iDIRECT

iSite Basics & VSAT* Commissioning iDS v6.0

*** Very Small Aperture Terminal***
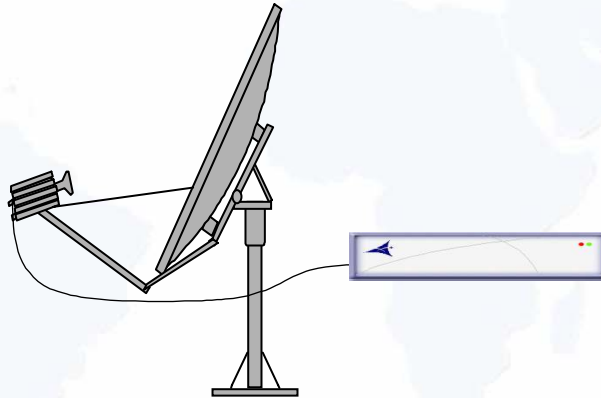
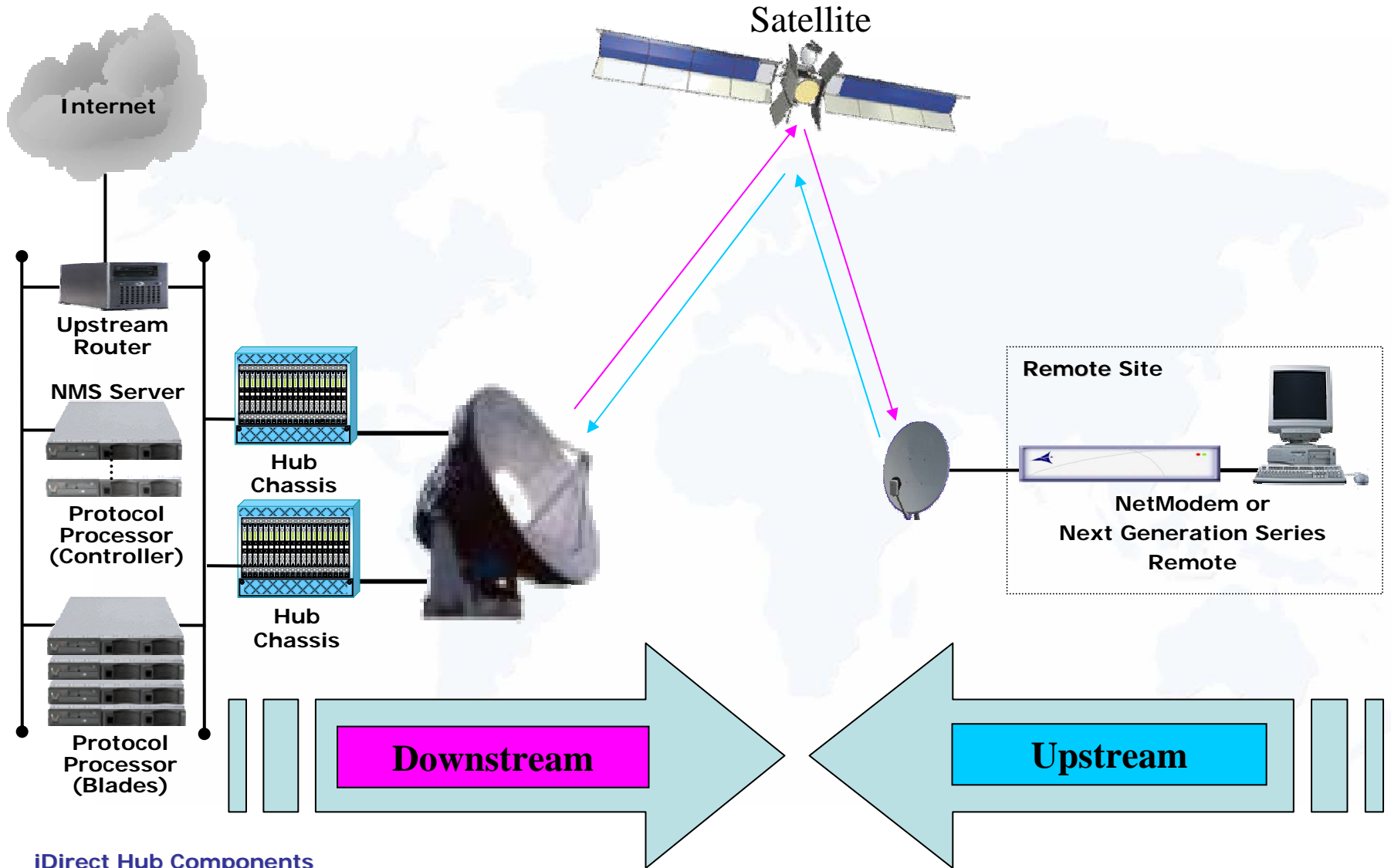**Installation, Operations & Maintenance (IOM) Class**
iSite Basics – VSAT Commissioning Module

Satellite

Internet

Upstream Router

NMS Server

Protocol Processor (Controller)

Hub Chassis

Hub Chassis

Protocol Processor (Blades)

Remote Site

NetModem or Next Generation Series Remote

iDirect Hub Components

Downstream

Upstream

Boot Loader
- Hardware Boot Instructions

Control Process Application
- CpApp_V6.0.2.s19

Field Programmable Gated Array (FPGA) Images
- FpgaDqt_2plus-V106.bin
- FpgaRx1Scpc_2plus-V408.bin
- FpgaRx2Scpc_2plus-V413.bin
- FpgaTxTdma_2plus-V501.bin
- LutRxScpc_2plus-V003.bin

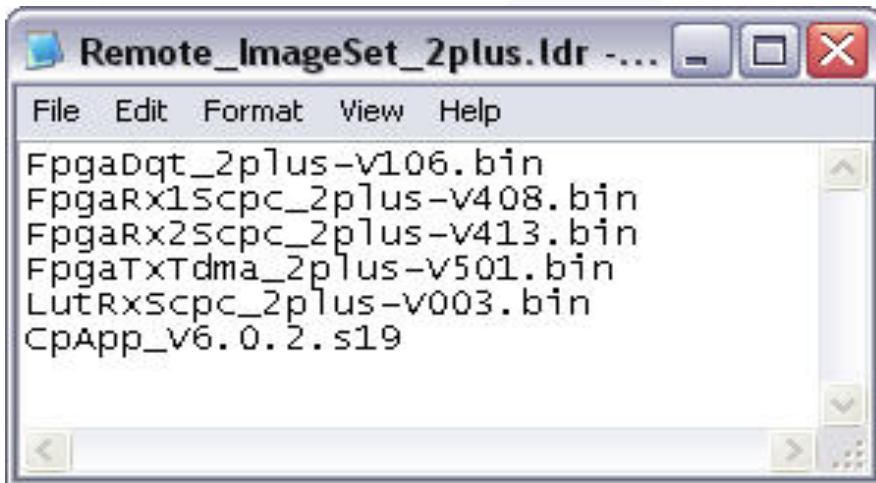## Always – ENSURE IMAGE & Option COMPATABILITY!!!

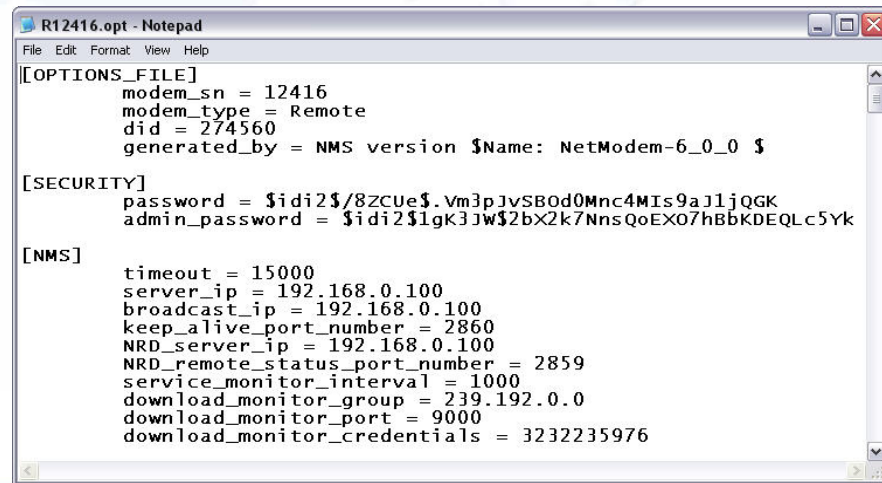## Loader File (Image Set)
- Remote_ImageSet_2plus.ldr

Option File (*.opt)
- R12416.opt

```
Remote_ImageSet_2plus.ldr -...
File  Edit  Format  View  Help

FpgaDqt_2plus-V106.bin
FpgaRx1Scpc_2plus-V408.bin
FpgaRx2Scpc_2plus-V413.bin
FpgaTxTdma_2plus-V501.bin
LutRxScpc_2plus-V003.bin
CpApp_V6.0.2.s19
```

```
R12416.opt - Notepad
File  Edit  Format  View  Help

[OPTIONS_FILE]
        modem_sn = 12416
        modem_type = Remote
        did = 274560
        generated_by = NMS version $Name: NetModem-6_0_0 $

[SECURITY]
        password = $idi2$/8ZCUe$.Vm3pJvSBOd0Mnc4MIs9aJ1jQGK
        admin_password = $idi2$1gK3JW$2bX2k7NnsQoEXO7hBbKDEQLc5Yk

[NMS]
        timeout = 15000
        server_ip = 192.168.0.100
        broadcast_ip = 192.168.0.100
        keep_alive_port_number = 2860
        NRD_server_ip = 192.168.0.100
        NRD_remote_status_port_number = 2859
        service_monitor_interval = 1000
        download_monitor_group = 239.192.0.0
        download_monitor_port = 9000
        download_monitor_credentials = 3232235976
```

- Front-End Interface for All iDirect Products
  - GUI Support for iDirect TDMA NetModem II & II+, NextGen Remotes
  - GUI Support for iSCPC Product
  - GUI Support for Series 1000, Network Accelerator

- Provides Local or Remote GUI Access for
  - Image & Option File Download, all Products
  - Monitoring of Remote Site Network Performance, all Products
  - Full Configuration Build, iSCPC Modem parameters, QoS, IP, etc.
  - Full Configuration Build, Series 1000 Network Accelerator

- Introduced with iDS v5.0
  - Replaced Stand-alone NetManager GUI
  - Replaced Stand-alone Service Monitor GUI

- API for External Interfaces
  - Allows customers to develop their own interfaces
  - Pointing functions
  - Configuration upload/download

- Supplemental NMS Client for Remote Site Implementation

Tree Layout Similar to iMonitor/iBuilder

IP Stats
Events

Configuration

- Manage Multiple Units from a Single Interface
  - Control TDMA remotes, iSCPC units, VPNA simultaneously
  - Older NetManager Limited to Accessing 1 remote at a time

- Auto-discovery of LAN units
  - Units on same LAN are automatically discovered
  - Monitoring of board available without logging in

- All Features Available across Remote Routers
  - Events
  - IP statistics
  - Pointing functions

- Audio Feedback during Pointing
  - Point without looking at display or DVM if desired

- Device-Specific Configuration and Display
  - Level of configuration determined by device type
  - Full configuration for iSCPC/NA, restricted for TDMA remote (GEO Location update for TDMA 'Mobile' remotes only)

- ### New Login Process for ALL iDirect Boards
  - ✦ More Secure Access to All NetModem Functions/Features
  - ✦ 'user' Login for More Restricted Access
    - • Default Password is "iDirect" or NMS Configured Password
    - • Limited Capabilities/Commands Available
  - ✦ 'admin' Login for Super User Access
    - • Default Password is "P@55w0rd!" or NMS Configured Password
    - • Provides Access to All NetModem Capabilities/Commands

- ### Login Required in All Cases to Access Remotes
  - ✦ Same Login Process Used for Console Access, Telnet, and/or iSite
  - ✦ No Longer have Access Without Login

