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CDMA 1xEV-DO Release A USB Modem
Technical Specifications
(CDU-680)

Confidential



Review

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CDU-680 Technical Specifications

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Revision History

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1. Product Overview

1.1. Overview

- Enjoy the freedom to get fast internet connection, anywhere, anytime.
- Now possible anywhere you want to work or play.
- Global wireless access to the internet, e-mail.
- Powerful CDMA 1xEV-DO Release A network.
- Compact, portable, manageable and state-of-the-art device.

1.2. General Features

DATA SERVICES

CDMA 1xEV-DOrA(IS-856-A)

Downlink: up to 3.1Mbps, Up link: 1.8Mbps

CDMA 1xRTT(IS-2000 Rel.0)

Forward and reverse link: up to 153.6Kbps

* Limit to Network conditions

GENERAL CHARACTERISTICS

Dimension/Weight: 32x78x9.5(mm)/25g

Operating Temperature: -20°C to 50°C

Qualcomm MSM6800 chipset based(ZIF)

MRD(Mobile Receiver Diversity)

Visual indicator LEDs

USB Series "A" Type plug form factor

Nominal Operation voltage: from USB host

ANTENNA

Primary antenna: Internal type

* Available extended antenna

Secondary antenna: internal type

STANDARDS

IS-856-A (CDMA 1xEV-DOrA)

IS-2000 Rel.0 (CDMA 1xRTT)

IS-707-A Data Service

IS-683C OTA Service Provisioning

IS-853-C Wireless IP Network

IS-707 AT command

SYSTEM REQUIREEMNTS

Windows® 2000/XP

Connection: USB slot A-Type

Disk Drive: CD-ROM

Processor: 667MHz or faster

Memory: 128MB

Disk space: 100MB

FREQUENCY BANDS

CDMA 800MHz(Band class 0)

CDMA 1900MHz(Band class 1)

GPS L1 band(1575.42MHz)

In packing box: Modem Device, USB Y-cable, Install CD, Manual

CDU-680 Technical specification

- Wave Type

Cellular: G7W

US-PCS: G7W

- Frequency Scope

| Transmit Frequency(MHz) | | Receiver Frequency(MHz) | |
|-------------------------|-------------|-------------------------|-------------|
| Cellular | US-PCS | Cellular | US-PCS |
| 824.82 ~ 848.19 | 1850 ~ 1910 | 869.82 ~ 893.19 | 1930 ~ 1990 |

- Rated Output Power

Cellular: 0.25W, CLASS 3

US-PCS: 0.25W, CLASS 2

- Voltage and Current value of terminal part power amplifier

| Band | Part name | Maker | Typical voltage | Max. current | RF output power |
|----------|-----------|-------|-----------------|--------------|-----------------|
| Cellular | FC7113-1 | FCI | 3.4V | 480mA | 28dBm |
| US-PCS | SKY77149 | FCI | 3.4V | 470mA | 28dBm |

- Functions of major semi-conductors

| Part name | Function |
|-----------|---|
| MSM6800 | MSM(Mobile Station Modem) Terminal operation control and digital signal processing |
| MCP | Storing of terminal operation program NAND Flash memory(1Gb) and SDRAM(256Mb) |
| RFR6500 | Convert Rx RF signal to base-band signal |
| RFT6150 | Convert base-band signal to Tx RF signal |
| PM6650 | Power management |

