Operation Guide for CNAD3.0 CDMA Device

1. Product Overview

CNAD3.0 is a 1xRTT - capable device for use within automotive environment to provide wireless connectivity within a vehicle. The device will be installed behind the radio panel of a commercial vehicle during the car factory assembly process. The device has no user interface and will not be assessable without special tools.

- Class II PCS band
- Class III Cellular Band
- 1x-RTT
- SMS
- On-board autonomous GPS
- Fakra RF connector (violet) for GSM RF.
- Fakra RF connector (blue) for GPS RF.
- Automotive-grade system-level connector
- Input Voltage 8-16 V

2. Device Installation and User Manual

The CNAD3.0 device is a proprietary product designed and manufactured by Temic Automotive North America, brand name Continental, for use by an automotive OEM.
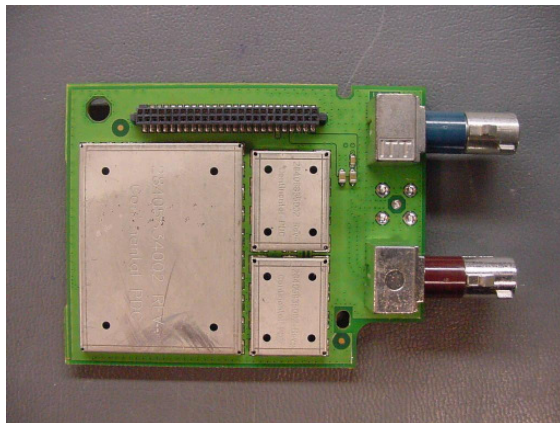

Fig 1. Top view of CNAD3.0.

Fig. 2 Bottom view of CNAD3.0

3. Special Testing Instructions

Set-up requirements:

[1] The interface board (NIB), its power cable, and 36 pin ribbon cable with 36 pin standoff.

[2] 36 pin to 50 pin adapter circuit board.

[3] 8V-16V Power supply capable of sourcing 1A.

[4] A CDMA capable call box [Agilent 8960 is used in this example].
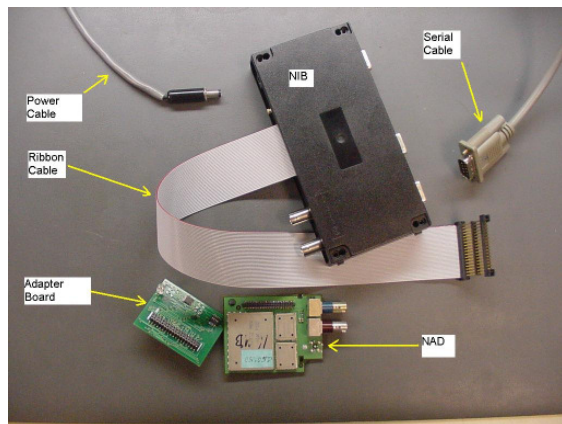
[5] A CNAD3.0 module

Figure 3. CNAD3.0 test set-up

Power-up Instructions:

[1] Program the power supply to 12V (acceptable range is 8V-16V) and set the current limit to 1.5A.
  IMPORTANT: Make certain the power supply output is off.

[2] Connect the NIB to the power supply.

[3] Connect the ribbon cable to the adapter board as shown in 4. Be certain that the ribbon cable is not backward.
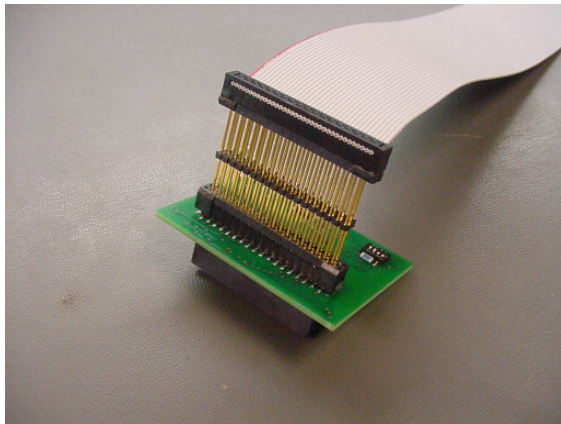

Fig. 4. Adaptor board and cable connection.

[4] Connect the adapter board to the NAD as indicated in Figure 5.

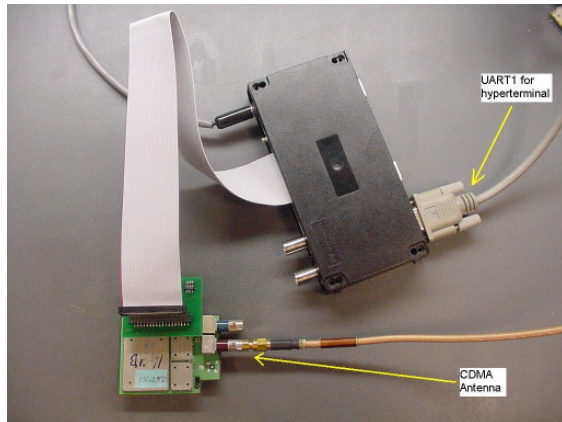[5] Connect the serial communication cable to the NIB as shown in Figure 5.

Fig. 5. Properly assembled CNAD3.0 set-up

[6] Launch Hyperterminal. **Note: multiple applications trying to communicate on the same COM port will result in NO communication.**

[7] Turn on the power supply output. Current draw by the NIB should be around 95mA for NIBs with no LEDs, and 125mA for NIBS with LEDs.

[8] Press the KBD_PWR switch down for about 1 second, then let go. The phone should power on. Current drawn from the power supply should jump by 20mA

[9] Optionally connect USB as shown in Fig. 6 below, and launch QXDM or QPST for diagnostics.