NOTE: Same Login Required for Hub Line Card (HLC) Access

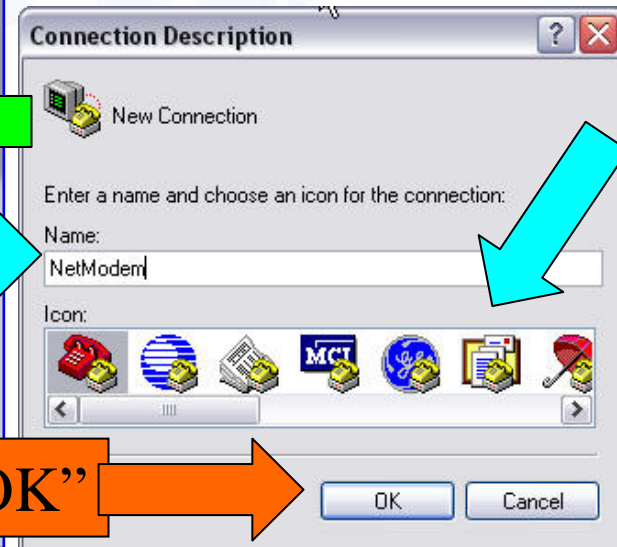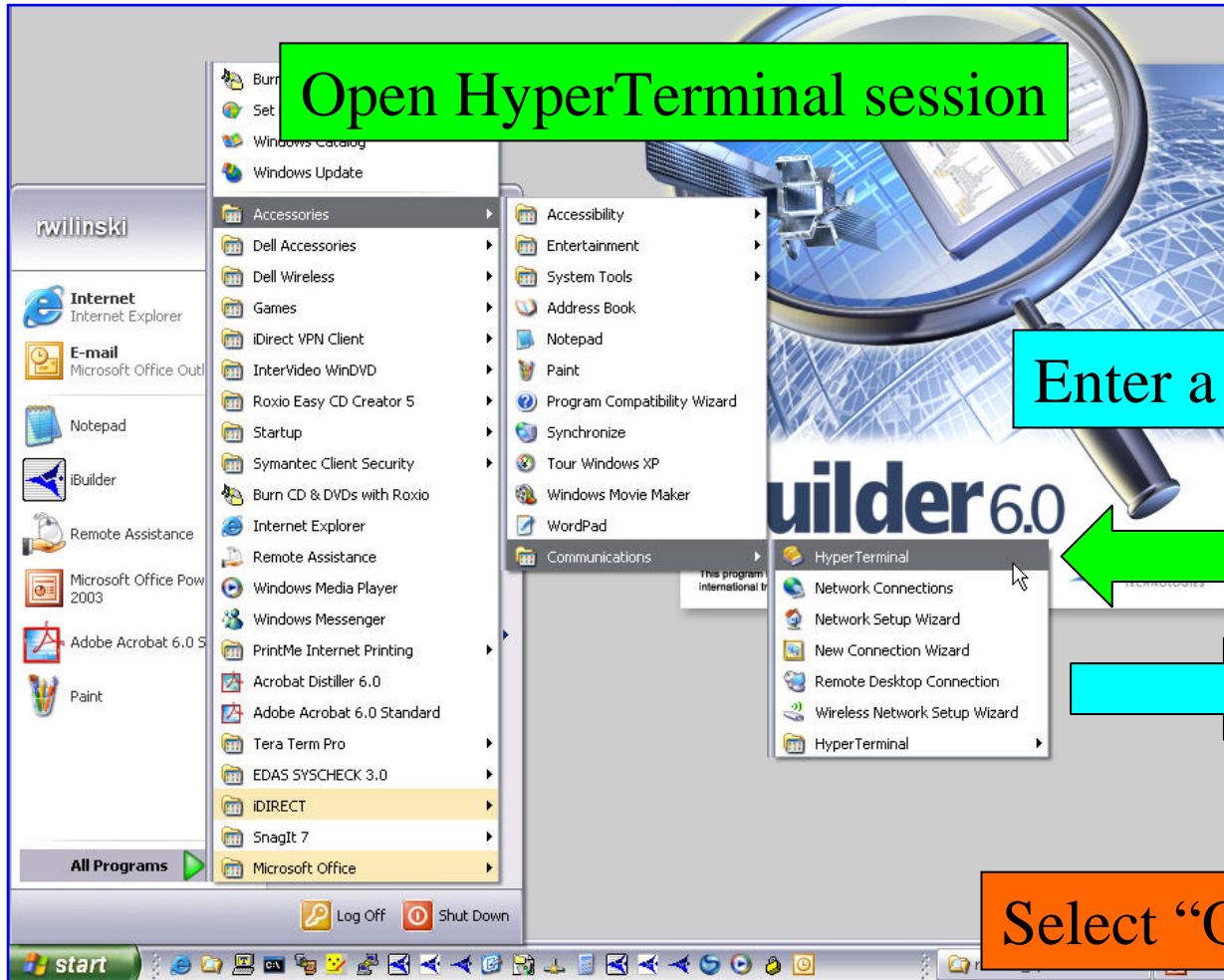**DB-9 to RJ-45 adapter And straight through cable**

DB-9 to RJ-45 adapter Pin-Out

DB-9 to RJ-45 Adapter Pin-Out		
RJ-45	Color Code	DB-9
1	Blue	8
2	Orange	6
3	Black	2
4	Green	N.C.
5	Red	5
6	Yellow	3
7	Brown	4
8	White/Gray	7

Open HyperTerminal session

Enter a "Name" and select icon

Select "OK"

NOTE: NetModemII+s from inventory are typically preloaded during production with an IP address of 192.168.2.1 and a Subnet Mask of 255.255.255.0

Connect using: COM1

Connect To

NetModem

Enter details for the phone number that you want to dial:
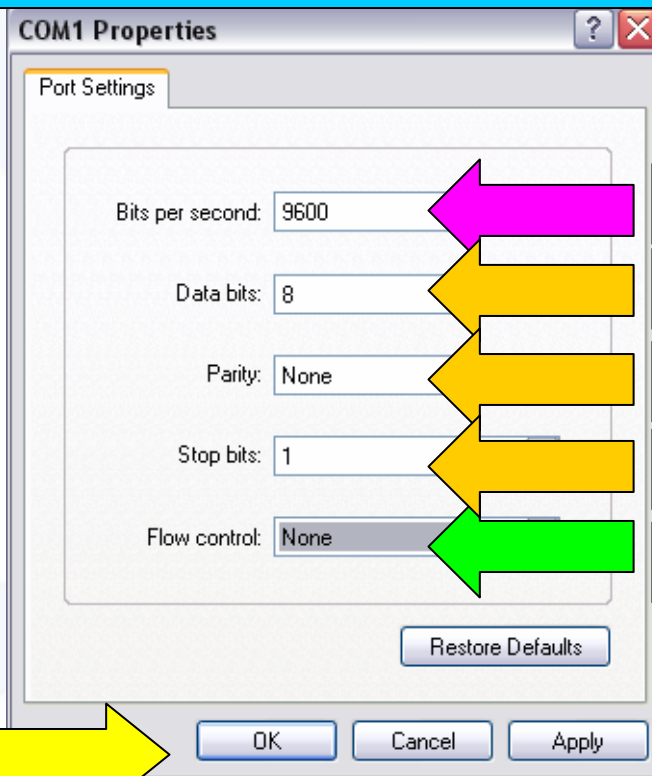
Country/region: United States (1)

Area code: 666

Phone number:

Connect using: COM1

OK   Cancel

COM1 Properties

Port Settings

Bits per second: 9600

Data bits: 8

Parity: None

Stop bits: 1

Flow control: None

Restore Defaults

OK   Cancel   Apply

Bits per second: 9600

Data bits:8

Parity:None
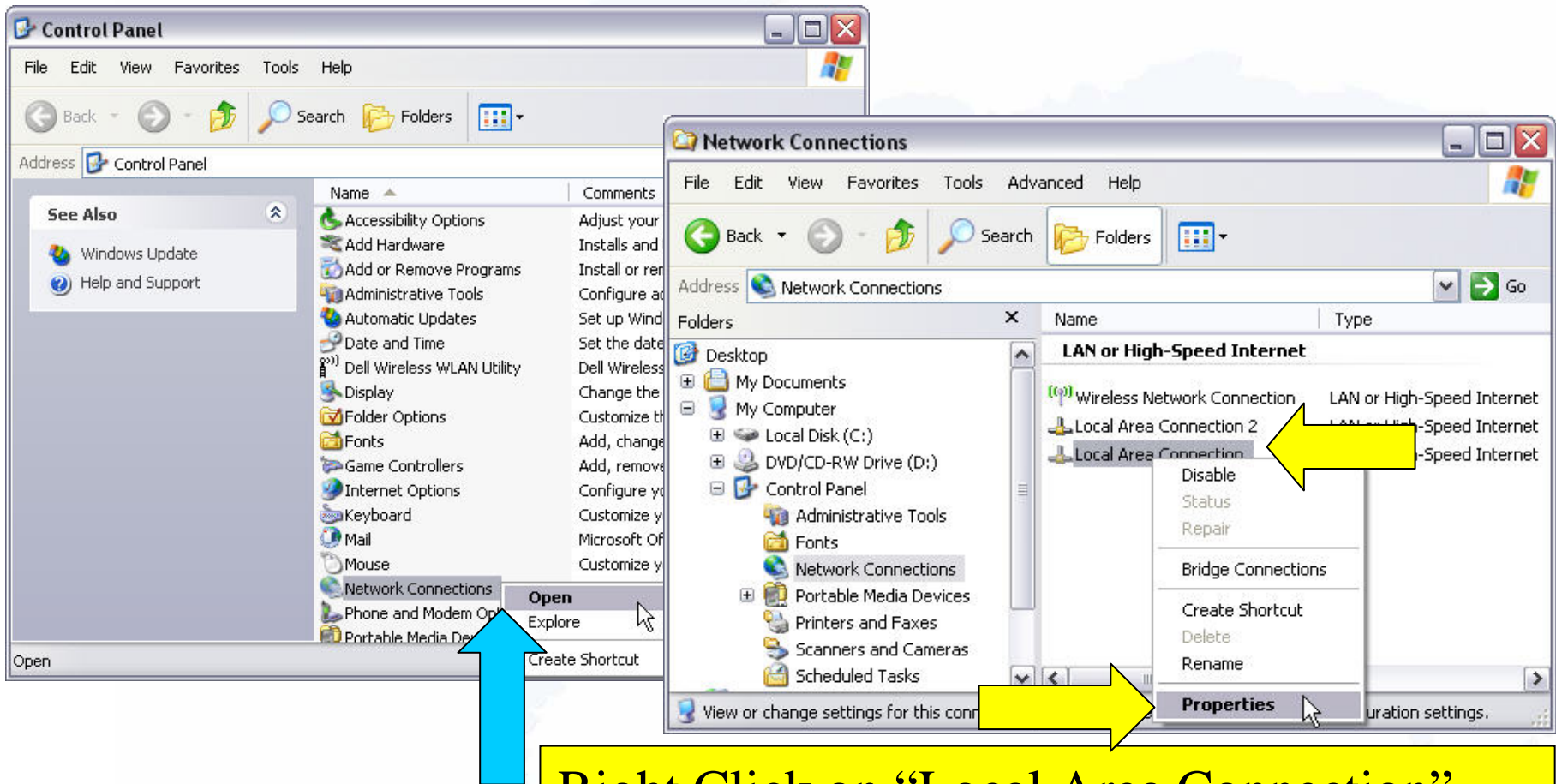
Stop bits:1

Flow control: None

Select "OK": A HyperTerminal Session Will Open NetModem Console Port:
- Logon to NetModem Using 'user' or 'admin' Login and Password
- Type "laninfo" and Select "Enter".
- The NetModem Will Reply With Its' Current IP Address and Subnet Mask

Go to "Network and Dial-up Connections"

Right Click on "Local Area Connection"
Select "Properties" from Menu Option

iDIRECT

Highlight "Internet Protocol (TCP/IP)"

Local Area Connection Properties

General | Authentication | Advanced

Connect using:

Broadcom 570x Gigabit Integrated Co   Configure...

