



# RadioComm User Manual

**Product Test Engineering Group (PTEG)**

**Version 2.3**

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**Abstract:** This document provides an overview of the RadioComm software application. RadioComm is a manual test tool, which provides an easy to use GUI interface to the available test commands for a given product plus additional user convenience features. RadioComm currently supports CDMA P2K, CDMA1X, GSM (P2K and forward), TDMA (P2K and forward), and 3G products.

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# 1 Introduction

## 1.1 Purpose

This document provides a general overview of the RadioComm test software. It will describe general setup and a description of the features for the different MAs on the various tabs within the application.

## 1.2 Scope

The RadioComm User Manual applies to CDMA P2K, CDMA1X, GSM (P2K and forward), TDMA (P2K and forward) and 3G products. The target audience includes anyone needing to communicate via test commands to a Motorola cellular phone.

## 1.3 Objectives

The objective of the RadioComm User Manual is to provide a general understanding on how the software works. After reading this document, the user should be able to navigate through the application and understand the basic features and how they work. The user, however, will need to have an understanding on how the actual phone works in order to use the software efficiently.

## 1.4 Overview of RadioComm and this user manual

RadioComm is graphical interface to the numerous test commands available for various Motorola cellular products. It contains an easy to use interface to the test commands, which would otherwise be very difficult to execute based on the number of options and protocol. The command data strings required to be sent to the phone for a given test command are formatted in the background so the user does not have to have knowledge of the test command format or protocol. RadioComm also contains user definable test scripts and many other features which make communicating to the phones much easier. The software is designed with the development engineer and cellular technicians in mind. This manual will describe the features of RadioComm and provide general setup information. For specific information on a given product, the user should consult that product's specific documentation, such as the Manufacturing 12M and Test Commands Document.

## 1.5 Table of Definitions

| Acronym | Definition  |
|---------|---|
| MA      | Major Architecture (i.e. CDMA, CDMA1X, GSM, TDMA, 3G) |
| PST     | Product Support Tool                                  |
| PTEG    | Product Test Engineering Group                        |

## 1.6 References

Platform 2000 Test Command Specifications (CONN-TCMD-SIS-2329)

CDMA Platform 2000 Reference Architecture 12M (1209183A45)

CDMA 2000 Reference Architecture 12M (1209189A92)

GSM Platform 2000 Reference Architecture 12M (1209190A16)

TDMA P2K 12M (1209188A5)

## 2 General Information

### 2.1 Web Site

The latest version of RadioComm can be downloaded from the Motorola internal web site:

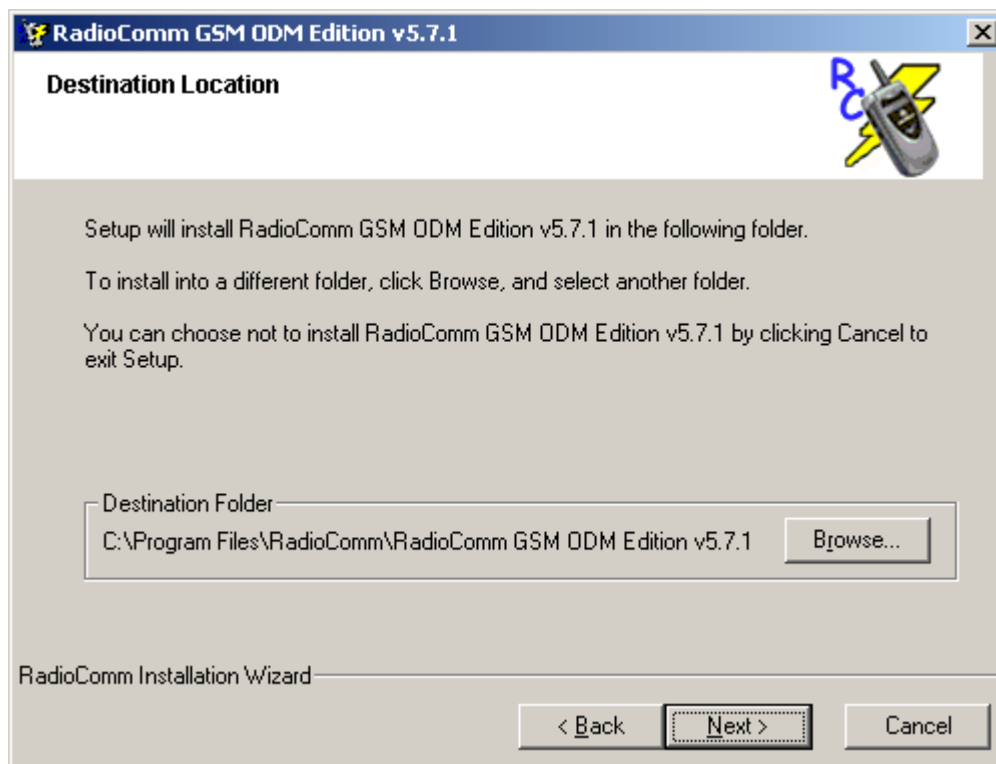
<http://compass.mot.com/go/radiocomm>. Access will be required to view the website and download the application. Follow the instructions on the web page listing regarding contact information in order to get access to the site.

### 2.2 Installing RadioComm

- 1) Download the latest version of RadioComm from the web site to a local directory on your PC. The local directory that you choose to download to should be clean and not have other programs or executable files in it. Other files belonging to other applications could cause problems with the RadioComm install.
- 2) The downloaded file will be a self-extracting executable, typically in the form of *RadioComm\_vX.Y.Z\_Install.exe*. Double-click the file to start the install.
- 3) A welcome screen will appear as below. Select 'Next'.



- 4) After selecting 'Next', another message will appear asking to select the destination directory to install to. No changes have to be made but if so desired, change the install directory and then press 'Next'. This will begin copying various files onto your PC. If a message appears stating that certain dlls cannot be copied, you may be asked to reboot your PC. This can happen if a dll is in use by another application. Restart your machine or make sure no other applications are running, and then try the install procedure again. Also, you MUST have administrative rights on your PC. If not, the installation will not work.



- 5) After installation the screen below will be displayed. Simply press 'OK' and installation is complete.



## 2.3 Running RadioComm

RadioComm should be installed as a registered program on your PC. Therefore, start RadioComm as any other Windows application from your Start → Programs menu.

The first time RadioComm runs on a PC, it will prompt you to pick a technology. After this first time, the last technology used, along with other various settings, will be remembered and automatically defaulted when you launch RadioComm.



After selecting the desired technology, the specific screens for that technology will appear and you are ready to begin using RadioComm.



## 2.4 Menus

### 2.4.1 Main Menu

#### MA

MA allows the selection of the technology. Current supported technologies are CDMA, GSM, TDMA, CDMA1X, CDMA1X – IDEN, and 3G. Selecting the technology will display the screens and features available for that technology. Note: CDMA1X and CDMA1X – IDEN use the same features. Only the channel assignments are different.

#### Exit

Exits the RadioComm application.

### 2.4.2 Settings Menu

#### RS232

Selects RS232 as the communication protocol. The last used COM port will be opened by default.

#### USB

Closes the open COM port (if applicable), then enables the PST Initialize and UnInitialize functions on the menu. Simply selecting USB does NOT automatically initialize the PST application or phone.

#### RS232 Settings

Numerous sub-menus appear under RS232 Settings. This menu and its sub-menus are only enabled when RS232 has been selected as the communication protocol.

Sub-menus:

##### Select COM Port

Allows the user to select COM1, COM2, COM3, COM4, or close the current open COM port

##### Desired P2K Baud Rate

Allows the user to select the desired baud rate for P2K mode of Qualcomm based phones. This menu item will be disabled on all non-CDMA1X MAs. Selecting a baud rate will be invoked when the user resets/recycles their phone and presses the AT+MODE command button on the CDMA1X header. The user's PC will be set to the Default Radio Baud Rate so that the PC matches the radios baud rate. If 115200 is selected, the correct AT command will be sent to the phone to set it to 115200 baud. The user's PC will then be set to 115200 and the AT+MODE=1 command will then be sent.

##### Desired QC Baud Rate

Allows the user to select the desired baud rate for Qualcomm modes (PhoneT, Diag) of Qualcomm based phones. This menu item will be disabled on all non-CDMA1X MAs. Selecting a baud rate will be invoked when the user resets/recycles their phone and presses the IsOnline or SetMode functions. The SetBaudRate command will be sent and the user's PC will then be set to the desired baud rate.

##### Default Radio Baud Rate

Allows the user to select the radios default baud rate at power up. This menu item will be disabled on all non-CDMA1X MAs. Selecting this baud rate allows us to properly communicate with the phone when the user presses the AT+MODE or IsOnline buttons. If this selection is set to 115200, then the Desired P2K Baud Rate will also be forced to 115200 as well.

##### Command Timeout

Allows the user to select the amount of time the RS232 receive buffer will be polled when looking for a command response back from the radio. Some phones/commands take longer than others so users may want to increase the timeout in order to avoid getting command failures. Several pre-defined timeouts are listed plus the user can select 'User Def' and enter the desired timeout in seconds. Once this is set, the entered time will be displayed next to 'User Def'.

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### Force COM Port Baud Rate

In the event the phone and PC baud rates become mismatched, a user can manually select a baud rate. This will force the user's PC to the selected baud rate. This feature should only be used by the advanced user. It is recommended to just simply power cycle or reset your radio and allow RadioComm to auto-baud to your desired baud rate.

### Serial Port Polling

Selecting this menu item brings up a form allowing the user to start polling or stop polling the open COM port. This is a useful feature when looking for unsupported or unknown data being sent out by the phone.

### USB Settings

This sub-menu will only be available if USB has been selected as the communication protocol. Two functions are available: Initialize PST and UnInitialize PST.

Initialize PST will initialize the PST functions and determine if it can see a phone. If successful, PST: Initialized will be displayed in the bottom status bar. This is the identical function as the *Initialize* button on the header portion of the different technologies. If not successful, an error message will be displayed to the user.

UnInitialize PST will un-initialize the PST and close the PST session. If successful, PST: UnitIALIZED should be displayed in the bottom status bar.

### 2.4.3 Phone Menu

#### Conversions

This will bring up the Conversions form. This form is a combination of all the other forms that were used in the individual MA's prior to this release. See [Section 8.3](#) for a complete description.

#### Factory Info

This will bring up the Factory Information form. It allows the user to read the 128 bytes of factory information from the phone and will automatically parse and decode the data and display to the screen via test commands. See [Section 8.4](#) for a complete description.

#### NV / SEEM

This will bring up the NV / SEEM form. It allows the user to read the SEEM from the radio and to write the SEEM into the radio via test commands. See [Section 8.5](#) for a complete description.

#### Phone Book

This will bring up the Phone Book form. It will allow the user to read and write the entire 500 entry phone book. For GSM, reading/writing to the SIM card can also be performed. You may also save the data to a file. See [Section 8.6](#) for a complete description.

#### Run Test Command Script

This will bring up the Run Test Command Script form. It allows users to run previously saved test command scripts with some options. See [Section 8.8](#) for a complete description.

#### Show Keys

This will bring up the Keys form. It allows the user to query the phone for the keys that were pressed as well as control the keys of the phone via test commands. See [Section 8.7](#) for a complete description.

#### Toggle On/Off Line

This toggles the DTR line of the PC's serial port. If using an interface device such as the Junior Board, the Junior Board will translate the toggling of the DTR line as toggling the On/Off line of the radio.

### 2.4.4 Help Menu

#### User Manual

Selecting this will open the RadioComm User Manual, which is in .pdf format. The user's PC must have a program associated with .pdf files in order to automatically open the manual.

#### About

Selecting this will open the 'About' screen, displaying various RadioComm information.

## 2.5 General Phone Setup

RadioComm supports both RS232 and USB communication to/from the phone.

### 2.5.1 RS232 Requirements and Setup

#### Requirements

- Either COM Port 1, 2, 3, or 4 must be available on your PC.
- A serial data cable. This may be a cable that connects directly from the COM port to the phone or a normal serial cable that connects to an interface device, such as a Junior Board. If an interface device such as a Junior Board is used, a second cable connecting from the Junior Board to the accessory connector of the phone is also needed.
- A working phone that supports RS232 communication.

#### Phone Setup

- Connect the phone to data serial cable, either directly or through an interface.
- Power up phone to the nominal voltage level specified for the phone. Note: certain phones may be required to be powered from the battery contacts due to current drain limitations.
- Select RS232 from the Settings Menu
- Select the desired COM port from the Settings Menu
- Press the AT+MODE button (or IsOnline if a Qualcomm based phone) to put the phone into test command mode. If successful, the status window will turn green if the correct response is received from the phone.
- At this point, you may execute other test commands. Note that some test commands may only be performed while the phone is in a certain mode. As the user, you should be familiar with what each test command does. For more specific information on a test command, refer to the test commands document for the given product.

### 2.5.2 USB Requirements and Setup

#### Requirements

- A USB port must be available on your PC.
- The PST application must be installed and functional. RadioComm simply calls the various dlls within the PST application for USB communication. USB will NOT work if the PST is not installed and functional.
- A USB data cable. This may be a cable that connects directly from the USB port to the phone or a normal USB cable that connects to an interface device, such as a Junior Board. If an interface device such as a Junior Board is used, a second cable connecting from the Junior Board to the accessory connector of the phone is also needed.
- A working phone that supports USB communication.

#### Phone Setup

- Connect the phone to the USB cable, either directly or through an interface.
- Power up phone to the nominal voltage level specified for the specific phone. Note: certain phones may be required to be powered from the battery contacts due to current drain limitations.
- Select USB from the Settings Menu
- Once USB is selected, the PST frame in the top header area should become enabled. Press the Initialize button. If the PST recognizes the phone, *PST: Initialized* should appear in the bottom status bar. If an error occurs, a message box will appear with the error message.
- If the PST recognized the phone and initialized successfully, you may execute the other test commands. Note that some test commands may only be performed while the phone is in a certain mode. As the user,

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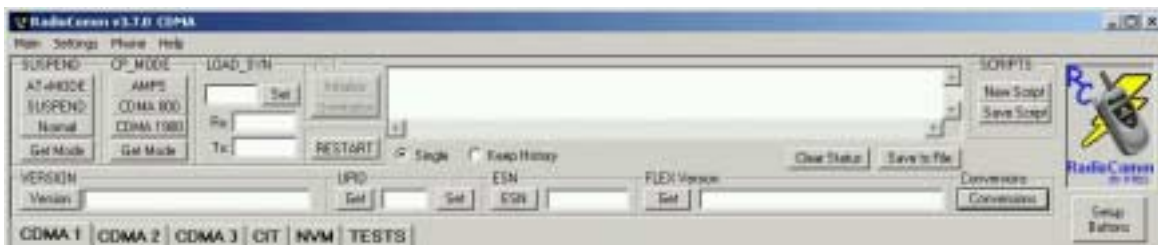
you should be familiar with what each test command does. For more specific information on a test command, refer to the test commands document for the given product.

## 3 CDMA

The CDMA technology may or may not be available based on the version of RadioComm you are using. If available, the sections below describe the CDMA features in detail.

### 3.1 CDMA Header

The header area contains common commands/functions that are displayed all the time for a given technology, regardless of the specific Tab selected. The following is the header area for CDMA.



**AT+MODE:** Sends the AT+MODE=1/r/n data to the phone to place the phone into test command mode. This command only works when a phone is in normal mode, such as when it is first powered up. It is only available in RS232 Mode.

**SUSPEND:** Sends the SUSPEND test command, putting the phone into Suspend mode.

**Normal:** Sends the SUSPEND test command, putting the phone back into Normal mode.

**Get Mode:** Sends the SUSPEND test command, requesting what mode the phone is currently in. Either the *Suspend* button or *Normal* button will be highlighted with the mode of the phone.

**AMPS:** Sends the CP\_MODE test command, putting the phone in AMPS, or Analog, Mode.

**CDMA 800:** Sends the CP\_MODE test command, putting the phone in CDMA 800 Mode.

**CDMA 1900:** Sends the CP\_MODE test command, putting the phone in CDMA 1900 Mode.

**Get Mode:** Sends the CP\_MODE test command, requesting what call processing mode the phone is currently in. Either the *AMPS*, *CDMA 800*, or *CDMA 1900* button will be highlighted with the current mode of the phone.

**LOAD\_SYN frame:** Enter the desired channel number into the text box and press Set. This will send the LOAD\_SYN test command with the desired channel. The Rx and Tx text boxes will display the corresponding Rx and Tx frequency for the entered channel.

**PST:** *Initialize* will initialize the PST functions and determine if it can see a phone. If successful, PST: Initialized will be displayed in the bottom status bar. This is the identical function as the Initialize PST function in the Settings Menu. If not successful, an error message will be displayed to the user. *UnInitialize* will un-initialize the PST and close the PST session. If successful, PST: Uninitialized should be displayed in the bottom status bar.

**RESTART:** Sends the RESTART test command, which will restart the phone and put it back into Normal Mode.

**Status Window:** Displays the test commands sent to the phone and the data/response returned back from the phone. If a command is successful, the window will turn green. If a command fails, the window will turn red. Note: depending on the version of RadioComm, the full data string in Hexadecimal format may or may not be displayed.

**Single option:** When selected, only the last command sent to the phone is displayed in the status window.

**Keep History option:** When selected, every command sent to the phone is displayed in the status window until cleared using the Clear Status button. The user can scroll down the list of displayed commands.

**Clear Status:** Clears the status window.

**Save to File:** Will prompt the user for a filename and will save the data in the status window to a file.

**SCRIPTS frame:** A test command script is a saved sequence of test commands that can be executed so that a user does not have to send the same individual test commands over and over. A new test command script can be

generated by first pressing the '*New Script*' button. Then press any available test commands, from any tab. RadioComm will remember every test command and its corresponding data, in the order they were executed. When finished with the desired test command sequence, press the *Save Script* button. The user will be prompted for a filename and location to save the script. This script can then be run by using the *Run Custom Test Command Scripts* frame on the TESTS Tab or by linking the script to one of the user definable hot buttons.

**New Script:** Clears out a buffer within the RadioComm code that keeps track of the test commands sent to the phone.

**Save Script:** Saves the sequence of test commands and their corresponding data stored in the scripts buffer to a file. The file is a simple text file with a .tcs file extension.

**VERSION:** Sends the VERSION test command, parameter 0xFFFF, and displays the version data sent back by the phone.

**UPID:** Pressing *Get* will return the phone's UPID (Universal Platform ID). Entering a UPID in the text box and pressing *Set* will set the phone's UPID. In order for a UPID to take affect, the phone needs to be power cycled.

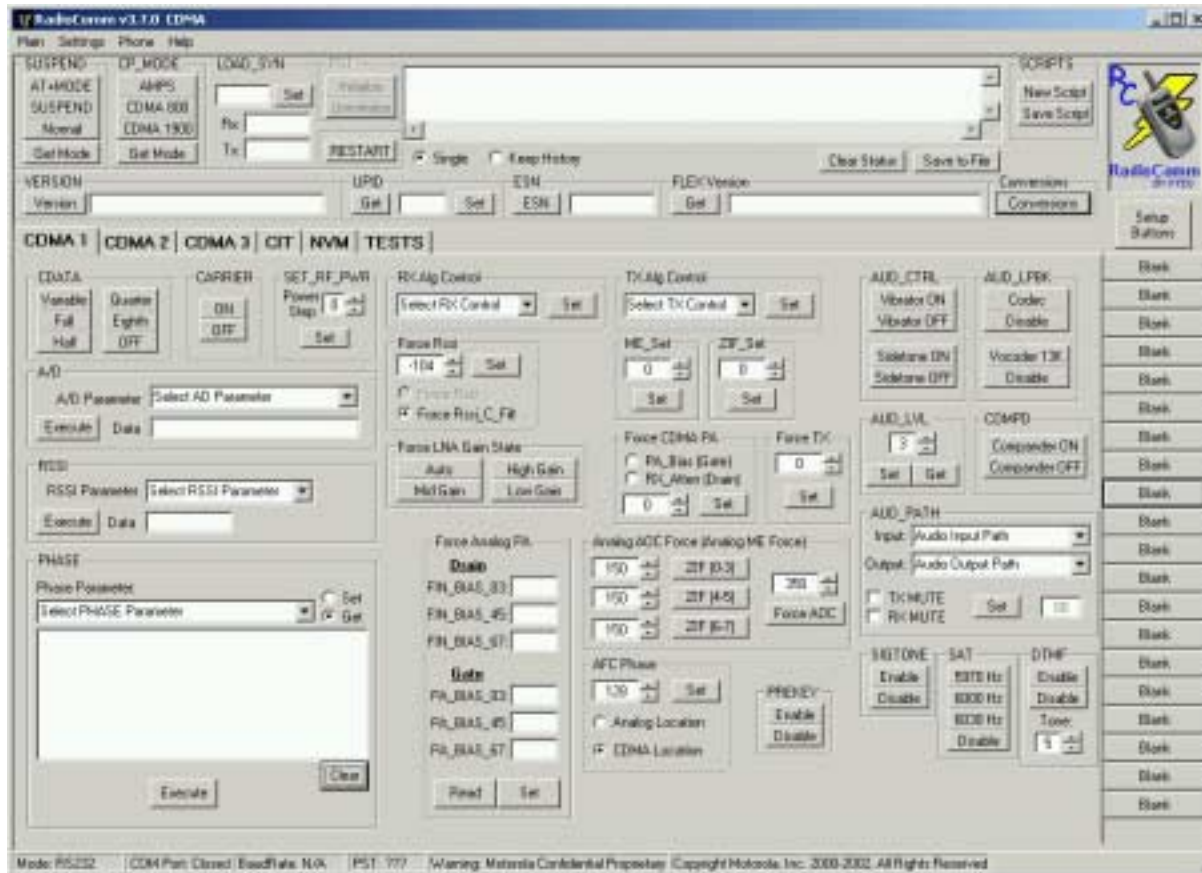
**ESN:** Sends the RDELEM test command with the SEEM location for the stored ESN and displays the ESN sent back by the phone.

**FLEX Version:** Pressing *Get* sends the RDELEM test command with the SEEM location for the stored Flex version and displays the Flex version sent back by the phone.

**Setup Buttons:** Brings up the Custom Buttons Entry screen which allows the user to link previously saved test command scripts to hot buttons which a user can define. See [Section 8.1](#) of this manual for a more in-depth description on how to setup custom buttons.

### 3.2 CDMA 1 Tab

The following shows the CDMA 1Tab and describes the available features:



**CDATA:** Pressing the *Variable*, *Full*, *Half*, *Quarter*, or *Eighth* button sends the CDATA test command with data to turn on the CDMA transmitter at the desired data rate. Pressing *OFF* sends the CDATA test command with data to turn the transmitter off.

**CARRIER:** Pressing *ON* sends the CARRIER test command to turn on the transmitter with a CW signal. Pressing *OFF* turns the transmitter off.

**SET\_RF\_POWER:** Enter the desired power step (0-7) into the text box or use the up/down buttons to select. Press 'Set' to send the SET\_RF\_POWER test command with the entered power step.

**A/D:** Performs an A/D conversion. Choose the desired A/D parameter from the drop down list and press *Execute*. The AD\_CONV test command will be sent to the phone and the requested data returned and displayed in the Data window.

**RSSI:** Choose the desired RSSI parameter from the drop down list and press *Execute*. The RSSI test command will be sent to the phone and the requested data returned and displayed in the Data window.

**PHASE:** Choose the desired PHASE parameter from the drop down list, choose the *Get* option, and press *Execute*. The PHASE test command will be sent to the phone and the requested data for the selected parameter will be returned and displayed in the data window. You may modify the data in the window and send the modified data back to the phone by choosing the *Set* option and then pressing *Execute*. To clear the data in the window, press the *Clear* button.

**RX Alg Control:** Choose the desired Rx Alg Control from the drop down list and press *Set*. This will set the phone's Rx mode to the selected mode.



**TX Alg Control:** Choose the desired Tx Alg Control from the drop down list and press *Set*. This will set the phone's Tx mode to the selected mode.

**Force RSSI:** Enter a valid RSSI level in dB into the text box and press *Set*. This will force the phone's receiver to the entered dB level. The correct RX Alg Control must be set prior to doing this in order for it to work correctly.

**Force LNA Gain State:** Pressing the High Gain, Mid Gain, or Low Gain button will force the LNA of the receiver to the desired gain state. Pressing the Auto button will put the phone back to where it sets its own LNA gain state based on its receive level. The correct RX Alg Control must be set prior to doing this in order for it to work correctly.

**Force Analog PA:** Allows you to read or set the Analog PA biasing points. Press the *Read* button to read the values from the phone. Press the *Set* button to store values back into the phone. The phone must be in Analog mode.

**ME Set:** Enter the desired DAC count into the text box and press *Set*. This will set the ME VCA to the entered count. The correct TX Alg Control must be set prior to doing this in order for it to work correctly.

**ZIF Set:** Enter the desired DAC count into the text box and press *Set*. This will set the ZIF VCA to the entered count. The correct TX Alg Control must be set prior to doing this in order for it to work correctly.

**Force CDMA PA:** Allows you to set the biasing points of the CDMA PA. Choose either PA\_Bias or RX\_Atten, enter the desired value in the text box, and press *Set*. The phone must be in CDMA 800 or CDMA 1900 mode.

**Force TX:** Allows you to force the output power of the phone to a desired power level. Enter the desired power level in dB and press *Set*. The correct TX Alg Control must be set prior to doing this in order for it to work correctly.

**Analog AOC Force:** Allows you to force the value of the ZIF VCA and ME VCA in Analog mode. Press *ZIF (0-3)* to set the value used when on power steps 0 through 3. Press *ZIF (4-5)* to set the value used when on power steps 4 and 5. Press *ZIF (6-7)* to set the value used when on power steps 6 and 7. Press '*Force AOC*' to set the value of the ME VCA. The phone must be in Analog mode.

**AFC Phase:** Allows you to set the oscillator warp value in the phone. There are two separate locations, one for Analog and one for CDMA (includes both 800 and 1900). Choose either CDMA or Analog, enter the desired warp count, and press *Set*. To set the Analog location, the phone must be in Analog mode. To set the CDMA location, the phone must be in CDMA 800 or 1900 mode.

**PREKEY:** Sends the PREKEY test command. Choose *Enable* to turn PREKEY on, *Disable* to turn PREKEY off.

**AUD\_CTRL:** Sends the AUD\_CTRL test command to turn the phone's vibrator on/off or the phone's sidetone on/off. Choose *Vibrator ON* to turn on the vibrator. Choose *Vibrator OFF* to turn off the vibrator. Choose *Sidetone ON* to turn on the sidetone. Choose *Sidetone OFF* to turn off the sidetone.

**AUD\_LPBK:** Sends the AUD\_LPBK test command to enable or disable audio loopback via the audio path selected by the AUD\_PATH command. Codec or Vocoder 13K loopback can be chosen. *Disable* turns off the respective loopback.

**AUD\_LVL:** Enter the desired audio level (0-15) and press *Set*. This will set the phone's audio level by sending the AUD\_LVL test command. Press *Get* to display the current audio level the phone is set to.

**COMPd:** Sends the COMPd test command to either turn ON or turn OFF the phone's compander.

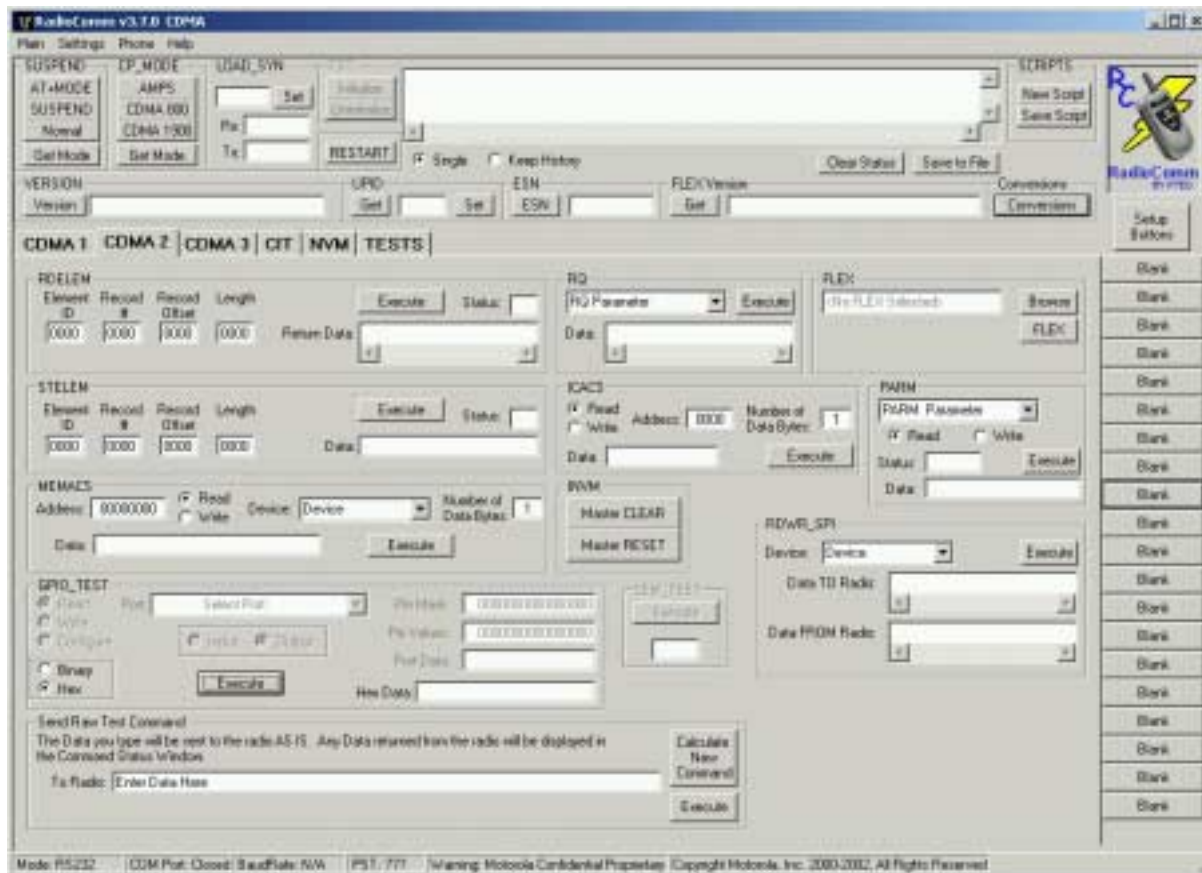
**AUD\_PATH:** Choose the audio input path from the drop down list. Choose the audio output path from the drop down list. Optionally choose to RX or TX mute the paths. Press the *Set* button to set the phone's audio paths to those selected.