2. Specifications

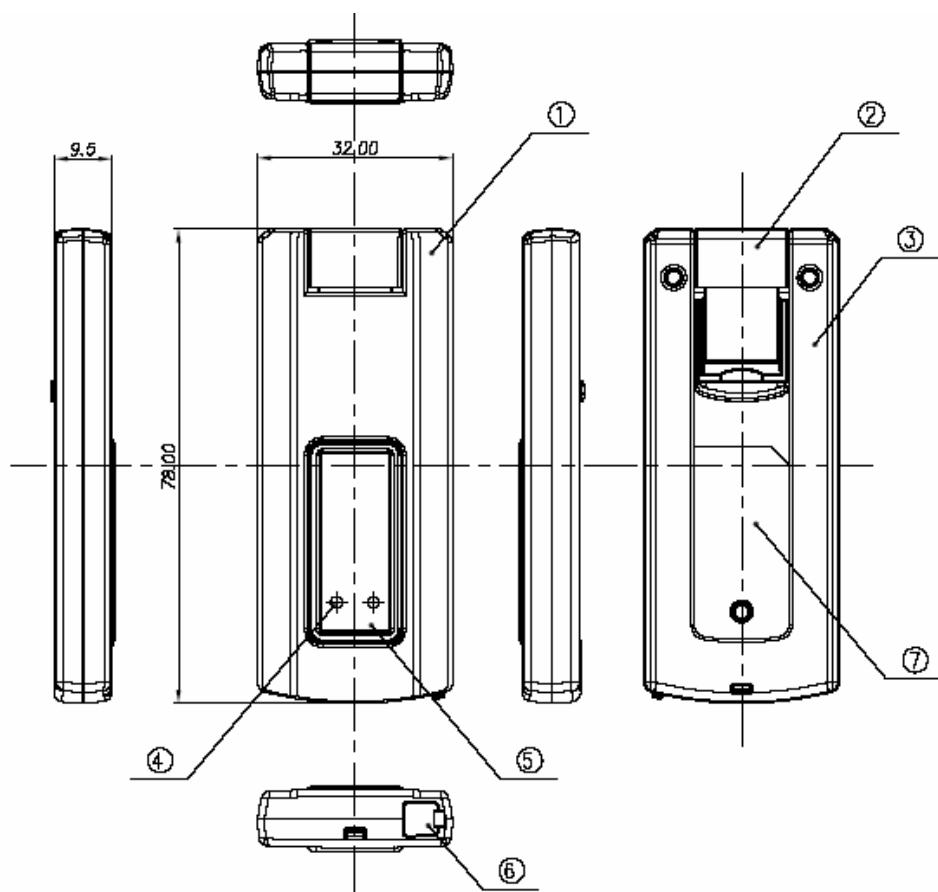
2.1. Mechanical Specifications

| | |
|------------------------------|---|
| Dimensions | 32mm x 78 mm x 9.5mm (1.26 x 3.1x 0.38 inch) * Dimension is in accordance with the following drawing. |
| Weight | Approx. 25g (0.9 oz) |
| Form Factor | USB Series "A" Type plug |
| Antenna | Internal type |
| RF Switch connector for test | MOB-140 |
| Visual indicator LEDs | RED-Single color & RED & BLUE- Dual color |
| Housing Material | PC |
| Battery Pack | No support |
| Headset Jack | No support |
| Power button | No support |
| Car-kit connector interface | No support |

LED function descriptions

| Function | LED Color | | |
|--------------------|---------------|---------------|----------------------------|
| | RED | RED | BLUE |
| POWER ON | ON | ON | |
| ACQUISITION- Fail | Flash (500ms) | Flash (500ms) | |
| Idle(1x & HDR) | ON | | ON |
| DATA CALL: 1X(QNC) | ON | Flash (500ms) | Flash (500ms) |
| DATA CALL: HDR | ON | | Flash (500ms) |
| Dormant state | ON | ON | ON |
| Incoming SMS | ON | | Flash (200ms) , 4 times |

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| | | | | |
|---|----------------|--|---------|--|
| 7 | DEVICE LABEL | | | |
| 6 | RF CAP | | URETHAN | |
| 5 | LCD DECO PLATE | | PC 0.6t | |
| 4 | LED INDECATOR | | | |
| 3 | BOTTOM COVER | | PC | |
| 2 | USB ASS'Y | | | |
| 1 | TOP COVER | | PC | |

2.2. Environment Specifications

| | |
|----------------------|--|
| Operating conditions | -20°C ~ +50°C , 85%(at 50(C), relative humidity (non-condensing) |
| Storage Temperature | -40°C ~ +70°C |
| Humidity | 95%, non-condensing |
| Vibration Stability | |
| Shock Stability | |
| ESD discharge | Contact / Air discharge |