This connection uses the following items:

☑ QoS Packet Scheduler
☑ AEGIS Protocol (IEEE 802.1x) v2.3.1.7
☑ Internet Protocol (TCP/IP)

Install...   Uninstall   Properties

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communica across diverse interconnected networks.

☑ Show icon in notification area when connected
☑ Notify me when this connection has limited or no connectivity

Select "Properties"

OK   Cancel

Internet Protocol (TCP/IP) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically
◉ Use the following IP address:

IP address: 10 . 0 . 5 . 2
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 10 . 0 . 5 . 1

○ Obtain DNS server address automatically
◉ Use the following DNS server addresses:

Preferred DNS server: .   .   .
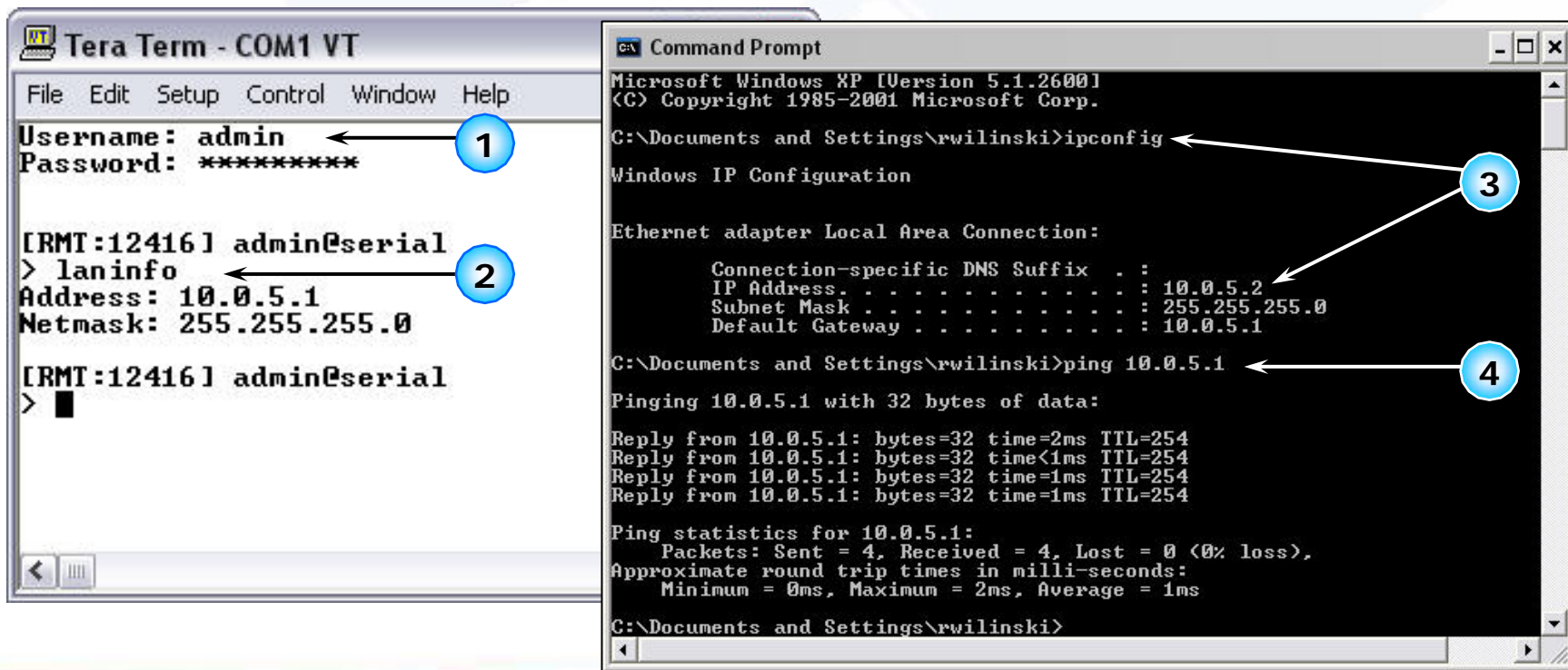Alternate DNS server: .   .   .

Advanced...

OK   Cancel

Enter IP Address of NetModem as 'Default Gateway'
Enter Subnet Mask of NetModem
IP Address of NIC is 1 greater than the NetModem

Verify NetModem LAN/PC NIC Configuration

1. Logon to NetModem Using User/Admin Login (Described Later)
2. Type "laninfo" via Console Port Interface (if NetModem IP Address Not Determined Previously) to Obtain LAN IP
3. Open DOS Command Window; Verify NIC Address with "ipconfig"
4. Ping Remote from DOS Window to Verify Connectivity

Tera Term - COM1 VT

```
File  Edit  Setup  Control  Window  Help

Username: admin                    (1)
Password: **********


[RMT:12416] admin@serial
> laninfo                          (2)
Address: 10.0.5.1
Netmask: 255.255.255.0

[RMT:12416] admin@serial
>
```

Command Prompt

```
Microsoft Windows XP [Version 5.1.2600]
<C> Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\rwilinski>ipconfig        (3)

Windows IP Configuration


Ethernet adapter Local Area Connection:

        Connection-specific DNS Suffix  . :
        IP Address. . . . . . . . . . . . : 10.0.5.2
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . : 10.0.5.1

C:\Documents and Settings\rwilinski>ping 10.0.5.1   (4)

Pinging 10.0.5.1 with 32 bytes of data:

Reply from 10.0.5.1: bytes=32 time=2ms TTL=254
Reply from 10.0.5.1: bytes=32 time<1ms TTL=254
Reply from 10.0.5.1: bytes=32 time=1ms TTL=254
Reply from 10.0.5.1: bytes=32 time=1ms TTL=254

Ping statistics for 10.0.5.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\Documents and Settings\rwilinski>
```
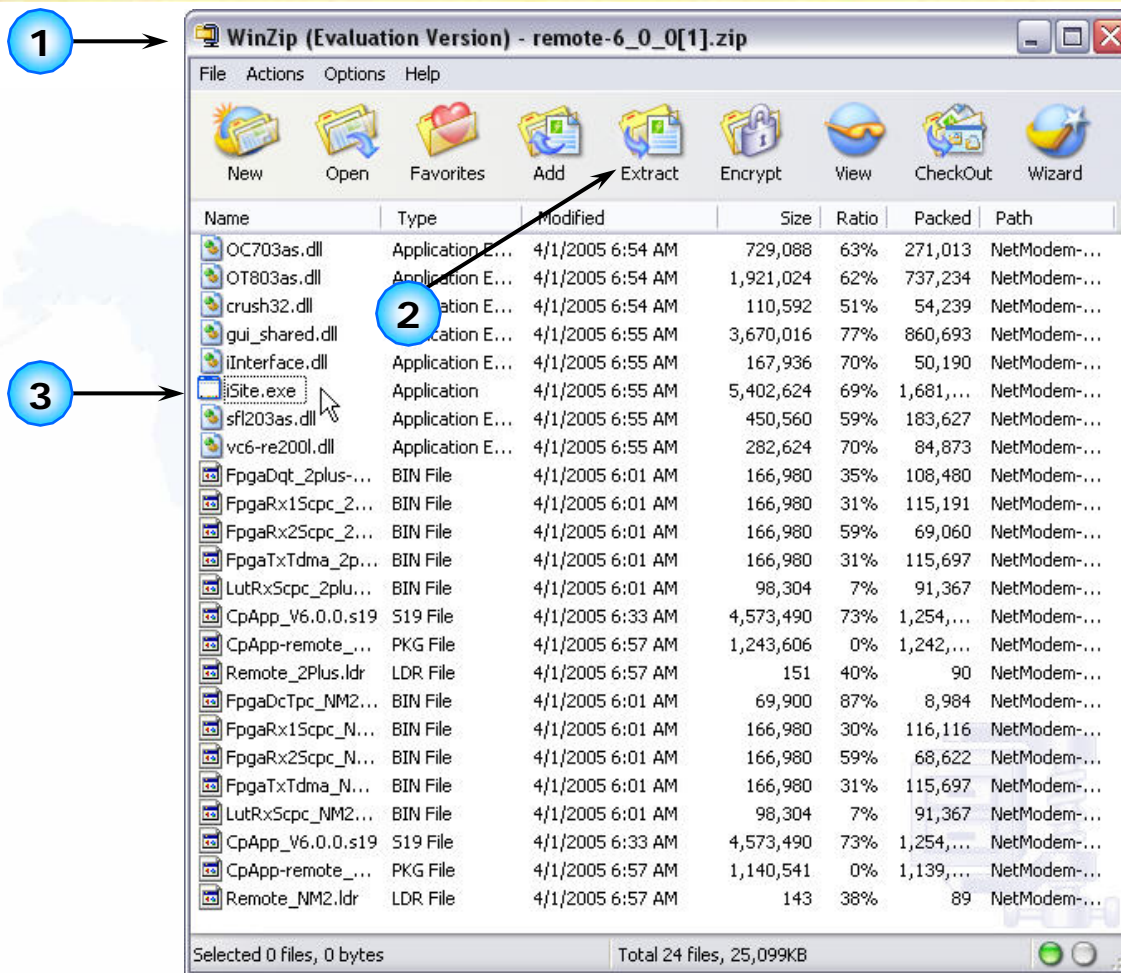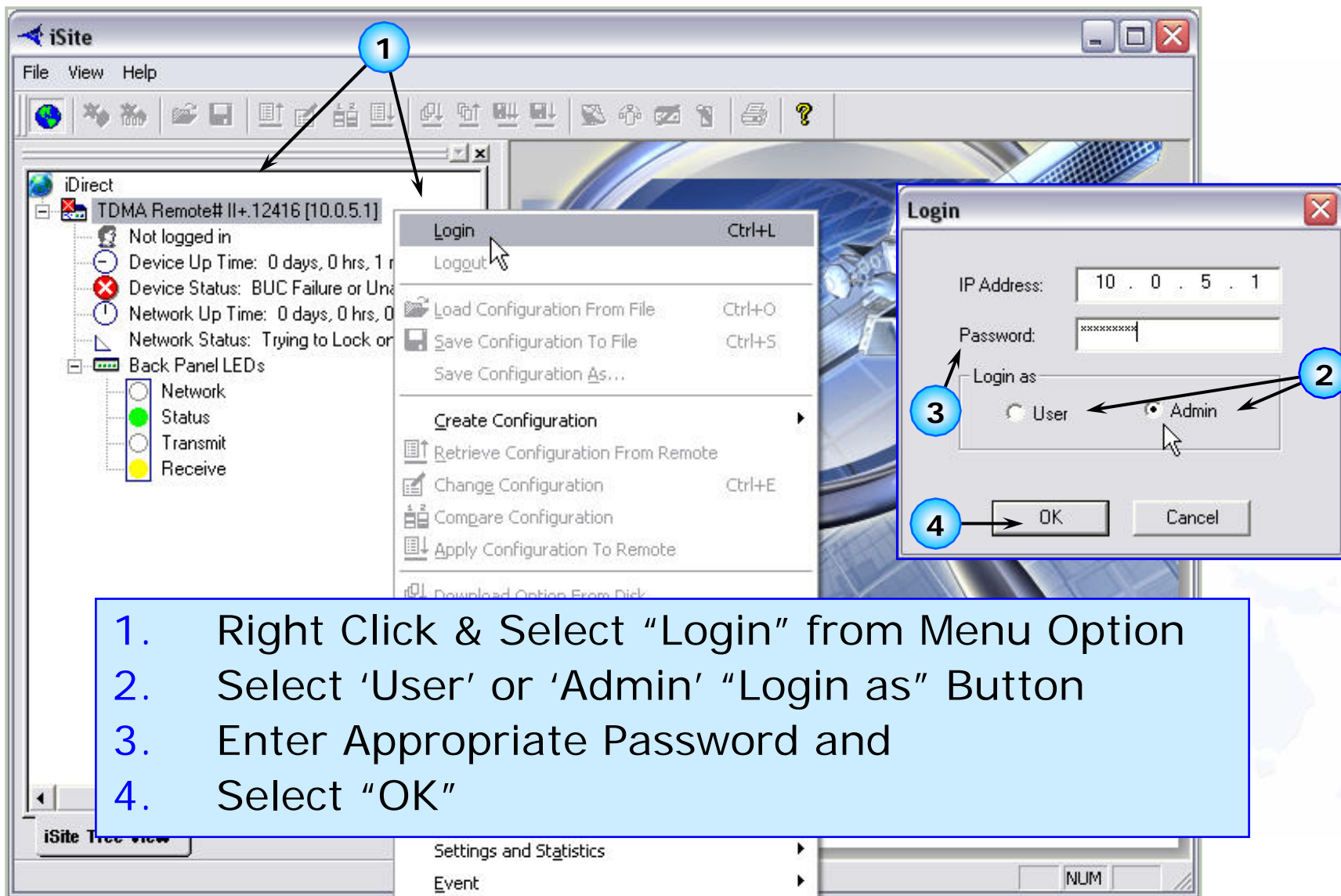
1. Download "remote-<version>.zip" File from TAC Web Page
2. Unzip/Extract File (example: remote-5_0_2.zip) to Laptop/PC
3. Create iSite Shortcut or Double Click on iSite.exe to Launch
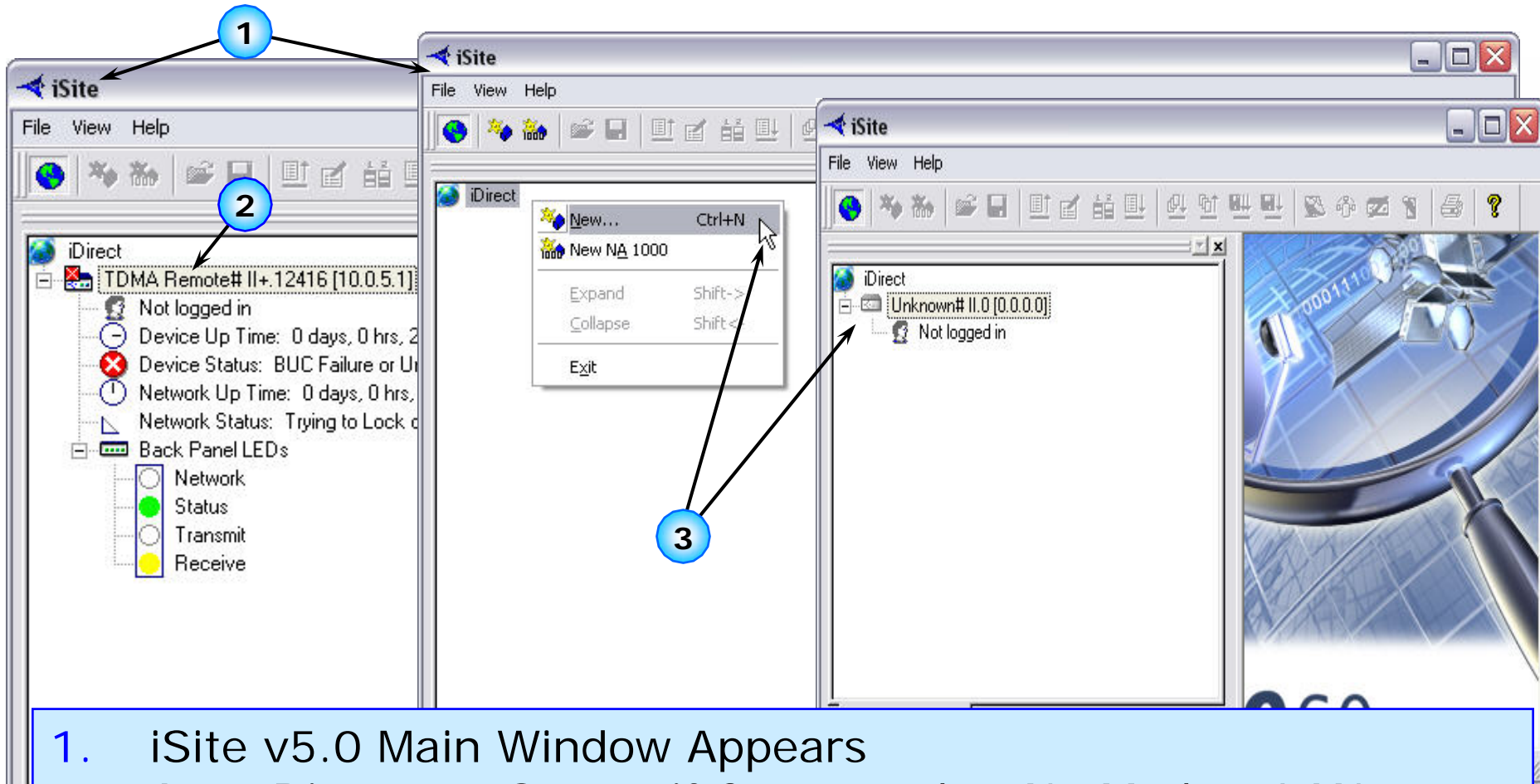
1. iSite v5.0 Main Window Appears
2. Auto-Discovery Occurs if Connected to NetModem LAN, or Remote Site 'Subnet'
3. Otherwise, Right Click on World and Select "New" from Menu