**SIGTONE:** Press *Enable* to enable the phone's signaling tone or *Disable* to disable the phone's signaling tone.

**SAT:** Choose 5970 Hz, 6000 Hz, or 6030 Hz to enable the transponding of SAT at the selected frequency. Choose *Disable* to stop transponding.

**DTMF:** Enter the desired DTMF tone and press *Enable*. This sends the DTMF test command to generate a continuous DTMF tone. Press *Disable* to stop the tone generation.

### 3.3 CDMA 2 Tab



**RDELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, for the data you wish to read from the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Press *Execute*. A successful read should return 0x00 in the Status window.

**STELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, and data you wish to write to the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Enter the data you wish to write to the phone in the Data window in hex format. The number of bytes of data should match the Length entered. Press *Execute*. A successful write should return 0x00 in the Status window.

**MEMACS:** Allows you to directly write to a memory address in the MCU or DSP. Enter in the address, select whether you wish to read or write, select the device from the dropdown list, and enter in the number of data bytes you wish to read/write. If you are writing data, enter the data you wish to write in the Data window. Press *Execute*. Any data returned (in the case of a read) will be displayed in the Data window.

**GPIO\_TEST:** Allows you to read, write, and configure various GPIO ports and registers on the phone's chipset. This command can either be used in binary or hex format. Binary format allows you to manually configure the specific pins. Select Binary, select Read, Write or Configure, and select the Port. If Configure is chosen, select whether you are configuring the pins for Input or Output. Depending on which mode you have chosen (Read/Write/Configure) the text windows for Pin Mask, Pin Values, and Port Data will be enabled. These are in binary format, with each bit representing an individual pin. Press *Execute*. If you choose the Hex option, only the Hex Data window is enabled. Enter the hex data you wish to send to the phone and press *Execute*. Any data returned from the phone will also be displayed in the Hex Data window.

**Send Raw Test Command:** Any data entered in the To Radio text window will be sent to the phone as is. This may be useful when a new test command is enabled in the phone software but not yet updated in the test tools such as RadioComm. In the case of USB, this will call a function within the PST application to send the raw data to the phone as well. In the event you may have a command op-code and the required data bytes, you can formulate the

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correct command string, either in RS232 or USB, by using the P2K Command Calculator. See [Section 8.2](#) of this document for a description on the P2K Command Calculator.

**RQ:** Select the desired RQ parameter from the drop down list and press *Execute*. The returned data from the phone is displayed in the Data window.

**FLEX:** This function allows you to flex a phone with an appropriate flex file. First, Browse for the flex file by pressing *Browse*. Next press the *FLEX* button. The phone will first be Suspended and then flexed via the data in the chosen flex file. A progress bar is displayed to let you know of the progress.

**ICACS:** This allows read and write access to IC registers. Select Read or Write, Enter the register address (2 bytes) and the number of data bytes being written or read. If writing, enter the data in hex format into the Data window. Press *Execute*. If reading data, the data returned from the phone will be displayed in the Data window.

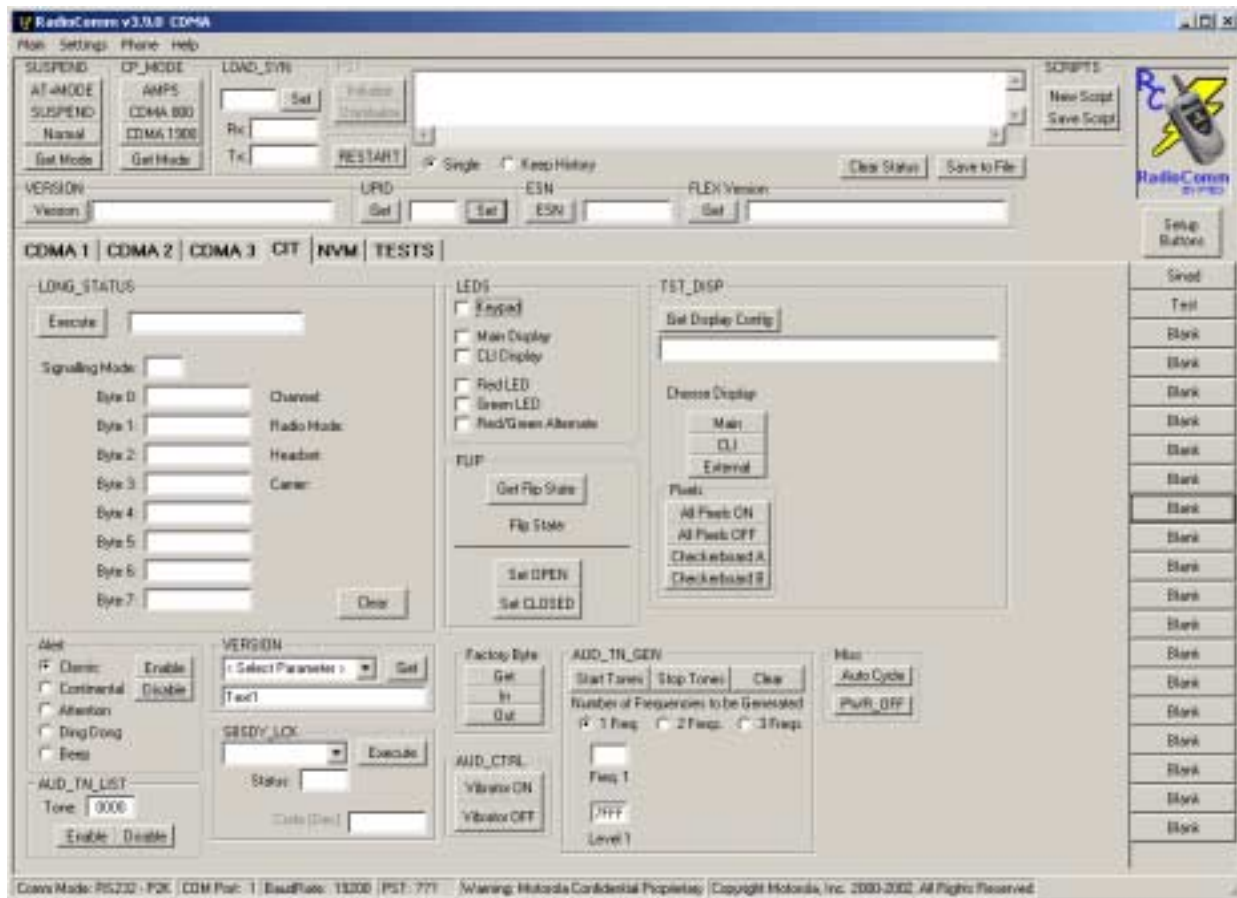
**PARM:** The PARM command allows you to read and write various parameters of the phone. Choose the desired parameter from the drop down list. Choose Read or Write. If Write, enter the data you wish to write to the phone in the Data window. Press *Execute*. The phone will return a status for the Write, displayed in the Status window. A status of 0x00 is a success. If reading data, the returned data from the phone will be displayed in the Data window.

**INVM:** This initializes the non-volatile memory parameters of the phone. Either press *Master CLEAR* to do a Master Clear on the phone or press *Master RESET* to do a Master Reset on the phone. Master Reset will reset all user-selectable options back to their original factory settings. Master Clear will perform a Master Reset plus clears the timers, call lists, and phonebook.

**CEM\_TEST:** Executes the CEM\_TEST test command, which sends and receives a set data pattern over certain CE Module Bus pins that cannot be tested with the GPIO\_TEST command. The phone must be in USB mode. Press *Execute* to execute the command. A result of 0x0000 in the text window indicates a success. Anything else is a failure. Note that various pins must be tied together, as a data loopback method is used. See the Platform 2000 Test Commands document for specific details of what pins need to be tied together and specific failure codes.

**RDWR\_SPI:** This is a generic test command, which performs reads/writes from/to devices connected to the SPI bus. Select the device from the drop down list. Enter any required data in the Data TO Radio window. Press *Execute*. Any data returned from the phone will be displayed in the Data FROM Radio window.

### 3.4 CIT Tab



**LONG\_STATUS:** The LONG\_STATUS command returns various information about the status of the radio. This command can be sent in Normal Mode (after AT+MODE=1 if in RS232) or Suspend Mode. In Normal Mode, it can be used to determine the phone's current channel and if it is in service. It is also frequently used to determine if the headset is detected or not detected. Press *Execute*. All data returned is displayed in the top window of the frame. The individual bytes are displayed in binary as well, since individual bits have a distinct meaning. Channel, Radio Mode, Headset, and Carrier are displayed to the right based on the returned data.

**Alert:** Choose the type of alert you wish to enable and then press *Enable*. This is a user convenience feature, since enabling the alert actually requires multiple test commands. The audio path is set to Alert path, the audio level is set to maximum, and the correct audio tone is sent based on the alert selection. Press *Disable* to turn off the alert. Note: After disabling the alert, the audio path and audio level remain set to alert path and max audio.

**AUD\_TN\_LIST:** This will send the AUD\_TN\_LST test command, which starts or stops alert tones. Enter in the 2 byte tone in hex and press *Enable*. Press *Disable* to turn off the tone. Audio path and audio level must be set separately.

**VERSION:** Select the desired parameter of the version and press *Get*. This will send the VERSION test command. The version data returned from the phone will be displayed in the text window.

**SBSYD\_LCK:** This sends the SBSYD\_LCK test command. Select the desired parameter from the drop down list and press *Execute*. The status returned from the phone will be displayed in the Status window. If unlocking a subsidy locked phone, with the correct parameter chosen, the Code (Dec) window will become enabled and you can enter in the lock code in decimal format.

**PWR\_OFF:** Sends the PWR\_OFF test command to turn off the phone.

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**LEDS:** Checking an option turns on that feature, un-checking an option turns it off. This sends the LEDS test command to turn on/off various LEDs of the phone. Note that not all products have all the features listed.

**FLIP:** Allows you to either get the current state of the flip or set the current state of the flip, regardless if it is physically opened or closed. Press *Get Flip State* to have the radio return what state the flip is in. Press *Set OPEN* to set the flip state as Open. Press *Set CLOSED* to set the flip state as closed. Note this command only works on phones that have a flip.

**TST\_DISP:** This test command allows you to configure the current display settings. Press '*Get Display Config*' to return the current display configuration. The data displayed is the raw data in hex that the phone returns. To choose which display is the active display, press *Main*, *CLI*, or *External*. You can also choose to turn various pixel patterns on/off of the active display. *All Pixels ON* will turn on all pixels, *All Pixels OFF* will turn off all pixels. *Checkerboard A* will turn on a pixel checkerboard pattern. *Checkerboard B* will turn on a reverse checkerboard, or the opposite pixels as Checkerboard A.

**AUD\_TN\_GEN:** Allows enabling or disabling of a generated tone. Select how many frequencies (1-3) you wish to generate, enter the frequency for each selected, and enter the audio level for each. Press *Start Tones*. To disable the tone generation, press *Stop Tones*. The data required to be entered for the frequency and audio level is formally described in the Platform 2000 Test Commands document.

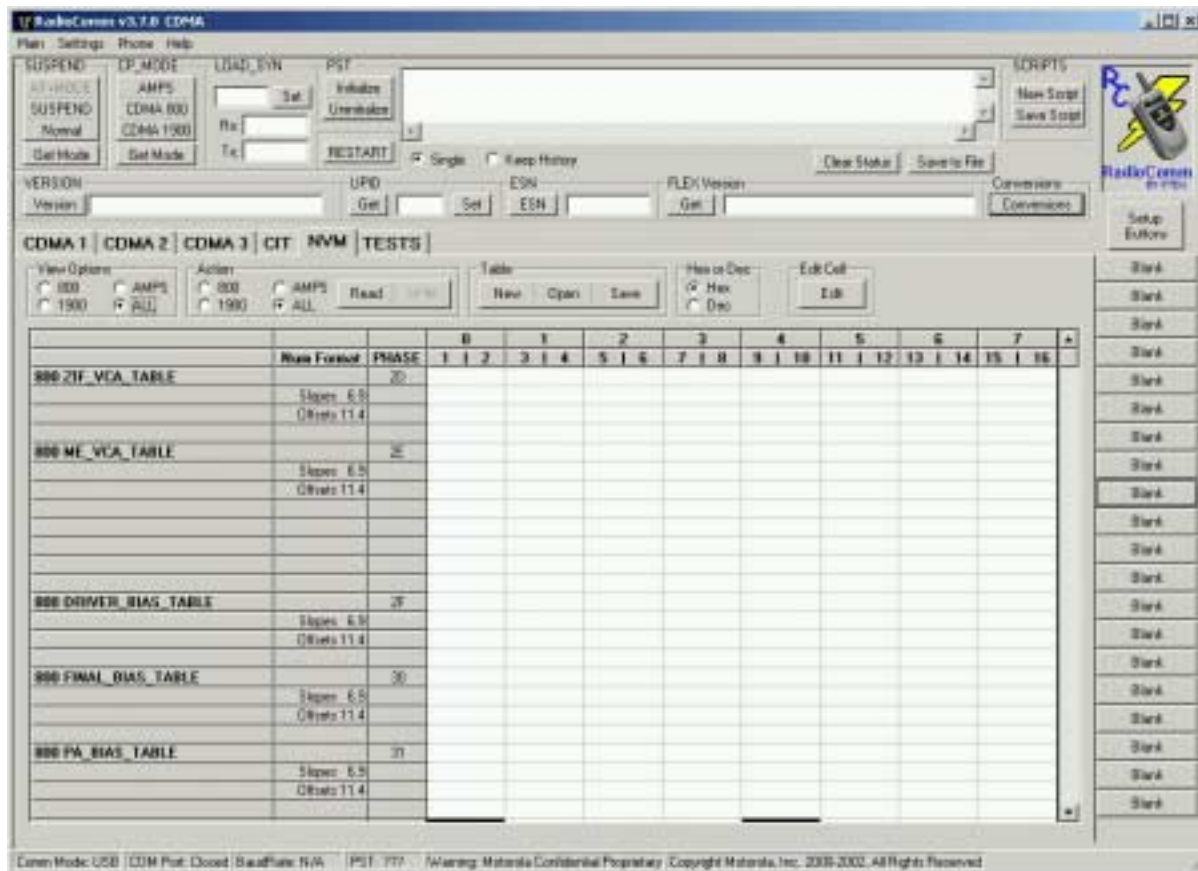
**AUD\_CTRL:** Sends the AUD\_CTRL test command to turn the phone's vibrator on/off. Choose *Vibrator ON* to turn on the vibrator. Choose *Vibrator OFF* to turn off the vibrator.

**AUTOCYCLE:** Sends the AUTOCYCLE test command, putting the phone into an automated mode that enables and disables various features in an endless cycle. Once this mode is activated, the phone will have to be power cycled to get out of this mode. The Platform 2000 Test Commands document describes the various cycles of the phone in this mode.

**Factory Byte:** This allows the user to check to see how the radio is set for the factory byte. It also allows the user to change the factory byte to either in or out. Note: a power cycle is required for the radio to change modes, once the command is sent to the phone.

### 3.5 NVM Tab

The NVM tab allows you to read, write, and edit the CDMA P2K phasing values stored in the phone.



**View Options:** Select whether you want to display on the screen the 800 parameters, 1900 parameters, AMPS parameters, or all three (800/1900/AMPS) parameters.

**Action:** First select whether which set of parameters you want to read or write. Select either 800, 1900, AMPS, or all three. To read the values out of the phone, press the *Read* button. To write values into a phone, press the *Write* button. Note that the *Write* button is only enabled when there is valid data displayed in the grid.

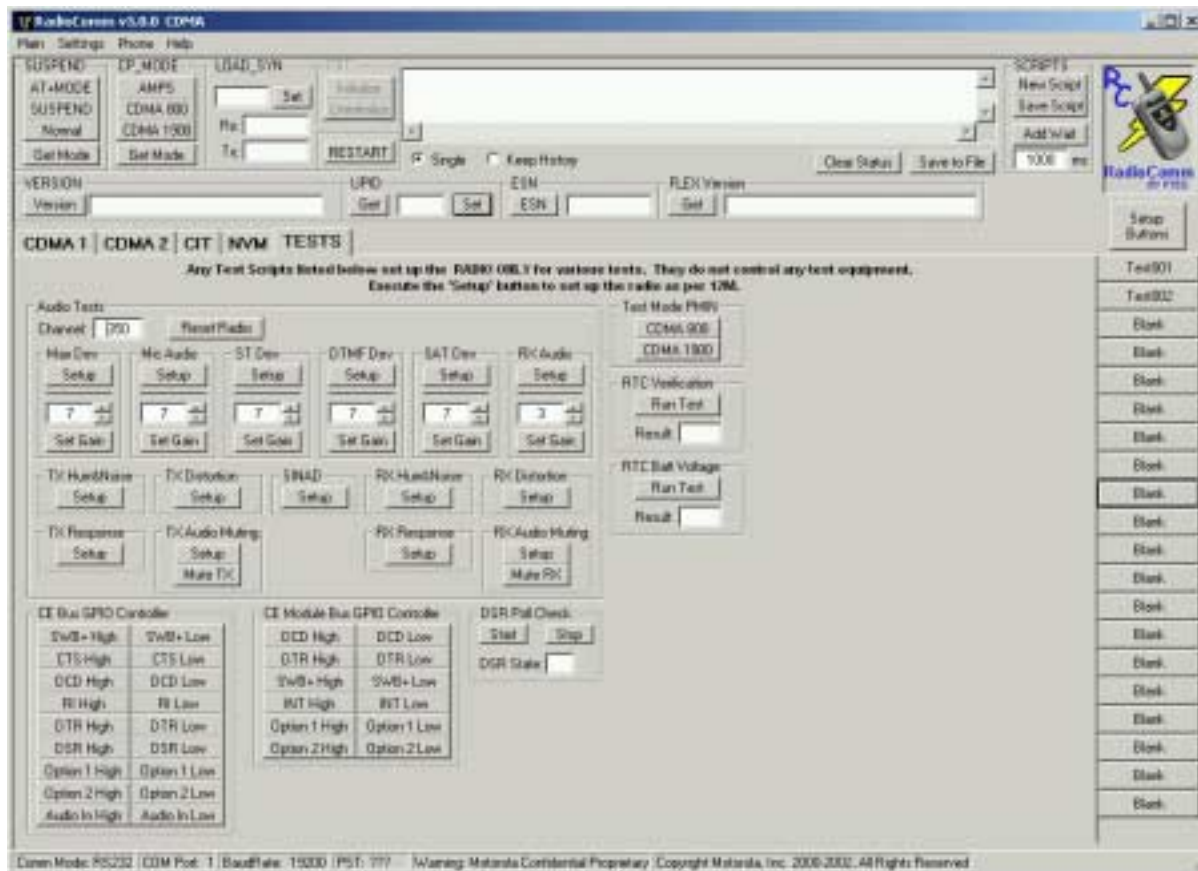
**Table:** Press the *New* button to clear the current table's data displayed on the screen. Press the *Open* button to open an existing table that was previously saved. The user will be prompted for a file name. Press the *Save* button to save the current data in the table displayed on the screen to a file. The default file extension that will be used is .NVM. The user will be prompted for a storage location and file name.

**Hex or Dec:** Choose whether you would like the table displayed in hexadecimal format or decimal format.

**Edit Cell:** In order to edit the data in the table, select/highlight a particular cell. Press the *Edit* button. A user input box will appear, displaying the current contents of the cell. Change the value to a new value and press OK. The cell in the table should now be changed to the new value.



### 3.6 TESTS Tab



**Audio Tests:** This section of tests sets up the PHONE ONLY for various audio tests. The phone is set up in the way listed in the Manufacturing 12M. Enter the desired channel in the Channel window that you wish the phone to be tested on. Press *Setup*. Pressing *Reset Radio* will reset the radio back to default setting by issuing a CP\_MODE command to AMPS mode. The individual gain control to various tests can be entered and then press *Set Gain*.

**Test Mode PMIN:** This sets the radio up as per the Minimum Power 12M test in Suspend Mode.

**RTC Verification:** This performs the RTC test as per the 12M and displays the result in the Result window.

**RTC Batt Voltage:** This performs the RTC Battery Voltage Check per the 12M and displays the result in the Result window.

**CE Bus GPIO Controller:** This allows the user to toggle the listed CE Bus pins high and low using the GPIO\_TEST test command. The required data for the GPIO\_TEST command is done in the background so the user does not have to know it.

**CE Module Bus GPIO Controller:** This allows the user to toggle the listed CE Module Bus pins high and low using the GPIO\_TEST test command. The required data for the GPIO\_TEST command is done in the background so the user does not have to know it.

**DSR Poll Check:** When a phone powers up, the DSR line toggles from low to high with respect to the PC serial RS232 port. Press *Start* to start polling the active COM port on your PC. Power up the phone. The DSR Status should change from a 0 to a 1 if the phone is working properly. Press *Stop* to stop the polling. Note that the phone may hold the PC's DSR line high, even after turned off. Therefore, you want to start with the DSR Status as a 0 so that you will be able to see the transition from low to high when a phone turns on. You can reset the COM port by going to the Settings menu and closing and then re-opening your COM port. This should reset the DSR Status to 0.

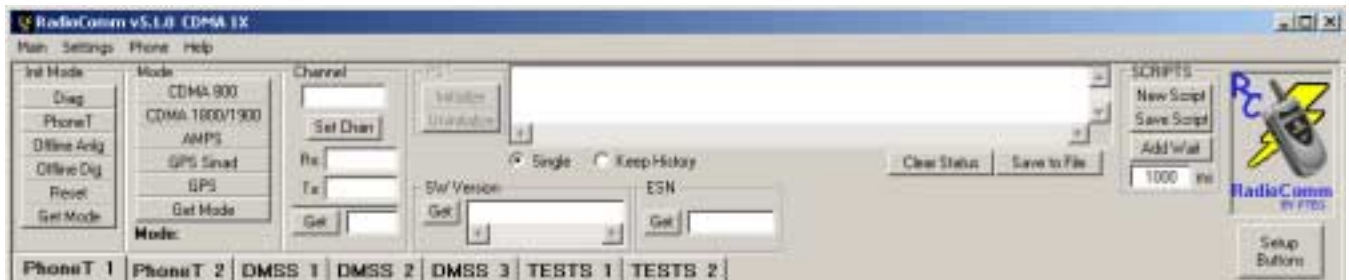
## 4 CDMA1X

The CDMA1X technology may or may not be available based on the version of RadioComm you are using. If available, the sections below describe the CDMA1X features in detail.

### 4.1 CDMA1X Header

The header area contains common commands/functions that are displayed. In CDMA1X, certain functions are only available based on the mode of the phone. Therefore, when in Qualcomm mode (PhoneT 1, PhoneT 2, DMSS 3, or TESTS 2 Tabs) one header is shown with the available functions. When in Motorola P2K mode (DMSS 1, DMSS2, NV/SEEM, TESTS1 Tabs) a slightly different header is shown. The following are the header areas for CDMA1X.

**Qualcomm mode header:**



**Diag:** Sends the AT\$QCDMG command to the phone to put it into Diag mode.

**PhoneT:** Sends the SetMode CDMA800 command to the phone to put the radio into PhoneT mode. This button is the same as hitting the CDMA 800 button.

**Offline Anlg:** Sends the ChangeMode command to put the phone in Offline Analog mode.

**Offline Dig:** Sends the ChangeMode command to put the phone in Offline Digital mode.

**Reset:** Sends the ChangeMode command to reset the phone.

**Get Mode:** Sends the NVRead command to the phone to read the ESN and then based on the ESN, makes the decision of what mode the phone is in, either Diag or PhoneT.

**CDMA 800:** Sends the SetMode function, putting the phone in CDMA 800 mode. If the phone was previously in DMSS mode and has all-in-one software, the phone will be put into PhoneT mode. This will also set the radio and PC to the desired baud rate selected in the Settings menu.

**CDMA 1800:** Sends the SetMode function, putting the phone in CDMA 1800 mode.

**AMPS:** Sends the SetMode function, putting the phone in AMPS mode.

**GPS SINAD:** Sends the SetMode function, putting the phone in GPS Sinad mode.

**GPS:** Sends the SetMode function, putting the phone in GPS mode.

**Set Chan:** This will send the SetChannel function and set the phone to the entered channel number. The corresponding Rx and Tx frequency will be displayed. This is for PhoneT mode only.

**Get Chan:** This will send the GetChannel function and will return the phone's current channel. This is for PhoneT mode only.

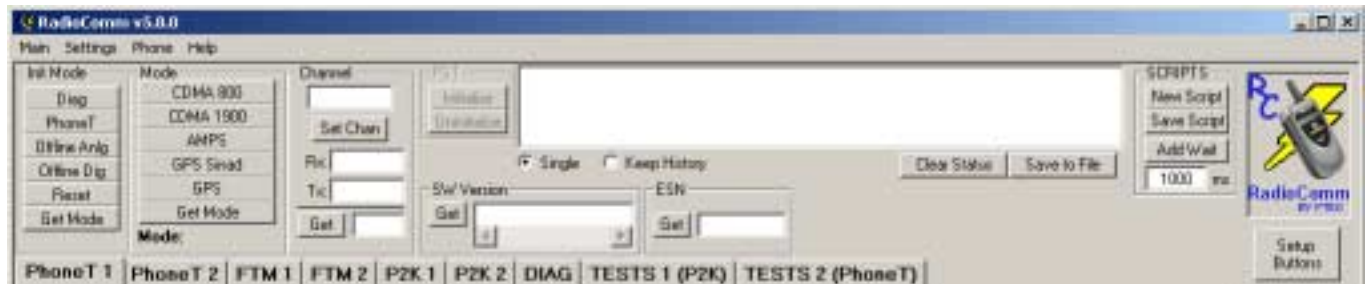
**SW Version:** This will send the GetVersion function and return the PhoneT software version listed in the Qualcomm NV area.

**ESN:** This will send the GetESN function and return the ESN if an ESN has been programmed and in DMSS Diag Mode. If an ESN has not been programmed or you are in PhoneT mode, this should return 0xFFFFFFFF.



**IsOnline:** Sends the IsOnline function and returns whether the phone is in PhoneT mode or DMSS mode. Executing this command is similar to the Motorola AT+MODE function. Once executed successfully, you are in 1 of the 2 Qualcomm modes (PhoneT or DMSS). To get out of Qualcomm mode, you must power-cycle the phone.

## 4.2 Motorola P2K mode header:



**AT+MODE:** Sends the AT+MODE=1/r/n data to the phone to place the phone into test command mode. This command only works when a phone is in normal mode, such as when it is first powered up. It is only available in RS232 Mode.

**SUSPEND:** Sends the SUSPEND test command, putting the phone into Suspend mode.

**Normal:** Sends the SUSPEND test command, putting the phone back into Normal mode.

**Get Mode:** Sends the SUSPEND test command, requesting what mode the phone is currently in. Either the *Suspend* button or *Normal* button will be highlighted with the mode of the phone.

**AMPS:** Sends the CP\_MODE test command, putting the phone in AMPS, or Analog, Mode.

**CDMA 800:** Sends the CP\_MODE test command, putting the phone in CDMA 800 Mode.

**CDMA 1900:** Sends the CP\_MODE test command, putting the phone in CDMA 1900 Mode.

**Get Mode:** Sends the CP\_MODE test command, requesting what call processing mode the phone is currently in. The current mode of the phone will be displayed.

**Channel frame:** Enter the desired channel number into the text box and press Set. This will send the LOAD\_SYN test command with the desired channel. The Rx and Tx text boxes will display the corresponding Rx and Tx frequency for the entered channel.

**SW VERSION:** Sends the VERSION test command, parameter 0xFFFF, and displays the version data sent back by the phone.

**ESN:** Sends the RDELEM test command with the SEEM location for the stored ESN and displays the ESN sent back by the phone.

**FLEX Version:** Pressing *Get* sends the RDELEM test command with the SEEM location for the stored Flex version and displays the Flex version sent back by the phone.

### Common Functions of both Headers (Qualcomm and Motorola mode)

**Status Window:** Displays the test commands sent to the phone and the data/response returned back from the phone. If a command is successful, the window will turn green. If a command fails, the window will turn red. Note: depending on the version of RadioComm, the full data string in Hexadecimal format may or may not be displayed.

**Single option:** When selected, only the last command sent to the phone is displayed in the status window.

**Keep History option:** When selected, every command sent to the phone is displayed in the status window until cleared using the Clear Status button. The user can scroll down the list of displayed commands.

