 Series Mobile Phone Tester.

The 4464 CDMA2000 System Option must be installed also.

The 4483 RAPID! Mobile/Carrier Test Software for CDMA needs to be enabled on the instrument. If not already enabled, the software will prompt for the option code to enable the software. This may be necessary at first-time use.

To call up the 4483 RAPID! Mobile/Carrier Test Software for CDMA, proceed as follows:

- 1 On the 4400, call up RAPID! (e.g. by selecting **Tools > RAPID!**).
- 2 If the File menu appears, select file `/rapid/AUTORUN.bas`, push **Open** and select **Run > Run**.  
The Evaluation Tests menu appears.
- 3 In the "Evaluation Tests" menu, select **CDMA**.  
A new menu showing different CDMA tests appears.
- 4 Select **Mobile Carrier** for the CDMA Mobile and Carrier Tests.  
The CDMA system option software is loaded and if the 4483 RAPID! Mobile/Carrier Test Software for CDMA is not yet enabled, the Enable Option menu will appear (see below); otherwise the Mobile and Carrier Tests main menu will appear.



- 5 Press the Enable Option softkey to enter the option code.

# Getting Started

## 3

This chapter describes the functionality of the instrument. Topics discussed in this chapter are as follows:

- "Preparing for a test" on page 6
- "Starting the Mobile/Carrier Test Software for CDMA" on page 6
- "Setting up the software for the phone and coupler" on page 7
- "Selecting the carrier and frequency band" on page 8
- "Setting up a test type" on page 8
- "Setting up the test limits" on page 9
- "Carrying out a test" on page 10

## Preparing for a test

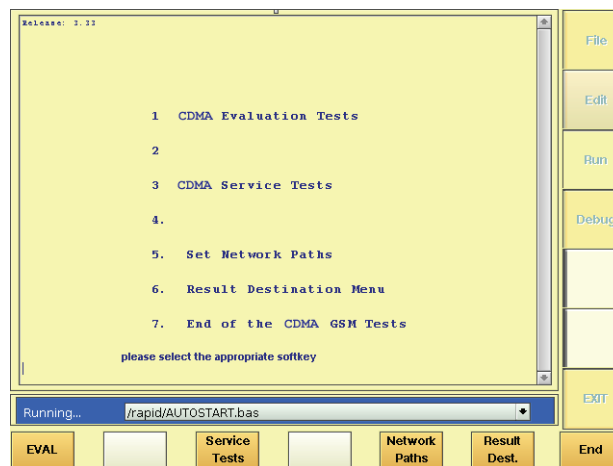
Before starting a new test, ensure that the 4483 RAPID! Mobile/Carrier Test Software for CDMA is properly set up for the phone and the type of test. You should apply the following procedures:

- Select a printer if you want to print the results – this can be done from the **Tools > Configuration > I/O** menu in the **Parallel Port** section.
- Select a phone and coupler – this step is explained below in more detail.
- Select a carrier or frequency band – this step is explained below in more detail.
- Select a test type – this step is explained below in more detail.
- Select test limits – this step is explained below in more detail.

## Starting the Mobile/Carrier Test Software for CDMA

To call up the 4483 RAPID! Mobile/Carrier Test Software for CDMA, proceed as follows:

- 1 On the 4400, call up RAPID! (e.g. by selecting **Tools > RAPID!**).
- 2 If the File menu appears, select file `/rapid/AUTORUN.bas`, push **Open** and select **Run > Run**.  
The Evaluation Tests menu appears.



- 3 In the "Evaluation Tests" menu, select **CDMA**.  
A new menu showing different CDMA tests appears.
- 4 Select **Mobile Carrier** for the CDMA Mobile and Carrier Tests.  
The CDMA system option software is loaded and the "Mobile and Carrier Tests" main menu appears.

The Mobile and Carrier Tests main menu allows you to change basic test parameters and to start a test.