1. Right Click & Select "Login" from Menu Option
2. Select 'User' or 'Admin' "Login as" Button
3. Enter Appropriate Password and
4. Select "OK"

1. Tree Reports Component Type, Status and Login Detail
2. Status Detail Provided is Dynamic; Back Panel LEDs Displayed
3. Menu and Tool Bar Provide Similar Access to iSite Features
4. Tabs Appear for "Information", "IP Configuration", "QoS" and "GEO Location" Providing Detail for This Component
5. Most Detail is NOT Editable for TDMA Remotes (Read Only)

1. "**IP Configuration**" Tab Displays **IP**/VLAN Configuration Detail
2. Parameters are 'Fixed' Here, Not Editable for TDMA Remotes

1. "QoS" Tab Displays Configured Service Levels & Rules
2. Additional Tabs, "Traffic", "Filter" and "Data Rate" Provide QoS Supporting Detail, per Existing Configuration

1. GEO Location Tab Displays Remote Site Latitude/Longitude in DMS or Decimal Format (Mobile Remotes Will be Blank)
2. Mobile Remotes (TDMA) Allow GEO Location Entry (> v5.0.2)
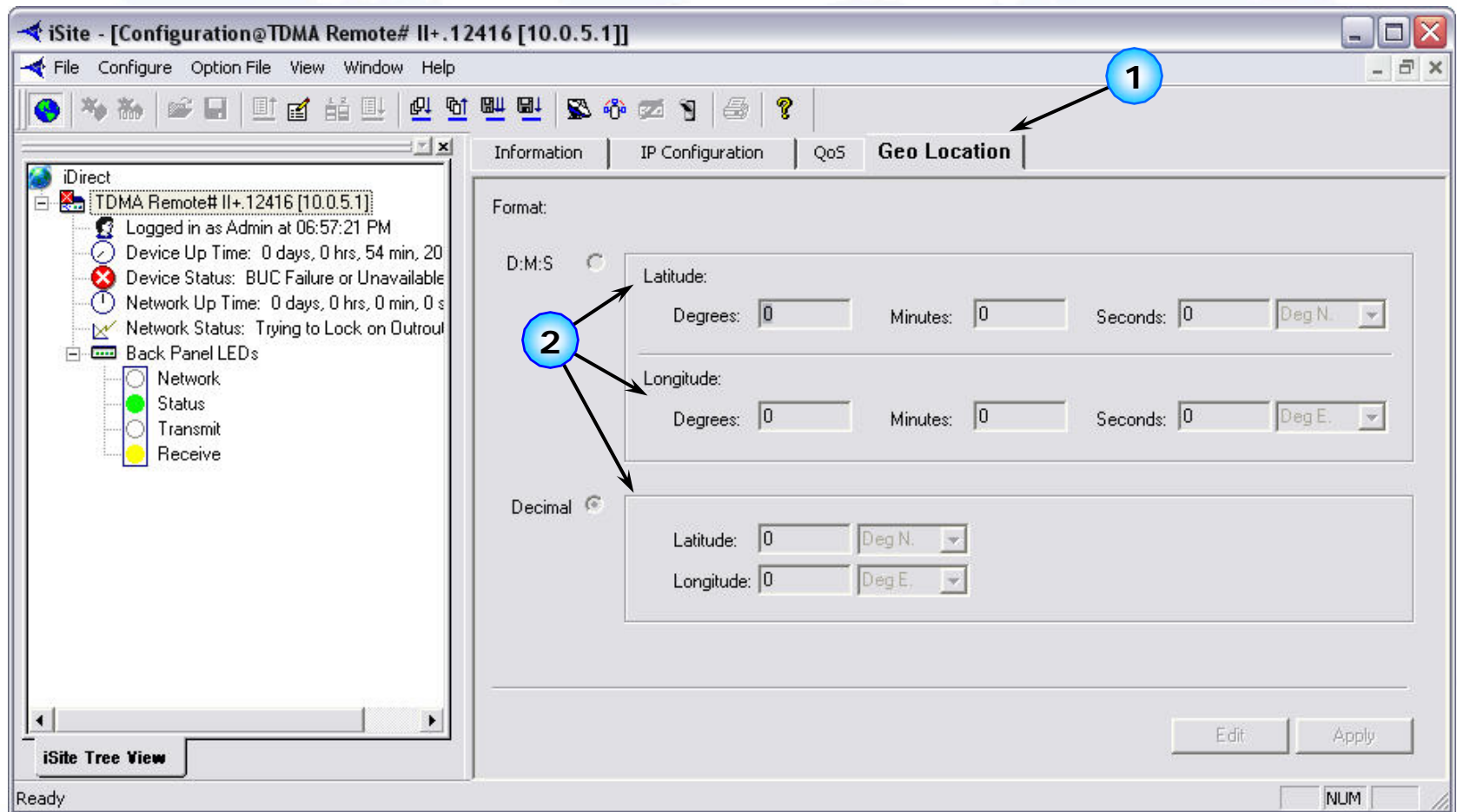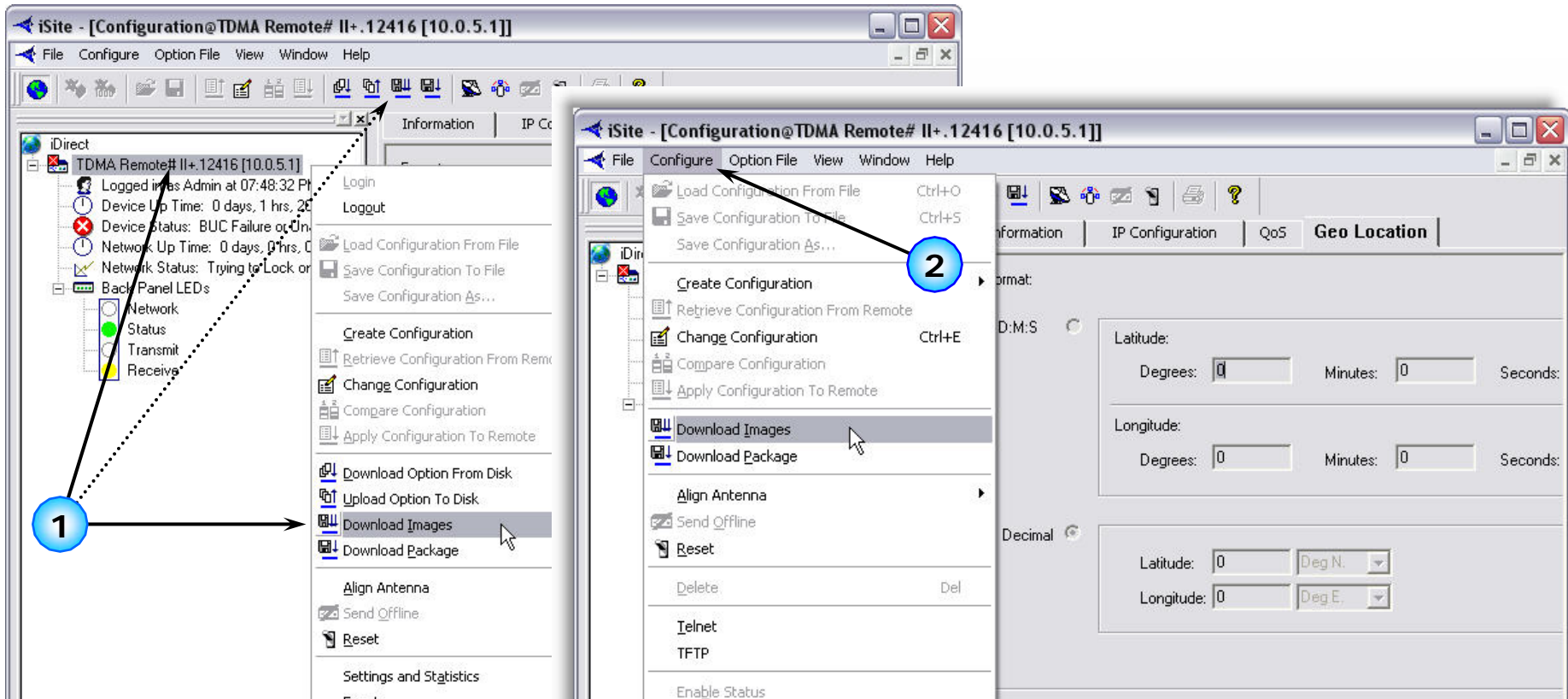
To Download Modem Images (Unicast Mode)
- Right Click on Component Tree Menu to "Download Images" or . . .
- Select "Configure", "Download Images" from iSite Menu