**Clear Status:** Clears the status window.

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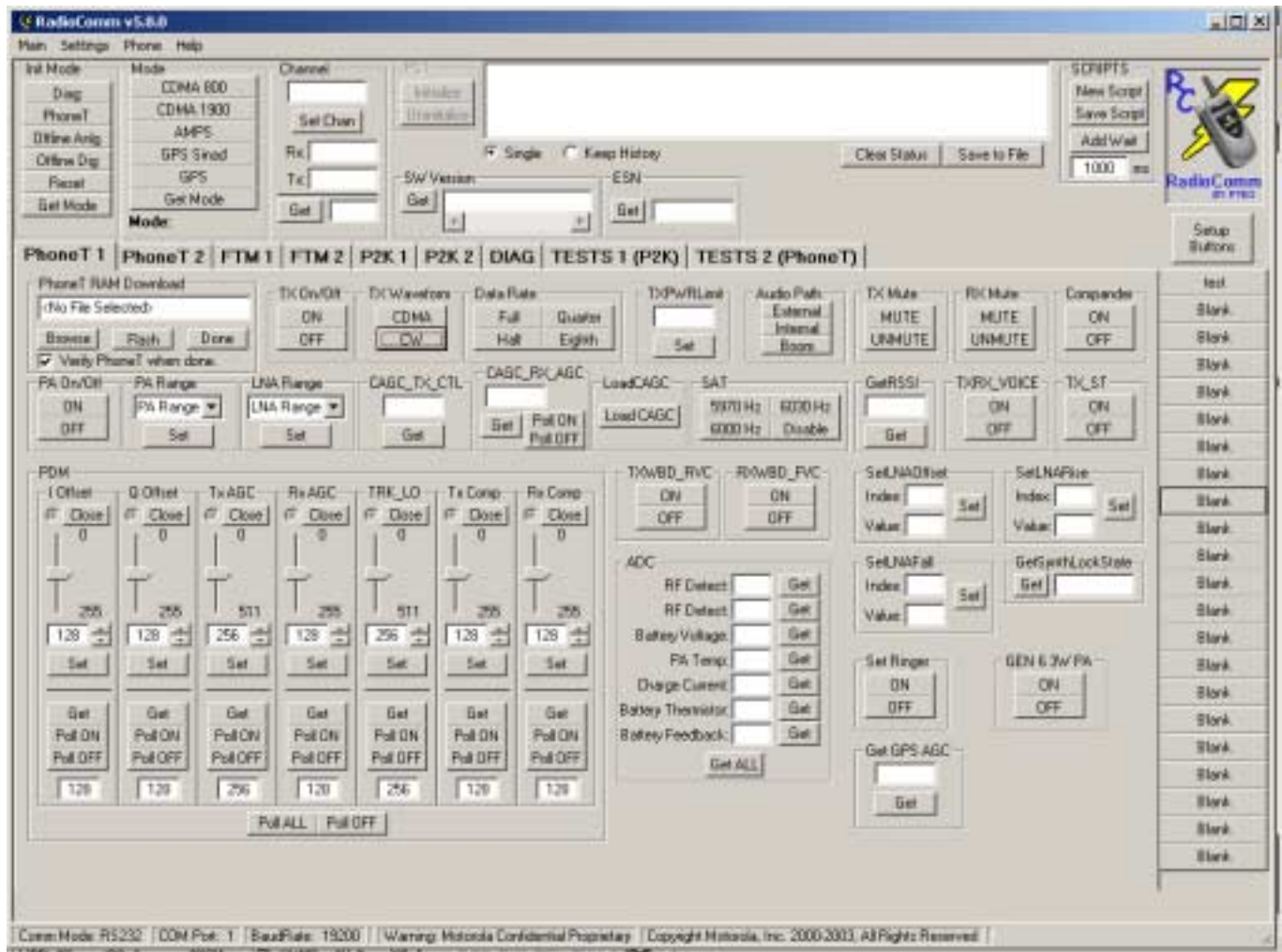
**Save to File:** Will prompt the user for a filename and will save the data in the status window to a file.

**SCRIPTS frame:** A test command script is a saved sequence of test commands that can be executed so that a user does not have to send the same individual test commands over and over. A new test command script can be generated by first pressing the '*New Script*' button. Then press any available test commands, from any tab. RadioComm will remember every test command and its corresponding data, in the order they were executed. When finished with the desired test command sequence, press the *Save Script* button. The user will be prompted for a filename and location to save the script. This script can then be run by using the *Run Custom Test Command Scripts* frame on the TESTS Tab or by linking the script to one of the user definable hot buttons. **NOTE: For CDMA1X, a script must be generated with all Qualcomm commands or all P2K commands. You cannot mix and match, since the phone has to be in one mode or the other for the commands to work properly.**

**New Script:** Clears out a buffer within the RadioComm code that keeps track of the test commands sent to the phone.

**Save Script:** Saves the sequence of test commands and their corresponding data stored in the scripts buffer to a file. The file is a simple text file with a .tcs file extension.

## 4.3 PhoneT 1 Tab



**PhoneT RAM Download:** Allows the ability to flash PhoneT into RAM. This uses the PST dll and a PhoneT flash file (.shx). Power up the radio into flash mode. Press the *Browse* button to locate the PhoneT flash file. Press the *Flash* button. The first time it is used, it will prompt you for the location of the pst.dll. Browse for the pst.dll. Most new versions are now defaulted in C:\Program Files\Motorola\Pst directory. Once the radio starts to flash, a user prompt will appear informing you that this is a manual process. The radio is done flashing when the current draw on the radio increases from approximately 100mA to around 150mA. Press the *Done* button to exit the routine.

**TX On/Off:** Turns the phone transmitter on or off.

**TXWaveform:** Sets the Tx waveform to either a CDMA signal or a CW signal.

**Data Rate:** Sets the CDMA data rate to Full, Half, Quarter, or Eighth.

**TXPWRLimit:** Sets the CAGC Transmit Power Limit register's value.

**PA On/Off:** Turns the PA on or off.

**PA Range:** Sets the PA to the desired range.

**CAGC\_TX\_CTL:** Press Get to have the phone return the 10-bit input to the Tx Linearizer.

**CAGC\_RX\_AGC:** Press Get to have the phone return the 8-bit output of the RX CAGC loop gain integrator, or AGC\_VAL.

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**LoadCAGC:** LoadCAGC loads the Tx and/or Rx AGC values to RASRAM so that the phone can use the values. Pressing the LoadCAGC button will bring up the following screen:

The screenshot shows a window titled "LoadCAGC" with a grid of input fields for Rx and Tx Slope and Lin Offset values. The Rx Lin Offset is set to 0. The Tx Lin Offset is set to 0. The Rx Slope values (0-15) are all set to 16. The Tx Slope values (0-31) are set to 0 for odd indices and 16 for even indices. On the right side, there are radio buttons for "Load Straight Line Values" (selected) and "Load Custom Values". Below these are buttons for "LoadCAGC", "Save Custom Values", and "Restore Custom Values".

| Rx Lin Offset | Tx Lin Offset | Tx Slope (0) | Tx Slope (1) | Tx Slope (2) | Tx Slope (3) | Tx Slope (4) | Tx Slope (5) | Tx Slope (6) | Tx Slope (7) | Tx Slope (8) | Tx Slope (9) | Tx Slope (10) | Tx Slope (11) | Tx Slope (12) | Tx Slope (13) | Tx Slope (14) | Tx Slope (15) | Tx Slope (16) | Tx Slope (17) | Tx Slope (18) | Tx Slope (19) | Tx Slope (20) | Tx Slope (21) | Tx Slope (22) | Tx Slope (23) | Tx Slope (24) | Tx Slope (25) | Tx Slope (26) | Tx Slope (27) | Tx Slope (28) | Tx Slope (29) | Tx Slope (30) | Tx Slope (31) | Tx Slope (32) | Tx Slope (33) | Tx Slope (34) | Tx Slope (35) |
|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 0             | 0             | 16           | 0            | 16           | 16           | 16           | 16           | 16           | 16           | 16           | 16           | 16            | 16            | 16            | 16            | 16            | 16            | 0             | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 16            | 0             | 0             |

You may either select "Load Straight Line Values", which set the slopes and offsets to straight line defaults, or select "Load Custom Values" which allows you to modify the slopes and offsets. If you wish to save the modified values, press the *Save Custom Values* button. At a later time, you can then restore those values by pressing the *Restore Custom Values* button.

**PDM:** Allows you to control the PDM's in the phone. You can set, get, close or poll each individual or all the PDM's. Pressing the up/down arrows changes the PDM value and issues the SetPDM command with that value.

**Aud\_Path:** Allows you to control the desired audio path of the phone.

**TX\_Mute:** Allows you to turn the tx muting on or off.

**RX\_Mute:** Allows you to turn the rx muting on or off.

**Compander:** Allows you to turn the compander on and off.

**LNARange:** Allows you to set the desired LNA Range.

**SAT:** Allows the user to select which frequency SAT signal they want to transpond.

**TX\_WBD:** Allows you to turn the transmitter's wide band data signal on and off.

**RX\_WBD:** Allows you to turn the receiver's capability to receive wide band data on and off.

**ADC:** Allows you to read the current state of the ADC channels listed.

**GetRSSI:** Allows you to read the current analog RSSI value.

**TXRXVoice:** Allows you to set the phone in Voice Traffic state for analog mode.

**TX\_ST:** Allows you to turn the signaling tone on and off.

**Set\_LNA\_Offset:** Allows you to set the LNA Offset value in the phone.

**Set\_LNA\_Rise:** Allows you to set the LNA Rise value in the phone.

**Set\_LNA\_Fall:** Allows you to set the LNA Fall value in the phone.

**Get\_Synth\_Lock\_State:** Allows you to read the state of the synthesizer.

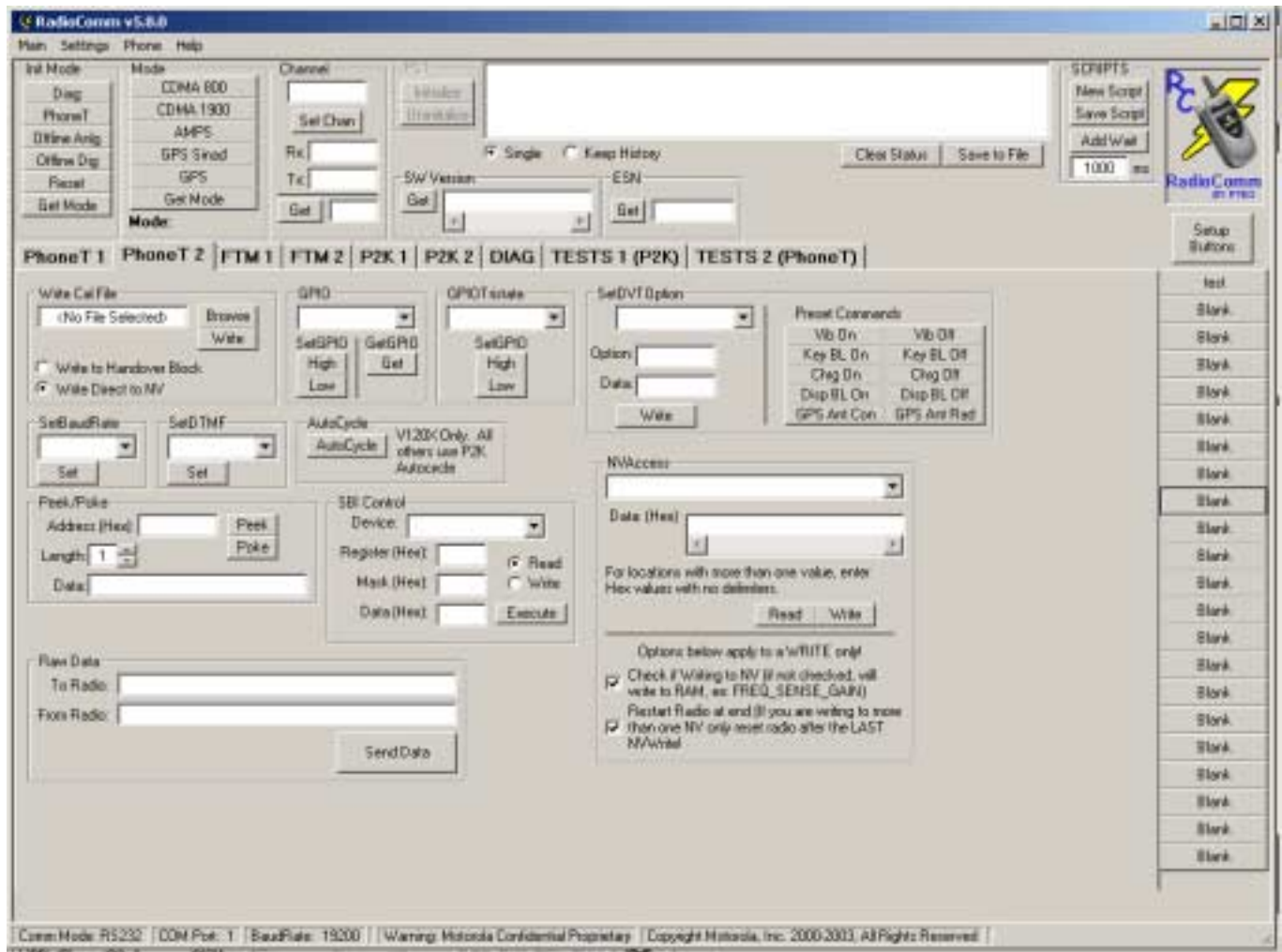
**Set\_Ringer:** Allows you to turn the ringer on and off.

**Get\_GPS\_AGC:** Allows you to read the current GPS AGC value.

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## 4.4 PhoneT 2 Tab



**Write Cal File:** Allows you to write the NexTest cal file with phasing values into the phone. This cal file is the exact cal file that comes from the test benches in the factory. The cal file format is described in the CDMA1X 5100 12M.

**SetBaudRate:** Allows you to change the baud rate of the phone. Once the baud rate of the phone is changed, then the command changes the computer serial port to the new rate as well so communication is still possible. Note: If the radio does not change baud rates then the computer port will not be changed.

**Inpb:** Allows you to read a byte of data from an address in the MSM.

**Outpb:** Allows you to write a byte of data to an address in the MSM.

**GPIO:** Allows you to either read or write to specific GPIO's in the phone.

**GPIOTristate:** Allows you to configure the GPIO's to either an input or output.

**Autocycle:** Allows you to put the phone into Autocycle mode. This is only valid for V120X phones.

**SetDVTOption:** Allows you to select the available DVTOptions available in the phones. You can either select from the pull down menu and then enter the desired data, or simply enter the option and data manually.

**SBI Control:** Allows you to control items on the SBI bus.

**Peek/Poke:** Allows you to either peek (read) or poke (write) a byte of data to a specific address.

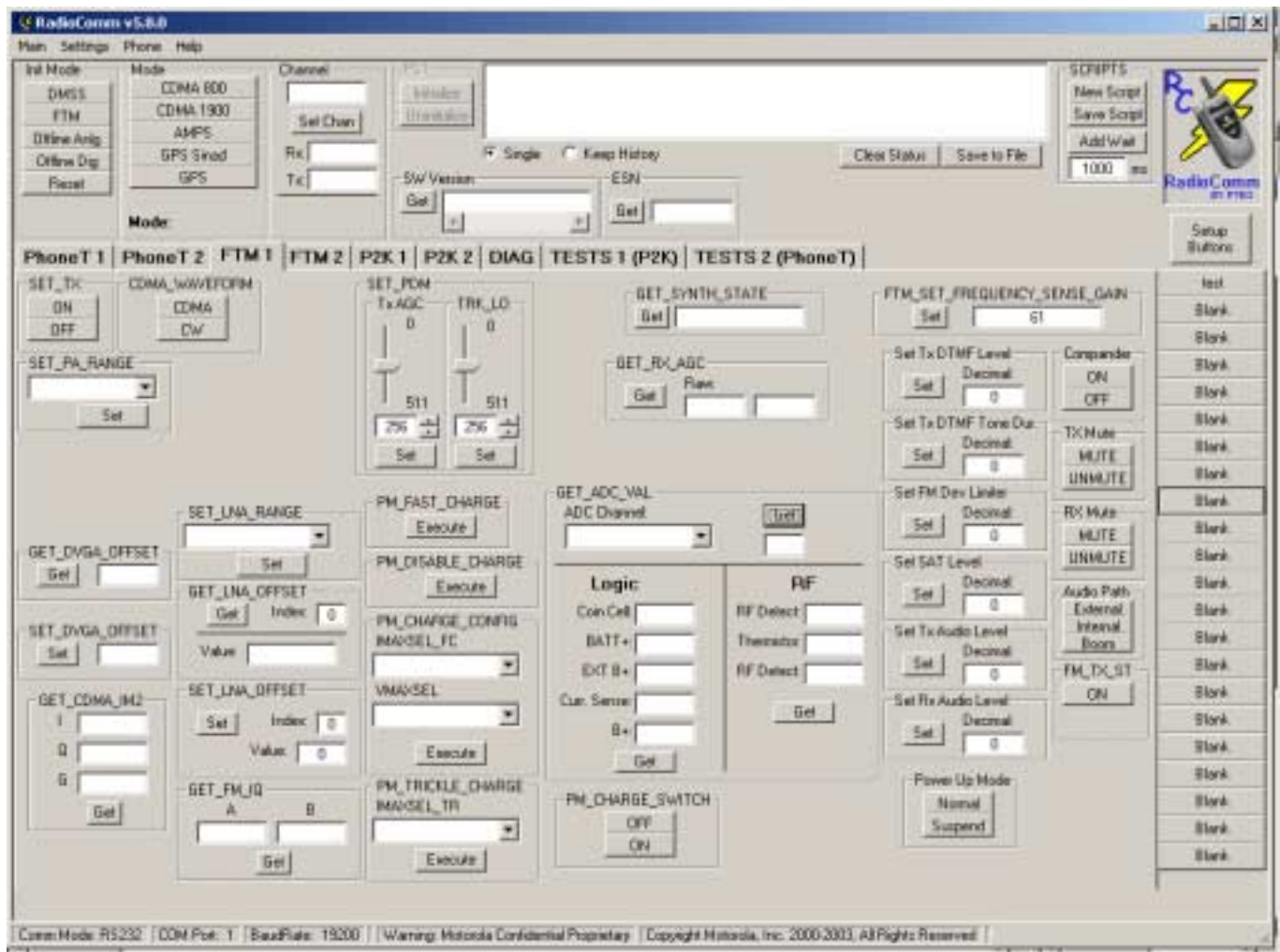
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**NVAccess:** NV Access allows the user to perform either the NVRead or NVWrite command to read/write data to/from the phone's NV. When using the Read command, the user needs to select is the NV element from the pull down menu. A manual entry box is available for items not listed. When using the Write command, the user must also select a few other options. Selecting the Write to NV box, will tell the program if you are writing to NV or to the radio's RAM location. The RAM location is only used for FM\_FREQ\_SENSE\_GAIN and should only be used when 'tweaking' the value for this item during audio testing. The Restart Radio option is so that any values written to the phone start to be used when the command is complete. If you are writing to more than one NV location, then only restart the radio after the LAST nv write. This will cause the radio to restart when the command is complete and therefore allow the radio to start using this new value. If not selected the radio will remain in 'Offline Digital' mode if the Write to NV box is selected or simply 'PhoneT' mode if the Write to NV is not selected.

## 4.5 FTM 1 Tab



**GET\_ADC\_VAL:** Allows the user to retrieve the current ADC value from any of the 17 available ADC channels. Simply choose the ADC channel and then press the Get button. There is a Logic and RF section with a button to get all channels related to those items at once.

**FTM\_SET\_FREQUENCY\_SENSE\_GAIN:** Allows the user to set the current Freq Sense Gain register to control the DFM modulation index. Enter a valid value and press the Set button.

**FM\_TX\_ST:** Allows the user to control the signaling tone in FM mode of the phone. If turning the ST tone on, this command turns on a 10kHz tone for the radio to modulate and transmit and automatically mutes the TX aud path so the tone is not distorted. Press the On or Off button.

**GET\_FM\_IQ:** This command returns the A and B compensation values for the FM RF mode. Press the Get button to execute the command.

**CDMA\_WAVEFORM:** This command allows the user to turn the I/Q modulation on and off, therefore making the transmit signal a CW or a CDMA signal. Press the corresponding button for the desired waveform type.

**SET\_TX:** Allows the user to turn the transmitter of the radio on and off. Press the corresponding button for the desired functionality.

**SET\_PA\_RANGE:** This command allows the user to select the PA range that they want to test with. Select the range from the pull down menu and then press Set.

**SET\_LNA\_RANGE:** This command allows the user to select the LNA range that they want to test with. Select the range from the pull down menu and then press Set.

**SET\_PDM:** This command allows the user to control the PDM levels for the TXAGC and the TRKLO PDM's. If controlling the TXAGC PDM note that in CDMA and PCS mode, the PDM is inverted and 0 is high power out and 511 is low power out. FM mode is normal, 0 low power out and 511 high power out. Select the PDM value and press the corresponding Set button to execute the command.

**GET\_RX\_AGC:** This command returns the 10 bit two's complement output of the RX AGC loop, referred to as the AGC value in CDMA mode and the RSSI in FM mode. Press the Get button to execute the command.

**GET\_DVGA\_OFFSET:** This command calculates and returns the DVGA offset for the current channel of operation. Press the Get button to execute the command.

**SET\_DVGA\_OFFSET:** This command sets the DVGA offset register for the current channel of operation. Enter the desired value and press the Set button to execute the command.

**GET\_CDMA\_IM2:** This command returns the optimum IM2 value for the current mode and channel of the phone. Press the Get button to execute the command.

**GET\_SYNTH\_STATE:** This command will return if all the synthesizers are locked or not. If any of the synthesizers are unlocked then this command will return that value. Press the Get button to send the command to the phone.

**GET\_LNA\_OFFSET:** This command calculates and returns the LNA offset for the current channel and index of operation. Enter the desired index value and press the Get button to execute the command.

**SET\_LNA\_OFFSET:** This command sets the LNA offset register for the current channel and index of operation. Enter the desired index and value and press the Set button to execute the command.

**PM\_FAST\_CHARGE:** This command will turn the fast charger on using the options set with PM\_CHARGE\_CONFIG.

**PM\_DISABLE\_CHARGE:** This command will turn the fast charger off.

**PM\_CHARGE\_CONFIG:** This command will allow you to select the IMAX and VMAX selection items for charger testing.

**PM\_TRICKLE\_CHARGE:** This command will turn the trickle charger on using the options chosen for IMAX sel.

**PM\_CHARGE\_SWITCH:** This command allows control of the FET charger switch.

**Set Tx DTMF Level:** This command allows the user to select the level at which the transmitted DTMF will be used.

**Set Tx DTMF Duration:** This command allows the user to select the time the transmitted DTMF on.

**Set FM Dev Limiter:** This command allows the user to select the gain level for the tx deviation limiter in the phone.

**Set SAT Level:** This command allows the user to select the level at which the SAT will be transmitted.

**Set Tx Audio Level:** This command allows the user to select the level at which the tx audio will be transmitted.

**Set Rx Audio Level:** This command allows the user to select the level at which the Rx audio will be sent out of the phone at.

**Power Up Mode:** This command allows the user to change the setting for whether the phone will power up next time in P2K suspend mode or normal mode.

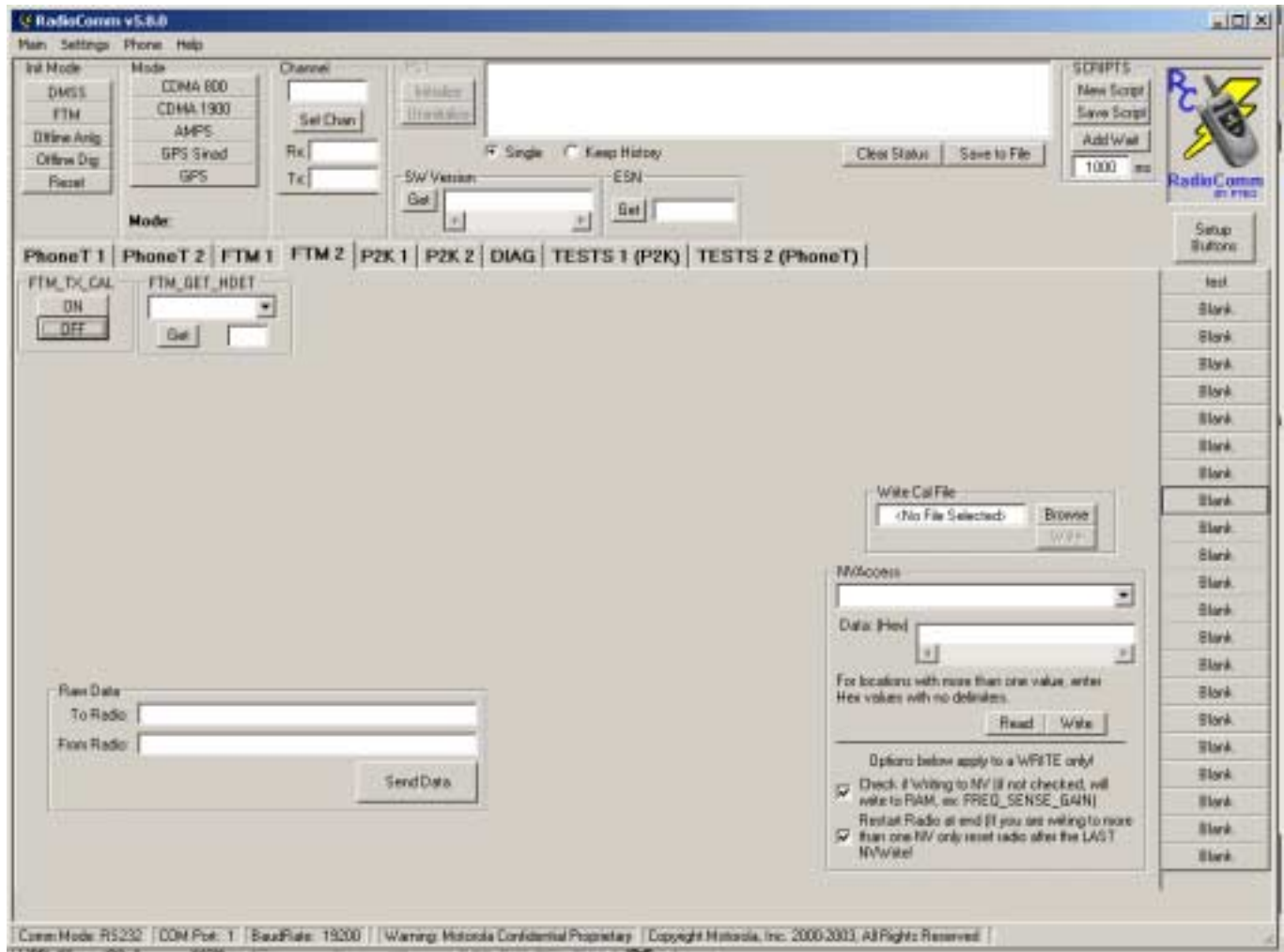
**Compandor:** This command allows the user to select if the compandor is on or off.

**Tx Mute:** This command allows the user to select if the Tx Muting is on or off.

**Rx Mute:** This command allows the user to select if the Rx Muting is on or off.

**Audio Path:** This command allows the user to select the desired audio path to use.

## 4.6 FTM 2 Tab



**FTM\_TX\_CAL:** This is a special function from QC that sweeps the TXAGC from the minimum power out to the current PDM setting up and back down the curve. During this routine the HDET is recorded and you can obtain those HDET values by using the FTM\_GET\_HDET command. These two commands are not used for other things.

**FTM\_GET\_HDET:** When the TX\_CAL mode is turned on then the HDET values from that routine can be obtained by using this command.

**NVAccess:** NV Access allows the user to perform either the NVRead or NVWrite command to read/write data to/from the phone's NV. When using the Read command, the user needs to select is the NV element from the pull down menu. A manual entry box is available for items not listed. When using the Write command, the user must also select a few other options. Selecting the Write to NV box, will tell the program if you are writing to NV or to the radio's RAM location. The RAM location is only used for FM\_FREQ\_SENSE\_GAIN and should only be used when 'tweaking' the value for this item during audio testing. The Restart Radio option is so that any values written to the phone start to be used when the command is complete. If you are writing to more than one NV location, then only restart the radio after the LAST nv write. This will cause the radio to restart when the command is complete and therefore allow the radio to start using this new value. If not selected the radio will remain in 'Offline Digital' mode if the Write to NV box is selected or simply 'PhoneT' mode if the Write to NV is not selected.