## Setting up the software for the phone and coupler

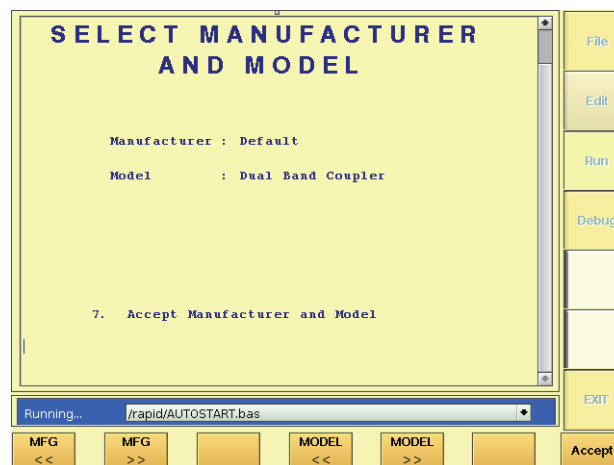
There are different types of connections possible between the mobile phone and the instrument: a cable connection ("direct connect") or different types of radio frequency couplers such as the 4916 Antenna Coupler. Each phone model and coupling device have their own coupling characteristics, in particular with respect to attenuation (or coupling loss). Usually each phone model is used with a specific connection device.

Different types of mobiles require individual test channels to support transmitter and receiver tests. These parameters must be taken into account when testing a phone.

The 4483 RAPID! Mobile/Carrier Test Software for CDMA caters for all these variations by allowing you to select the phone under test and associate it with a coupling device. This will set up the channel and the predefined coupling loss in the software and take the loss into account when setting up power levels and presenting measurement results.

To select the phone and coupling device, proceed as follows:

- 1 In the main menu, select **Change Mobile**.  
The "Select Manufacturer and Model" menu appears.



- 2 Push the **MFG <<** or **MFG >>** softkeys several times until the desired manufacturer is displayed on the screen.
- 3 Push the **MODEL <<** or the **MODEL >>** softkey several times until the connection type is shown. The selection of models depends on the chosen manufacturer.
- 4 Push the **Accept** softkey to return to the main menu.

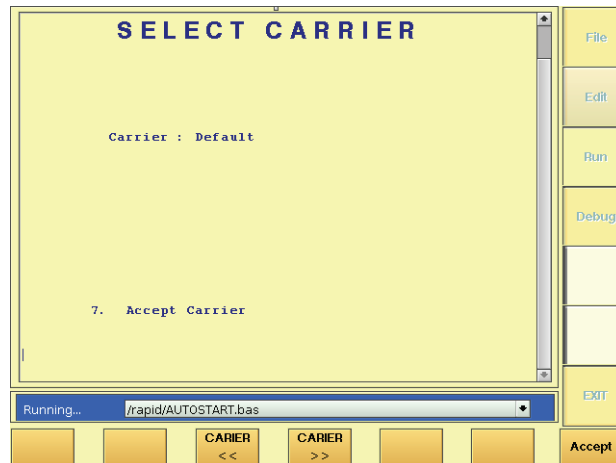
Section "[Adding a new manufacturer and phone model](#)" on page 14 shows experienced users how to change or add new mobile phones and manufacturers to the lists.

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## Selecting the carrier and frequency band

Each network has their own frequency band and preferred channel numbers. CDMA phones are optimized to look for a carrier on specific frequency channels. Therefore the 4483 RAPID! Mobile/Carrier Test Software for CDMA allows the user to select a particular frequency band or even a mobile network.

- 1 To set up the instrument for a specific network or frequency, push the **Change Carrier** softkey in the main menu. The "Select Carrier" menu appears.



- 2 Push the **CARRIER <<** or **CARRIER >>** softkeys until the desired band or carrier name appears.
- 3 Select **Accept** to apply the changes. The 4400 is set up for the appropriate predefined carrier frequency. The main menu appears.

Section ["Adding or modifying carrier-specific parameters"](#) on page 18 shows experienced users how to change or add new carriers and frequency band parameters to the lists.

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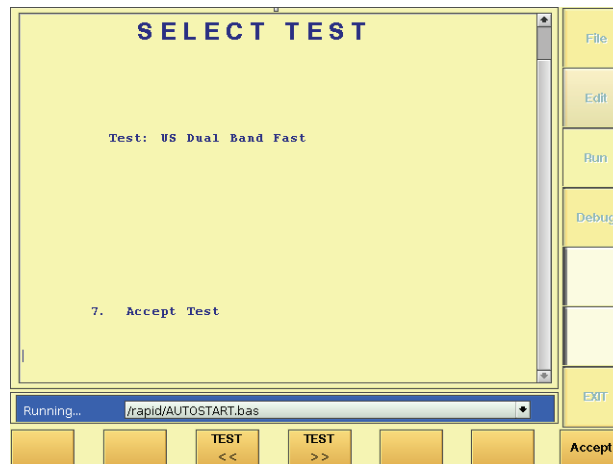
## Setting up a test type