Download Command Center ⟵ 1

Download Command Center

Hardware Version: | II

Image Set: | Static | Select... ⟵ 4

Image Name	Modem Version	Image Version	Compress?	Download?	Erase?	Status
Application	V5.1.3	N/A	☐	☐	☐	
Tx SCPC	N/A	N/A	☐	☐	☐	
Tx TDMA	2plus-V501	N/A	☐	☐	☐	
Rx1 SCPC	2plus-V408	N/A	☐	☐	☐	
Rx1 TDMA	N/A	N/A	☐	☐	☐	
Rx2 SCPC	2plus-V413	N/A	☐	☐	☐	
Rx2 TDMA	N/A	N/A	☐	☐	☐	
LUT SCPC	2plus-V003	N/A	☐	☐	☐	
LUT TDMA	N/A	N/A	☐	☐	☐	
DC Reed	N/A	N/A	☐	☐	☐	
DC Tpc	2plus-V106	N/A	☐	☐	☐	
Board Calibration	SPECIAL	N/A	☐	☐	☐	

2 3

Select All	Select All	Select All
Clear All	Clear All	Clear All

1. "Download Command Center" Window Opens
2. "Image Name" Column Lists All Possible Image Variations
3. Currently Loaded Images Displayed in "Modem Version" Column
4. Use "Select" to Access Correct Image Set, or 'Loader' File

1. "Select" Opens Selection Window for Image Set Loader File
2. "Remote_ImageSet_2plus.ldr" File 'Identifies' Images to be Loaded
3. Image Files from Loader File Appear in Image Version Column
4. Auto Selects "Compress" and "Download" for Each Image to Update
5. Choose "Select All" or "Clear All" if Desired and Appropriate
6. Select "Erase" and/or "Defragment" if Required
7. Select "Download" to Initiate the Download Process

1. "Erase" is Completed First, if Selected for Each (Not REQUIRED to Erase Normally)
2. "Defragment" Occurs Next, if Selected; Status of Defrag Reported 'til "Done"
3. "Download" Begins; x of y Bytes Counts Up 'til Matching, Then "Saving . . ."
4. "Completed" MUST be Displayed for ALL Images Downloaded Before Closing DCC
5. "Reset" ONLY if Images are Compatible With Current Option File, Otherwise "Close"

To Download Modem Image 'Package' (Unicast Mode)
- Right Click on Component Tree Menu to "Download Package" or . . .
- Select "Configure", "Download Package" from iSite Menu

Download Package ①

Package: CpApp-remote_2plus-Beta60   ▼ Folder... ②

Contents:

File Name	Checksum	Decoded Len	Encoded Len	Load Addr	Jump
LutRxScpc_2plus-V003.bin	10401	98304	88779	0x0	0x0
FpgaTxTdma_2plus-V501.bin	40425	166980	119121	0x0	0x0
FpgaRx2Scpc_2plus-V413.bin	45508	166980	74442	0x0	0x0
FpgaRx1Scpc_2plus-V408.bin	34662	166980	118917	0x0	0x0
FpgaDqt_2plus-V106.bin	12926	166980	113171	0x0	0x0
CpApp_V20050314.s19	50573	1631960	728274	0x1000000	0x10

Image Version Check:
- ● Don't check versions
- ○ Download images only if versions differ
- ○ Check versions only

Configurations:
- ○ Download images and configurations
- ● Download images only
- ○ Download configurations only

Reset:
- ● Don't reset
- ○ Reset on success
- ○ Reset only

④

Information:

Start to download package ......
Package is sent 159082 bytes.
Package is downloaded successfully.
Please wait about one minute for remote to
flash images contained in package ......
...................Done.

⑤   Start   Stop   Close

1. "Download Package" Window Opens
2. Select "Folder" Button to Locate Correct Package
3. Identify Folder in Browse Window; Select "OK"
4. Select Appropriate Option for Download Process –
5. Select "Start" to Begin Package Download
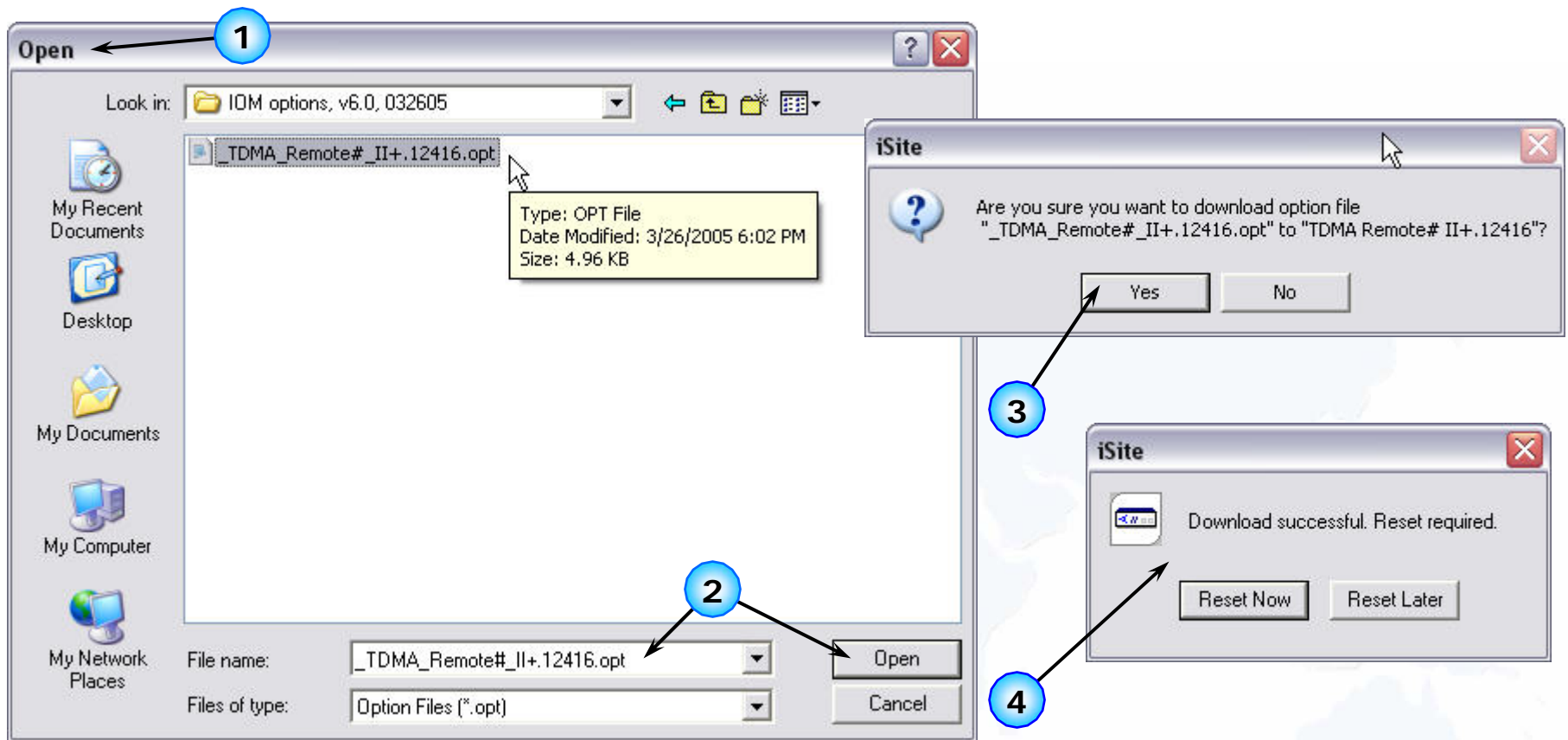
Browse for Folder

Please choose the folder which contains the packages:

- 📁 boot
- ⊞ 📁 embedded
- ⊞ 📁 fpga_images
- ⊞ 📁 hpb
- 📁 images
- ⊞ 📁 install
- ⊞ 📁 nms
- ⊟ 📁 shared
  - ⊟ 📁 tools
   - 📁 mcast
    - ⊞ 📁 package ③