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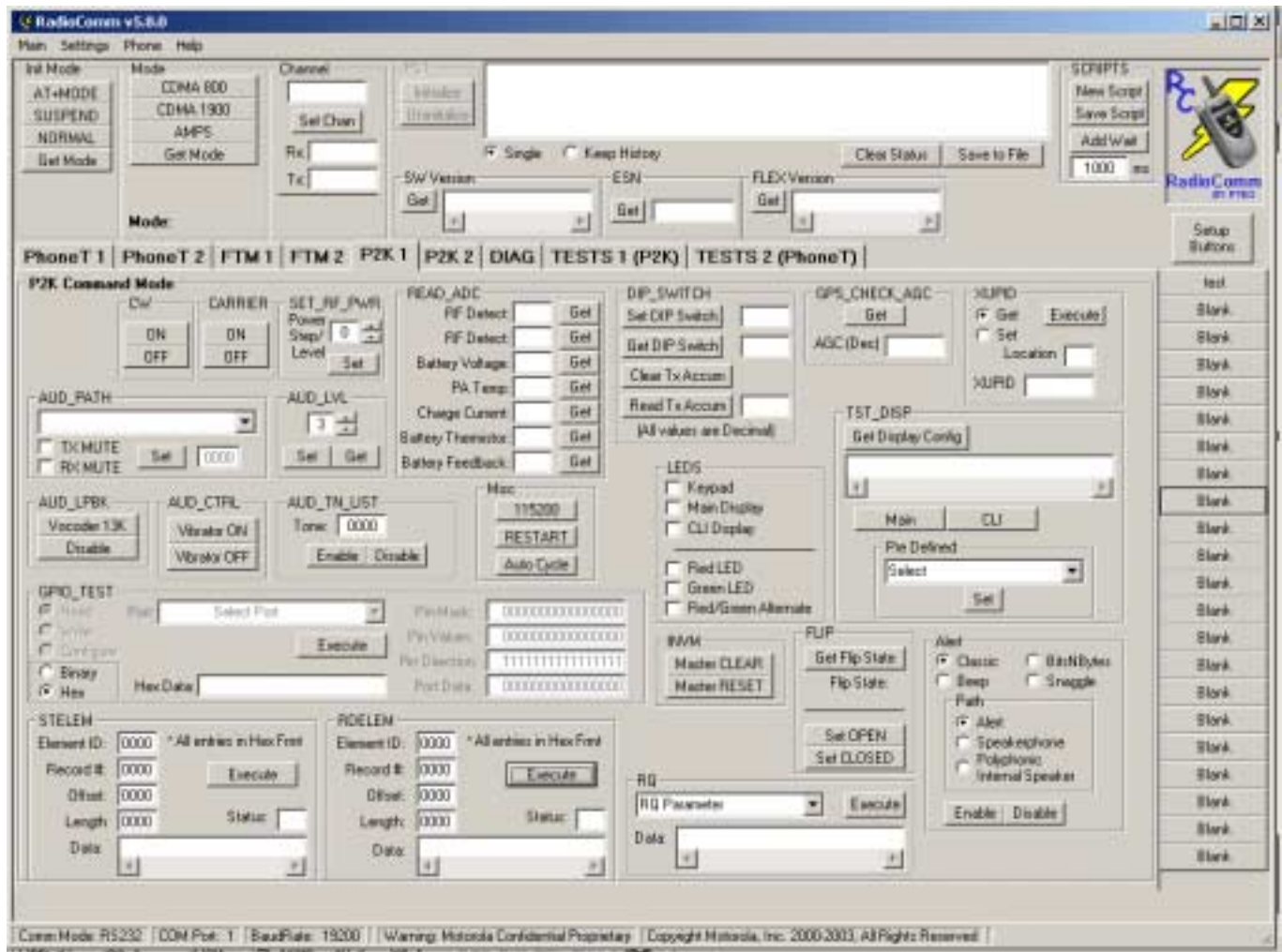
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**Write Cal File:** Allows you to write the NexTest cal file with phasing values into the phone. This cal file is the exact cal file that comes from the test benches in the factory. The cal file format is described in the CDMA1X 6100 12M.

**Raw Data:** This will allow the user to enter raw commands to send to the phone that RC may not support yet.

## 4.7 P2K 1 Tab



**Alert:** Choose the type of alert you wish to enable and then press *Enable*. This is a user convenience feature, since enabling the alert actually requires multiple test commands. The audio path is set to Alert path, the audio level is set to maximum, and the correct audio tone is sent based on the alert selection. Press *Disable* to turn off the alert. Note: After disabling the alert, the audio path and audio level remain set to alert path and max audio.

**AUD\_TN\_LST:** This will send the AUD\_TN\_LST test command, which starts or stops alert tones. Enter in the 2 byte tone in hex and press *Enable*. Press *Disable* to turn off the tone. Audio path and audio level must be set separately.

**LEDs:** Checking an option turns on that feature, un-checking an option turns it off. This sends the LEDs test command to turn on/off various LEDs of the phone. Note that not all products have all the features listed.

**FLIP:** Allows you to either get the current state of the flip or set the current state of the flip, regardless if it is physically opened or closed. Press *Get Flip State* to have the radio return what state the flip is in. Press *Set OPEN* to set the flip state as Open. Press *Set CLOSED* to set the flip state as closed. Note this command only works on phones that have a flip.

**TST\_DISP:** This test command allows you to configure the current display settings. Press *Get Display Config* to return the current display configuration. The data displayed is the raw data in hex that the phone returns. To

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choose which display is the active display, press *Main*, *CLI*, or *External*. You can also choose to turn various pixel patterns on/off of the active display. *All Pixels ON* will turn on all pixels, *All Pixels OFF* will turn off all pixels. *Checkerboard A* will turn on a pixel checkerboard pattern. *Checkerboard B* will turn on a reverse checkerboard, or the opposite pixels as Checkerboard A.

**AUD\_CTRL:** Sends the AUD\_CTRL test command to turn the phone's vibrator on/off. Choose *Vibrator ON* to turn on the vibrator. Choose *Vibrator OFF* to turn off the vibrator.

**AUTOCYCLE:** Sends the AUTOCYCLE test command, putting the phone into an automated mode that enables and disables various features in an endless cycle. Once this mode is activated, the phone will have to be power cycled to get out of this mode. The Platform 2000 Test Commands document describes the various cycles of the phone in this mode.

**RDELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, for the data you wish to read from the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Press *Execute*. A successful read should return 0x00 in the Status window.

**STELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, and data you wish to write to the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Enter the data you wish to write to the phone in the Data window in hex format. The number of bytes of data should match the Length entered. Press *Execute*. A successful write should return 0x00 in the Status window.

**GPIO\_TEST:** Allows you to read, write, and configure various GPIO ports and registers on the phone's chipset. This command can either be used in binary or hex format. Binary format allows you to manually configure the specific pins. Select Binary, select Read, Write or Configure, and select the Port. If Configure is chosen, select whether you are configuring the pins for Input or Output. Depending on which mode you have chosen (Read/Write/Configure) the text windows for Pin Mask, Pin Values, and Port Data will be enabled. These are in binary format, with each bit representing an individual pin. Press *Execute*. If you choose the Hex option, only the Hex Data window is enabled. Enter the hex data you wish to send to the phone and press *Execute*. Any data returned from the phone will also be displayed in the Hex Data window.

**RQ:** Select the desired RQ parameter from the drop down list and press *Execute*. The returned data from the phone is displayed in the Data window.

**INVM:** This initializes the non-volatile memory parameters of the phone. Either press *Master CLEAR* to do a Master Clear on the phone or press *Master RESET* to do a Master Reset on the phone. Master Reset will reset all user-selectable options back to their original factory settings. Master Clear will perform a Master Reset plus clears the timers, call lists, and phonebook.

**CARRIER:** Pressing *ON* sends the CARRIER test command to turn on the transmitter with a CW signal. Pressing *OFF* turns the transmitter off.

**SET\_RF\_POWER:** Enter the desired power step (0-7) into the text box or use the up/down buttons to select. Press *Set* to send the SET\_RF\_POWER test command with the entered power step.

**Read ADC:** Allows you to read the current ADC values from the listed channels. This command gives same value as the ADC command in PhoneT mode, but this command is for P2K mode.

**AUD\_LPBK:** Sends the AUD\_LPBK test command to enable or disable audio loopback. Vocoder 13K loopback is the only supported option.

**AUD\_LVL:** Enter the desired audio level (0-15) and press *Set*. This will set the phone's audio level by sending the AUD\_LVL test command. Press *Get* to display the current audio level the phone is set to.

**AUD\_PATH:** Choose the audio input path from the drop down list. Choose the audio output path from the drop down list. Optionally choose to RX or TX mute the paths. Press the *Set* button to set the phone's audio paths to those selected.

**RESTART:** Allows you to send the restart command to the phone.

**XUPID:** Allows you to read and write the Universal Platform ID from the phone.

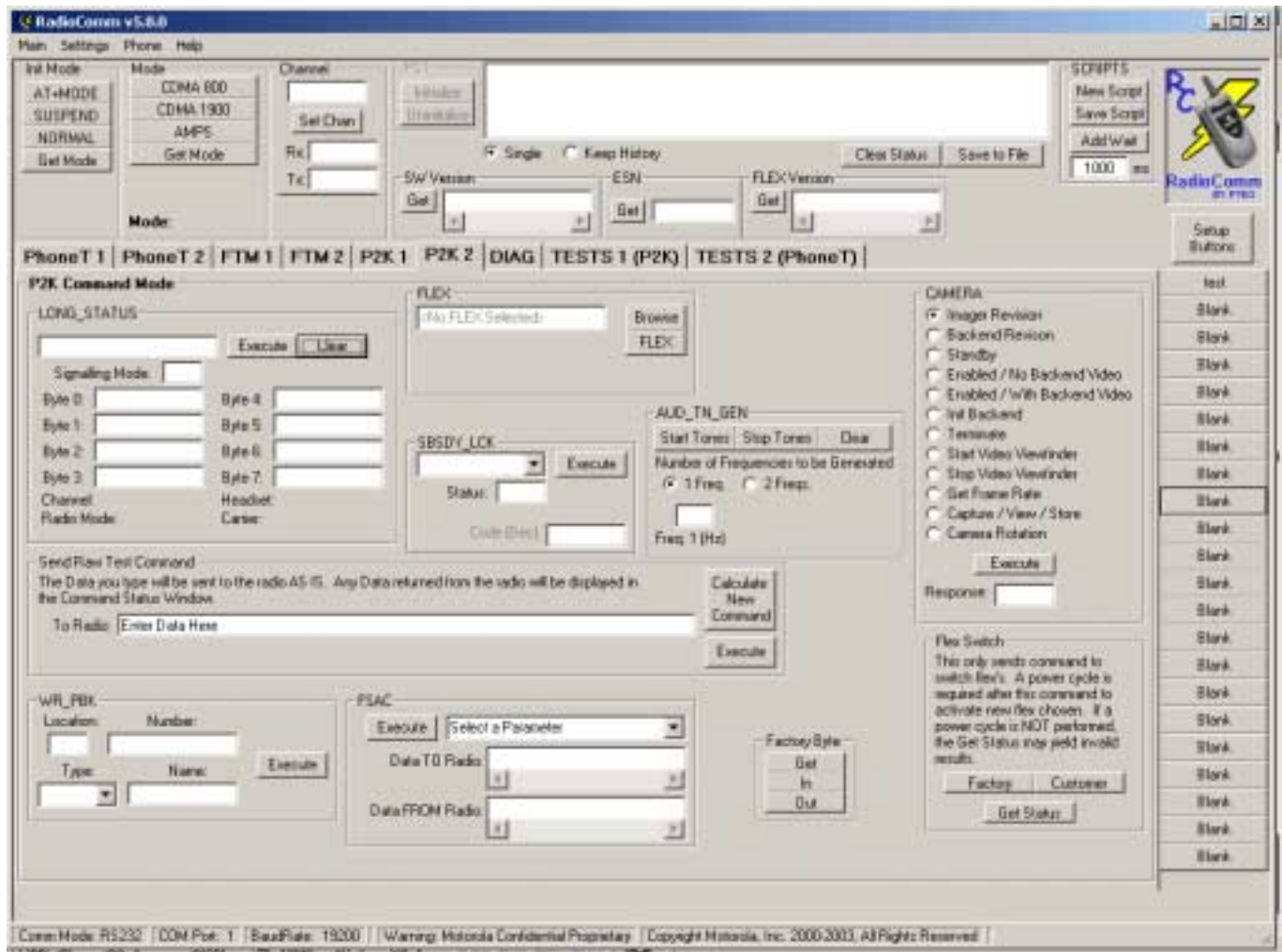
**GPS\_CHECK\_AGC:** Allows you to read the current value of the GPS AGC. Note: you must be in a CDMA (800 or 1900) call for this command to work. Also, on some models, issuing this command too many times in a row consecutively will cause the phone to drop the call.

**DIP\_SWITCH:** Allows you to read and write various parameters that are listed.

**BAUD\_RATE:** Allows you to change the baud rate of the radio. This command must be done prior to AT+MODE=1 command. This command will also change the computer serial port baud rate.

**PST:** *Initialize* will initialize the PST functions and determine if it can see a phone. If successful, PST: Initialized will be displayed in the bottom status bar. This is the identical function as the Initialize PST function in the Settings Menu. If not successful, an error message will be displayed to the user. *UnInitialize* will un-initialize the PST and close the PST session. If successful, PST: Uninitialized should be displayed in the bottom status bar.

## 4.8 P2K 2 Tab



**Send Raw Test Command:** Any data entered in the To Radio text window will be sent to the phone as is. This may be useful when a new test command is enabled in the phone software but not yet updated in the test tools such as RadioComm. In the case of USB, this will call a function within the PST application to send the raw data to the phone as well. In the event you may have a command op-code and the required data bytes, you can formulate the correct command string, either in RS232 or USB, by using the P2K Command Calculator. See [Section 8.2](#) of this document for a description on the P2K Command Calculator.

**FLEX:** This function allows you to flex a phone with an appropriate flex file. First, Browse for the flex file by pressing *Browse*. Next press the *FLEX* button. The phone will first be Suspended and then flexed via the data in the chosen flex file. A progress bar is displayed to let you know of the progress.

**LONG\_STATUS:** The LONG\_STATUS command returns various information about the status of the radio. This command can be sent in Normal Mode (after AT+MODE=1 if in RS232) or Suspend Mode. In Normal Mode, it can

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be used to determine the phone's current channel and if it is in service. It is also frequently used to determine if the headset is detected or not detected. Press *Execute*. All data returned is displayed in the top window of the frame. The individual bytes are displayed in binary as well, since individual bits have a distinct meaning. Channel, Radio Mode, Headset, and Carrier are displayed to the right based on the returned data.

**SBSDY\_LCK:** This sends the SBSDY\_LCK test command. Select the desired parameter from the drop down list and press *Execute*. The status returned from the phone will be displayed in the Status window. If unlocking a subsidy locked phone, with the correct parameter chosen, the Code (Dec) window will become enabled and you can enter in the lock code in decimal format.

**WR\_PBK:** This allows the user to program the radios phonebook. Enter the location desired, number, name and select the type of phonebook entry desired and press *Execute*. Only one entry can be programmed at a time.

**Factory Byte:** This allows the user to check to see how the radio is set for the factory byte. It also allows the user to change the factory byte to either in or out. Note: a power cycle is required for the radio to change modes, once the command is sent to the phone.

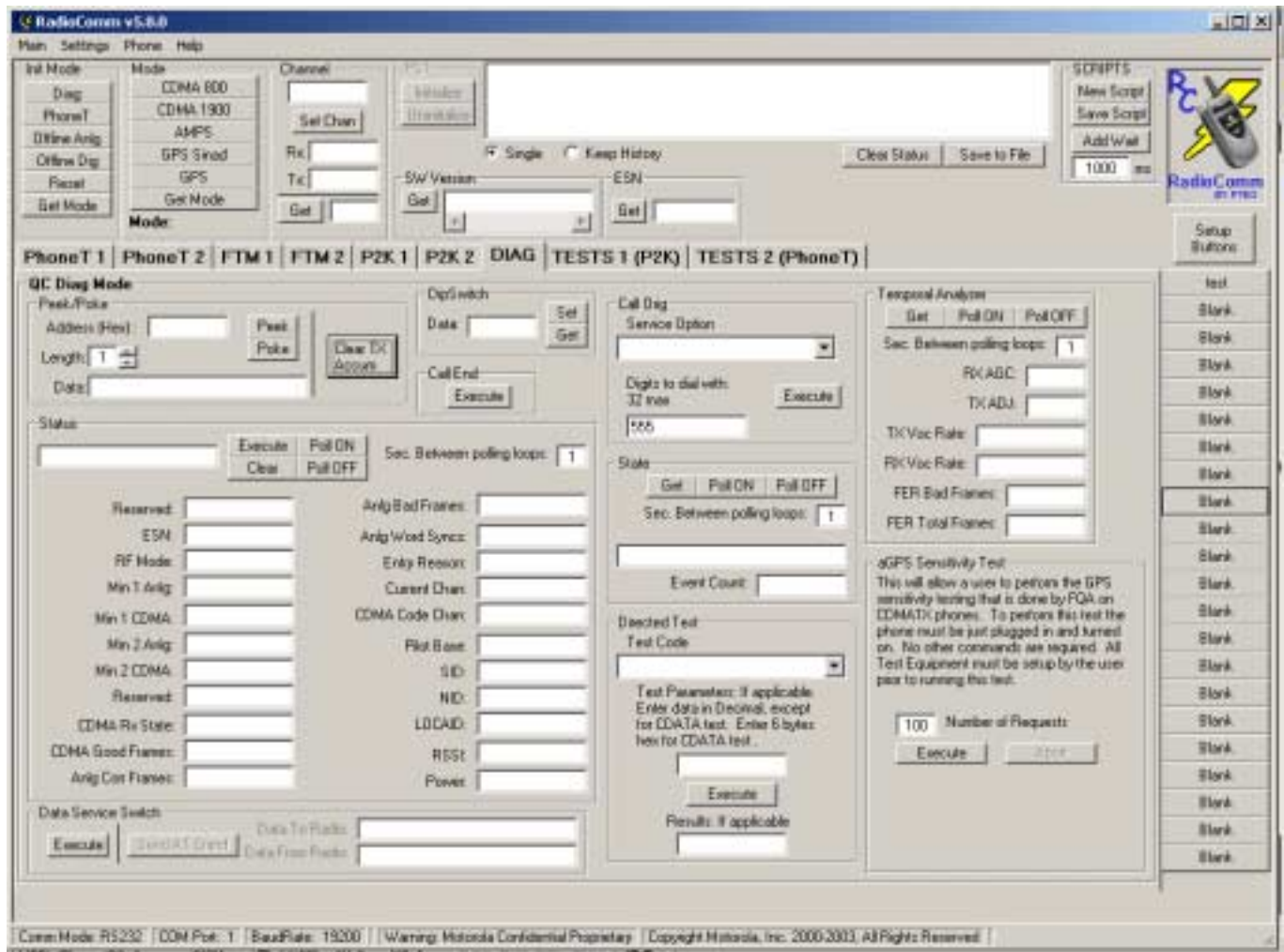
**AUD\_TN\_GEN:** Allows enabling or disabling of a generated tone. Select how many frequencies (1or 2) you wish to generate, enter the frequency for each selected, and enter the audio level for each. Press *Start Tones*. To disable the tone generation, press *Stop Tones*. The data required to be entered for the frequency and audio level is formally described in the Platform 2000 Test Commands document.

**FSAC:** This command activates different file system requests to/from the phone. See the Platform 2000 Test Commands document for further description on each parameter.

**Flex Switch:** This allows a user to change the active flex in the radio to either Customer or Factory. Follow 12M procedures for this command.

**CAMERA:** This command allows the user to control the camera in the phone. This command is only available on products that support a camera.

## 4.9 DIAG Tab



**DipSwitch:** Allows you to set and get the value of the Dip Switches in the phone.

**Peek/Poke:** Allows you to peek (read) or poke (write) one byte of data from the phone. Equivalent to the PhoneT version of this command. This command is for Diag Mode.

**Status:** Allows you to get the radio current status. This command is for Diag Mode.

**Data Service Switch:** Allows you to change the mode of the radio to modem mode where the radio will accept AT commands. This command is for Diag Mode.

**Call End:** Allows you to end a call. Equivalent to pressing the END key on the phone. This command is for Diag Mode.

**Call Orig:** Allows you to originate a call. Enter the number you want dialed and choose the service option to use and then press the execute button. This command is for Diag Mode.

**State:** Allows you to get the radio current state. This command is for Diag Mode.

**Directed Test:** Allows you to send directed test commands to the phone. The phone must be in Offline Analog mode for this command to work properly. This command is for Diag Mode.

**Temporal Analyzer:** Allows you to read the current values of the temporal analyzer in the phone. Any data will be displayed on the screen. This command is for Diag Mode.

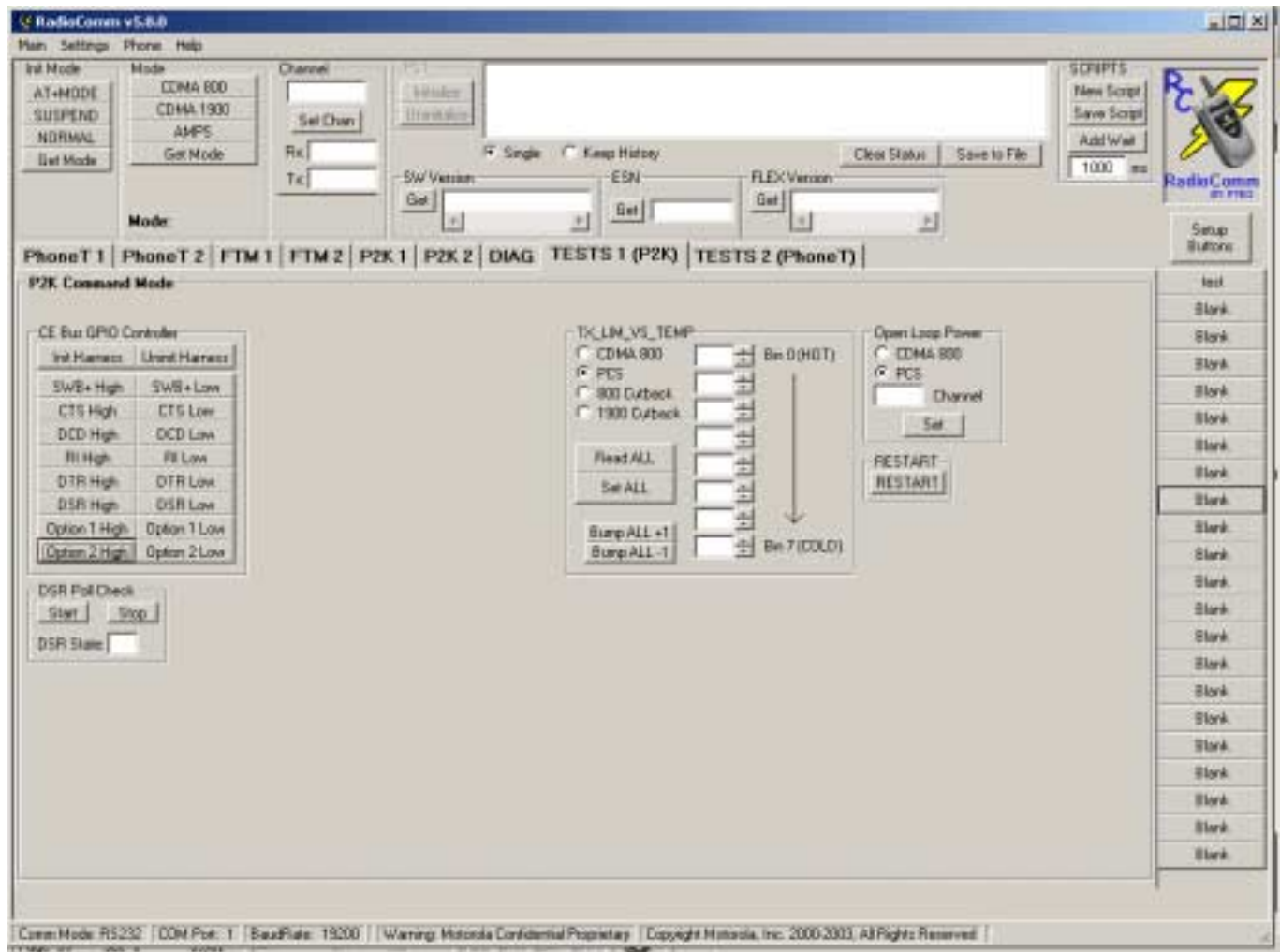
**aGPS Sensitivity Test:** Allows you to perform the audit test that FQA performs on CDMA 1X phones. No other tools are needed. This is the only tool required. All equipment setup is still the responsibility of the operator.

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## 4.10 TESTS 1 Tab



**CE Bus GPIO Controller:** This allows the user to toggle the listed CE Bus pins high and low using the GPIO\_TEST test command. The required data for the GPIO\_TEST command is done in the background so the user does not have to know it.

**DSR Poll Check:** When a phone powers up, the DSR line toggles from low to high with respect to the PC serial RS232 port. Press *Start* to start polling the active COM port on your PC. Power up the phone. The DSR Status should change from a 0 to a 1 if the phone is working properly. Press *Stop* to stop the polling. Note that the phone may hold the PC's DSR line high, even after turned off. Therefore, you want to start with the DSR Status as a 0 so that you will be able to see the transition from low to high when a phone turns on. You can reset the COM port by going to the Settings menu and closing and then re-opening your COM port. This should reset the DSR Status to 0.

**TX\_LIM\_VS\_TEMP:** Allows the user to manually adjust the TX\_LIM\_VS\_TEMP NV values in either 800, PCS, 800 Cutback for C33xC or 1900 Cutback for C33xC. Select one of the 4 choices. Press *Read ALL* to read out the current values in the phone. You can then either adjust each value individually or press the *Bump ALL +1* button to increase all 8 values by +1. Similarly, you can press the *Bump ALL -1* button to decrease all 8 values by -1. Press *Set ALL* to store the 8 values back into the phone. The phone must be power cycled in order for the values to take effect.

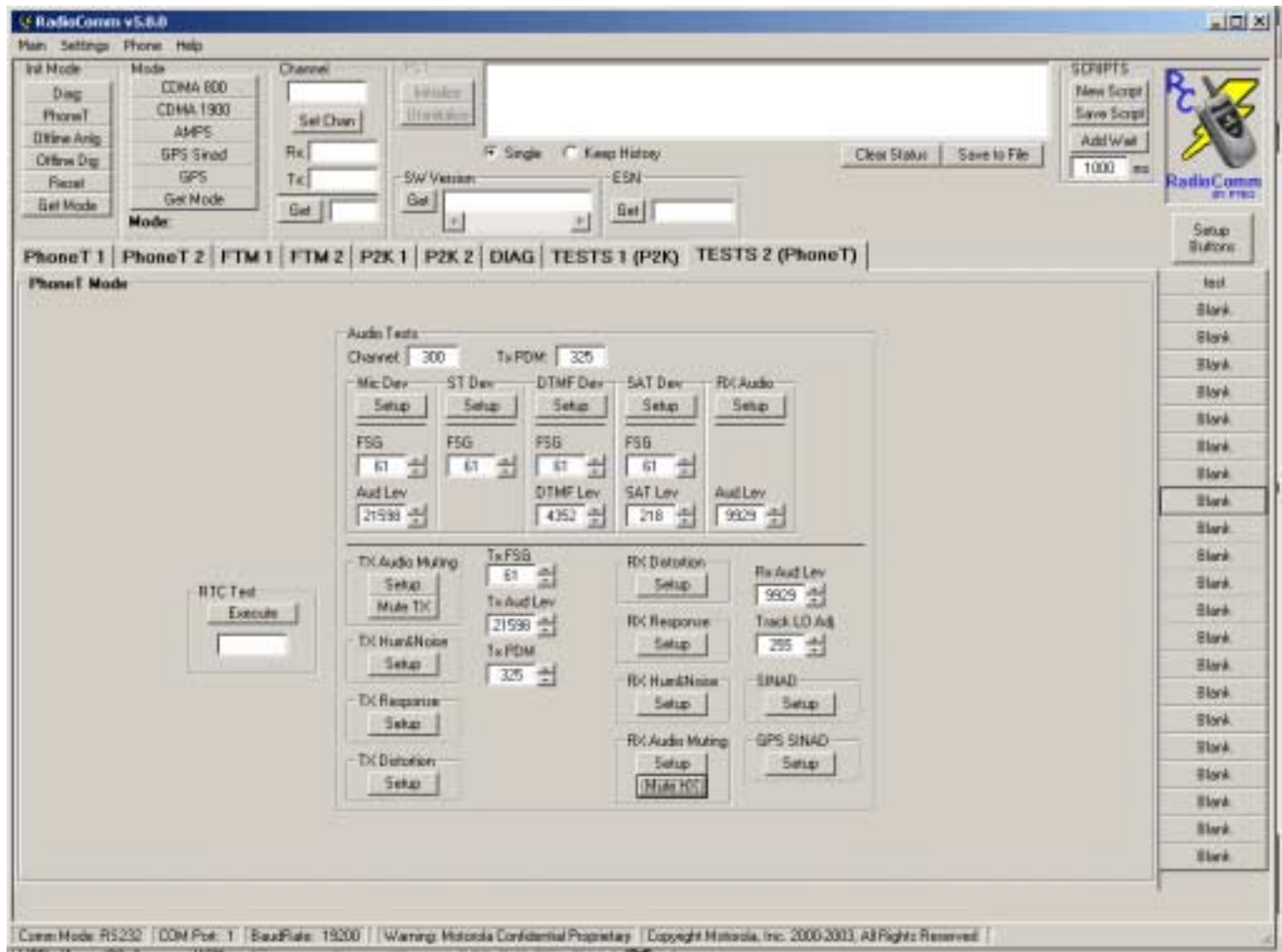
**Open Loop Power:** This sets the radio into open loop power control mode as per the procedure in the CDMA1X 12M. Select either CDMA 800 or PCS mode and enter the desired channel number. Press *Set*. This will send the following test commands: SUSPEND, CPMODE, LOAD\_SYN, CARRIER. The radio should now transmit power based on the input RF level to the phone.

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**RESTART:** Allows you to send the restart command to the phone.

## 4.11 TESTS 2 Tab



**Audio Tests:** This section of tests sets up the PHONE ONLY for various audio tests. The phone is set up in the way listed in the Manufacturing 12M. Enter the desired channel in the Channel window that you wish the phone to be tested on and the Tx PDM. Press *Setup*. The individual gain controls and audio levels must be entered before hitting the Setup button.

**RTC Test:** This performs the RTC test as per the 12M and displays the result in the Result window.

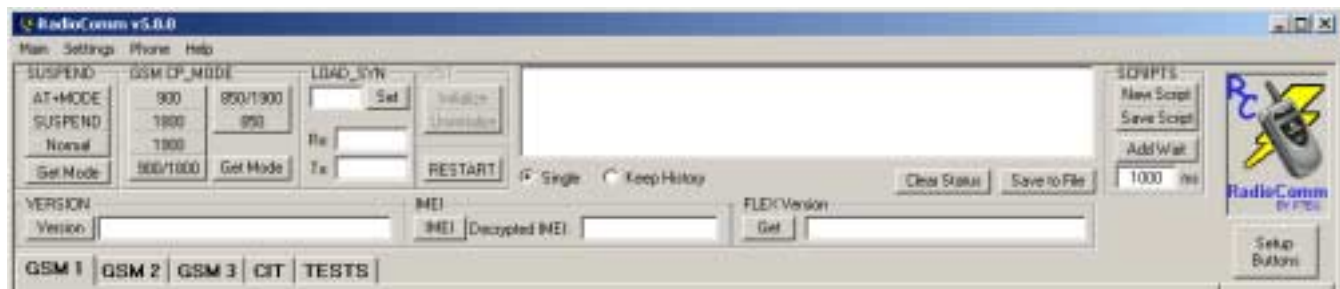


## 5 GSM

The GSM technology may or may not be available based on the version of RadioComm you are using. If available, the sections below describe the GSM features in detail.