The 4483 RAPID! Mobile/Carrier Test Software for CDMA provides several test sequences to accommodate different testing requirements. Predefined test sequences include:

- US Dual Band Fast
- US Dual Band Long
- US PCS Fast
- US PCS Long
- US 800 Fast
- US 800 Long

To select a test sequence, proceed as follows:

- 1 Push the **Change Test** softkey.  
The "Select Test" menu appears.



- 2 Push **Test <<<** or **Test >>>** to change the type of test.  
The test type currently selected will be shown on the display.
- 3 Select **Accept** to confirm your choice and to return to the main menu.

#### Note

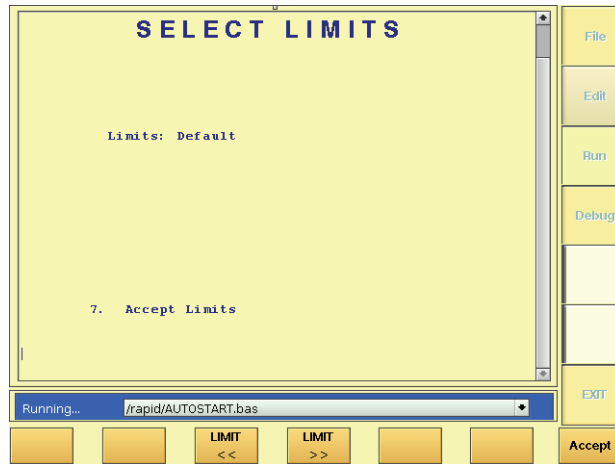
The 4483 RAPID! Mobile/Carrier Test Software for CDMA only offers those test types that fit with the type of mobile, e.g. if the mobile is defined as US800 only, only the US 800 Fast and US 800 Long tests will be displayed for the user to select.

## Setting up the test limits

The 4483 RAPID! Mobile/Carrier Test Software for CDMA tests the mobile phone against predefined limits and, at the end of the test, provides a Pass or Fail verdict. Each network operator or mobile manufacturer may have their own test limits, so the software can be set up to apply certain limits. A set of limits can be stored under a name and called up from within the software.

To change the set of limits, proceed as follows:

- 1 In the main menu, select **Change Limits**.  
The "Select Limits" menu appears.



- 2 Push the **LIMIT <<<** or **LIMIT >>>** softkey until the name of the desired limits profile appears.
- 3 Push **Accept** to apply the new limits and to return to the main menu.

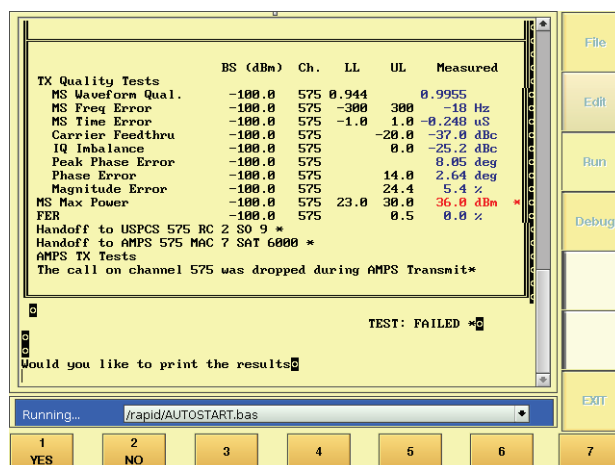
Section "Adding or modifying test limits" on page 19 shows experienced users how to change the limits or add new mobile or carrier-specific limit profiles to the list.

## Carrying out a test

To start a test, push the **Start Test** softkey in the main menu.

The test will start, the instrument will set up a connection with the mobile phone and the test will take a few minutes, depending on the selected test. The 4483 RAPID! Mobile/Carrier Test Software for CDMA will keep you informed about the progress.

At the end of the test, the software will show an overview of the results, together with a Pass or Fail statement. Depending on the selections made in the Result Destination menu (see section "Setting up the output devices" on page 11), the results can be printed and/or stored on a media device.