2.3. Hardware Specifications

| | |
|--|-------------------------------------|
| Main Chipset | MSM6800 ZIF |
| Memory(NAND FLASH / SDRAM) | 1Gb / 512Mb (128MB/64MB) |
| Interface Type | Full-speed USB 2.0 Compliant |
| Common Air Interface | Dual-band 1xEV-DO Release A & 1xRTT |
| Frequency band | CDMA Band class 0 & 1 |
| Mobile Receiver Diversity | Support |
| gpsOne | Support - GPS L1 band (1575.42MHz) |
| Battery and Charger | N/A |
| Display type | N/A |
| Voice capability | N/A |
| DC input operating voltage | +5VDC from USB Host port |
| Maximum current @ +5VDC, HDR, DRC=2.4Mbps, Maximum TX Power (24+/- 0.3dBm) | Under 600mA |
| On communication Ior=-75dBm Ior=-104dBm | Under 200mA Under 500mA |

(Note) The current consumption might vary of 5% over the whole operating temperature range.

2.4. CDMA RF performance

RF performances are compliant with IS-95A/B, cdma2000-1X, and 1xEV-DO.

CDMA2000-1X RX & TX specifications

Receiver Specifications

| | Cellular | USPCS |
|-----------------------------|-----------------|-------------------|
| Frequency range (MHz) | 869.94 ~ 893.37 | 1931.25 ~ 1990.00 |
| Frequency Bandwidth | 1.23MHz | |
| Receiver Sensitivity | Under -104dBm | |
| Single Tone Desensitization | Under -101dBm | |
| Inter-Modulation | | |
| @Tone Power -43dBm | Under -101dBm | Under -101dBm |
| @Tone Power -32dBm | Under -90dBm | |
| @Tone Power -21dBm | Under -79dBm | |

Transmitter Specifications

| | Cellular | USPCS |
|----------------------------|----------------------|----------------------|
| Frequency range (MHz) | 824.64 ~ 848.37MHz | 1851.25 ~ 1910.00MHz |
| Output Power (dBm/1.23MHz) | 23 ~ 30 (Class 3) | 23 ~ 30 (Class 2) |
| Frequency Bandwidth | 1.23MHz | |
| Frequency Accuracy | +/- 300Hz | +/- 150Hz |
| Spurious Emission Limits | | |
| Offset Freq @ +/- 900kHz | Under -42dBc / 30kHz | |
| Offset Freq @ +/- 1.25MHz | | Under -42dBc / 30kHz |
| Offset Freq @ +/- 1.98 MHz | Under -54dBc / 30kHz | Under -50dBc / 30kHz |

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1xEV-DO RX & TX specifications

Receiver Specifications

| | Cellular | USPCS |
|-----------------------------|---|-------------------|
| Frequency range (MHz) | 869.94 ~ 893.37 | 1931.25 ~ 1990.00 |
| <u>Receiver Sensitivity</u> | <p>FTAP Rate = 307.2 kbps 2Slot QPSK Under -105.5dBm, 0.5%</p> <p>FTAP Rate = 2457.6 kbps 1Slot 16QAM @ -25dBm 0.5%</p> | |
| Single Tone Desensitization | Under -102.4dBm | |
| Inter-Modulation | | |
| @ Tone Power -43dBm | Under -102.4dBm | Under -102.4dBm |
| @ Tone Power -32dBm | Under -91.4dBm | |
| @ Tone Power -21dBm | Under -80.4dBm | |