### 5.1 GSM Header

The header area contains common commands/functions that are displayed all the time for a given technology, regardless of the specific Tab selected. The following is the header area for GSM.



**AT+MODE:** Sends the AT+MODE=1/r/n data to the phone to place the phone into test command mode. This command only works when a phone is in normal mode, such as when it is first powered up. It is only available in RS232 Mode.

**SUSPEND:** Sends the SUSPEND test command, putting the phone into Suspend mode.

**Normal:** Sends the SUSPEND test command, putting the phone back into Normal mode.

**Get Mode:** Sends the SUSPEND test command, requesting what mode the phone is currently in. Either the *Suspend* button or *Normal* button will be highlighted with the mode of the phone.

**900:** Sends the CP\_MODE test command, putting the phone in GSM 900 Mode.

**1800:** Sends the CP\_MODE test command, putting the phone in GSM 1800 Mode.

**1900:** Sends the CP\_MODE test command, putting the phone in GSM 1900 Mode.

**900/1800:** Sends the CP\_MODE test command, putting the phone in GSM 900/1800 Mode.

**850/1900:** Sends the CP\_MODE test command, putting the phone in GSM 850/1900 Mode.

**Get Mode:** Sends the CP\_MODE test command, requesting what call processing mode the phone is currently in. Either the *AMPS*, *CDMA 800*, or *CDMA 1900* button will be highlighted with the current mode of the phone.

**LOAD\_SYN frame:** Enter the desired channel number into the text box and press Set. This will send the LOAD\_SYN test command with the desired channel. The Rx and Tx text boxes will display the corresponding Rx and Tx frequency for the entered channel.

**PST:** *Initialize* will initialize the PST functions and determine if it can see a phone. If successful, PST: Initialized will be displayed in the bottom status bar. This is the identical function as the Initialize PST function in the Settings Menu. If not successful, an error message will be displayed to the user. *UnInitialize* will un-initialize the PST and close the PST session. If successful, PST: Uninitialized should be displayed in the bottom status bar.

**RESTART:** Sends the RESTART test command, which will restart the phone and put it back into Normal Mode.

**Status Window:** Displays the test commands sent to the phone and the data/response returned back from the phone. If a command is successful, the window will turn green. If a command fails, the window will turn red. Note: depending on the version of RadioComm, the full data string in Hexadecimal format may or may not be displayed.

**Single option:** When selected, only the last command sent to the phone is displayed in the status window.

**Keep History option:** When selected, every command sent to the phone is displayed in the status window until cleared using the Clear Status button. The user can scroll down the list of displayed commands.

**Clear Status:** Clears the status window.

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**Save to File:** Will prompt the user for a filename and will save the data in the status window to a file.

**SCRIPTS frame:** A test command script is a saved sequence of test commands that can be executed so that a user does not have to send the same individual test commands over and over. A new test command script can be generated by first pressing the '*New Script*' button. Then press any available test commands, from any tab. RadioComm will remember every test command and its corresponding data, in the order they were executed. When finished with the desired test command sequence, press the *Save Script* button. The user will be prompted for a filename and location to save the script. This script can then be run by using the *Run Custom Test Command Scripts* frame on the TESTS Tab or by linking the script to one of the user definable hot buttons.

**New Script:** Clears out a buffer within the RadioComm code that keeps track of the test commands sent to the phone.

**Save Script:** Saves the sequence of test commands and their corresponding data stored in the scripts buffer to a file. The file is a simple text file with a .tcs file extension.

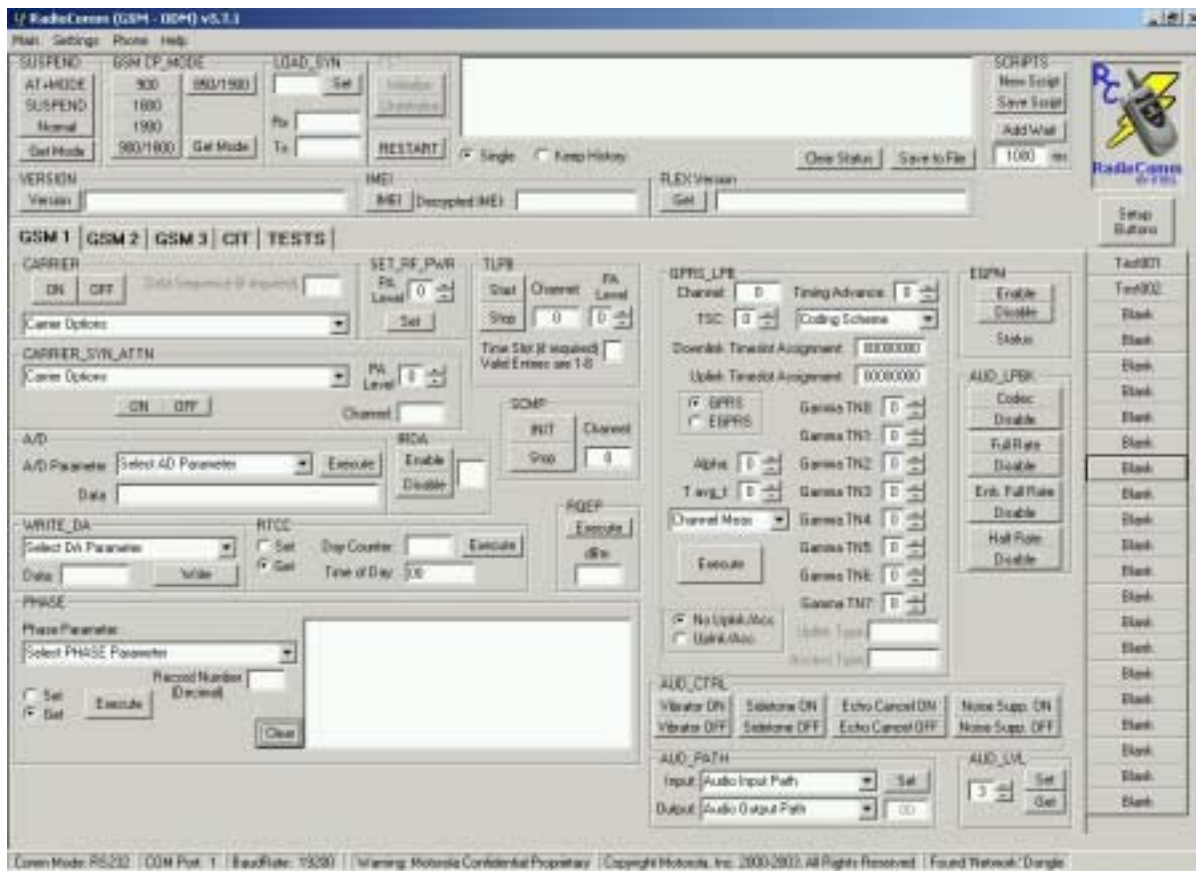
**VERSION:** Sends the VERSION test command, parameter 0xFFFF, and displays the version data sent back by the phone.

**IMEI:** Sends the RDELEM test command with the SEEM location for the stored IMEI, decrypts the stored IMEI, and displays the decrypted IMEI in the text window.

**FLEX Version:** Pressing *Get* sends the RDELEM test command with the SEEM location for the stored Flex version and displays the Flex version sent back by the phone.

**Setup Buttons:** Brings up the Custom Buttons Entry screen which allows the user to link previously saved test command scripts to hot buttons which a user can define. See [Section 8.1](#) of this manual for a more in-depth description on how to setup custom buttons.

## 5.2 GSM 1 Tab



**CARRIER:** Turns on the GSM transmitter. Select the desired option and press *ON*. Press *OFF* to turn off the transmitter.

**CARRIER\_SYN\_ATTEN:** This combines 3 separate test commands into 1: CARRIER, LOAD\_SYN, and SET\_RF\_PWR. Select the Carrier option, set the PA Level, enter the desired channel, and press *ON*. Press *OFF* to turn off the transmitter.

**SET\_RF\_PWR:** Sets the PA power level. Enter the desired level and press *Set*.

**TLPB:** This starts and stops a TCH Loopback on a specified channel and with a specified PA level. Enter the desired channel and PA level and press *Start*. Press *Stop* to stop the loopback.

**SCMP:** This causes the radio to initialize or stop Simple Camp. Enter the desired channel and press *INIT* to start the Simple Camp. Press *Stop* to stop Simple Camp.

**A/D:** Performs an A/D conversion. Choose the desired A/D parameter from the drop down list and press *Execute*. The AD\_CONV test command will be sent to the phone and the requested data returned and displayed in the Data window.

**IRDA:** Activates or Deactivates the IRDA port. Press *Enable* to activate the IRDA port, *Disable* to deactivate it. A status byte will be returned and displayed: 0x00=Activate Succeeded, 0x01=Activate Failed, 0x02=Already Activated, 0x03=Deactivate Succeeded, 0x04=Deactivate Failed.

**WRITE\_DA:** This writes the D to A value for the selected parameter. Select the desired parameter, enter in the data you wish to write, and press *Write*.

**RTCC:** This sets or gets the Real Time Clock value. This command is used to test the real time clock, not to set or get the absolute time and date. Enter in the number of days (0-32767) since any specific date. Enter in the number

of seconds since midnight. Press *Set*. Press *Get* to have the phone return the number of days since a specific date and the number of seconds since midnight.

**PHASE:** Choose the desired PHASE parameter from the drop down list, choose the *Get* option, enter the record number (in decimal format) and press *Execute*. The PHASE test command will be sent to the phone and the requested data for the selected parameter will be returned and displayed in the data window. You may modify the data in the window and send the modified data back to the phone by choosing the *Set* option and then pressing *Execute*. To clear the data in the window, press the *Clear* button.

**GPRS\_LPB:** This command enters the phone into GPRS Loopback mode. See the Platform 2000 Test Commands document for further descriptions of each parameter.

**EGPM:** This enables or disables handovers from the GSM band to the PCS band in GSM/PCS capable phones. Press *Enable* to enable handovers, *Disable* to disable handovers. A status byte is returned and will be displayed: 0x00=Success, 0x01=GSM/PCS handover already enabled, 0x02=GSM/PCS handover already disabled, 0x03=Factory bit is Off.

**AUD\_CTRL:** Sends the AUD\_CTRL test command to turn the phone's vibrator on/off, sidetone on/off, echo cancellation on/off, and noise suppressor on/off.

**AUD\_LPBK:** Sends the AUD\_LPBK test command to enable or disable audio loopback via the audio path selected by the AUD\_PATH command. Codec, Speed Coder Full Rate, Speech Coder Enhanced Full Rate, or Speech Coder Half Rate loopback can be chosen. *Disable* turns off the respective loopback.

**AUD\_LVL:** Enter the desired audio level and press *Set*. This will set the phone's audio level by sending the AUD\_LVL test command. Press *Get* to display the current audio level the phone is set to.

**AUD\_PATH:** Choose the audio input path from the drop down list. Choose the audio output path from the drop down list. Press the *Set* button to set the phone's audio paths to those selected.

## 5.3 GSM 2 Tab

**RDELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, for the data you wish to read from the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Press *Execute*. A successful read should return 0x00 in the Status window.

**STELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, and data you wish to write to the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Enter the data you wish to write to the phone in the Data window in hex format. The number of bytes of data should match the Length entered. Press *Execute*. A successful write should return 0x00 in the Status window.

**MEMACS:** Allows you to directly write to a memory address in the MCU or DSP. Enter in the address, select whether you wish to read or write, select the device from the dropdown list, and enter in the number of data bytes you wish to read/write. If you are writing data, enter the data you wish to write in the Data window. Press *Execute*. Any data returned (in the case of a read) will be displayed in the Data window.

**GPIO\_TEST:** Allows you to read, write, and configure various GPIO ports and registers on the phone's chipset. This command can either be used in binary or hex format. Binary format allows you to manually configure the specific pins. Select Binary, select Read, Write or Configure, and select the Port. If Configure is chosen, select whether you are configuring the pins for Input or Output. Depending on which mode you have chosen (Read/Write/Configure) the text windows for Pin Mask, Pin Values, and Port Data will be enabled. These are in binary format, with each bit representing an individual pin. Press *Execute*. If you choose the Hex option, only the Hex Data window is enabled. Enter the hex data you wish to send to the phone and press *Execute*. Any data returned from the phone will also be displayed in the Hex Data window.

**Send Raw Test Command:** Any data entered in the To Radio text window will be sent to the phone as is. This may be useful when a new test command is enabled in the phone software but not yet updated in the test tools such as RadioComm. In the case of USB, this will call a function within the PST application to send the raw data to the phone as well. In the event you may have a command op-code and the required data bytes, you can formulate the

correct command string, either in RS232 or USB, by using the P2K Command Calculator. See [Section 8.2](#) of this document for a description on the P2K Command Calculator.

**RQ:** Select the desired RQ parameter from the drop down list and press *Execute*. The returned data from the phone is displayed in the Data window.

**FLEX:** This function allows you to flex a phone with an appropriate flex file. First, Browse for the flex file by pressing *Browse*. Next press the *FLEX* button. The phone will first be Suspended and then flexed via the data in the chosen flex file. A progress bar is displayed to let you know of the progress.

**INVM:** This initializes the non-volatile memory parameters of the phone. Either press *Master CLEAR* to do a Master Clear on the phone or press *Master RESET* to do a Master Reset on the phone. Master Reset will reset all user-selectable options back to their original factory settings. Master Clear will perform a Master Reset plus clears the timers, call lists, and phonebook.

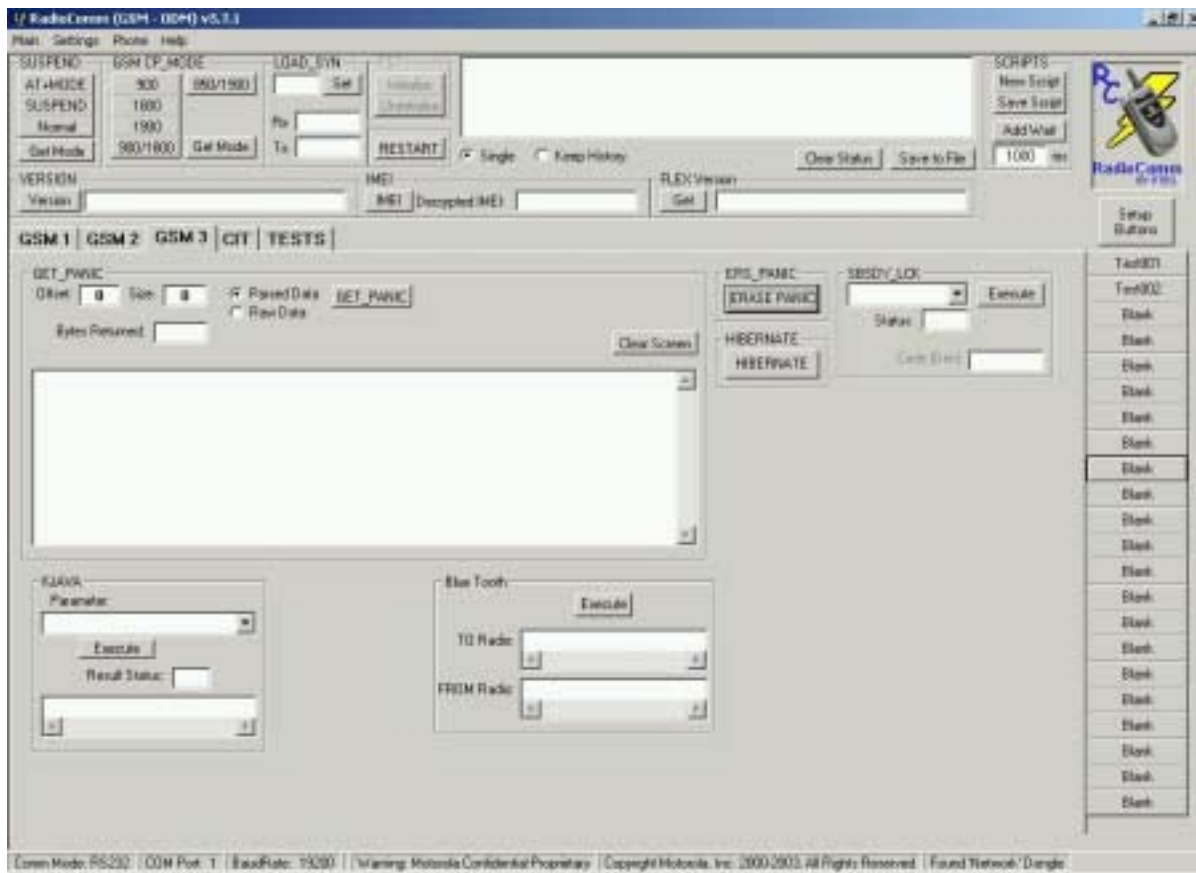
**RDWR\_SPI:** This is a generic test command, which performs reads and writes to devices connected to the SPI bus. Select the device from the drop down list. Enter any required data in the Data TO Radio window. Press *Execute*. Any data returned from the phone will be displayed in the Data FROM Radio window.

**FSAC:** This command activates different file system requests to/from the phone. See the Platform 2000 Test Commands document for further description on each parameter.

**SMARTCARD:** This command reads/writes from/to a smart card. See the Platform 2000 Test Commands document for further description on each parameter.



## 5.4 GSM 3 Tab



**ERS\_PANIC:** Allows you to clear the panic data in the phone.

**GET\_PANIC:** Allows you to read out the panic data of the phone. Enter the offset value and the size value and select if you want raw data or parsed data displayed and then press the *GET\_PANIC* button. Data will be displayed in the window. Press the *Clear Screen* button if you wish to clear the data display window.

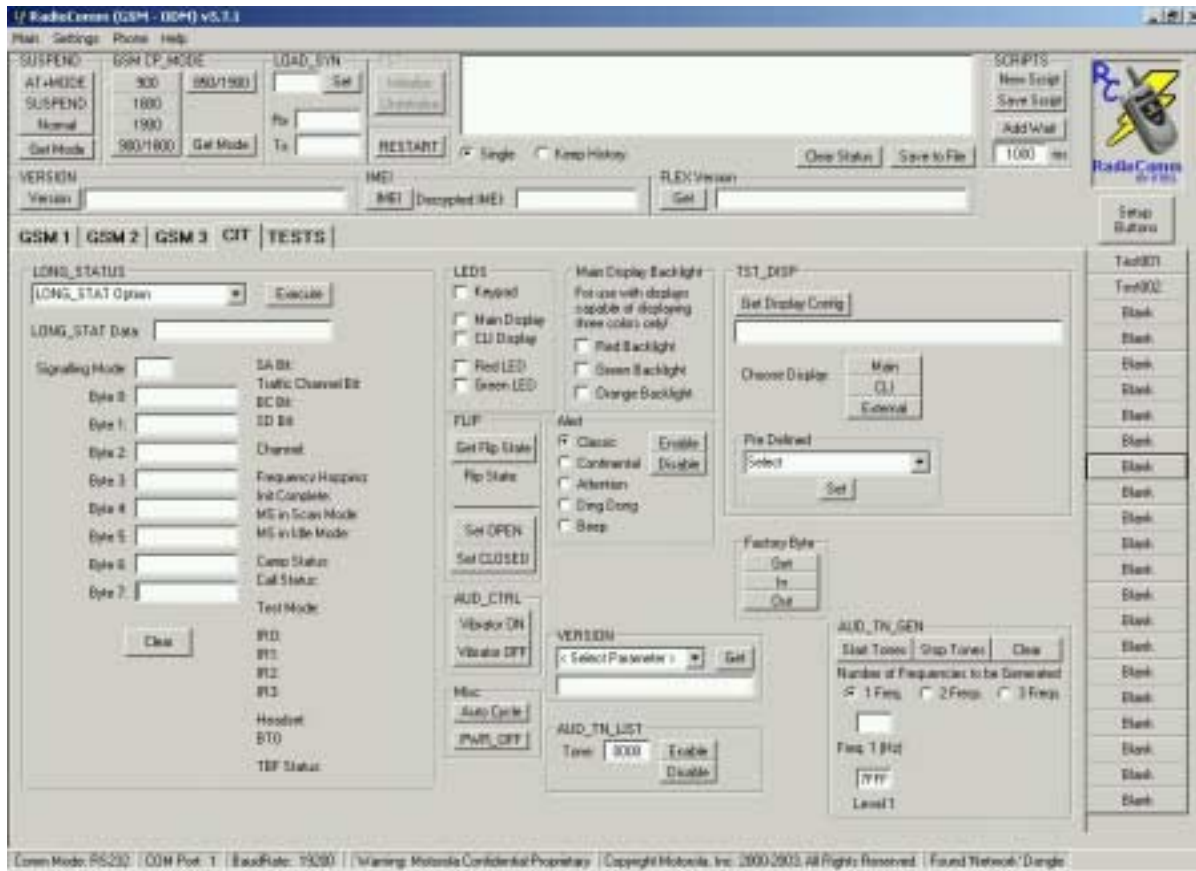
**SBSY\_LCK:** This sends the SBSY\_LCK test command. Select the desired parameter from the drop down list and press *Execute*. The status returned from the phone will be displayed in the Status window. If unlocking a subsidy locked phone, with the correct parameter chosen, the Code (Dec) window will become enabled and you can enter in the lock code in decimal format.

**HIBERNATE:** This sends the HIBERNATE test command to the phone.

**Blue Tooth:** This sends the BT test command to the phone with the user entered data.



## 5.5 CIT Tab



**LONG\_STATUS:** The LONG\_STATUS command returns various information about the status of the radio. This command can be sent in Normal Mode (after AT+MODE=1 if in RS232) or Suspend Mode. In Normal Mode, it can be used to determine the phone's current channel and if it is in service. It is also frequently used to determine if the headset is detected or not detected. Press *Execute*. All data returned is displayed in the top window of the frame. The individual bytes are displayed in binary as well, since individual bits have a distinct meaning. Channel, Radio Mode, Headset, and Carrier are displayed to the right based on the returned data.

**Alert:** Choose the type of alert you wish to enable and then press *Enable*. This is a user convenience feature, since enabling the alert actually requires multiple test commands. The audio path is set to Alert path, the audio level is set to maximum, and the correct audio tone is sent based on the alert selection. Press *Disable* to turn off the alert. Note: After disabling the alert, the audio path and audio level remain set to alert path and max audio.

**AUD\_TN\_LIST:** This will send the AUD\_TN\_LST test command, which starts or stops alert tones. Enter in the 2 byte tone in hex and press *Enable*. Press *Disable* to turn off the tone. Audio path and audio level must be set separately.

**VERSION:** Select the desired parameter of the version and press *Get*. This will send the VERSION test command. The version data returned from the phone will be displayed in the text window.

**PWR\_OFF:** Sends the PWR\_OFF test command to turn off the phone.

**LEDS:** Checking an option turns on that feature, un-checking an option turns it off. This sends the LEDS test command to turn on/off various LEDs of the phone. Note that not all products have all the features listed.

**FLIP:** Allows you to either get the current state of the flip or set the current state of the flip, regardless if it is physically opened or closed. Press *Get Flip State* to have the radio return what state the flip is in. Press *Set OPEN* to set the flip state as Open. Press *Set CLOSED* to set the flip state as closed. Note this command only works on phones that have a flip.

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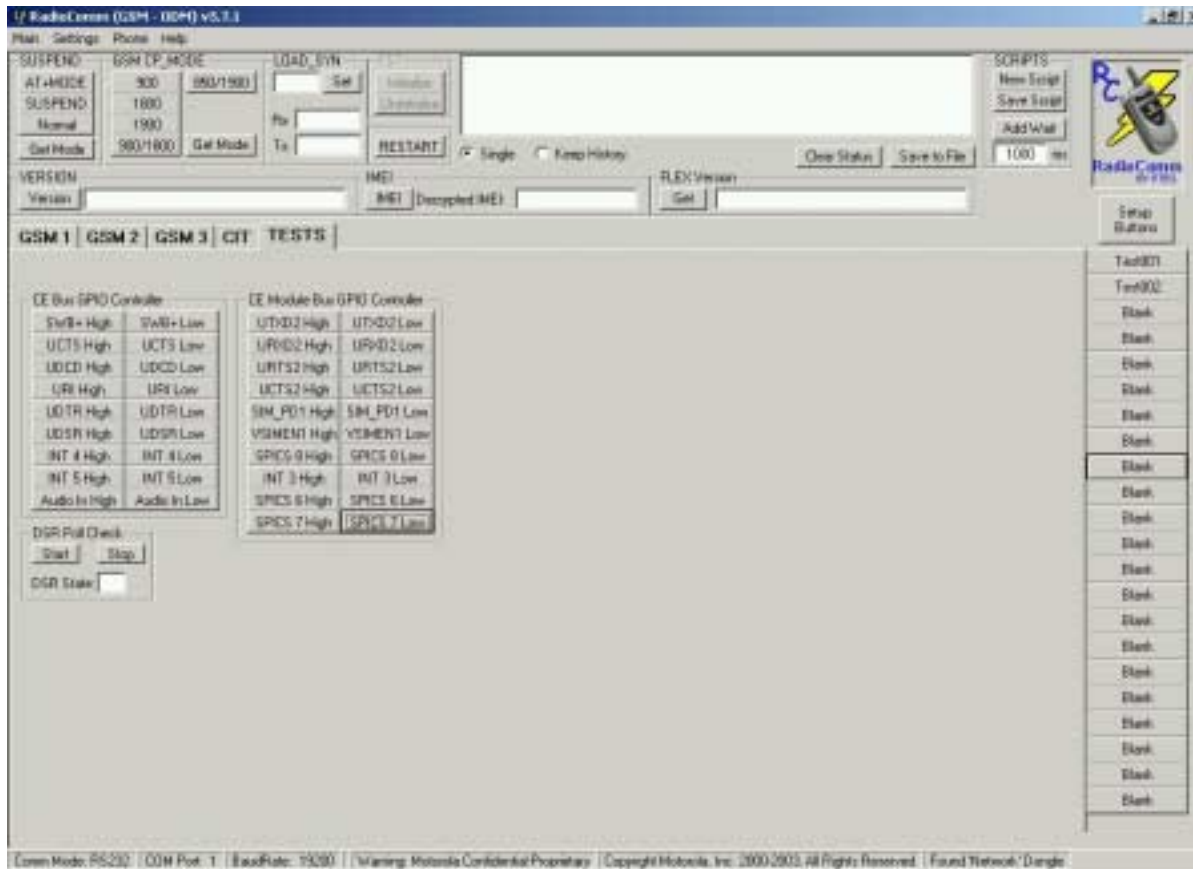
**TST\_DISP:** This test command allows you to configure the current display settings. Press *Get Display Config* to return the current display configuration. The data displayed is the raw data in hex that the phone returns. To choose which display is the active display, press *Main*, *CLI*, or *External*. You can also choose to turn various pixel patterns on/off of the active display. *All Pixels ON* will turn on all pixels, *All Pixels OFF* will turn off all pixels. *Checkerboard A* will turn on a pixel checkerboard pattern. *Checkerboard B* will turn on a reverse checkerboard, or the opposite pixels as Checkerboard A.

**AUD\_TN\_GEN:** Allows enabling or disabling of a generated tone. Select how many frequencies (1-3) you wish to generate, enter the frequency for each selected, and enter the audio level for each. Press *Start Tones*. To disable the tone generation, press *Stop Tones*. The data required to be entered for the frequency and audio level is formally described in the Platform 2000 Test Commands document.

**AUD\_CTRL:** Sends the AUD\_CTRL test command to turn the phone's vibrator on/off. Choose *Vibrator ON* to turn on the vibrator. Choose *Vibrator OFF* to turn off the vibrator.

**AUTOCYCLE:** Sends the AUTOCYCLE test command, putting the phone into an automated mode that enables and disables various features in an endless cycle. Once this mode is activated, the phone will have to be power cycled to get out of this mode. The Platform 2000 Test Commands document describes the various cycles of the phone in this mode.

## 5.6 TESTS Tab



**CE Bus GPIO Controller:** This allows the user to toggle the listed CE Bus pins high and low using the GPIO\_TEST test command. The required data for the GPIO\_TEST command is done in the background so the user does not have to know it.

**CE Module Bus GPIO Controller:** This allows the user to toggle the listed CE Module Bus pins high and low using the GPIO\_TEST test command. The required data for the GPIO\_TEST command is done in the background so the user does not have to know it.

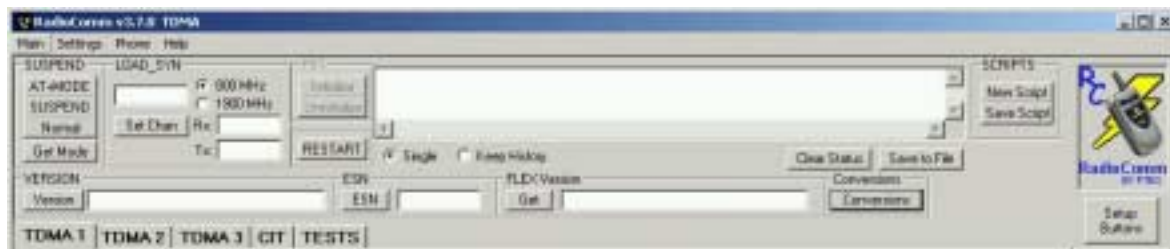
**DSR Poll Check:** When a phone powers up, the DSR line toggles from low to high with respect to the PC serial RS232 port. Press *Start* to start polling the active COM port on your PC. Power up the phone. The DSR Status should change from a 0 to a 1 if the phone is working properly. Press *Stop* to stop the polling. Note that the phone may hold the PC's DSR line high, even after turned off. Therefore, you want to start with the DSR Status as a 0 so that you will be able to see the transition from low to high when a phone turns on. You can reset the COM port by going to the Settings menu and closing and then re-opening your COM port. This should reset the DSR Status to 0.