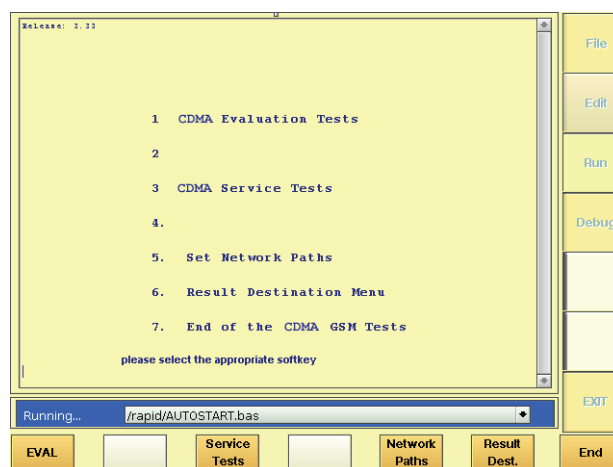


## Setting up the output devices

The 4483 RAPID! Mobile/Carrier Test Software for CDMA allows you to select multiple interfaces where the results are sent. These can be a printer, the internal hard disk, a floppy disk or a hard disk on the network. Depending on which interfaces have been selected and how, the software may ask you after a completed test if you want to print or store the results. In case of a failed test, the results may help an experienced technician to identify the source of the problem for subsequent repair. In any case, it may be useful to document that a test has been performed on a particular mobile and what the result was.

The 4483 RAPID! Mobile/Carrier Test Software for CDMA shares the output device selection with the Evaluation Tests for CDMA. This is why the selection can only be made outside the 4483 RAPID! Mobile/Carrier Test Software for CDMA:

- 1 If the 4483 RAPID! Mobile/Carrier Test Software for CDMA has not been started yet, call up the CDMA RAPID! menu by selecting **Tools > RAPID!**. If the File menu appears, select file `/rapid/AUTORUN.bas`, push **Open** and select **Run > Run**. In the "Evaluation Tests" menu, select **CDMA**. A new menu showing different CDMA tests and options appears. If the 4483 RAPID! Mobile/Carrier Test Software for CDMA is already running, go up one or several menu levels with the "Back" softkey until the CDMA Evaluation test menu appears.



- 2 Select **Result Dest.**.  
The "Configure Result Destination" menu appears.
- 3 Select the topic you want to modify, and make your choice.



# Test Parameters

## 4

This chapter provides instructions for experienced users how to modify and add test parameters for the 4483 RAPID! Mobile/Carrier Test Software for CDMA. Topics discussed in this chapter are as follows:

- ["Overview" on page 14](#)
- ["Adding a new manufacturer and phone model" on page 14](#)
- ["Adding or modifying carrier-specific parameters" on page 18](#)
- ["Adding or modifying test limits" on page 19](#)

## Overview

The 4483 RAPID! Mobile/Carrier Test Software for CDMA is an easy-to-use, menu-based tool for testing mobile phones. CDMA phones are typically configured for a particular network and coupler; different network operators and manufacturers require individual test limits. These variations result in collections of parameters that can be stored and called up under easy-to-remember names in the respective menus.

This chapter shows you how to change already existing parameters, and how to add new parameter values for easy access through the menus.

---

## Adding a new manufacturer and phone model

The 4483 RAPID! Mobile/Carrier Test Software for CDMA comes pre-installed with a number of combinations for the manufacturer and phone model. These are at the time of this writing:

- Default
  - Dual Band Coupler
  - Dual Band Direct Connect
  - US800 Coupler
  - US800 Direct Connect
  - USPCS Coupler
  - USPCS Direct Connect
- Mfr-Example A
  - Model-Example A1
  - Model-Example A2

Section "[Setting up the software for the phone and coupler](#)" on page 7 explains how the model can be selected from the list before a test is carried out.

Manufacturers and models appearing in the menu of the 4483 RAPID! Mobile/Carrier Test Software for CDMA are defined in file `/rapid/evaluation/ini/cdma_mob.ini` on the hard disk of your 4400. You can either edit the file directly in the RAPID! environment on the 4400 with the help of a computer mouse and keyboard, or by copying the file to a PC via USB memory stick or over a local area network.