OK   Cancel
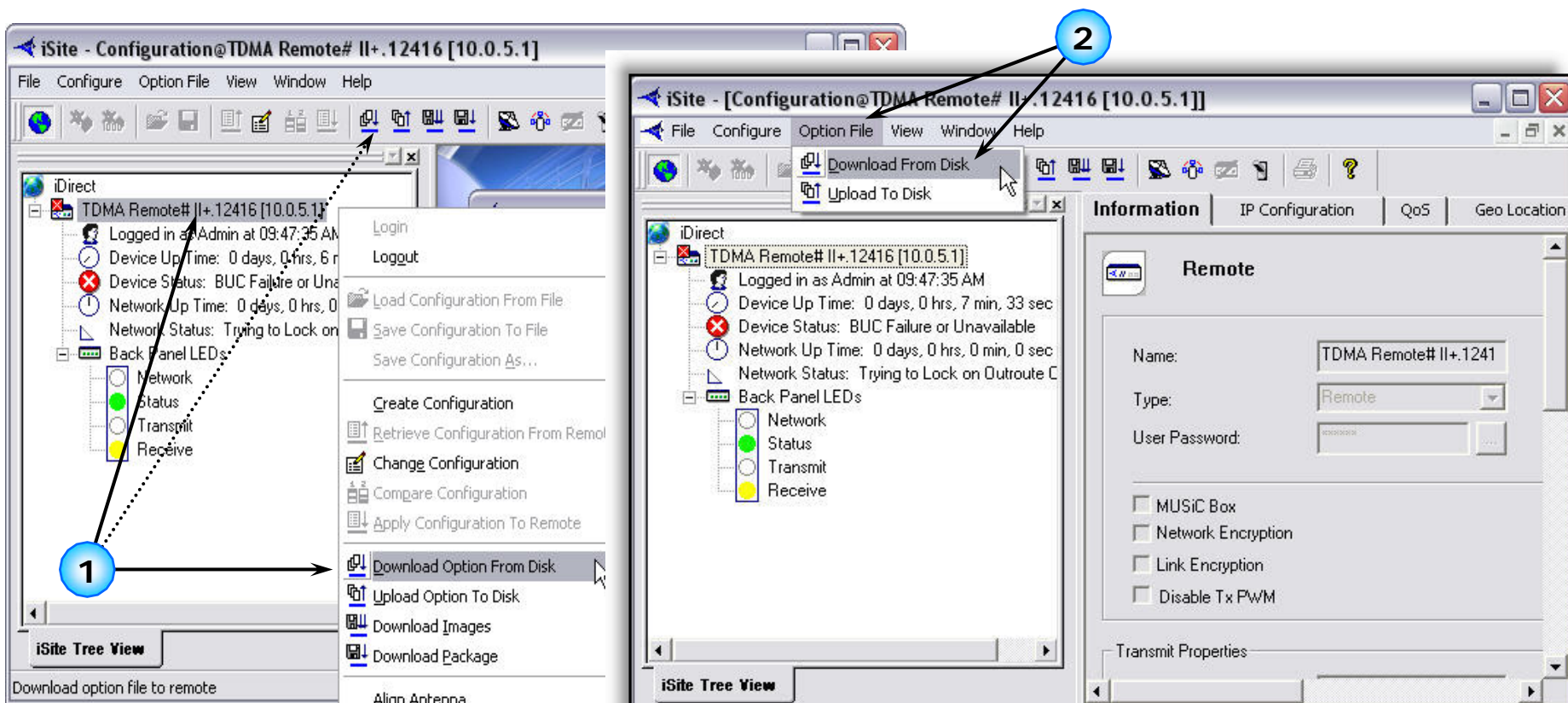
1. Right Click on Remote; Select "Download Option From Disk" from Component Tree Menu
2. Alternatively Select "Option File" from iSite Menu; Select Download From Disk

1. Dialog Opens to 'Locate' Desired/Current Option File
2. Select File from List (Double Click, or Highlight and Select "Open")
3. iSite Requests Confirmation of Download Request; Click "Yes"
4. Download Reports Success; NetModem can be Reset Now/Later
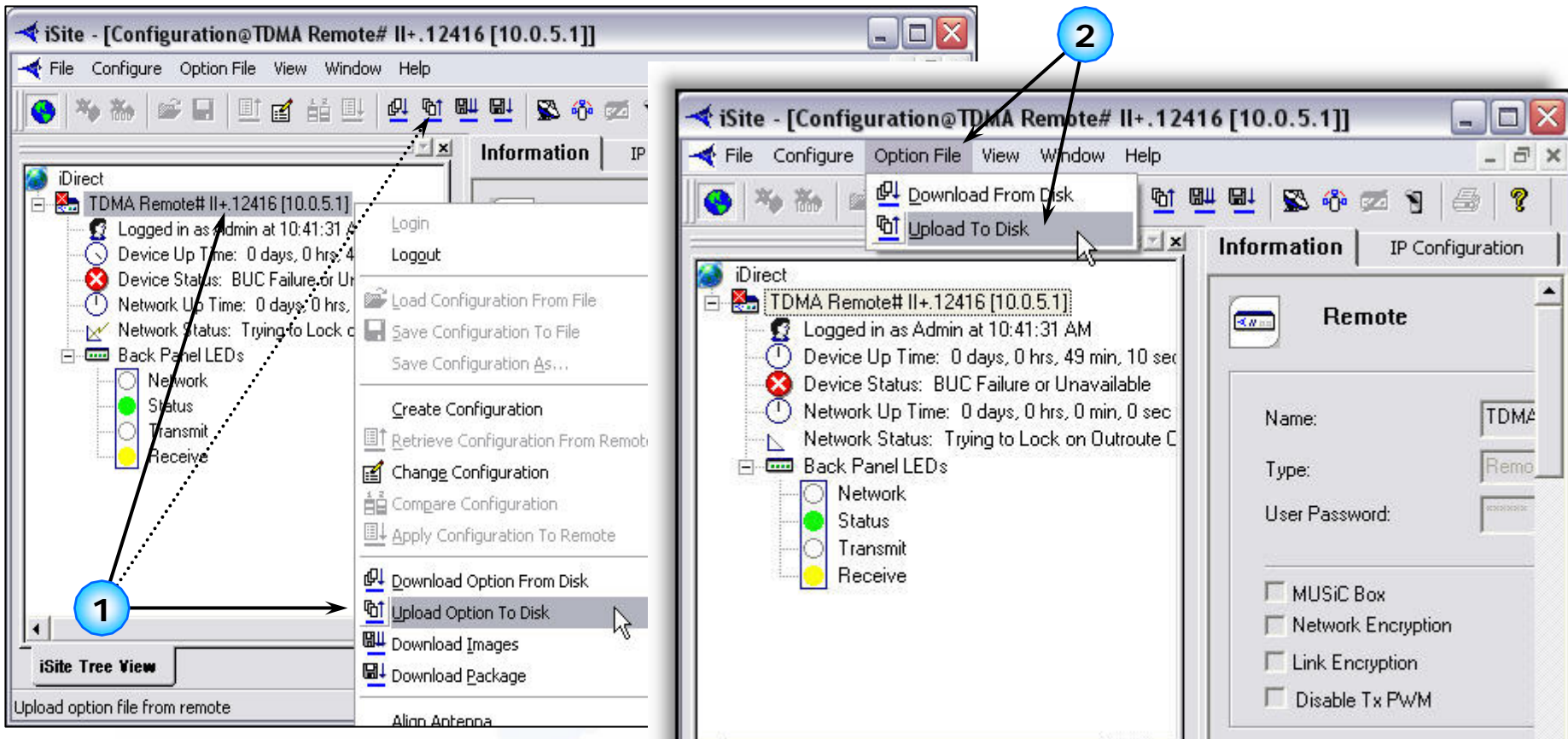
1. Select "Option File", "Upload To Disk" Menu Option
2. Dialog Opens to 'Locate' Desired 'Save' Location
3. Option File 'Opens' to Display Configured Parameters
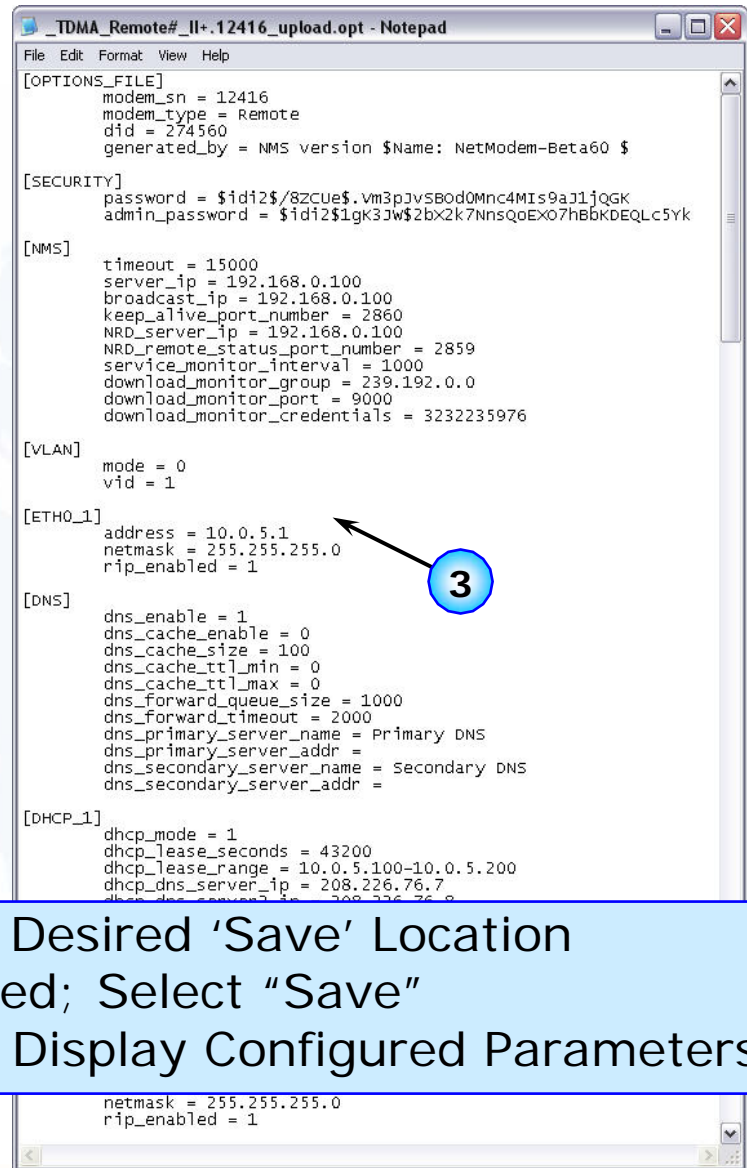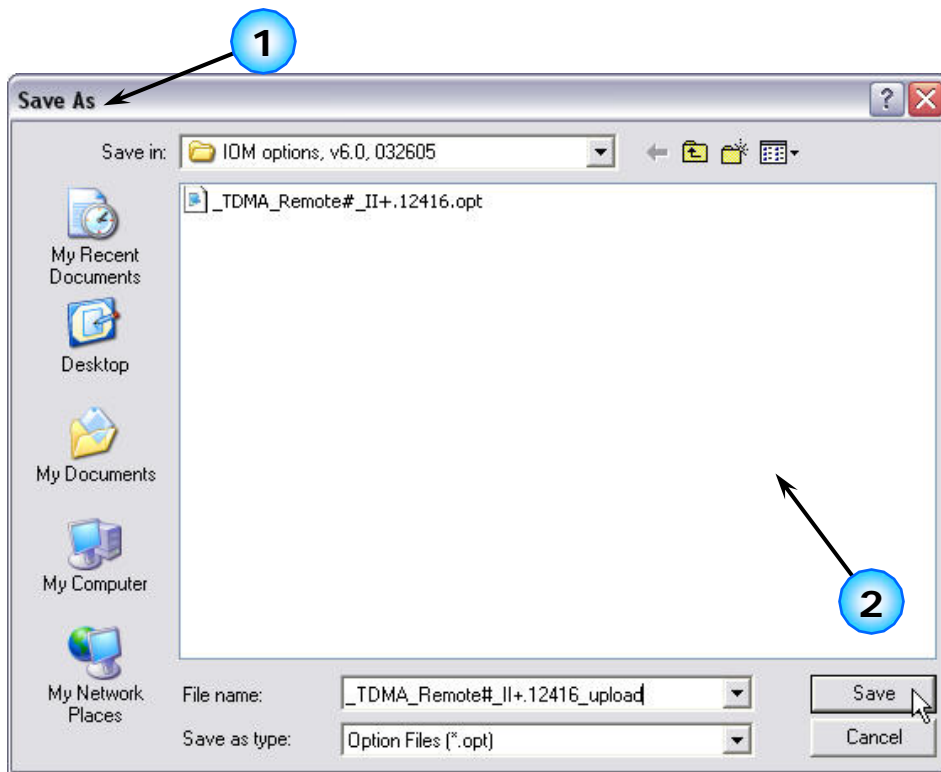
1. "Save As" Dialog Opens to 'Locate' Desired 'Save' Location
2. Name/Rename Option File as Desired; Select "Save"
3. Option File 'Opens' (in Notepad) to Display Configured Parameters

1. Right Click, Select "Align Antenna", "Antenna Pointing" from Menu
2. "Antenna Pointing" Opens, Displays "Look Angle Calculator" Tab First
3. GEO Detail Must Be Entered if "Mobile" Remote; Calculates Look Angle
4. Observe "Notes" for Reference Information Used in Calculations