Transmitter Specifications

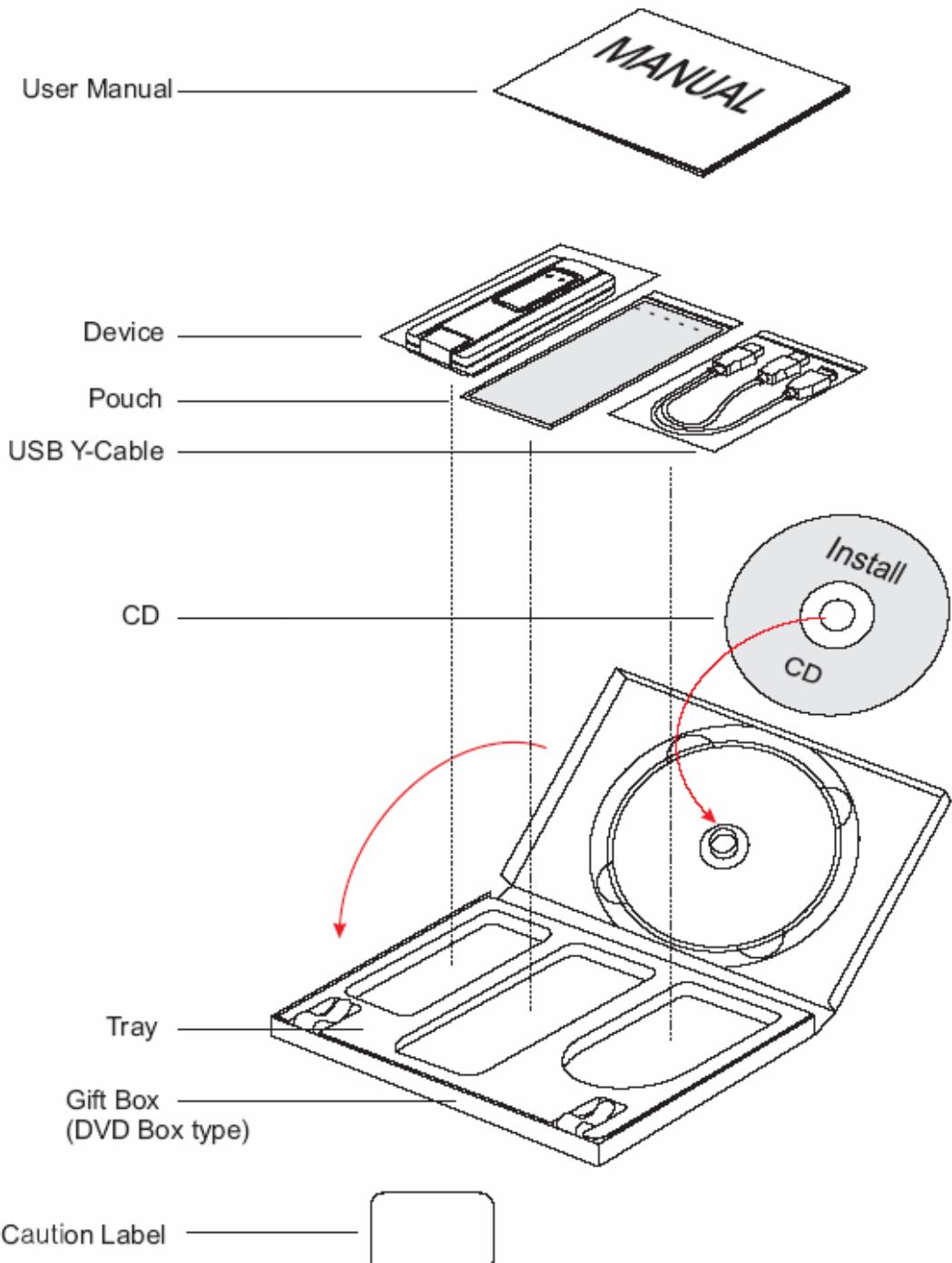
| | Cellular | USPCS |
|----------------------------|-----------------------|----------------------|
| Frequency range (MHz) | 824.64 ~ 848.37 | 1851.25 ~ 1910.00 |
| Output Power (dBm/1.23MHz) | 23 ~ 30 (Class 3) | 23 ~ 30 (Class 2) |
| Frequency Bandwidth | 1.23MHz | |
| Time Reference | Within $\pm 1.0\mu s$ | |
| Waveform Quality | Over 0.944 | |
| Frequency Accuracy | Within ± 300 | Within $\pm 150Hz$ |
| Spurious Emission Limits | | |
| Offset Freq @ +/- 900kHz | Under -42dBc / 30kHz | |
| Offset Freq @ +/- 1.25MHz | | Under -42dBc / 30kHz |
| Offset Freq @ +/- 1.98 MHz | Under -54dBc / 30kHz | Under -50dBc / 30kHz |