Here is an example of how a proper description of a manufacturer and phone model is set up:

[Default]

The manufacturer definition must begin in the first column. Replace 'Default' with the manufacturer's name.



[A59 with Dual Band Coupler]	The model name must begin at least 6 spaces from the first column (use the space key, do NOT use the Tab key). It is a good idea to define the coupling device as this text is displayed onscreen.						
Test Band: DUAL	Valid entries are 'US800' or 'USPCS' or 'KPCS' or 'NMT450' or 'TACS' or 'JTAC' or 'IMT2000' or 'MHZ900' or 'MHZ1800' or 'DUAL' (US800 and USPCS)						
Band: US800	'USPCS' or 'US800'. If Test Band is DUAL, both must be defined, each with the parameters ranging from Radio Configuration to Long Test Channel High.						
Radio Configuration: 2	Valid entries: 1 or 2 or 3 or 4 or 5						
Service Option: 9	Valid entries for Service Option depend on the Radio Configuration as follows: <table border="0"> <tr> <td>Radio Configuration</td> <td>Service Opt.</td> </tr> <tr> <td>1 or 3 or 4</td> <td>1 or 2 or 3 or 55</td> </tr> <tr> <td>2 or 5</td> <td>9 or 17 or 55 or 32768</td> </tr> </table>	Radio Configuration	Service Opt.	1 or 3 or 4	1 or 2 or 3 or 55	2 or 5	9 or 17 or 55 or 32768
Radio Configuration	Service Opt.						
1 or 3 or 4	1 or 2 or 3 or 55						
2 or 5	9 or 17 or 55 or 32768						
Minimum Base Power: -100	Minimum signal power at the mobile's input, in dBm						
FER Traffic Level: -12.3	Signal power level for FER measurements, in dBm						
Fast Test Channel: 385	Fast Test Channel must be one of the Long Test Channels						
Long Test Channel Low: 100	Channel numbers for the frequency band						
Long Test Channel Mid: 385							
Long Test Channel High: 777							
Band: USPCS	Definition for the other band (as Test Band is DUAL)						
Radio Configuration: 2							
Service Option: 9							
Minimum Base Power: -100							
FER Traffic Level: -12.3							
Fast Test Channel: 575							
Long Test Channel Low: 150							
Long Test Channel Mid: 575							
Long Test Channel High: 1075							

Coupling: User-CPL

User-CPL: US800 RX, TX  
Low-Channel: 16.3, 11.2  
Mid-Channel: 15.5, 11.1  
High-Channel: 13.0, 10.6

'User-CPL' or 'Script file' or  
'RAPID! file'

'US800' or 'USPCS' or 'KPCS' or  
'NMT450'. Do not include bands  
without specifying losses. Losses are  
with respect to the 4400.

TX is the loss from the mobile to the  
4400 (mobile TX).

RX is the loss from the 4400 to the  
mobile (mobile RX).

Alternatively, if Coupling is  
'Script file', replace User-CPL and  
the subsequent definitions by the  
keyword 'Script file'. The coupling  
loss values are then taken from the  
test script defining the measure-  
ments.

Else if Coupling is 'RAPID! file',  
replace User-CPL and the subse-  
quent definitions by the keyword  
'RAPID! file' and a file definition.  
The file definition may include a  
path relative to rapid/cpl/others/. If  
the file exists in this folder no path  
is needed. If the file exists in a sub-  
folder of this path, the path must be  
specified.

Example:

```
RAPID! file: motorola/  
u-m-8800.cpl
```

is in rapid/cpl/others/motorola

The file must conform to the cou-  
pling loss file format as described in  
the 4400 user's guide.

User-CPL: USPCS RX, TX  
Low-Channel: 21.5, 20.4  
Mid-Channel: 22.0, 19.9  
High-Channel: 22.2, 20.0

Definition for the second band

Mobile Defined Tests:

Mobile Defined Tests do not have to be defined. The number of tests that can be defined is not limited.

The tests that are defined here will appear in the Select Tests menu, together with the carrier-specific tests.

To define a test use the following line:

```
(label) : filename
```

The label will appear on the RAPID! screen. filename is the name of the script file. This file must be in the /rapid/evaluation/scripts folder.

Example:

```
Mobile Defined Tests :  
(Motorola Test) :  
mototest.rbt
```

[Dual Band Direct Connect]  
(...)