Note: Remember to ALWAYS Power down NetModem II+ when Connecting and/or Disconnecting IFL Cables
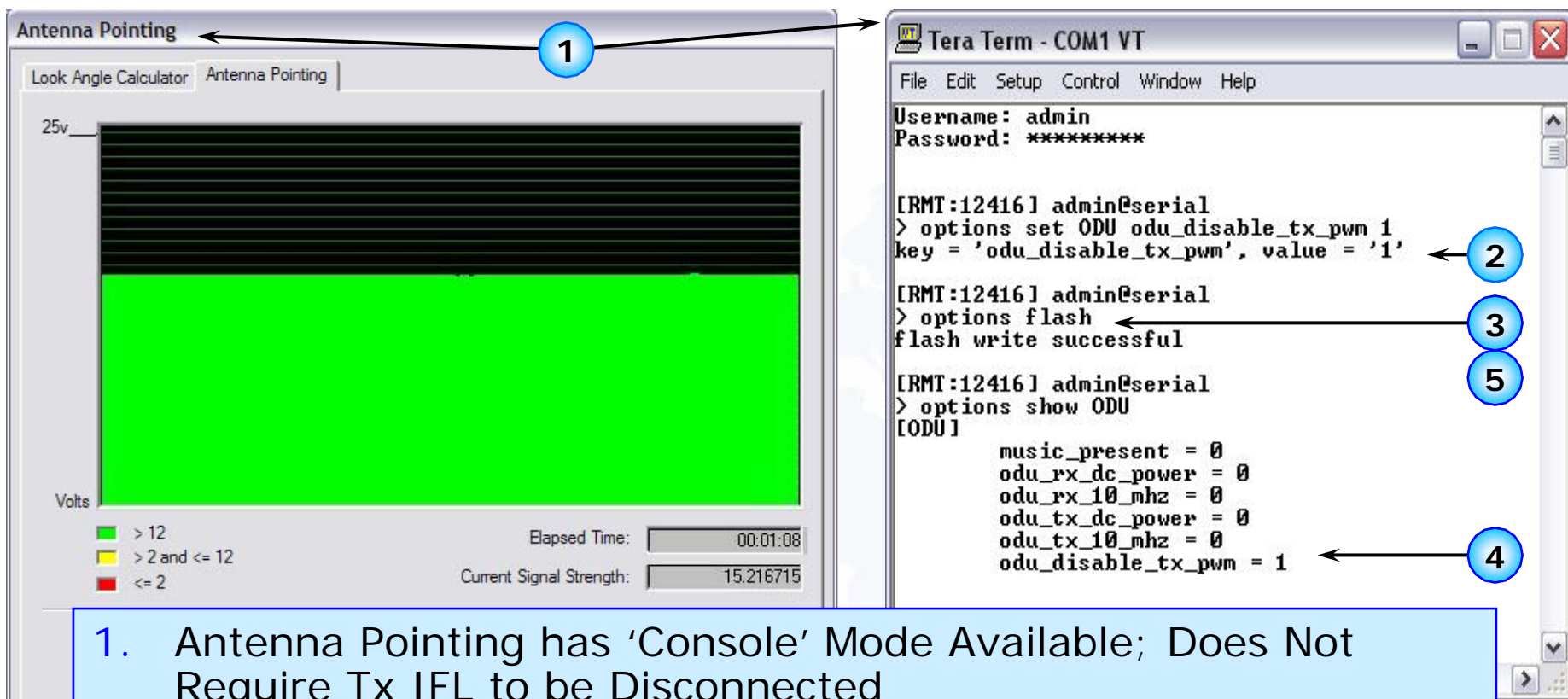

1. Select "Antenna Pointing" Tab
2. Select "Start" to Initiate Process
3. Observe Warning; Remove Cable from BUC
4. Observe Antenna Pointing DC Voltage

Red = Off/No Satellite

Yellow = Satellite Energy

Green = On Satellite

Antenna Pointing

Look Angle Calculator | Antenna Pointing

25v

Volts

■ > 12
■ > 2 and <= 12
■ <= 2

Elapsed Time: 00:02:25
Current Signal Strength: 15.075412

<- Reset Histogram ->   Start
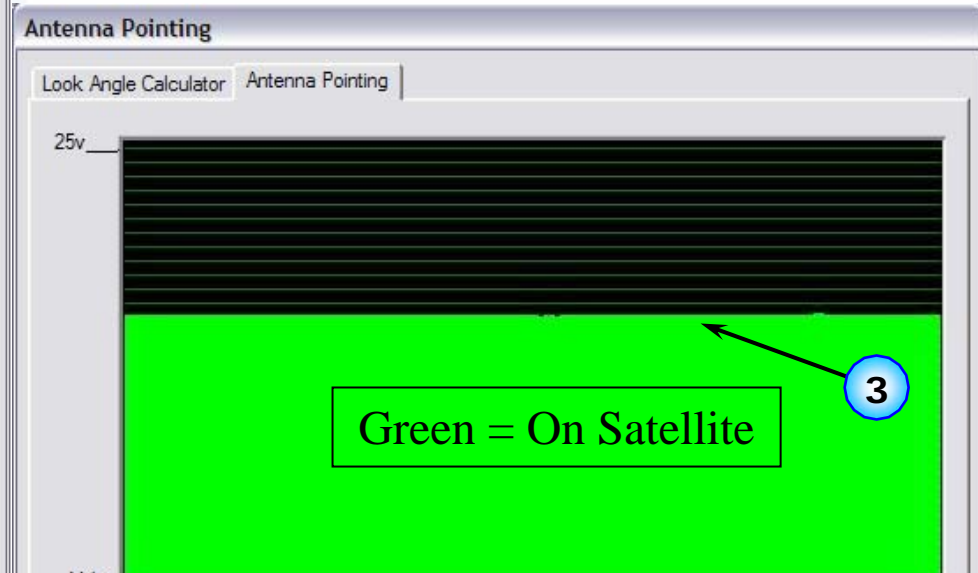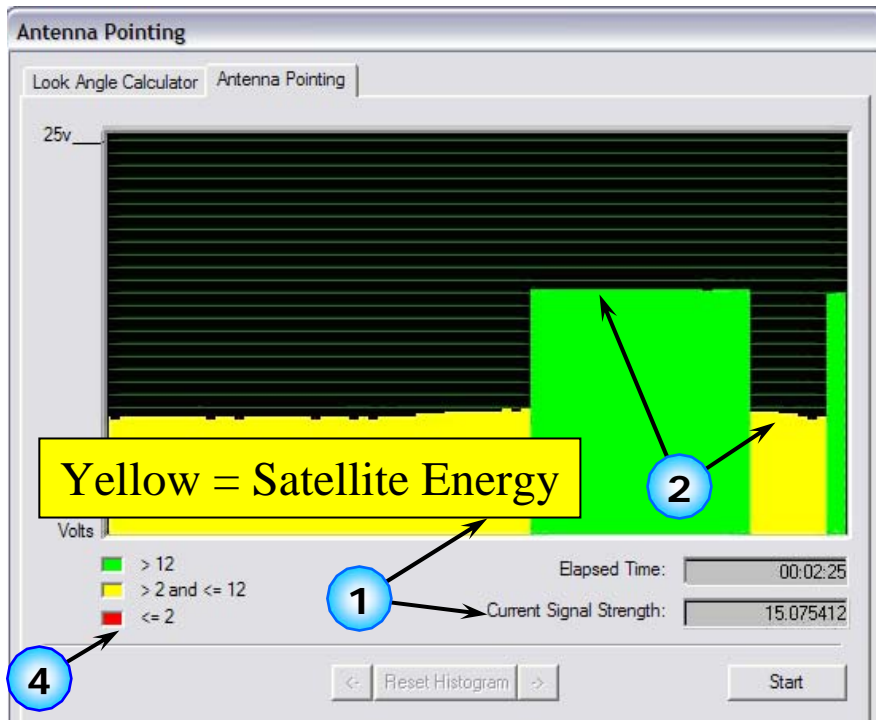
1. Observe Graph, "Current Signal Strength" or Voltmeter
2. Adjust Antenna in Azimuth/Elevation to Maximize Signal
3. Graphically, Peak Signal Until 'Green' is Displayed (=>12 vdc), or >12 vdc Present on Voltmeter.
4. Anything < 12 vdc Indicates Satellite Energy Sensed, However iDirect Network Outbound SCPC Carrier Not Detected

1. Antenna Pointing has 'Console' Mode Available; Does Not Require Tx IFL to be Disconnected
2. Entry Made at Console Session 'Disables' Tx Voltage
3. Save to 'Flash'; Verify Entry – Reset to Take Effect
4. After Pointing Completed, Modify Option File to Remove Entry
5. Save to 'Flash' and Reset to return to Normal Operation

NOTE: Console pointing Option Required 'Modified' Console Cable

Note: Rx cable must be disconnected before performing this procedure; Remember to ALWAYS Power down NetModem II+ when Connecting/Disconnecting IFL Cables

1. Right Click, Select "Align Antenna", Then "Cross Polarization"
2. "Cross Polarization" Window Opens; Enter Test "RF Uplink Frequency"
3. "BUC LO Frequency" Displayed/Entered, "L-Band TX Frequency" Calculated
4. Upon Direction from Satellite Controller, Select "Start" (Generates CW, or Continuous Wave Carrier for Level and Cross-Pol Check)
5. Adjust "Transmit Power" to Level Required for Cross-Polarization Check

NOTE: Perform 1 dB Compression Test for BUC Before Continuing/Note Result

Cross Polarization

Specify Transmit Frequency

RF Uplink Frequency: 14220 MHz.

BUC LO Frequency: 13050 MHz.

L-Band TX Frequency: 1170.000 MHz.
(Absolute Value)