## 6 TDMA

The TDMA technology may or may not be available based on the version of RadioComm you are using. If available, the sections below describe the TDMA features in detail.

### 6.1 TDMA Header

The header area contains common commands/functions that are displayed all the time for a given technology, regardless of the specific Tab selected. The following is the header area for TDMA.



**AT+MODE:** Sends the AT+MODE=1/r/n data to the phone to place the phone into test command mode. This command only works when a phone is in normal mode, such as when it is first powered up. It is only available in RS232 Mode.

**SUSPEND:** Sends the SUSPEND test command, putting the phone into Suspend mode.

**Normal:** Sends the SUSPEND test command, putting the phone back into Normal mode.

**Get Mode:** Sends the SUSPEND test command, requesting what mode the phone is currently in. Either the *Suspend* button or *Normal* button will be highlighted with the mode of the phone.

**LOAD\_SYN:** Sends the command to load the desired channel into the phone. Select which band you want to set the channel in as this command also sets the call processing mode of the phone.

**PST:** *Initialize* will initialize the PST functions and determine if it can see a phone. If successful, PST: Initialized will be displayed in the bottom status bar. This is the identical function as the Initialize PST function in the Settings Menu. If not successful, an error message will be displayed to the user. *UnInitialize* will un-initialize the PST and close the PST session. If successful, PST: UnitIALIZED should be displayed in the bottom status bar.

**RESTART:** Sends the RESTART test command, which will restart the phone and put it back into Normal Mode.

**Status Window:** Displays the test commands sent to the phone and the data/response returned back from the phone. If a command is successful, the window will turn green. If a command fails, the window will turn red. Note: depending on the version of RadioComm, the full data string in Hexadecimal format may or may not be displayed.

**Single option:** When selected, only the last command sent to the phone is displayed in the status window.

**Keep History option:** When selected, every command sent to the phone is displayed in the status window until cleared using the Clear Status button. The user can scroll down the list of displayed commands.

**Clear Status:** Clears the status window.

**Save to File:** Will prompt the user for a filename and will save the data in the status window to a file.

**SCRIPTS frame:** A test command script is a saved sequence of test commands that can be executed so that a user does not have to send the same individual test commands over and over. A new test command script can be generated by first pressing the 'New Script' button. Then press any available test commands, from any tab. RadioComm will remember every test command and its corresponding data, in the order they were executed. When finished with the desired test command sequence, press the *Save Script* button. The user will be prompted for a filename and location to save the script. This script can then be run by using the *Run Custom Test Command Scripts* frame on the TESTS Tab or by linking the script to one of the user definable hot buttons.

**New Script:** Clears out a buffer within the RadioComm code that keeps track of the test commands sent to the phone.

**Save Script:** Saves the sequence of test commands and their corresponding data stored in the scripts buffer to a file. The file is a simple text file with a .tcs file extension.

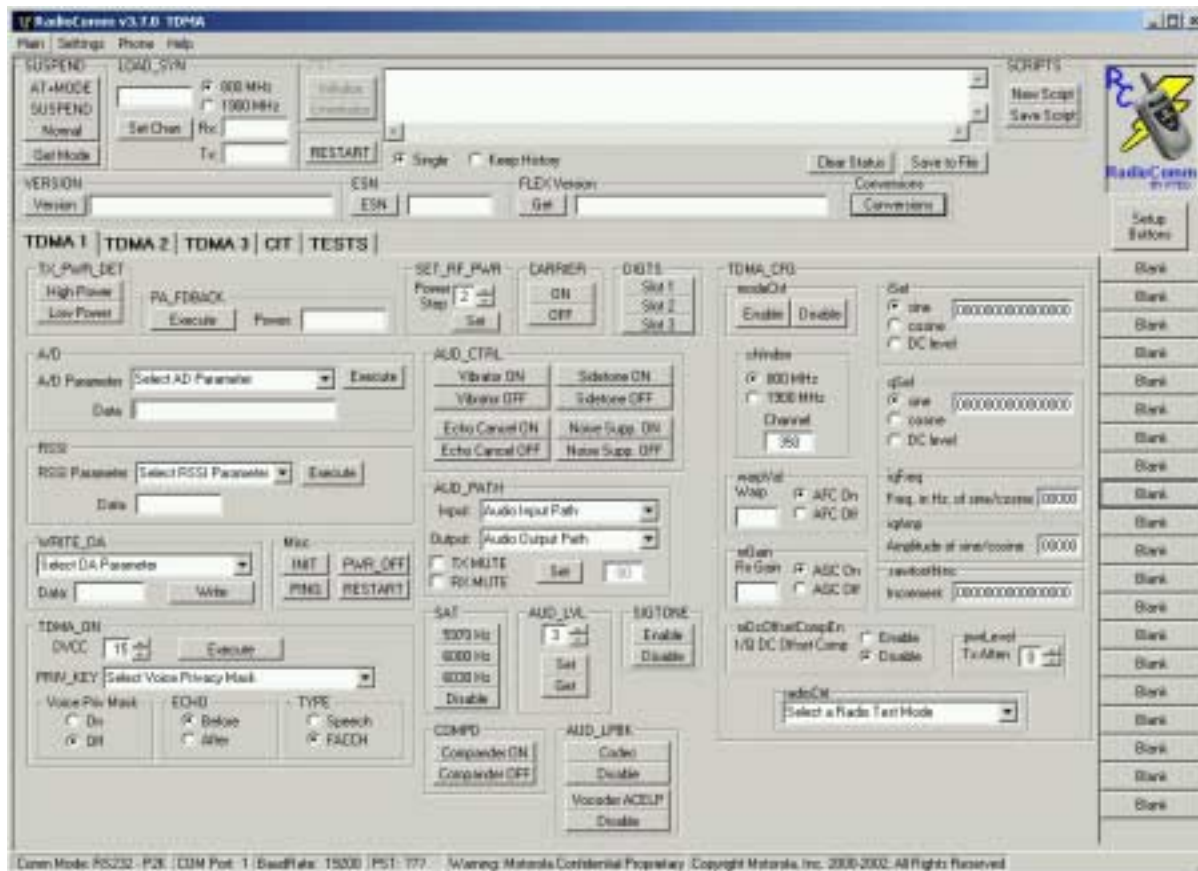
**VERSION:** Sends the VERSION test command, parameter 0xFFFF, and displays the version data sent back by the phone.

**ESN:** Sends the RDELEM test command with the SEEM location for the stored ESN and displays the ESN sent back by the phone.

**FLEX Version:** Pressing *Get* sends the RDELEM test command with the SEEM location for the stored Flex version and displays the Flex version sent back by the phone.

**Setup Buttons:** Brings up the Custom Buttons Entry screen which allows the user to link previously saved test command scripts to hot buttons which a user can define. See [Section 8.1](#) of this manual for a more in-depth description on how to setup custom buttons.

## 6.2 TDMA 1 Tab



**PWR OFF:** Sends the PWR OFF test command to turn off the phone.

**CARRIER:** Pressing *ON* sends the CARRIER test command to turn on the transmitter with a CW signal. Pressing *OFF* turns the transmitter off.

**SET\_RF\_POWER:** Enter the desired power step (0-7) into the text box or use the up/down buttons to select. Press 'Set' to send the SET RF POWER test command with the entered power step.

**A/D:** Performs an A/D conversion. Choose the desired A/D parameter from the drop down list and press *Execute*. The AD\_CONV test command will be sent to the phone and the requested data returned and displayed in the Data window.

**RSSI:** Choose the desired RSSI parameter from the drop down list and press *Execute*. The RSSI test command will be sent to the phone and the requested data returned and displayed in the Data window.

**AUD\_CTRL:** Sends the AUD\_CTRL test command to turn the phone's vibrator on/off, the phone's sidetone on/off, the phone's echo cancel on/off or the phone's noise supp on/off.

**AUD\_LPBK:** Sends the AUD\_LPBK test command to enable or disable audio loopback via the audio path selected by the AUD\_PATH command. Codec or Vocoder ACELP loopback can be chosen. *Disable* turns off the respective loopback.

**AUD\_LVL:** Enter the desired audio level (0-15) and press *Set*. This will set the phone's audio level by sending the AUD\_LVL test command. Press *Get* to display the current audio level the phone is set to.

**COMPd:** Sends the COMPd test command to either turn ON or turn OFF the phone's compander.

**AUD\_PATH:** Choose the audio input path from the drop down list. Choose the audio output path from the drop down list. Optionally choose to RX or TX mute the paths. Press the *Set* button to set the phone's audio paths to those selected.

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**SIGTONE:** Press *Enable* to enable the phone's signaling tone or *Disable* to disable the phone's signaling tone.

**SAT:** Choose *5970 Hz*, *6000 Hz*, or *6030 Hz* to enable the transponding of SAT at the selected frequency. Choose *Disable* to stop transponding.

**RESTART:** Sends the RESTART test command, which will restart the phone and put it back into Normal Mode.

**PING:** Allows you to send the dummy test command ping to the phone.

**INIT:** Allows you to send the INIT command to the phone, which puts the phone into a known state. See the Platform 2000 Test Commands document for further information about this command.

**WRITE\_DA:** This writes the D to A value for the selected parameter. Select the desired parameter, enter in the data you wish to write, and press *Write*.

**DIGTS:** This command will switch the phone to digital mode with a specific slot assignment. See the Platform 2000 Test Commands document for further information about this command.

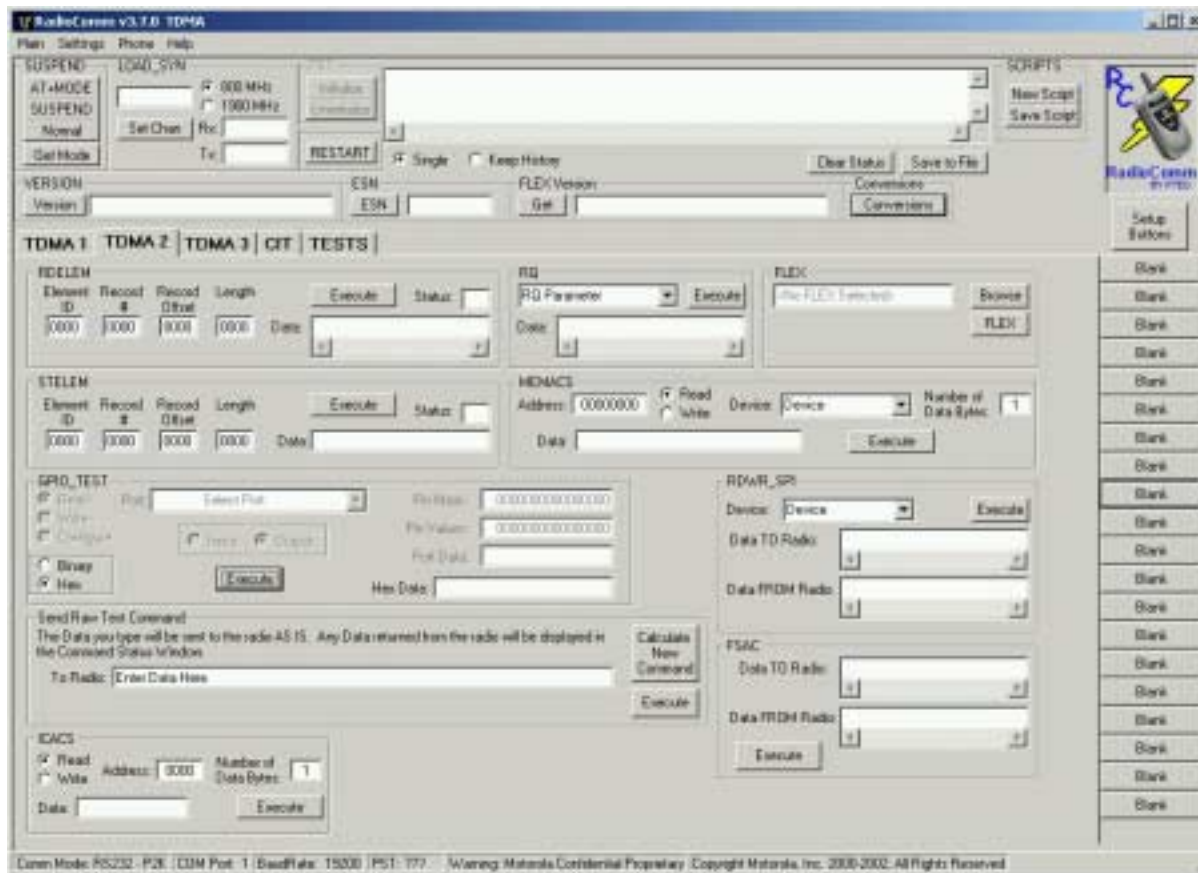
**TDMA\_ON:** This command will synchronize to the Forward Channel at the time slot specified by the DIGTS command. See the Platform 2000 Test Commands document for further description on each parameter.

**TDMA\_CFG:** This command will set the DSP into specific test settings. See the Platform 2000 Test Commands document for further description on each parameter.

**TX\_PWR\_DET:** This command sets the RF transmission power detector mode to either low or high power range amplitude detection. See the Platform 2000 Test Commands document for further description on each parameter.



## 6.3 TDMA 2 Tab



**FLEX:** This function allows you to flex a phone with an appropriate flex file. First, Browse for the flex file by pressing *Browse*. Next press the *FLEX* button. The phone will first be Suspended and then flexed via the data in the chosen flex file. A progress bar is displayed to let you know of the progress.

**RDELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, for the data you wish to read from the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Press *Execute*. A successful read should return 0x00 in the Status window.

**STELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, and data you wish to write to the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Enter the data you wish to write to the phone in the Data window in hex format. The number of bytes of data should match the Length entered. Press *Execute*. A successful write should return 0x00 in the Status window.

**MEMACS:** Allows you to directly write to a memory address in the MCU or DSP. Enter in the address, select whether you wish to read or write, select the device from the dropdown list, and enter in the number of data bytes you wish to read/write. If you are writing data, enter the data you wish to write in the Data window. Press *Execute*. Any data returned (in the case of a read) will be displayed in the Data window.

**GPIO\_TEST:** Allows you to read, write, and configure various GPIO ports and registers on the phone's chipset. This command can either be used in binary or hex format. Binary format allows you to manually configure the specific pins. Select Binary, select Read, Write or Configure, and select the Port. If Configure is chosen, select whether you are configuring the pins for Input or Output. Depending on which mode you have chosen (Read/Write/Configure) the text windows for Pin Mask, Pin Values, and Port Data will be enabled. These are in binary format, with each bit representing an individual pin. Press *Execute*. If you choose the Hex option, only the Hex Data window is enabled. Enter the hex data you wish to send to the phone and press *Execute*. Any data returned from the phone will also be displayed in the Hex Data window.

**Send Raw Test Command:** Any data entered in the To Radio text window will be sent to the phone as is. This may be useful when a new test command is enabled in the phone software but not yet updated in the test tools such as RadioComm. In the case of USB, this will call a function within the PST application to send the raw data to the phone as well. In the event you may have a command op-code and the required data bytes, you can formulate the correct command string, either in RS232 or USB, by using the P2K Command Calculator. See [Section 8.2](#) of this document for a description on the P2K Command Calculator.

**RQ:** Select the desired RQ parameter from the drop down list and press *Execute*. The returned data from the phone is displayed in the Data window.

**ICACS:** This allows read and write access to IC registers. Select Read or Write, Enter the register address (2 bytes) and the number of data bytes being written or read. If writing, enter the data in hex format into the Data window. Press *Execute*. If reading data, the data returned from the phone will be displayed in the Data window.

**RDWR\_SPI:** This is a generic test command, which performs reads and writes to devices connected to the SPI bus. Select the device from the drop down list. Enter any required data in the Data TO Radio window. Press *Execute*. Any data returned from the phone will be displayed in the Data FROM Radio window.

**FSAC:** This command activates different file system requests to/from the phone. See the Platform 2000 Test Commands document for further description on each parameter.

**INVM:** This initializes the non-volatile memory parameters of the phone. Either press *Master CLEAR* to do a Master Clear on the phone or press *Master RESET* to do a Master Reset on the phone. Master Reset will reset all user-selectable options back to their original factory settings. Master Clear will perform a Master Reset plus clears the timers, call lists, and phonebook.

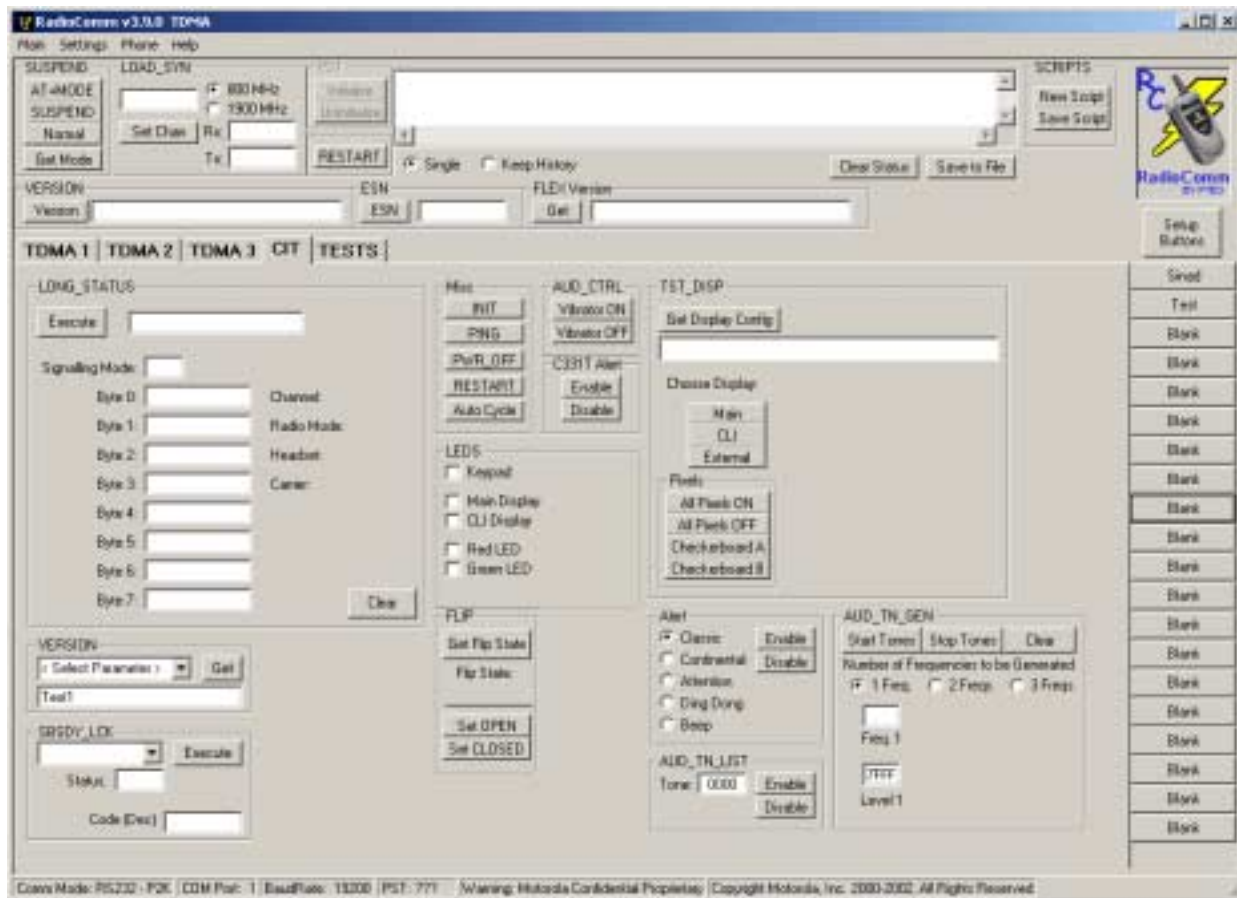
## 6.4 TDMA 3 Tab

**ERS\_PANIC:** Allows you to clear the panic data in the phone.

**GET\_PANIC:** Allows you to read out the panic data of the phone. Enter the offset value and the size value and select if you want raw data displayed or parsed data and then hit the 'GET\_PANIC' button. Data will be displayed in the window. Press the 'Clear Screen' button if you wish to clear the data display window.

**Hardware Version:** This command performs a RDELEM of the HW version location in SEEM and then converts the data and displays the version.

## 6.5 CIT Tab



**LONG\_STATUS:** The LONG\_STATUS command returns various information about the status of the radio. This command can be sent in Normal Mode (after AT+MODE=1 if in RS232) or Suspend Mode. In Normal Mode, it can be used to determine the phone's current channel and if it is in service. It is also frequently used to determine if the headset is detected or not detected. Press *Execute*. All data returned is displayed in the top window of the frame. The individual bytes are displayed in binary as well, since individual bits have a distinct meaning. Channel, Radio Mode, Headset, and Carrier are displayed to the right based on the returned data.

**SBSDY\_LCK:** This sends the SBSDY\_LCK test command. Select the desired parameter from the drop down list and press *Execute*. The status returned from the phone will be displayed in the Status window. If unlocking a subsidy locked phone, with the correct parameter chosen, the Code (Dec) window will become enabled and you can enter in the lock code in decimal format.

**Alert:** Choose the type of alert you wish to enable and then press *Enable*. This is a user convenience feature, since enabling the alert actually requires multiple test commands. The audio path is set to Alert path, the audio level is set to maximum, and the correct audio tone is sent based on the alert selection. Press *Disable* to turn off the alert. Note: After disabling the alert, the audio path and audio level remain set to alert path and max audio.

**C331T Alert:** This command is similar to the Alert command above except that it uses a different audio path specifically for the C331T phone's polyphonic alert. Press *Disable* to turn off the alert. Note: After disabling the alert, the audio path and audio level remain set to alert path and max audio.

**AUD\_TN\_LIST:** This will send the AUD\_TN\_LST test command, which starts or stops alert tones. Enter in the 2 byte tone in hex and press *Enable*. Press *Disable* to turn off the tone. Audio path and audio level must be set separately.

**VERSION:** Select the desired parameter of the version and press *Get*. This will send the VERSION test command. The version data returned from the phone will be displayed in the text window.

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**LEDS:** Checking an option turns on that feature, un-checking an option turns it off. This sends the LEDS test command to turn on/off various LEDs of the phone. Note that not all products have all the features listed.

**FLIP:** Allows you to either get the current state of the flip or set the current state of the flip, regardless if it is physically opened or closed. Press *Get Flip State* to have the radio return what state the flip is in. Press *Set OPEN* to set the flip state as Open. Press *Set CLOSED* to set the flip state as closed. Note this command only works on phones that have a flip.

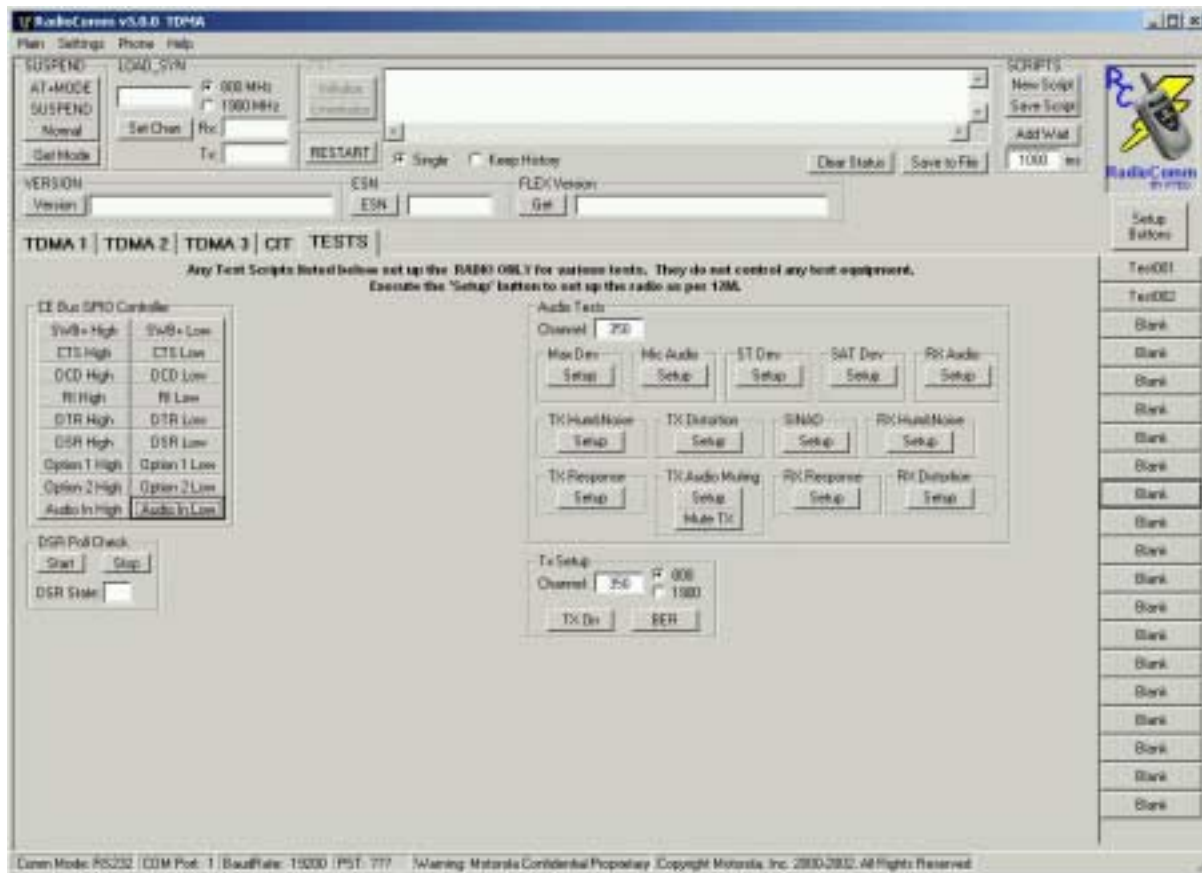
**TST\_DISP:** This test command allows you to configure the current display settings. Press *Get Display Config* to return the current display configuration. The data displayed is the raw data in hex that the phone returns. To choose which display is the active display, press *Main*, *CLI*, or *External*. You can also choose to turn various pixel patterns on/off of the active display. *All Pixels ON* will turn on all pixels, *All Pixels OFF* will turn off all pixels. *Checkerboard A* will turn on a pixel checkerboard pattern. *Checkerboard B* will turn on a reverse checkerboard, or the opposite pixels as Checkerboard A.

**AUD\_TN\_GEN:** Allows enabling or disabling of a generated tone. Select how many frequencies (1-3) you wish to generate, enter the frequency for each selected, and enter the audio level for each. Press *Start Tones*. To disable the tone generation, press *Stop Tones*. The data required to be entered for the frequency and audio level is formally described in the Platform 2000 Test Commands document.

**AUD\_CTRL:** Sends the AUD\_CTRL test command to turn the phone's vibrator on/off. Choose *Vibrator ON* to turn on the vibrator. Choose *Vibrator OFF* to turn off the vibrator.

**AUTOCYCLE:** Sends the AUTOCYCLE test command, putting the phone into an automated mode that enables and disables various features in an endless cycle. Once this mode is activated, the phone will have to be power cycled to get out of this mode. The Platform 2000 Test Commands document describes the various cycles of the phone in this mode.

## 6.6 TESTS Tab



**CE Bus GPIO Controller:** This allows the user to toggle the listed CE Bus pins high and low using the GPIO\_TEST test command. The required data for the GPIO\_TEST command is done in the background so the user does not have to know it.

**DSR Poll Check:** When a phone powers up, the DSR line toggles from low to high with respect to the PC serial RS232 port. Press *Start* to start polling the active COM port on your PC. Power up the phone. The DSR Status should change from a 0 to a 1 if the phone is working properly. Press *Stop* to stop the polling. Note that the phone may hold the PC's DSR line high, even after turned off. Therefore, you want to start with the DSR Status as a 0 so that you will be able to see the transition from low to high when a phone turns on. You can reset the COM port by going to the Settings menu and closing and then re-opening your COM port. This should reset the DSR Status to 0.

**Audio Tests:** This section of tests sets up the PHONE ONLY for various audio tests. The phone is set up in the way listed in the Manufacturing 12M. Enter the desired channel in the Channel window that you wish the phone to be tested on. Press *Setup*.

**Tx\_Setup:** This command will either set the phone up to transmit on the desired channel using the 'TX On' button or will setup the phone to do BER testing using the 'BER' button.

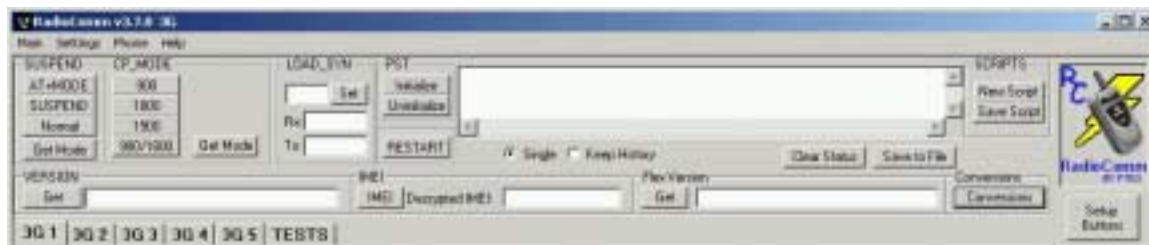


## 7 3G

The 3G technology may or may not be available based on the version of RadioComm you are using. If available, the sections below describe the 3G features in detail.