Next phone definition

To define a test that should appear for each model from a manufacturer, include the test in the Mobile Defined Test field for each model.

Note on editing: Copy one of the existing Default Mobile sections in the cdma\_mob.ini file and paste it where the new Mobile section belongs in the menu. Edit the label and the parameters.

Notes on parameters:

- Always leave at least one space between the ':' and the value.
- Always leave at least one space between the ';' and the TX loss value when specifying 'USER-CPL' coupling loss values.

Not all the fields in the definition of a manufacturer and mobile phone type are required. The following fields, however, are mandatory:

- [Manufacturer] label
- [Model] label
- Test Band:
- Band: when Test Band:
- Radio Configuration:
- Service Option:
- Minimum Base Power:
- FER Traffic Level:
- Fast Test Channel:
- Long Test Channel Low:
- Long Test Channel Mid:
- Long Test Channel High:

- Coupling:
- When Coupling is User-CPL, the following fields are required:
  - User-CPL:
  - Low-Channel:
  - Mid-Channel:
  - High-Channel:

The Mobile Defined Tests field is optional.

---

## Adding or modifying carrier-specific parameters

The fastest way for a CDMA phone to register with a network is with its home system. For a test system like the 4400 Series Mobile Phone Tester, this means that the tester needs to know the relevant home system parameters like frequency band, channel number and SID.

The 4483 RAPID! Mobile/Carrier Test Software for CDMA allows you to easily call up predefined carrier settings in the Select Carrier menu (see section ["Selecting the carrier and frequency band" on page 8](#)).

The predefined network parameters are defined in file rapid/evaluation/ini/cdma\_car.ini on the hard disk of your 4400. You can either edit the file directly in the RAPID! environment on the 4400 with the help of a computer mouse and keyboard, or by copying the file to a PC via USB memory stick or over a local area network.

The following table shows an example of how a carrier may be defined:

[Example-US 800]	The label is mandatory and must begin in the first column
BAND: US800	Mandatory parameter, allowable entries are 'US800' or 'USPCS' or 'KPCS' or 'NMT450' or 'TACS' or 'JTAC' or 'IMT2000' or 'MHZ900' or 'MHZ1800'
CHANNEL: 384	Channel number in the above band; mandatory parameter
SID: 80	System identification code; mandatory parameter
MNC:	Optional parameter (mobile network code)
MCC:	Optional parameter (mobile country code)
NID:	Optional Parameter (network identification code)

Carrier Defined Tests:

Carrier defined tests do not have to be defined. The number of tests that can be defined is not limited.

To define a test, use the following parameters:

```
(label): filename
```

The label will appear on the RAPID! screen. 'filename' is the name of the script file. This file must be in the /rapid/evaluation/scripts folder.

Example:

```
Carrier Defined Tests:  
(Carrier Test):  
catest.rbt
```

Notes on editing:

- Copy one of the existing carrier sections and paste it where the new carrier belongs in the menu. Edit the label and the parameters.
- Always leave at least one space between the ':' and the parameter value.

---

## Adding or modifying test limits

**General** The 4483 RAPID! Mobile/Carrier Test Software for CDMA provides versatile means to adapt test parameters to individual needs. Should a network operator or manufacturer require test limits that deviate from standard settings, these can be defined in a file on the 4400 and called up before starting a test.

Section "[Setting up the test limits](#)" on page 9 explains how a limit profile is selected from the list before carrying out a test.

General limits and deviating profiles appearing in the menus of the 4483 RAPID! Mobile/Carrier Test Software for CDMA are defined in file /rapid/evaluation/ini/cdma\_lim.ini on the hard disk of your 4400. You can either edit the file directly in the RAPID! environment on the 4400 with the help of a computer mouse and keyboard, or by copying the file to a PC via USB memory stick or over a local area network.

The file may consist of multiple sections, one containing a table with default (or standard) limits and additional sections with individual limit tables for a specific manufacturer and phone or operator. In the section with individual limits, only those parameters need to be defined that deviate from the default limits.

**Default limits** Here is an example of how the default or standard limits profile is set up:

Limits: Lower Limit, Upper Limit

(Default) 'Label

The label is used to provide a name to a set of default limits. These limits may apply to all mobiles and all carriers. The user can select from a number of different sets of default limits or from the mobile and carrier-specific limits; the number of default limits that can be defined is not limited.