2.5. Software Specifications

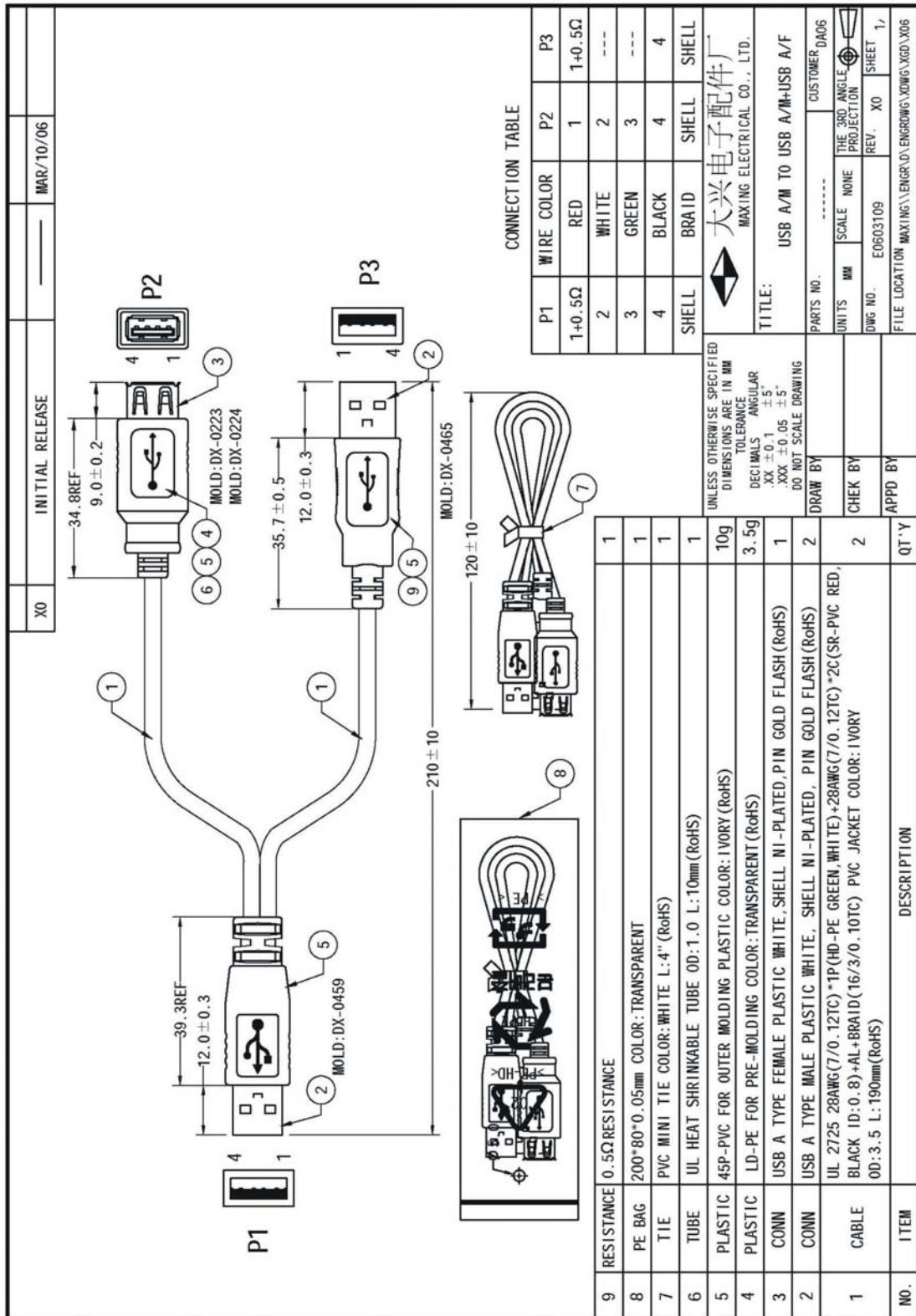
| | |
|-----------------------------|------------------------|
| CDMA specifications | 1xEV-DO Release A |
| Data service | Support |
| SMS | N/A |
| FAX | N/A |
| IOTA | Under development |
| OTASP(IS-863A) | Support |
| OTAPA(IS-863A) | Support |
| PRL(preferred roaming list) | Support |
| Authentication | Support |
| Voice | N/A |
| NAM | 2 |
| E911 & position location | MS Based & MS Assisted |
| TTY/Accessibility | N/A |
| Mobile IP | Support |
| BREW memory | N/A |
| Browser | N/A |
| Languages | US English |
| | |