### 7.1 3G Header

The header area contains common commands/functions that are displayed all the time for a given technology, regardless of the specific Tab selected. The following is the header area for 3G.



**AT+MODE:** Sends the AT+MODE=1/r/n data to the phone to place the phone into test command mode. This command only works when a phone is in normal mode, such as when it is first powered up. It is only available in RS232 Mode.

**SUSPEND:** Sends the SUSPEND test command, putting the phone into Suspend mode.

**Normal:** Sends the SUSPEND test command, putting the phone back into Normal mode.

**Get Mode:** Sends the SUSPEND test command, requesting what mode the phone is currently in. Either the *Suspend* button or *Normal* button will be highlighted with the mode of the phone.

**900:** Sends the CP\_MODE test command, putting the phone in 900 Mode.

**1800:** Sends the CP\_MODE test command, putting the phone in 1800 Mode.

**1900:** Sends the CP\_MODE test command, putting the phone in 1900 Mode.

**900/1800:** Sends the CP\_MODE test command, putting the phone in 900/1800 Mode.

**Get Mode:** Sends the CP\_MODE test command, requesting what call processing mode the phone is currently in. Either the *900*, *1800*, *1900* or *900/1800* button will be highlighted with the current mode of the phone.

**LOAD\_SYN frame:** Enter the desired channel number into the text box and press Set. This will send the LOAD\_SYN test command with the desired channel. The Rx and Tx text boxes will display the corresponding Rx and Tx frequency for the entered channel.

**PST:** *Initialize* will initialize the PST functions and determine if it can see a phone. If successful, PST: Initialized will be displayed in the bottom status bar. This is the identical function as the Initialize PST function in the Settings Menu. If not successful, an error message will be displayed to the user. *UnInitialize* will un-initialize the PST and close the PST session. If successful, PST: Unitialized should be displayed in the bottom status bar.

**RESTART:** Sends the RESTART test command, which will restart the phone and put it back into Normal Mode.

**Status Window:** Displays the test commands sent to the phone and the data/response returned back from the phone. If a command is successful, the window will turn green. If a command fails, the window will turn red. Note: depending on the version of RadioComm, the full data string in Hexadecimal format may or may not be displayed.

**Single option:** When selected, only the last command sent to the phone is displayed in the status window.

**Keep History option:** When selected, every command sent to the phone is displayed in the status window until cleared using the Clear Status button. The user can scroll down the list of displayed commands.

**Clear Status:** Clears the status window.

**Save to File:** Will prompt the user for a filename and will save the data in the status window to a file.



**SCRIPTS frame:** A test command script is a saved sequence of test commands that can be executed so that a user does not have to send the same individual test commands over and over. A new test command script can be generated by first pressing the *New Script* button. Then press any available test commands, from any tab. RadioComm will remember every test command and its corresponding data, in the order they were executed. When finished with the desired test command sequence, press the *Save Script* button. The user will be prompted for a filename and location to save the script. This script can then be run by using the *Run Custom Test Command Scripts* frame on the TESTS Tab or by linking the script to one of the user definable hot buttons.

**New Script:** Clears out a buffer within the RadioComm code that keeps track of the test commands sent to the phone.

**Save Script:** Saves the sequence of test commands and their corresponding data stored in the scripts buffer to a file. The file is a simple text file with a .tcs file extension.

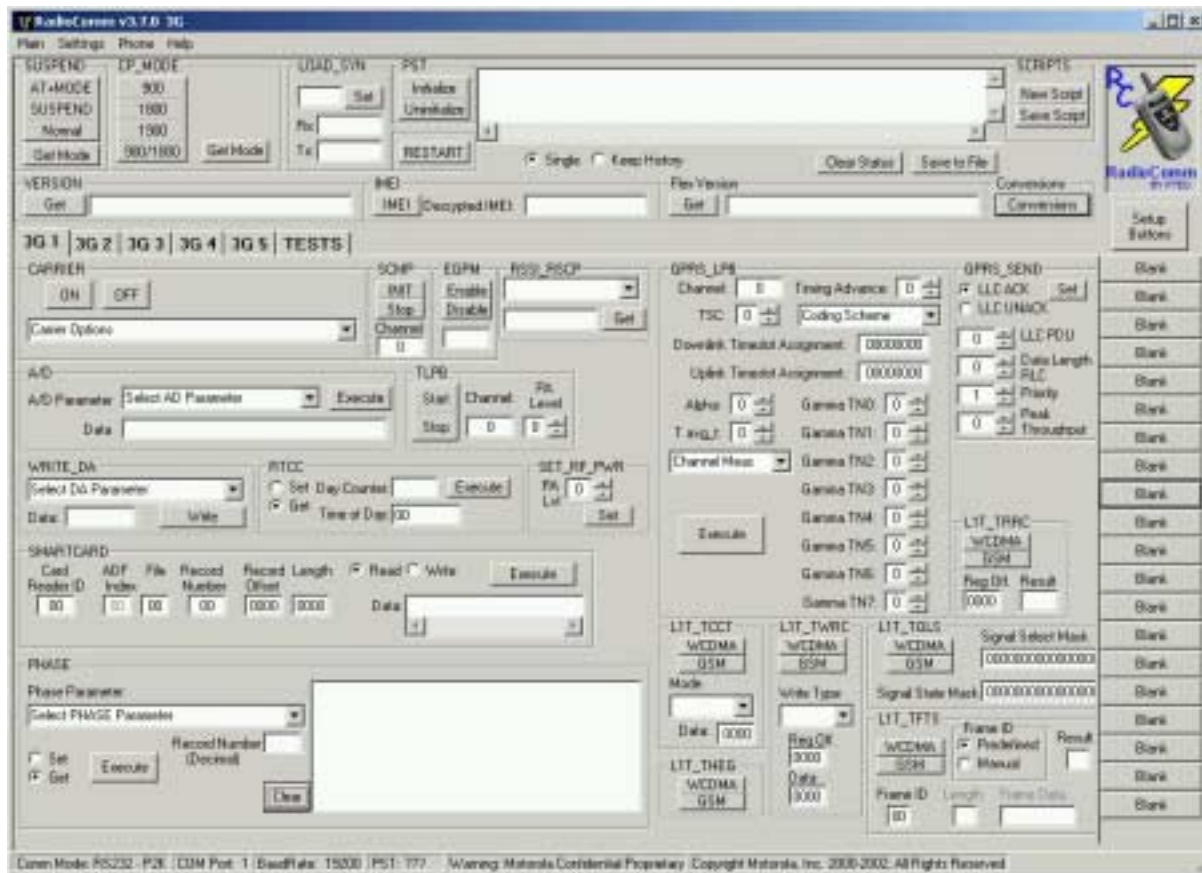
**VERSION:** Sends the VERSION test command, parameter 0xFFFF, and displays the version data sent back by the phone.

**FLEX Version:** Pressing *Get* sends the RDELEM test command with the SEEM location for the stored Flex version and displays the Flex version sent back by the phone.

**Setup Buttons:** Brings up the Custom Buttons Entry screen which allows the user to link previously saved test command scripts to hot buttons which a user can define. See [Section 8.1](#) of this manual for a more in-depth description on how to setup custom buttons.

**IMEI:** Sends the RDELEM test command with the SEEM location for the stored IMEI, decrypts the stored IMEI, and displays the decrypted IMEI in the text window.

## 7.2 3G 1 Tab



**CARRIER:** Pressing *ON* sends the CARRIER test command to turn on the transmitter with a CW signal. Pressing *OFF* turns the transmitter off.

**SET\_RF\_PWR:** Sets the PA power level. Enter the desired level and press *Set*.

**TLPB:** This starts and stops a TCH Loopback on a specified channel and with a specified PA level. Enter the desired channel and PA level and press *Start*. Press *Stop* to stop the loopback.

**SCMP:** This causes the radio to initialize or stop Simple Camp. Enter the desired channel and press *INIT* to start the Simple Camp. Press *Stop* to stop Simple Camp.

**A/D:** Performs an A/D conversion. Choose the desired A/D parameter from the drop down list and press *Execute*. The AD\_CONV test command will be sent to the phone and the requested data returned and displayed in the Data window.

**WRITE\_DA:** This writes the D to A value for the selected parameter. Select the desired parameter, enter in the data you wish to write, and press *Write*.

**RTCC:** This sets or gets the Real Time Clock value. This command is used to test the real time clock, not to set or get the absolute time and date. Enter in the number of days (0-32767) since any specific date. Enter in the number of seconds since midnight. Press *Set*. Press *Get* to have the phone return the number of days since a specific date and the number of seconds since midnight.

**PHASE:** Choose the desired PHASE parameter from the drop down list, choose the *Get* option, enter the record number (in decimal format) and press *Execute*. The PHASE test command will be sent to the phone and the requested data for the selected parameter will be returned and displayed in the data window. You may modify the data in the window and send the modified data back to the phone by choosing the *Set* option and then pressing *Execute*. To clear the data in the window, press the *Clear* button.

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**GPRS\_LPB:** This command enters the phone into GPRS Loopback mode. See the Platform 2000 Test Commands document for further description on each parameter.

**EGPM:** This enables or disables handovers from the GSM band to the PCS band in GSM/PCS capable phones. Press Enable to enable handovers, Disable to disable handovers. A status byte is returned and will be displayed: 0x00=Success, 0x01=GSM/PCS handover already enabled, 0x02=GSM/PCS handover already disabled, 0x03=Factory bit is Off.

**RSSI\_RSCP:** This command will return the RSSI or RSCP value for the current channel. Select the input parameter from the pull down list. The RSSI or RSCP value is returned and displayed in the text box.

**GPRS\_SEND:** This command initiates the mobile originated data from RLC in the GPRS stack. See the Platform 2000 Test Commands document for further description on each parameter.

**L1T\_TCCT:** This command message causes the L1T Quarter Bit Count Offset (QBCO) value to be modified. See the Platform 2000 Test Commands document for further description on each parameter.

**L1T\_TFTS:** This command tells the layer 1 timer to load the specified frame table data into the L1 Timer and make it the active frame table. See the Platform 2000 Test Commands document for further description on each parameter.

**L1T\_THEG:** This command tells the layer 1 timer to disable the L1T event generator and set all of the L1 signals to their default state. See the Platform 2000 Test Commands document for further description on each parameter.

**L1T\_TOLS:** This command tells the layer 1 timer to override the state of the layer 1 signals from the L1T event generator to the RF IC(s) to the values specified in the command. See the Platform 2000 Test Commands document for further description on each parameter.

**L1T\_TRRC:** This command will read the current value in the L1 timer register. See the Platform 2000 Test Commands document for further description on each parameter.

**L1T\_TWRC:** This command will write a new value to an L1 timer register. See the Platform 2000 Test Commands document for further description on each parameter.

**SMARTCARD:** This command reads/writes from/to a smart card. See the Platform 2000 Test Commands document for further description on each parameter.

## 7.3 3G 2 Tab

The screenshot displays the RadioComm v4.3.0 3G software interface. The main window is divided into several sections. At the top, there are tabs for 'SUSPEND', 'CP\_MODE', 'WCDMA', 'LOAD\_SW', 'PST', and 'SCRIPTS'. Below these, there are fields for 'VERSION', 'IMEI', 'Decrypted IMEI', and 'File Version'. The central area contains several test and configuration sections: 'STELEM', 'RDELEM', 'FSAC', 'TST\_MMC', 'GPIO\_TEST', 'DSP\_SPI\_TRIG\_CONFIG', and 'RDWR\_DSP\_SPI'. Each section has input fields for parameters like Element ID, Record #, Offset, Length, and Data, along with an 'Execute' button. The bottom status bar shows 'Comm Mode: RS232', 'PST: CSM Port: 1', 'BaudRate: 19200', 'PST: 177', and a copyright notice for Motorola, Inc. 2003-2002.

**RDELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, and data you wish to read from the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Press *Execute*. A successful read should return 0x00 in the Status window.

**STELEM:** Enter the SEEM Element ID, Record Number, Record Offset, Length, and data you wish to write to the phone. The Element ID, Record Number, Record Offset, and Length must be entered as 2 bytes each of hex data. Enter the data you wish to write to the phone in the Data window in hex format. The number of bytes of data should match the Length entered. Press *Execute*. A successful write should return 0x00 in the Status window.

**FSAC:** This command activates different file system requests to/from the phone. See the Platform 2000 Test Commands document for further description on each parameter.

**TST\_MMC:** This command allows you to read, write, and detect the MultiMedia card. Select the desired parameter from the drop down list and press *Execute*. In the case of a read/detect parameter, any returned data will be displayed in the Data window. In the case of a write parameter, enter the desired data to be written in the Data window.

**GPIO\_TEST:** Allows you to read, write, and configure various GPIO ports and registers on the phone's chipset. This command can either be used in binary or hex format. Binary format allows you to manually configure the specific pins. Select Binary, select Read, Write or Configure, and select the Port. If Configure is chosen, select whether you are configuring the pins for Input or Output. Depending on which mode you have chosen (Read/Write/Configure) the text windows for Pin Mask, Pin Values, and Port Data will be enabled. These are in binary format, with each bit representing an individual pin. Press *Execute*. If you choose the Hex option, only the Hex Data window is enabled. Enter the hex data you wish to send to the phone and press *Execute*. Any data returned from the phone will also be displayed in the Hex Data window.

**RQ:** Select the desired RQ parameter from the drop down list and press *Execute*. The returned data from the phone is displayed in the Data window.

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**Send Raw Test Command:** Any data entered in the To Radio text window will be sent to the phone as is. This may be useful when a new test command is enabled in the phone software but not yet updated in the test tools such as RadioComm. In the case of USB, this will call a function within the PST application to send the raw data to the phone as well. In the event you may have a command op-code and the required data bytes, you can formulate the correct command string, either in RS232 or USB, by using the P2K Command Calculator. See [Section 8.2](#) of this document for a description on the P2K Command Calculator.

**FLEX:** This function allows you to flex a phone with an appropriate flex file. First, Browse for the flex file by pressing *Browse*. Next press the *FLEX* button. The phone will first be Suspended and then flexed via the data in the chosen flex file. A progress bar is displayed to let you know of the progress.

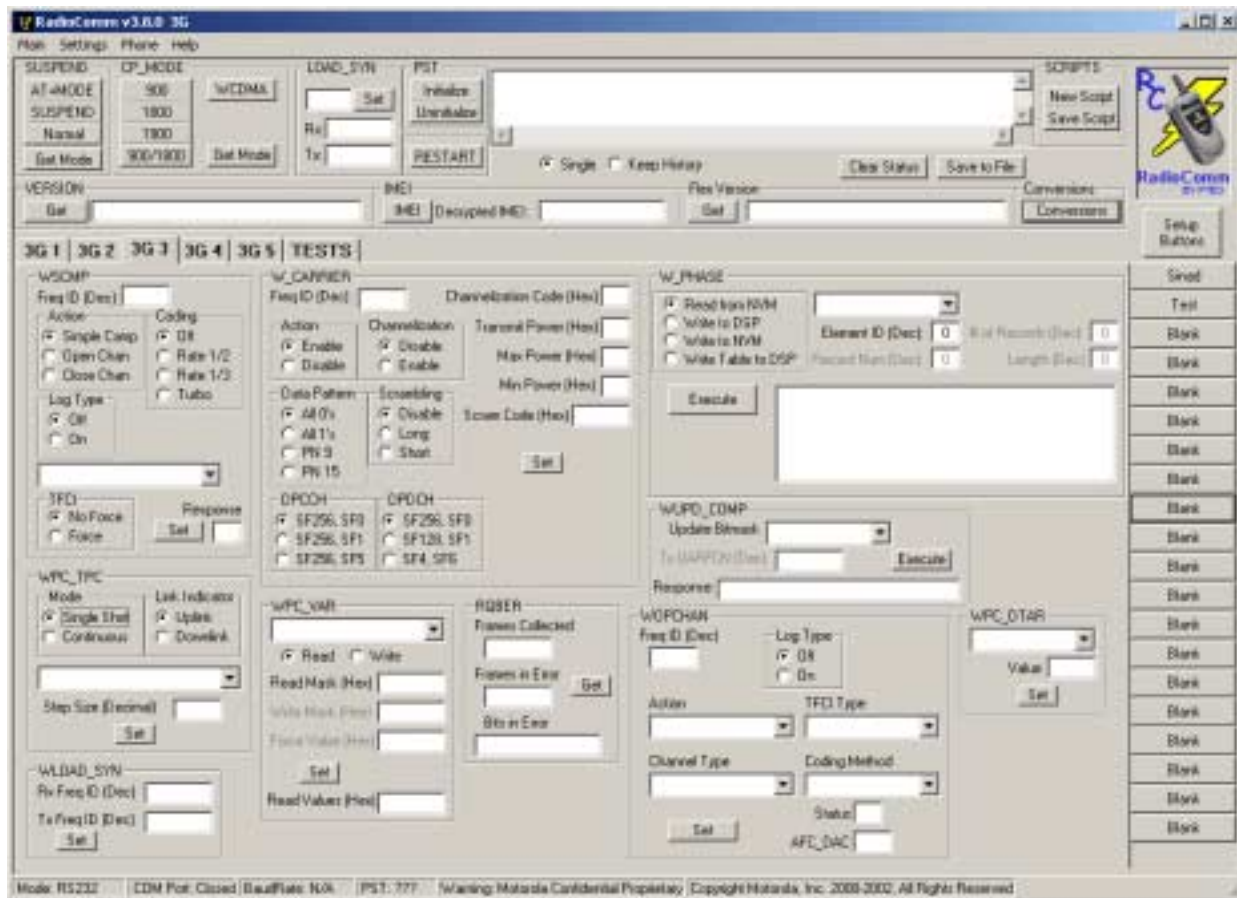
**MEMACS:** Allows you to directly write to a memory address in the MCU or DSP. Enter in the address, select whether you wish to read or write, select the device from the dropdown list, and enter in the number of data bytes you wish to read/write. If you are writing data, enter the data you wish to write in the Data window. Press *Execute*. Any data returned (in the case of a read) will be displayed in the Data window.

**RDWR\_SPI:** This is a generic test command, which performs reads and writes to devices connected to the SPI bus. Select the device from the drop down list. Enter any required data in the Data TO Radio window. Press *Execute*. Any data returned from the phone will be displayed in the Data FROM Radio window.

**RDWR\_DSP\_SPI:** This is a generic test command, which performs reads and writes to devices connected to the DSP SPI bus. Select the device from the drop down list. Enter any required data in the Data TO Radio window. Press *Execute*. Any data returned from the phone will be displayed in the Data FROM Radio window.

**DSP\_SPI\_TRIG\_CONFIG:** This test command is used to configure the operation of a specific MQSPI trigger. Select the proper setting and enter the values for the ID, ID Pointer and ID Mode. Press *Execute*.

## 7.4 3G 3 Tab



**RQBER:** This command will cause the phone to calculate its bit error rate. See the Platform 2000 Test Commands document for further description on each parameter.

**W\_CARRIER:** This command allows you to enable/disable continuous WCDMA carrier transmissions from the phone. See the Platform 2000 Test Commands document for further description on each parameter.

**W\_PHASE:** This command allows you to read/write phasing elements from/to the NVM table structure, the DSP or both. This command is similar to the RDELEM/STELM command but incorporates DSP/NVM specific functionality to aid in phasing. See the Platform 2000 Test Commands document for further description on each parameter.

**WLOAD\_SYN:** This command loads the synthesizer with the desired channel. The value entered is specified in UARFCN format. See the Platform 2000 Test Commands document for further description on each parameter.

**WOPCHAN:** This command is still under development and the exact functionality is not set. See the Platform 2000 Test Commands document for further description on each parameter.

**WPC\_DTAR:** This command forces the RF detect values into the closed loop power feedback for phasing. See the Platform 2000 Test Commands document for further description on each parameter.

**WPC\_TPC:** This command allows you to interface with the power control uplink and downlink. See the Platform 2000 Test Commands document for further description on each parameter.

**WPC\_VAR:** This command allows you to read/write various WCDMA power control algorithm variables. See the Platform 2000 Test Commands document for further description on each parameter.

**WSCMP:** This command will perform a simple camp on BCH channel. See the Platform 2000 Test Commands document for further description on each parameter.

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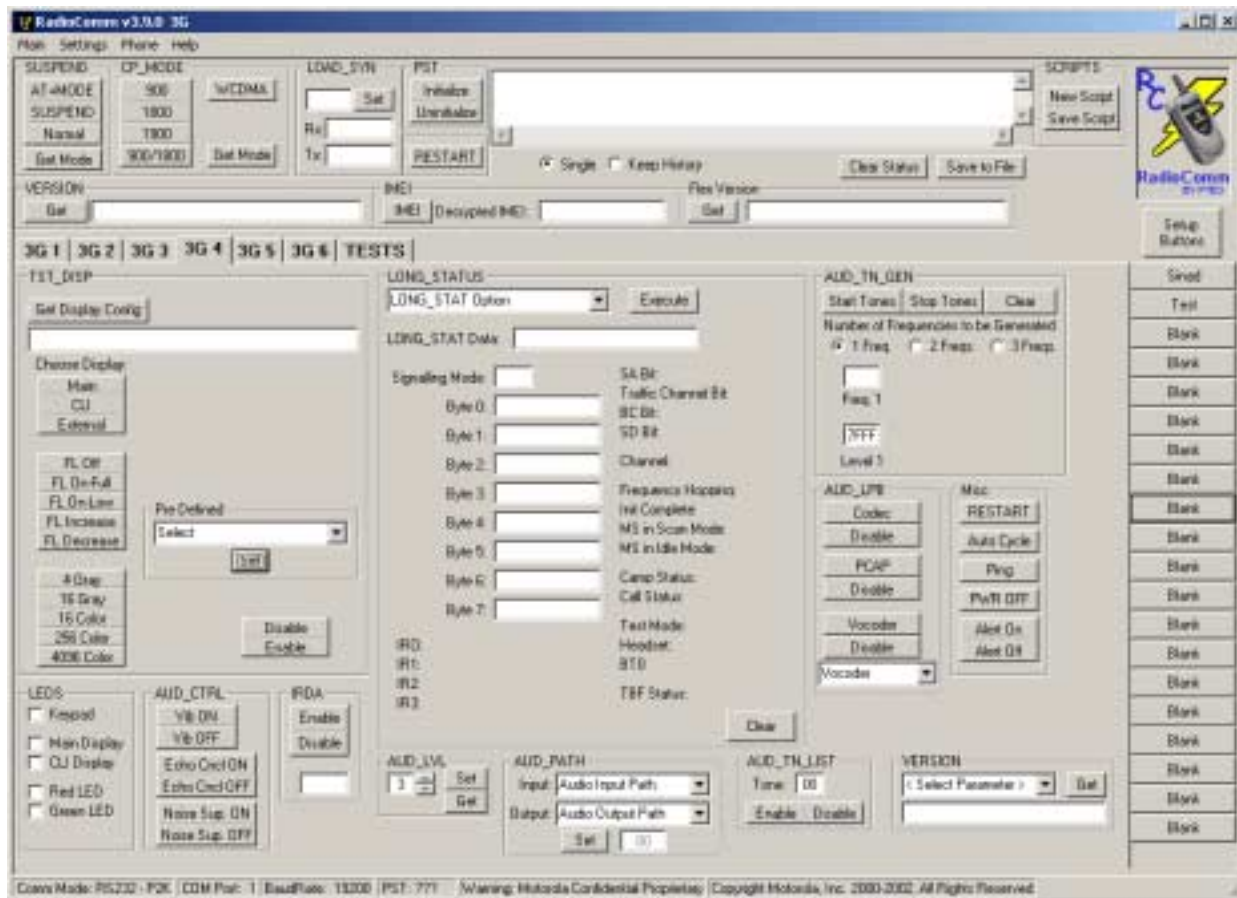
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**WUPD\_COMP:** This command allows for compensated values to be retrieved from the CU and passed to the DSP while in CU is suspended in test mode. The Test Command will make a request of the CU to retrieve/calculate the compensated values for the supported update types. The compensated value calculation is based upon the inputted/retrieved data sent/maintained in the CU and the corresponding CU phased tables. The compensated values are passed to the DSP by the test command. The DSP will use this information to update its corresponding values. The test command is required to pass this information because the MCU will be suspended and not updating this information while a transmit channel is broadcasting in test mode.



## 7.5 3G 4 Tab



**Alert:** Allows you to either enable or disable the alert on the phone. This is a user convenience feature, since enabling the alert actually requires multiple test commands. The audio path is set to Alert path, the audio level is set to maximum, and the correct audio tone is sent based on the alert selection. Press *Disable* to turn off the alert. Note: After disabling the alert, the audio path and audio level remain set to alert path and max audio.

**AUD\_TN\_LST:** This will send the AUD\_TN\_LST test command, which starts or stops alert tones. Enter in the 2 byte tone in hex and press *Enable*. Press *Disable* to turn off the tone. Audio path and audio level must be set separately.

**LEDs:** Checking an option turns on that feature, un-checking an option turns it off. This sends the LEDs test command to turn on/off various LEDs of the phone. Note that not all products have all the features listed.

**TST\_DISP:** This test command allows you to configure the current display settings. Press *Get Display Config* to return the current display configuration. The data displayed is the raw data in hex that the phone returns. To choose which display is the active display, press *Main*, *CLI*, or *External*. You can also choose to turn various pixel patterns on/off of the active display. *All Pixels ON* will turn on all pixels, *All Pixels OFF* will turn off all pixels. *Checkerboard A* will turn on a pixel checkerboard pattern. *Checkerboard B* will turn on a reverse checkerboard, or the opposite pixels as Checkerboard A.

**AUD\_CTRL:** Sends the AUD\_CTRL test command to control the vibrator, echo canceling, and noise suppression in the phone.

**AUTOCYCLE:** Sends the AUTOCYCLE test command, putting the phone into an automated mode that enables and disables various features in an endless cycle. Once this mode is activated, the phone will have to be power cycled to get out of this mode. The Platform 2000 Test Commands document describes the various cycles of the phone in this mode.

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**AUD\_LPBK:** Sends the AUD\_LPBK test command to enable or disable audio loopback. Codec, PCAP or Vocoder 13K loopback can be chosen. *Disable* turns off the respective loopback.

**AUD\_LVL:** Enter the desired audio level (0-15) and press *Set*. This will set the phone's audio level by sending the AUD\_LVL test command. Press *Get* to display the current audio level the phone is set to.

**AUD\_PATH:** Choose the audio input path from the drop down list. Choose the audio output path from the drop down list. Optionally choose to RX or TX mute the paths. Press the *Set* button to set the phone's audio paths to those selected.

**RESTART:** Allows you to send the restart command to the phone.

**LONG\_STATUS:** The LONG\_STATUS command returns various information about the status of the radio. This command can be sent in Normal Mode (after AT+MODE=1 if in RS232) or Suspend Mode. In Normal Mode, it can be used to determine the phone's current channel and if it is in service. It is also frequently used to determine if the headset is detected or not detected. Press *Execute*. All data returned is displayed in the top window of the frame. The individual bytes are displayed in binary as well, since individual bits have a distinct meaning. Channel, Radio Mode, Headset, and Carrier are displayed to the right based on the returned data.

**IRDA:** Activates or Deactivates the IRDA port. Press *Enable* to activate the IRDA port, *Disable* to deactivate it. A status byte will be returned and displayed: 0x00=Activate Succeeded, 0x01=Activate Failed, 0x02=Already Activated, 0x03=Deactivate Succeeded, 0x04=Deactivate Failed.

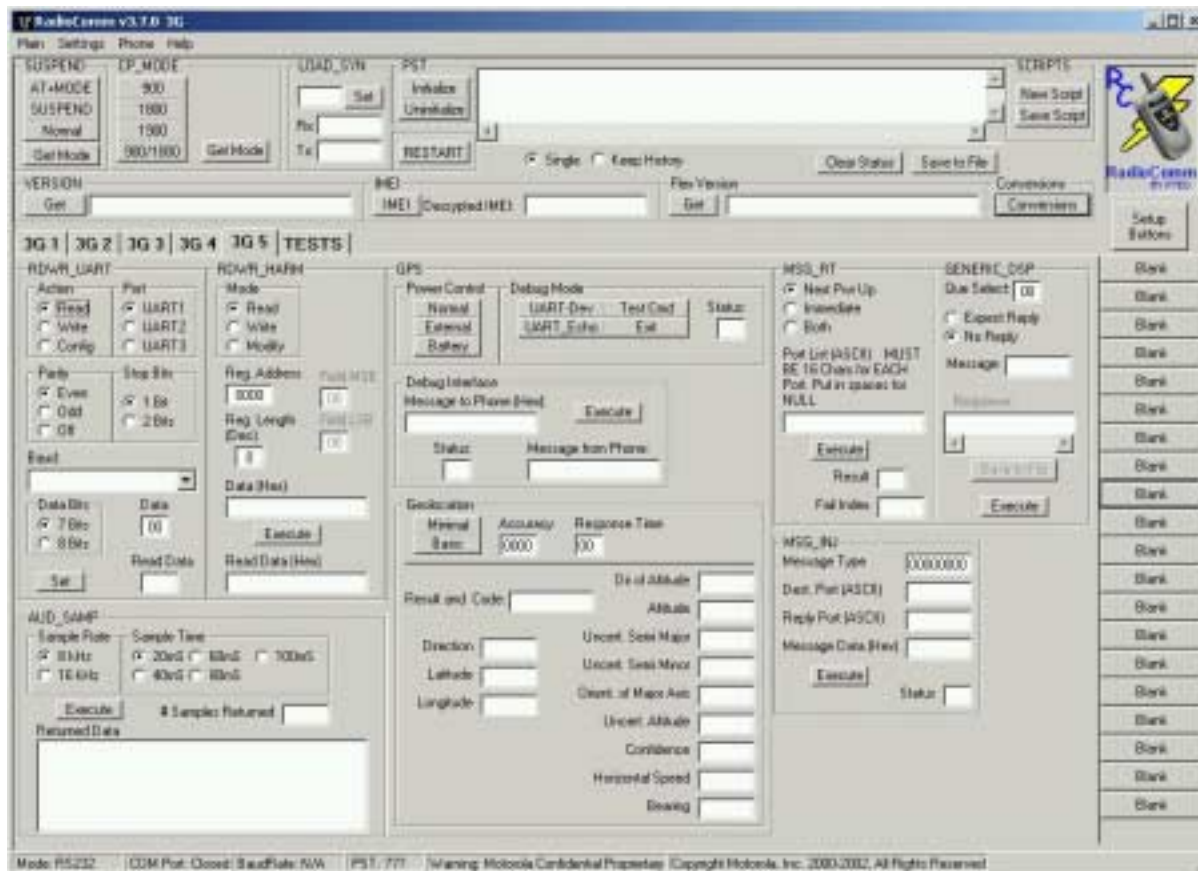
**AUD\_TN\_GEN:** Allows enabling or disabling of a generated tone. Select how many frequencies (1-3) you wish to generate, enter the frequency for each selected, and enter the audio level for each. Press *Start Tones*. To disable the tone generation, press *Stop Tones*. The data required to be entered for the frequency and audio level is formally described in the Platform 2000 Test Commands document.