Maximum Power: dBm	
US800 Power Class 1:	31.0, 38.0
US800 Power Class 2:	27.0, 34.0
US800 Power Class 3:	23.0, 30.0
USPCS Power Class 1:	28.0, 33.0
USPCS Power Class 2:	23.0, 30.0
USPCS Power Class 3:	18.0, 27.0
USPCS Power Class 4:	13.0, 24.0
USPCS Power Class 5:	8.0, 21.0
KPCS Power Class 1:	28.0, 33.0
KPCS Power Class 2:	23.0, 30.0
KPCS Power Class 3:	18.0, 27.0
KPCS Power Class 4:	13.0, 24.0
KPCS Power Class 5:	8.0, 21.0
NMT-450 Power Class 1:	33.0, 40.0
NMT-450 Power Class 2:	28.0, 35.0
NMT-450 Power Class 3:	23.0, 30.0
NMT-450 Power Class 4:	18.0, 25.0
-TACS Power Class 2:	31.0, 38.0
-TACS Power Class 3:	27.0, 34.0
-TACS Power Class 4:	23.0, 30.0
JTACS Power Class 1:	31.0, 38.0
JTACS Power Class 2:	27.0, 34.0
JTACS Power Class 3:	23.0, 30.0
IMT-2000 Power Class 1:	28.0, 33.0
IMT-2000 Power Class 2:	23.0, 30.0
IMT-2000 Power Class 3:	18.0, 27.0
IMT-2000 Power Class 4:	13.0, 24.0
IMT-2000 Power Class 5:	8.0, 21.0
M-1800 Power Class 1:	28.0, 33.0
M-1800 Power Class 2:	23.0, 30.0
M-1800 Power Class 3:	18.0, 27.0
M-1800 Power Class 4:	13.0, 24.0
M-1800 Power Class 5:	8.0, 21.0
M-900 Power Class 1:	31.0, 38.0
M-900 Power Class 2:	27.0, 34.0
M-900 Power Class 3:	23.0, 30.0
Open Loop Estimate: dB	-11.0, 9.5
Minimum Power: dBm	---, -50.0
Standby Power: dBm	---, -61.0
Access Power: dB	-9.5, 9.5

Closed Loop Range: dB	-24.0, 24.0
Freq. Error US800: Hz	-300, 300
Freq. Error USPCS: Hz	-150, 150
Freq. Error KPCS: Hz	-150, 150
Freq. Error NMT450: Hz	-300, 300
Freq. Error TACS: Hz	-300, 300
Freq. Error JTACS: Hz	-300, 300
Freq. Error IMT-2000: Hz	-150, 150
Freq. Error 1800: Hz	-150, 150
Freq. Error 900: Hz	-300, 300
Waveform Quality, Rho:	0.9440, ---
Time Error: uS	-1.000, 1.000
Carrier FeedThrough: dBc	---, -20.00
I/Q Imbalance: dBc	---, 0.00
Peak Phase Error: degrees	---, ---
RMS Phase Error: degrees	---, 14.00
Peak EVM: %	---, ---
RMS EVM: %	---, 24.4
Peak Mag. Error: %	---, ---
RMS Mag. Error: %	---, 24.4
FER Frame Error Rate: %	---, 0.5
FER Confidence Level: %	---, 100
FER Max. Frames:	---, 200
AMPS Power Level 0: dBm	32.0, 38.0
AMPS Power Level 1: dBm	28.0, 34.0
AMPS Power Level 2: dBm	24.0, 30.0
AMPS Power Level 3: dBm	20.0, 26.0
AMPS Power Level 4: dBm	16.0, 22.0
AMPS Power Level 5: dBm	12.0, 18.0
AMPS Power Level 6: dBm	8.0, 14.0
AMPS Power Level 7: dBm	4.0, 10.0
AMPS Freq. Error: Hz	-2060, 2060
AMPS SAT Freq. Error: Hz	-1, 1
AMPS SAT Deviation: Hz	1800, 2200
AMPS ST Freq. Error: Hz	-1, 1
AMPS ST Deviation: Hz	7200, 8800
AMPS RX SINAD: dB	12.0, ---
AMPS Peak Audio Deviation: Hz	---, 12000
AMPS BS Level Sensitivity: dBm	---, -116.0

Standard (default) applies to the RAPID! Evaluation CDMA tests as well as to the 4483 RAPID! Mobile/Carrier Test Software for CDMA. These limits are always loaded first. It is only necessary to include changes to these limits in another limit table.