3. Instruction

3.1. Package contents



3.2. Optional Accessory Drawing



3.3. Getting start

3.3.1. System Requirements

The CDMA USB modem is supported on the following OS;

- Windows®2000
- Windows®XP

To install and run the CDMA USB modem and UI software, your system requires these minimum resources.

| | |
|----------------------|------------------|
| OS(Operating System) | Windows® 2000/XP |
| Connection port | USB slot A-Type |
| Processor(CPU) | 667MHz or faster |
| Disk Drive | CD-ROM |
| Memory | 128MB |
| Disk space | 100MB |

Note: Special Note for Windows®2000 user's: To function properly, the CDMA USB modem's IOTA protocol requires support for high security 128-bit encryption. If the installer does not detect high-security support on your system, a pop-up window will appear instructing you to update your Windows®2000 to support 128-bit security. Follow the onscreen instructions to update your system.

3.3.2. Installing CDMA USB Modem software and Driver

Follow the instructions below to install the modem UI from the installation CD.

This process requires you to restart your PC at the end of the installation; therefore, we recommend that you quit all open applications before you begin installation.

Note: Windows®2000: Users of Windows 2000 must be logged in with administrative privileges to install the CDMA USB Modem software.

Windows®XP: Users of Windows XP may insert the USB Modem prior to installing the software. You may also require administrative privileges, depending on your XP installation.

Installing the CDMA USB modem

1. Insert the installation CD into your CD-ROM drive.
 - A. **Do not insert the CDMA USB modem to your laptop/PC yet.**
 - B. This will automatically start the installation and install the required drivers.
2. If the CD does not auto-start, select Start>Run and d:\setup.exe.
(where d is the letter of your CD-ROM drive)
3. From the CD start-up windows, select **CDMA USB Modem software**.
This will launch the InstallShield® Wizard.
4. The License Agreement window appears.
Click **Yes** to accept the agreement and proceed with the installation.
5. Select CDMA USB Modem software and Device Driver.
And click the **Next** button on the InstallShield screen.
6. Click Next to install the software to the default destination folder (recommended).
If you need to install the software to a different folder, click Choose and select an alternate install destination.
7. Click Finish or Restart to complete the installation and launch the **CDMA USB Modem software**.
8. Wait for your PC to reboot.
Windows®2000: You may need to restart your PC manually by selecting Start>Shutdown>Restart.

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9. Click OK when you are prompted to insert the CDMA USB modem.
Insert the modem into the USB port.
10. Windows will detect the new hardware (CDMA USB modem) and will install the necessary drivers. The Add New Hardware Wizard or Found New Hardware Wizard will launch, depending on your operating system.
11. Follow the onscreen prompts to allow the wizard to install the drivers.
12. Click OK when you are notified that the installation is complete.

On completion of this step, the CDMA USB modem software and modem driver are installed and you can proceed to activate your Modem (if it has not already been activated).