[10] **Make sure the power is off before disconnecting the cables from the NIB.**

Making a Voice Call:

[1] With the NAD connected as above, connect the RF cable to a call box.

[2] Set the CDMA call parameter as indicated by the PRL. In this example, Band is US Cellular, Channel is 384, SID is 20, NID is 1.

[3] For Auto-answer, Service Option 55 Loopback is used. For user answered calls, Service Option 3 Voice is used.

[4] Wait for the NAD to register; this should be less than 30 seconds.

[5] For mobile originated call, type ATD[number] e.g. ATD123

[6] For mobile terminated call, press the "originate call" soft-key.
VOICE CALLS ONLY:
The terminal will indicate the incoming call with "RING".
Type ATA to answer the call.
Loopback calls will be auto-answered by the NAD.

[7] To end the call, type ATH, or press the "end call" soft-key on the call box.

Making a Packed Data Call:

CNAD3.0 Serial Modem Driver Installation:

[1] Save the Serial Modem driver file GEN7.2_modem.inf to local hard drive

[2] Go to Start -> Settings -> Control Panel;

[3] Double click on Phone and Modem Options;

[4] Click on Modems and Add new modem;

[5] Follow the windows system Add/Remove Hardware Wizard instructions and click on the Don't detect my modem; I will select from a list option, then click on Next;

[6] Click on Have Disk button, then click on Next;

[7] Click on Browse button to select the GEN7.2_modem.inf file just downloaded from local hard drive, then click on OK;

[8] Choose Motorola CDMA 1X Modem from the Models list, then click on Next;

[9] Specify the COM port needed to run the dial up connection, then click on Next;

[10] Click on finish to complete the installation of Motorola serial modem driver.

[11] Select Motorola CDMA 1X Modem, Click on the properties tab, and set the Maximum Port Speed to 115200 and ensure that the 'Wait for Dialtone' box is unchecked.

Gen7.2_modem.inf

CNAD6055 NAD Dial Up Networking Configuration:

[1] Go to Start -> Settings -> Network and Dial Up connections -> Make New Connection;

[2] Follow the windows system Network Connection Wizard instructions, Choose Dial up to private network option then click on Next;

[3] Set the Phone number as #777 (please check using QPST service programming to insure #777 is configured as the Pkt Dial String in NAM), then click on Next;

[4] Select the Connection Availability option to be For all users, then click on Next;

[5] Name it as SO33 Dial Up Networking and click the option to create a shortcut on desktop, then click on Next;

[6] The Connect SO33 Dial Up Networking window pops up and set both the user name and password to be same for testing with Racal or other settings specific to the network operator;

[7] Click on the Properties button to change some configurations;

[8] Under Security, check to enable Show terminal window under Interactive logon and scripting;

[9] Under Networking, click on Settings button below PPP: Windows 95/98/NT 4/2000, Internet. Only select Enable software compression option. Click on OK;

[10] Under general, click on Configure, and set the maximum speed to 115200bps.

[11] Under general click on Configure, and make sure 'Enable Hardware Flow Control' is unchecked.

[12] The Dial Up Networking configuration is complete.

Powering off the NAD

[1] Terminate the call if the NAD is connected.

[2] Press KBD_PWR on the NIB for about 1 second.

[3] Current drain should drop to 95mA [or 125mA for NIBs with LEDs] within 3 seconds indicating the NAD is off. Hyperterminal communication should cease, as should any data streams in QXDM.

[4] Turn off the output of the 12V supply.

[5] The NAD setup may now be disassembled.

[6] Request Product Serial Number +GSN

Usage
AT+GSN
Ouput format
+GSN: <ESN/pESN> [,<MEID>]
<ESN> - NAD's ESN in 8-digit hexadecimal format.
<pESN> - NAD's pseudo-ESN in 8-digit hexadecimal format
<MEID> - NAD's MEID (Mobile Equipment Identifier) in 14-digit hexadecimal format
For the NADs that support the MEID feature, both pESN and MEID are returned for the GSN query. If MEID is not supported, only the ESN value is returned.
on the NAD.

Usage
AT+MHIG=1   // Sets ignition state to on
AT+MHIG=0   // Sets ignition state to off

   [7]   Registration Management +MNRR

This unsolicited result code reports when the NAD begins a registration attempt and reports whether the registration attempt was successful upon completion of the attempt. This status reporting is performed by the NAD whenever registration status reporting is enabled.

Usage
AT+MNRR=1   // Enable unsolicited reporting of registration attempts
AT+MNRR=0   // Disable unsolicited reporting of registration attempts

[1]   NIB Connectors

[2]   Front Side

KBD_PWR   AUDIO

| 12V | | NAD INTERFACE CABLE | IN | headset | OUT |
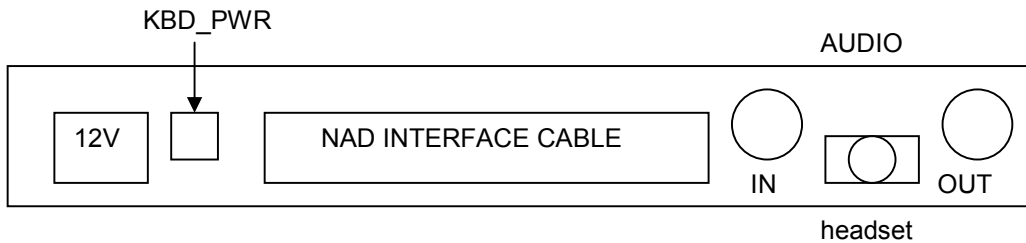
[3]   Back side

The connectors on the back side of the NIB are as follows.

| UART1 | UART2 | PC INTERFACE | GPS |