## Mobile-specific limits

Mobile-defined limits apply only to a specific manufacturer and a specific model. In order for the software to automatically apply mobile-specific limits, the labels (both manufacturer and model) used in `cdma_mob.ini` must appear in this ini file. The labels from `cdma_mob.ini` may appear only once in the `cdma_lim.ini` file. For limits to apply to all models of a manufacturer the limit table must appear for each model.

This is how a model-specific limits table could look like:

```
[Mfr-Example A]                                [Labels:] [Manufacturer] must begin
                                                in the first column

[Model-Example A1]                             [Model] must begin at least 6 spaces
                                                from the first column (use the space
                                                key, DO NOT use the Tab key!)

Limits:    Lower Limit, Upper Limit
(Mobile: Model Example A1) 'Label
Maximum Power: dBm
  US800 Power Class 3:  22.0, 31.0
  USPCS Power Class 2:  22.0, 31.0

[Model-Example A2]                             These are the limits for a second
Limits:    Lower Limit, Upper Limit            model from the same manufacturer
(Mobile: Model Example A2) 'Label
Maximum Power: dBm
  US800 Power Class 3:  26.0, 35.3
  USPCS Power Class 2:  17.3, 28.2
Freq. Error US800: Hz  -250, 250
Freq. Error USPCS: Hz  -99, 99
Peak Phase Error: degrees 0, 20.00
RMS Phase Error: degrees ---, 9.99
```

## Carrier-specific limits

Carrier-specific limits may imply test thresholds that refer either to mobile phones of a certain network operator or to a frequency band. The carrier should be the same as defined in the Select Carrier menu and the associated limits are chosen automatically whenever the respective carrier is selected; see section ["Selecting the carrier and frequency band" on page 8](#) on how to set up the carrier.

### Note

Carrier-defined limits apply only to a particular carrier. The label used in `cdma_car.ini` must appear in this file.

The table below shows how carrier-specific limits may look like:



[Example-US 800]

The carrier label must begin in the first column.

```
Limits:      Lower Limit, Upper Limit
(Carrier Example-US 800) 'Label
Maximum Power: dBm
  US800 Power Class 1:  .5, 38.0
  US800 Power Class 2: 25.5, 34.0
  US800 Power Class 3: 23.0, 30.0
  USPCS Power Class 1: 28.0, 33.0
  USPCS Power Class 2: 21.0, 30.0
  USPCS Power Class 3: 16.0, 27.0
  USPCS Power Class 4: 11.0, 24.0
  USPCS Power Class 5:  6.0, 21.0
Carrier FeedThrough: dBc  ---, 0.00
RMS Phase Error: degrees 0.0, 90.0
RMS Mag. Error: %        0.0, 100.0
```

## Special considerations

Notes on editing:

- Copy the Default limit table and paste it into the appropriate section (Standard, Carrier or Mobile Defined).
- Include the appropriate labels from the cdma\_car.ini and or cdma\_mob.ini above the limit table.
- Change the limit label.
- Limits in the new limit table that do not change or are not used should be deleted.
- Alter the limit parameters as required.

Notes on parameters:

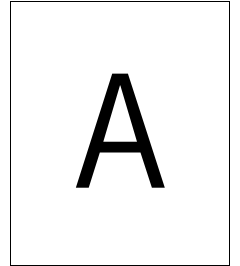
- Always leave at least one space between the ':' and the Lower Limit value.
- Always leave at least one space between the ',' and the Upper Limit value.
- '---' is used to indicate that a limit does not apply.

Not all the fields in the definition of mobile or carrier-specific limits are required. The following fields, however, are mandatory:

- [Carrier Label] from the cdma\_car.ini for carrier-defined limits.
- [Manufacturer] and [Model] labels from the cdma\_mob.ini for mobile-defined limits.
- The Limit Table label, will appear on the RAPID! screen. Example:  
(Carrier Example-US 800) 'Label
- Parameters from the (Default) Limit table that require changes.



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