**VERSION:** Allows you to select and execute the desired version test command. The data returned will be automatically decoded if necessary.

**PING:** Allows you to send the dummy test command ping to the phone.

**PWR OFF:** Allows you to send the PWR\_OFF command to the phone.

## 7.6 3G 5 Tab



**AUD\_SAMP:** This command will sample the input audio stream for a specified number of milliseconds. See the Platform 2000 Test Commands document for further description on each parameter.

**GENERIC\_DSP:** This command allows you to create a DSP specific message to be sent through the MDI. See the Platform 2000 Test Commands document for further description on each parameter.

**GPS:** This command performs GPS related operations. See the Platform 2000 Test Commands document for further description on each parameter.

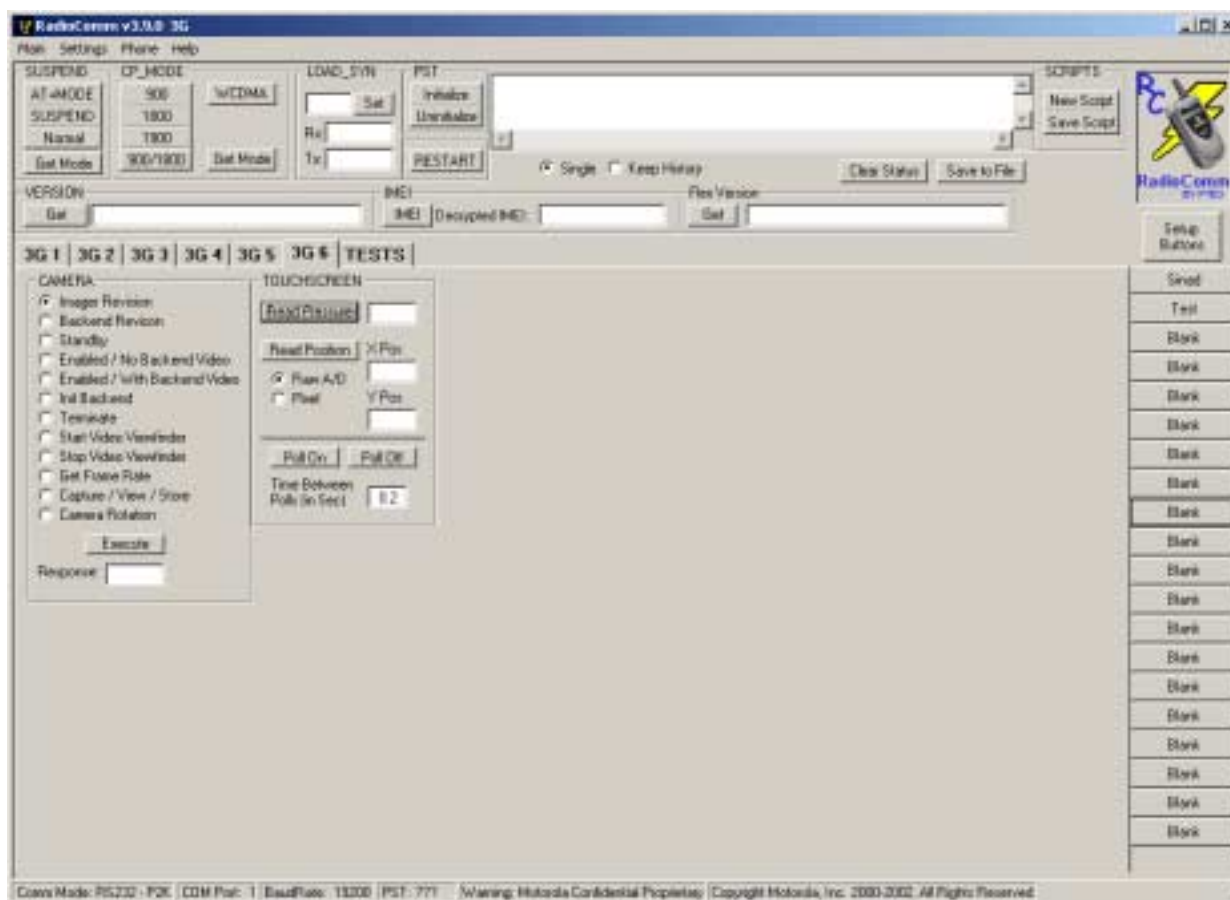
**MSG\_INJ:** This command allows you to create and send a SUAPI message to any port within the phone that has been registered with the SUAPI name services. See the Platform 2000 Test Commands document for further description on each parameter.

**MSG\_RT:** This command allows you to set SUAPI routing of ports registered with the SUAPI name services. See the Platform 2000 Test Commands document for further description on each parameter.

**RDWR\_HARM:** This command performs reads/writes/modifies on Harmony Lite registers via the MQSPI bus. See the Platform 2000 Test Commands document for further description on each parameter.

**RDWR\_UART:** This command configures the UART and allows reads/writes from the UART. See the Platform 2000 Test Commands document for further description on each parameter.

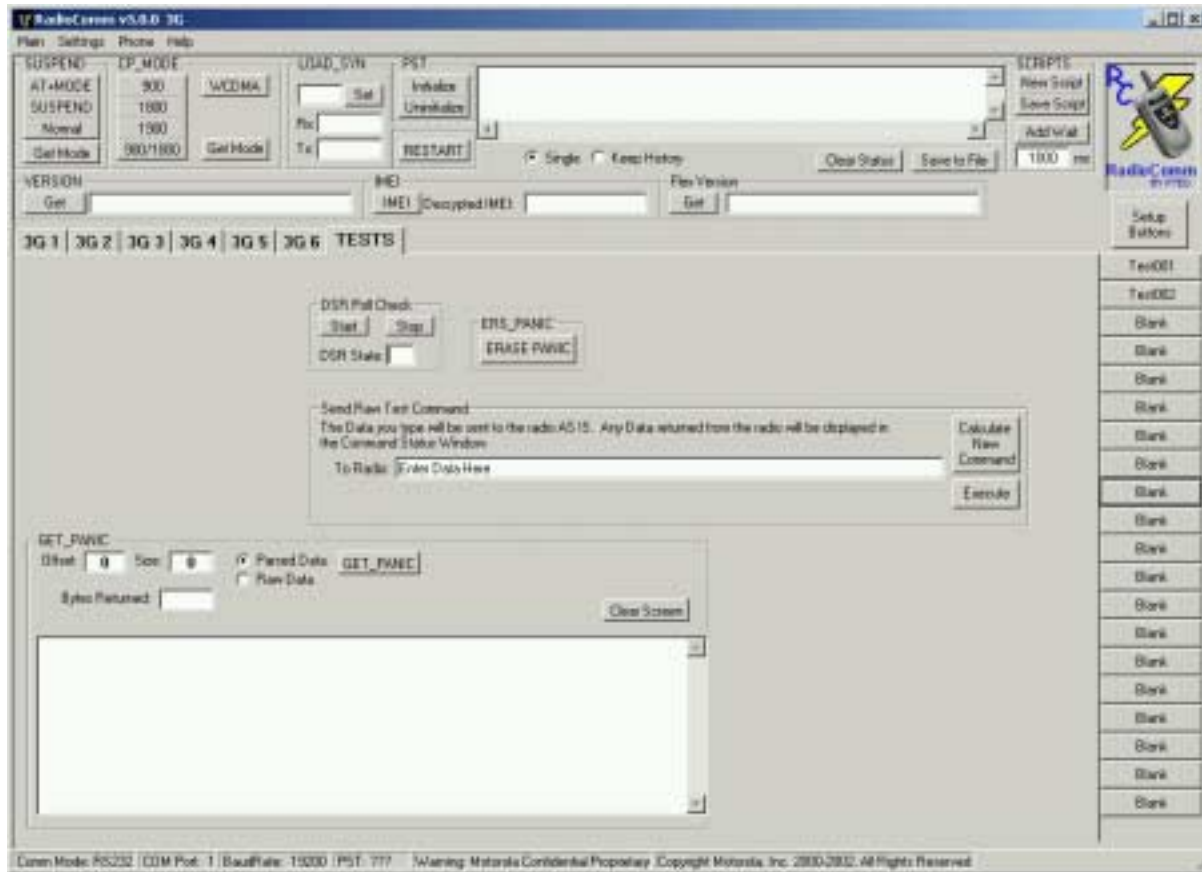
## 7.7 3G 6 Tab



**CAMERA:** This command will allow the user to select the desired option for the CAMERA test command and then execute it. The results are returned to the Response box.

**TOUCHSCREEN:** This command will allow the user to read the position and the pressure of the touch screen. The results are returned to the box next to the button for each respective command.

## 7.8 TESTS Tab



**Send Raw Test Command:** Any data entered in the To Radio text window will be sent to the phone as is. This may be useful when a new test command is enabled in the phone software but not yet updated in the test tools such as RadioComm. In the case of USB, this will call a function within the PST application to send the raw data to the phone as well. In the event you may have a command op-code and the required data bytes, you can formulate the correct command string, either in RS232 or USB, by using the P2K Command Calculator. See [Section 8.2](#) of this document for a description on the P2K Command Calculator.

**DSR Poll Check:** When a phone powers up, the DSR line toggles from low to high with respect to the PC serial RS232 port. Press *Start* to start polling the active COM port on your PC. Power up the phone. The DSR Status should change from a 0 to a 1 if the phone is working properly. Press *Stop* to stop the polling. Note that the phone may hold the PC's DSR line high, even after turned off. Therefore, you want to start with the DSR Status as a 0 so that you will be able to see the transition from low to high when a phone turns on. You can reset the COM port by going to the Settings menu and closing and then re-opening your COM port. This should reset the DSR Status to 0.

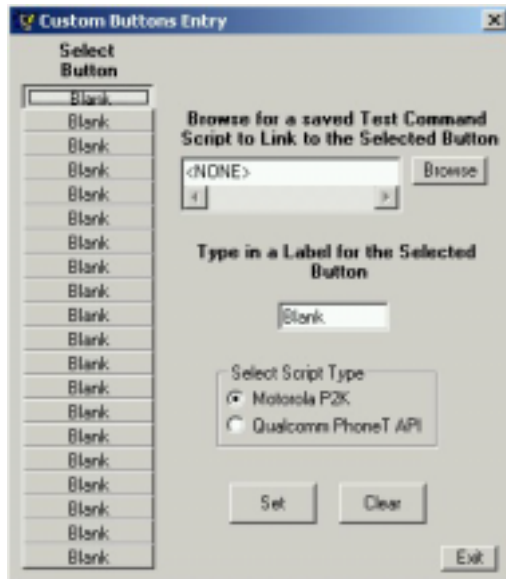
**ERS\_PANIC:** Allows you to clear the panic data in the phone.

**GET\_PANIC:** Allows you to read out the panic data of the phone. Enter the offset value and the size value and select if you want raw data displayed or parsed data and then hit the 'GET\_PANIC' button. Data will be displayed in the window. Press the 'Clear Screen' button if you wish to clear the data display window.

## 8 Common Features

### 8.1 Custom Buttons Entry

The following screen allows users to link previously saved test command scripts to hot buttons. This is a convenient method of executing frequently used test scripts.



Select one of the 20 buttons on the left. Then Browse for a test command script. The script must have already been previously saved. Type in a name for your new custom button. Select whether the selected test command script is a Motorola type command script or a Qualcomm PhoneT type script. Motorola is the default. Press *Set*. The button is now configured and will be retained so that even upon exiting RadioComm and re-starting, it will be remembered.

If you wish to clear a previously defined hot button, select the desired button to be cleared and press *Clear*.

Press *Exit* to exit this screen.

## 8.2 P2K Command Calculator

The P2K Command Calculator allows you to formulate the correct data string for a test command in either RS232 or USB format.

Enter OpCode: 000

Enter Number of Data Bytes: 0 Set Enter # of data bytes and press 'Set'

☒ RS232 Format ☐ USB Format

| Data Byte # | Data |
|-------------|------|
| 1           | 0x00 |
| 2           | 0x00 |
| 3           | 0x00 |
| 4           | 0x00 |
| 5           | 0x00 |
| 6           | 0x00 |
| 7           | 0x00 |
| 8           | 0x00 |
| 9           | 0x00 |
| 10          | 0x00 |
| 11          | 0x00 |
| 12          | 0x00 |
| 13          | 0x00 |
| 14          | 0x00 |
| 15          | 0x00 |
| 16          | 0x00 |
| 17          | 0x00 |
| 18          | 0x00 |
| 19          | 0x00 |
| 20          | 0x00 |
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| 22          | 0x00 |
| 23          | 0x00 |
| 24          | 0x00 |
| 25          | 0x00 |
| 26          | 0x00 |
| 27          | 0x00 |
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| 88          | 0x00 |
| 89          | 0x00 |
| 90          | 0x00 |
| 91          | 0x00 |
| 92          | 0x00 |
| 93          | 0x00 |
| 94          | 0x00 |
| 95          | 0x00 |
| 96          | 0x00 |
| 97          | 0x00 |
| 98          | 0x00 |
| 99          | 0x00 |
| 100         | 0x00 |

Double-Click on cell to change/enter data.

Calculate

Checksum:

Complete Data String:

Enter the op-code in the OpCode window. Enter the number of data bytes you will be sending with the command. Press the *Set* button. Based on the number of data bytes you entered, the same number of data cells will appear in the middle section of the window. The default value in each cell will be 0x00. Double-click on a cell to enter edit mode. Change the data byte to a new value if desired. When done entering the data bytes, select either RS232 Format or USB Format and press *Calculate*. The data string will be shown in the Complete Data String window. You will have to manually copy that string into the To Radio window of the original Send Raw Test Command frame.



## 8.3 Conversions

The following screen allows users to convert several things:

- 1) General numbers to and from Hex / Dec / Bin.
- 2) Chan to Freq and Freq to Chan for all the listed Channel ranges.
- 3) To and from UARFCN / Freq.
- 4) To and from Decimal 5.2 format.
- 5) To and from Decimal 6.9 format.
- 6) To and from Decimal 11.4 format.
- 7) To and from Decimal 4.11 format.

The screenshot shows a software window titled "Conversions". At the top, there is a "Base Conversion" section with a text input field containing "0" and three radio buttons: "Decimal" (selected), "Hexadecimal", and "Binary". Below this is a "Channel Range" section with two columns of radio buttons. The first column includes GSM 450, GSM 850, GSM 900, GSM 1800, GSM 1900, and CDMA 800. The second column includes CDMA 1800, CDMA 1900, TDMA 800, TDMA 1900, AMPS, and iDEN. To the right of the channel ranges are two conversion sections: "Channel to Frequency" and "Frequency to Channel". Each has input fields for "Enter Channel" or "Enter Freq", a "Go" button, and a "Clear" button. The "Frequency to Channel" section also has radio buttons for "Rx" (selected) and "Tx". Below these are four more conversion sections arranged in two columns. The left column contains "UARFCN to Frequency", "Decimal to 5.2 Format", "Decimal to 6.9 Format", "Decimal to 11.4 Format", and "Decimal to 4.11 Format". The right column contains "Frequency to UARFCN", "5.2 Format to Decimal", "6.9 Format to Decimal", "11.4 Format to Decimal", and "4.11 Format to Decimal". Each section has input fields for the source value, a "Go" button, a result field, and a "Clear" button.

## 8.4 Factory Information

Press Execute to display any information stored in the factory SEEM location. 128 bytes of data are returned and the raw data is displayed in the top window in the frame. The individual data will also be parsed and automatically decoded and displayed for the user. The data is decoded based on the Common Factory Info Area 12M (12M0919A87). Choose the product for which you want the factory information. Certain products have a slightly different variation of how the data is stored. Also, check the checkbox if you would like AT+MODE=1 to be sent to the radio, such as if this is done immediately after a power-up. If checked, this will also send the RESTART command when finished reading the information out of the radio. For CDMA1X products, the phone cannot be in PhoneT mode.

**Factory Information Reading**

☐ Check if AT+MODE=1 is required first

☒ P2K CDMA / TDMA   ☐ 1X CDMA   ☐ GSM

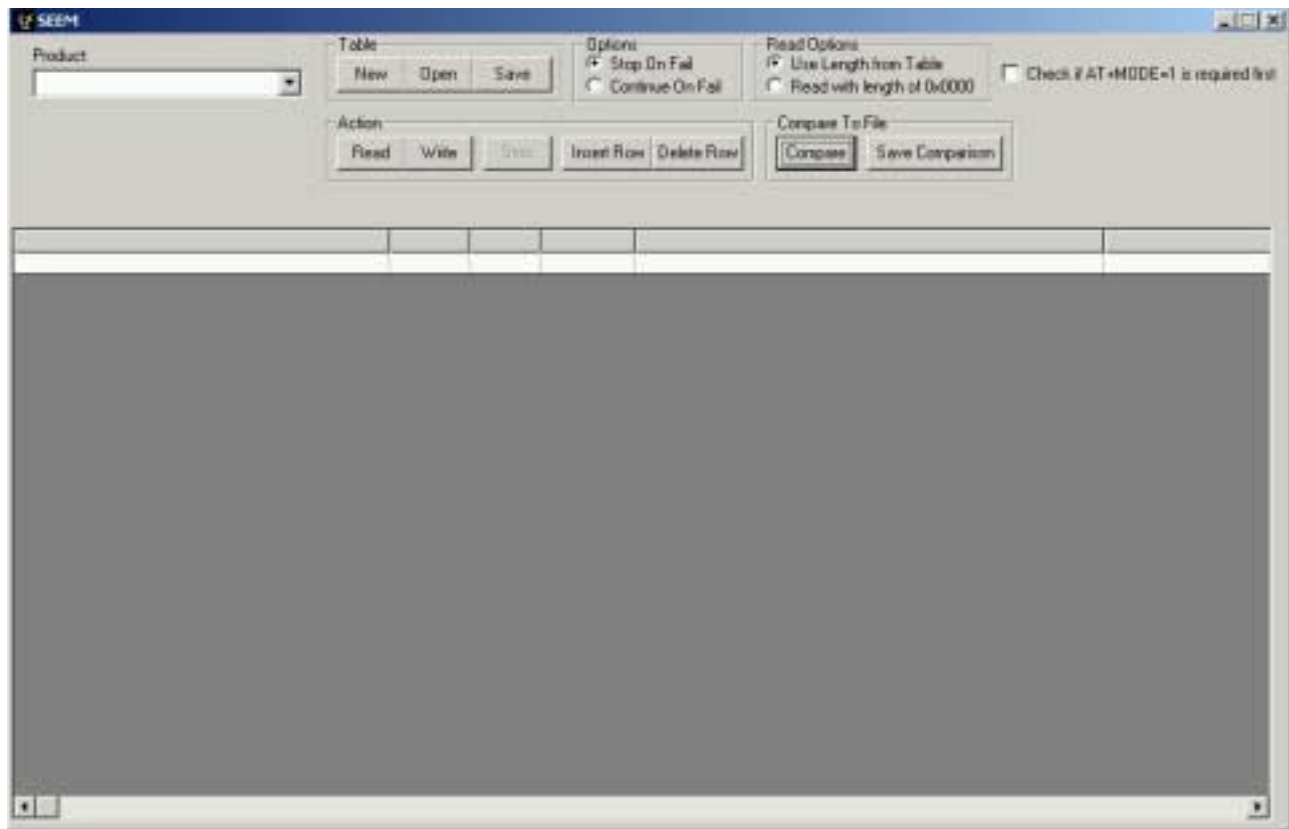
**Execute**

[16 empty rectangular boxes for data display]

## 8.5 NVM / SEEM

The following screen allows users to read/write the radios NV / SEEM from/to the phone. It also allows the users to save that information and recall it at a later time. User entry is allowed to change the NV / SEEM to whatever the user would like.

Check the checkbox if you would like AT+MODE=1 to be sent to the radio first, such as if this is done immediately after a power-up. If checked, this will also send the RESTART command when finished reading/writing the SEEM elements. For CDMA1X products, the phone cannot be in PhoneT mode.



**Select Product:** Use the pull-down selection box and choose the desired product from the list.

**Action:** Press *Read* to read out the SEEM elements of the phone based on the template currently open, either from selecting *New* or *Opening* an existing data file. Press *Write* to write the data in the current table back to the phone. Press *Insert Row* to add a new row to the grid. The new row will be added as the last row (bottom) of the grid. Press *Delete Row* to delete the current row which is highlighted from the grid.

**Table:** Press *New* to open a new table, based on the product selected. Press *Open* to open a table that was previously saved. Note that a valid table must be open in order to perform an action, such as *Read* or *Write*. Press *Save* to save the current table and data to a file. The default file extension that will be used is .NVM. The user will be prompted for a storage location and file name.

**Compare To File:** This feature allows the user to compare data between two separate files. The data in the SEEM Data column will be data from either using the *Read* action or opening existing data from the *Open* button. Press *Compare* and you will be prompted for a file name. To compare data, the data must have been previously saved. Once a file is chosen, the data from that file will be populated into the *Compare Data* column of the table and will be compared with the data in the SEEM Data column. Any differences in a data string will be highlighted in red. Press the *Save Comparison* button to save both sets of data being compared to a file. The user will be prompted for a storage location and file name.

**Options:** Select Stop On Fail if you wish the Read/Write process to stop on a command failure. Select Continue on Fail to continue trying to Read/Write on a command failure.

**Read Options:** Select Use Length from Table if you want to read using the data length that is specified in the table. This is what must be used for CDMA1X products all the time. Select Use length of 0x0000 if you want to read the entire SEEM at that specific ID. This option will NOT work with CDMA1X products.

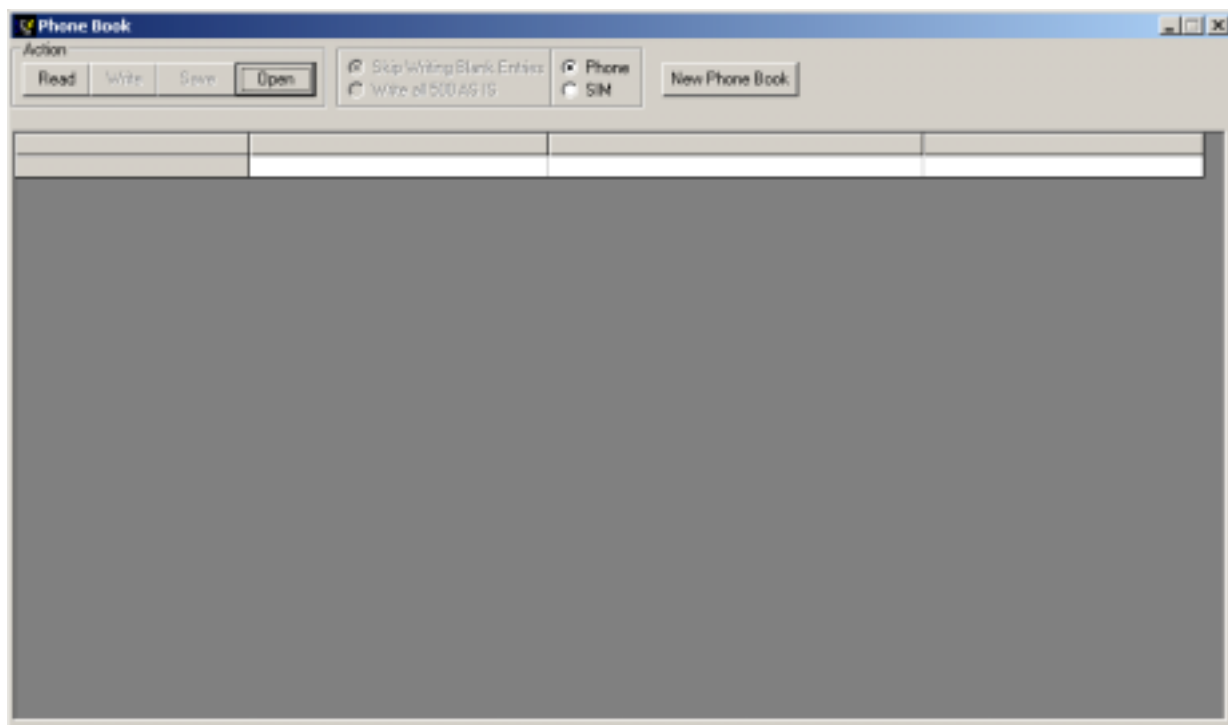
**Editing Data:** To edit SEEM data, double-click on the cell containing data you wish to modify. A message box will appear with the current data. Edit the data as desired and press **OK**. At this time, only the SEEM Data column can be modified.

## 8.6 Phone Book

The following screen allows users to read and write the radios entire 500 number phone book from the phone. It also allows users to read the 110 number phone book from a GSM SIM card. The user can save to a file and opening of a previously saved file to write to a phone. User entry is allowed so that the user can manually enter desired values.

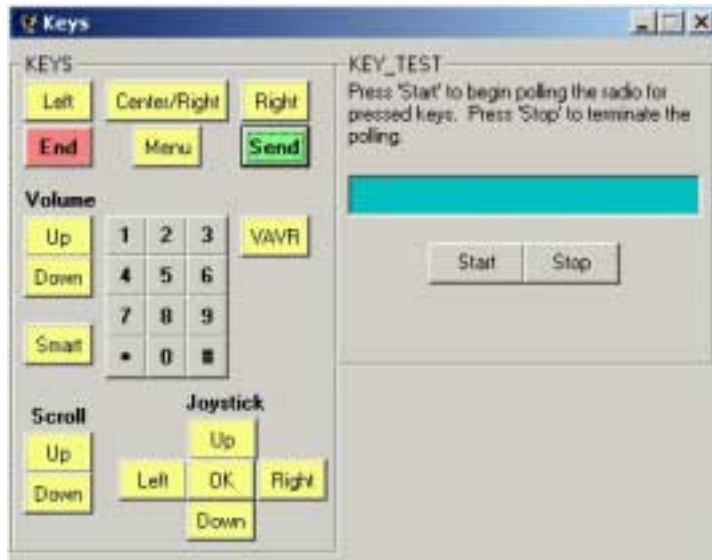
All commands are taken care of by RC for this function. Simply power up the phone and connect it to the CE bus cable. There is no need to do any external commands.

To modify/enter data, double-click on the desired cell. A message box will appear with the current data. Edit as desired and press **OK**.



## 8.7 Keys

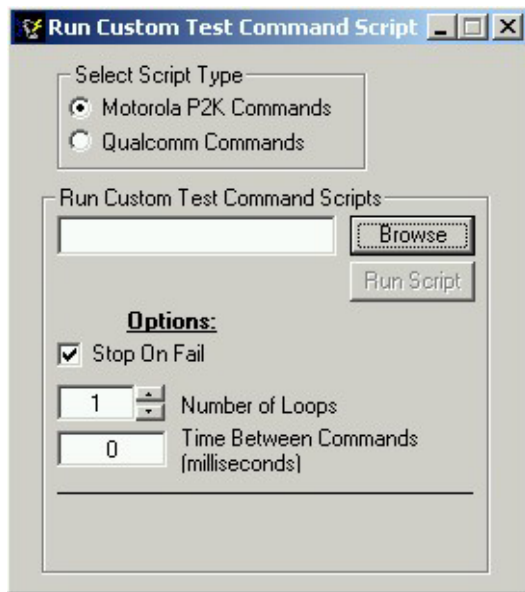
The Keys form is shown below. This is common to all the different technologies.



**KEYS:** Each button represents a simulated key stroke. The phone should be in Normal Mode (after AT+MODE=1 is sent). Press the desired key. The key should appear on the display of the phone or activate a phone feature as expected.

**KEY\_TEST:** Press *Start* to start polling the keys buffer in the phone. The phone should be in Suspend Mode. Any key pressed on the phone will be sent to the phone's keys buffer. The polling will then display the key press in the green text window. Press *Stop* to stop the continuous polling.

## 8.8 Run Test Command Script



**Run Custom Test Command Scripts:** See the description in the Header area of any MA on how to properly save a test command script. Once a script has been saved, you can either link it to a custom button or run it from this form. First select whether the script is Motorola P2K Commands or Qualcomm Commands. This is crucial in order to know how to handle the commands inside the script. Choosing the wrong one will result in the commands not being sent to the radio properly. Press *Browse* to find a previously saved script. Select whether you would like the sequence stopped if any of the commands in the script fail. You can also choose the number of times you would like the script, as a whole, to be executed. This is very convenient for loop-testing commands for performance. You may also enter the amount of time delay in between each individual test command. Enter the time in milliseconds. The default is set to 0 milliseconds, or basically as fast as the phone will accept the next command. Press *Run Script* to run the script with the options chosen.