Adjust Transmit Power

Transmit Power: -25.0 dBm

Start

Stop

ATTEN 10dB   MKR -38.35dBm
RL -30.0dBm   5dB/   1.181310GHz   SPAN

SPAN

SPAN
5.000 MHz

SPAN ZOOM

FULL SPAN

ZERO SPAN

LAST SPAN

1. After 'Cross Polarization' Check, Do 1 dB Compression Test
2. Adjust Carrier (Tx Power) Properly to Minimize Distortion (Linear Increase in Tx Power – Linear Increase in Tx Output
3. Each BUC has Unique Spec., Care Must Be Taken to Prevent Overdriving BUC and Creating Distortion/Spurious Emmissions
4. Critical -Replacement BUCs Must be Tested at Time of Installation
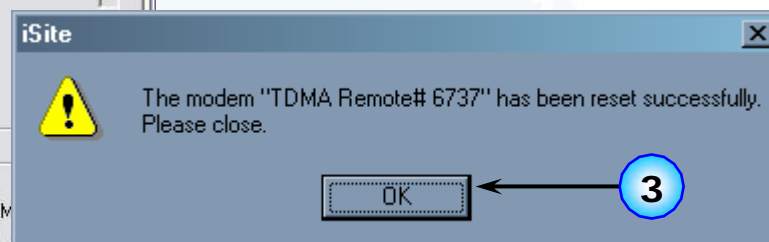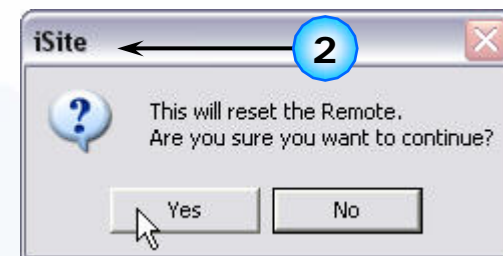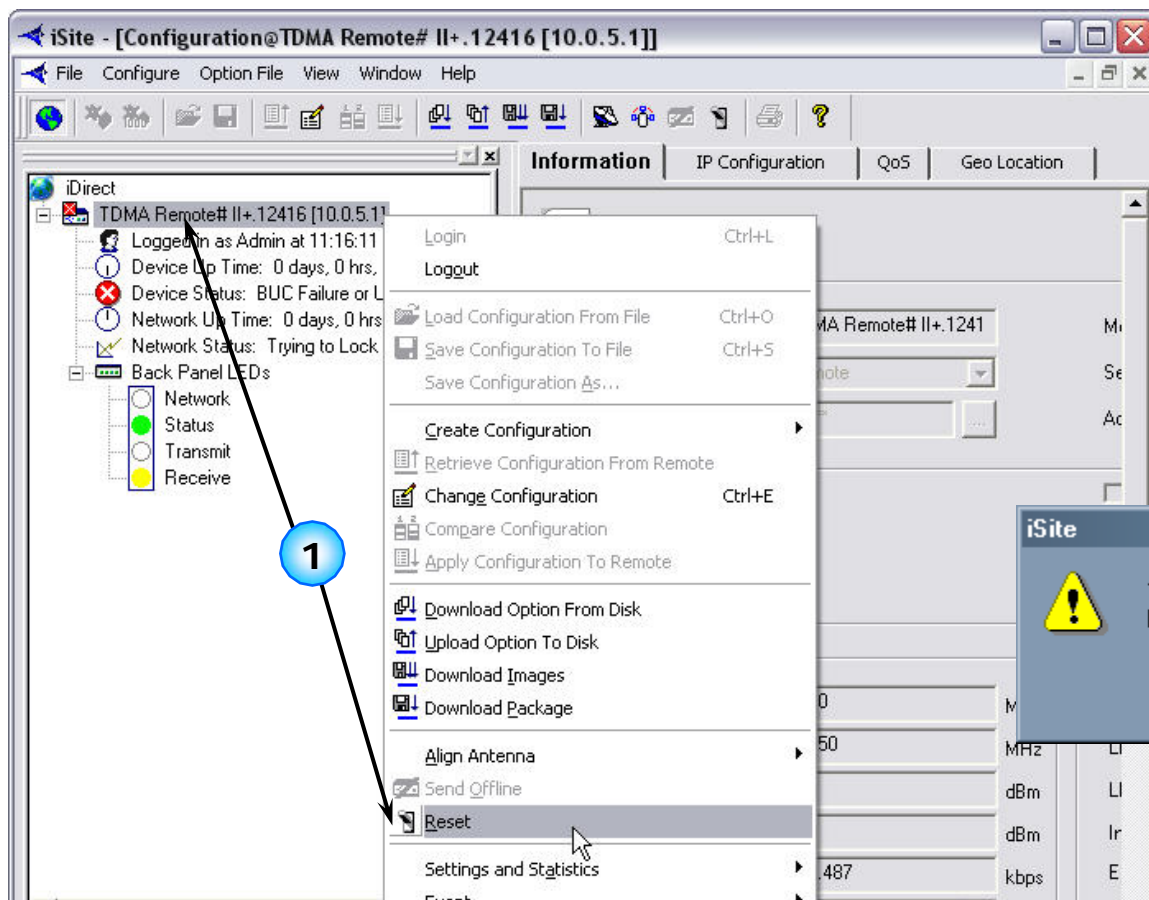
1. Right Click, Select "Reset" Menu Option
2. Confirmation Dialog Box Opens; Reply as Required
3. If "Reset", Confirmation Should be Received from NetModem

1. Right Click, Select "Settings and Statistics"
2. Tabs Provide "Equipment Details", "Modem Parameters", "Ethernet" and "Satcom" Statistics
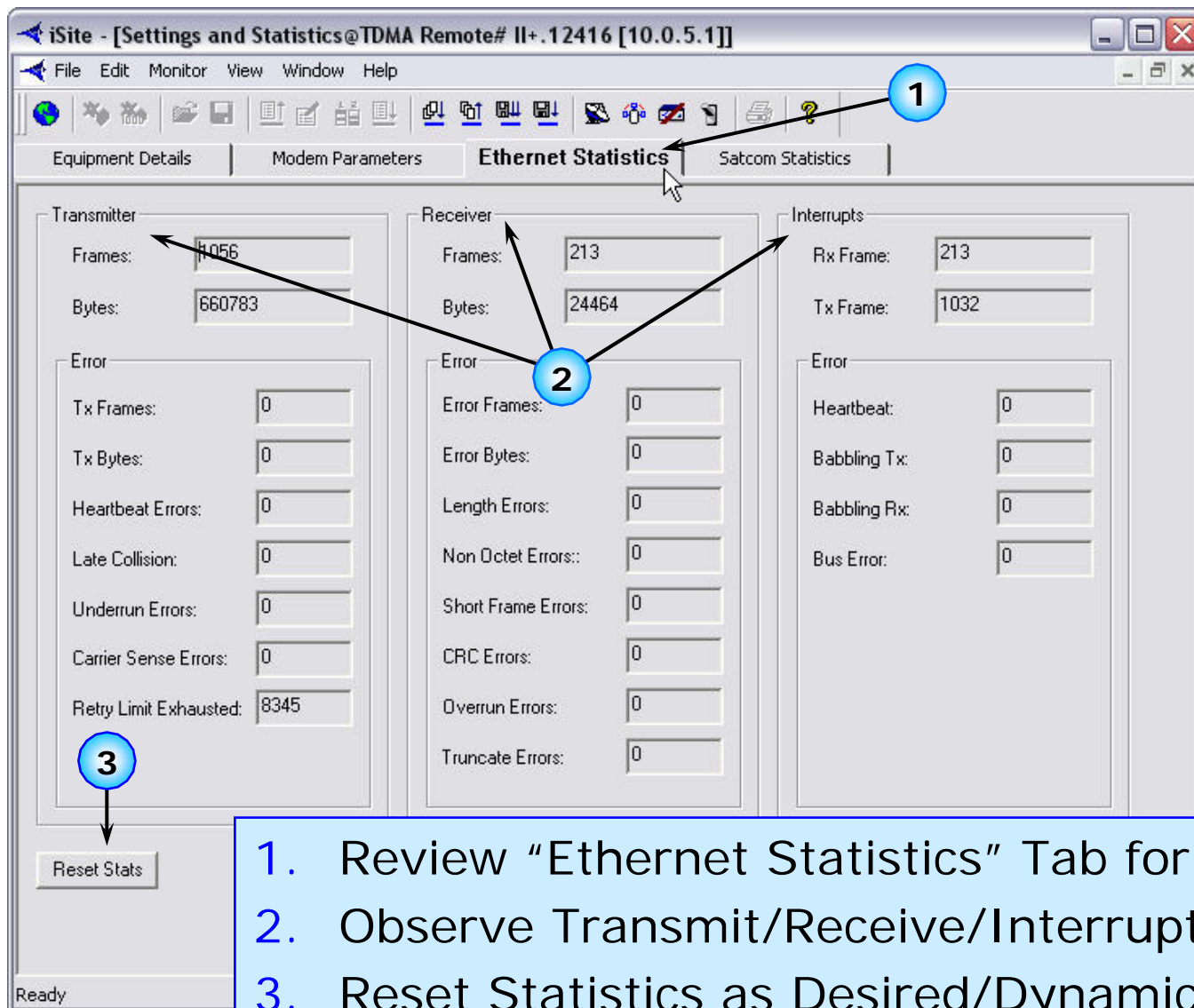3. Observe Equipment Details Information

1. Right Click, Select "Settings and Statistics"
2. Change Tab to "Modem Parameters" to
3. Observe Displayed (Read Only for TDMA Remote) Modulator/Demodulator Settings/Configuration
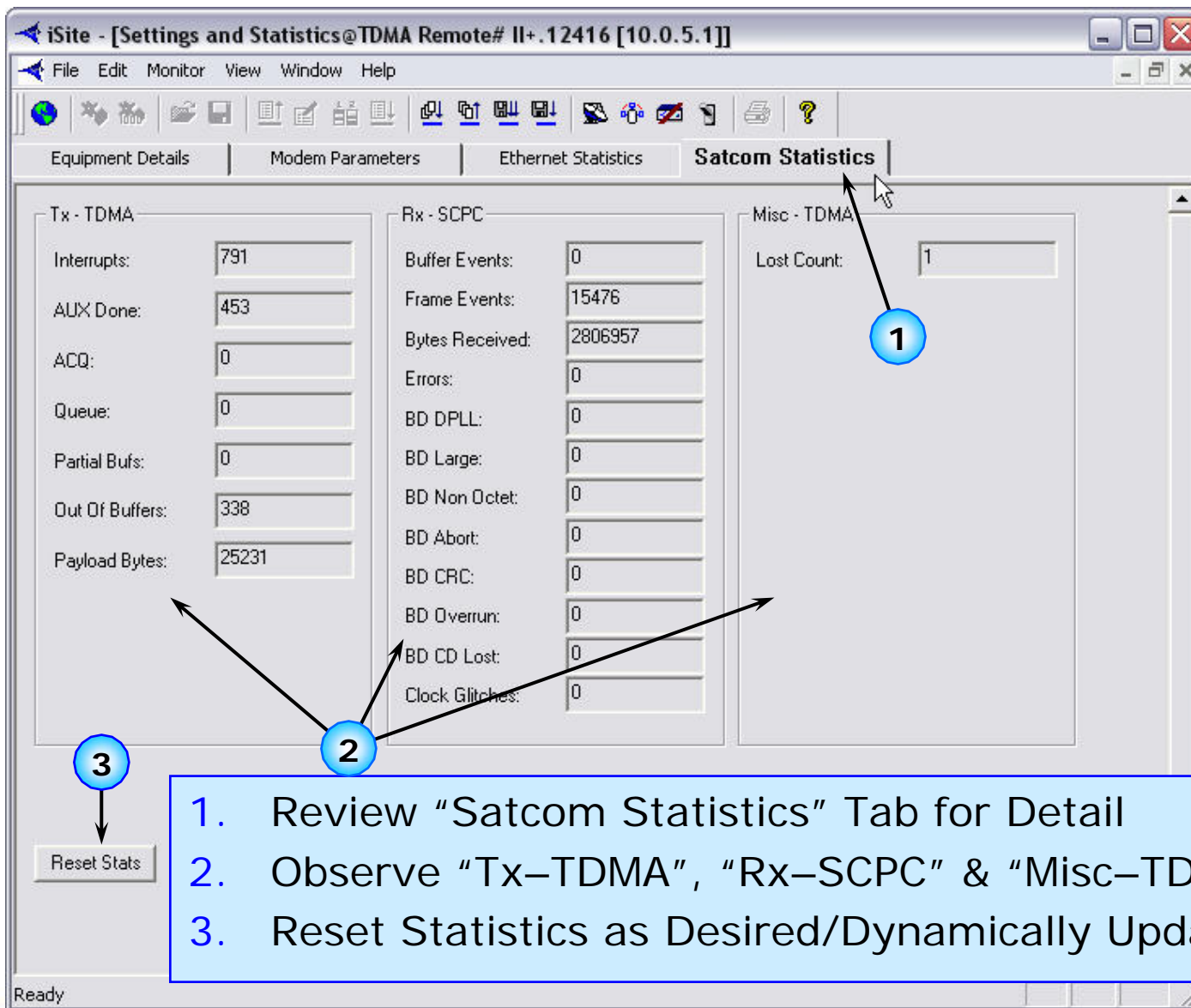
1. Review "Ethernet Statistics" Tab for Detail
2. Observe Transmit/Receive/Interrupt Statistics
3. Reset Statistics as Desired/Dynamically Updates

iSite - [Settings and Statistics@TDMA Remote# II+.12416 [10.0.5.1]]

File   Edit   Monitor   View   Window   Help

Equipment Details | Modem Parameters | Ethernet Statistics | **Satcom Statistics**

Tx - TDMA

Interrupts:	791
AUX Done:	453
ACQ:	0
Queue:	0
Partial Bufs:	0
Out Of Buffers:	338
Payload Bytes:	25231

Rx - SCPC

Buffer Events:	0
Frame Events:	15476
Bytes Received:	2806957
Errors:	0
BD DPLL:	0
BD Large:	0
BD Non Octet:	0
BD Abort:	0
BD CRC:	0
BD Overrun:	0
BD CD Lost:	0
Clock Glitches:	0

Misc - TDMA

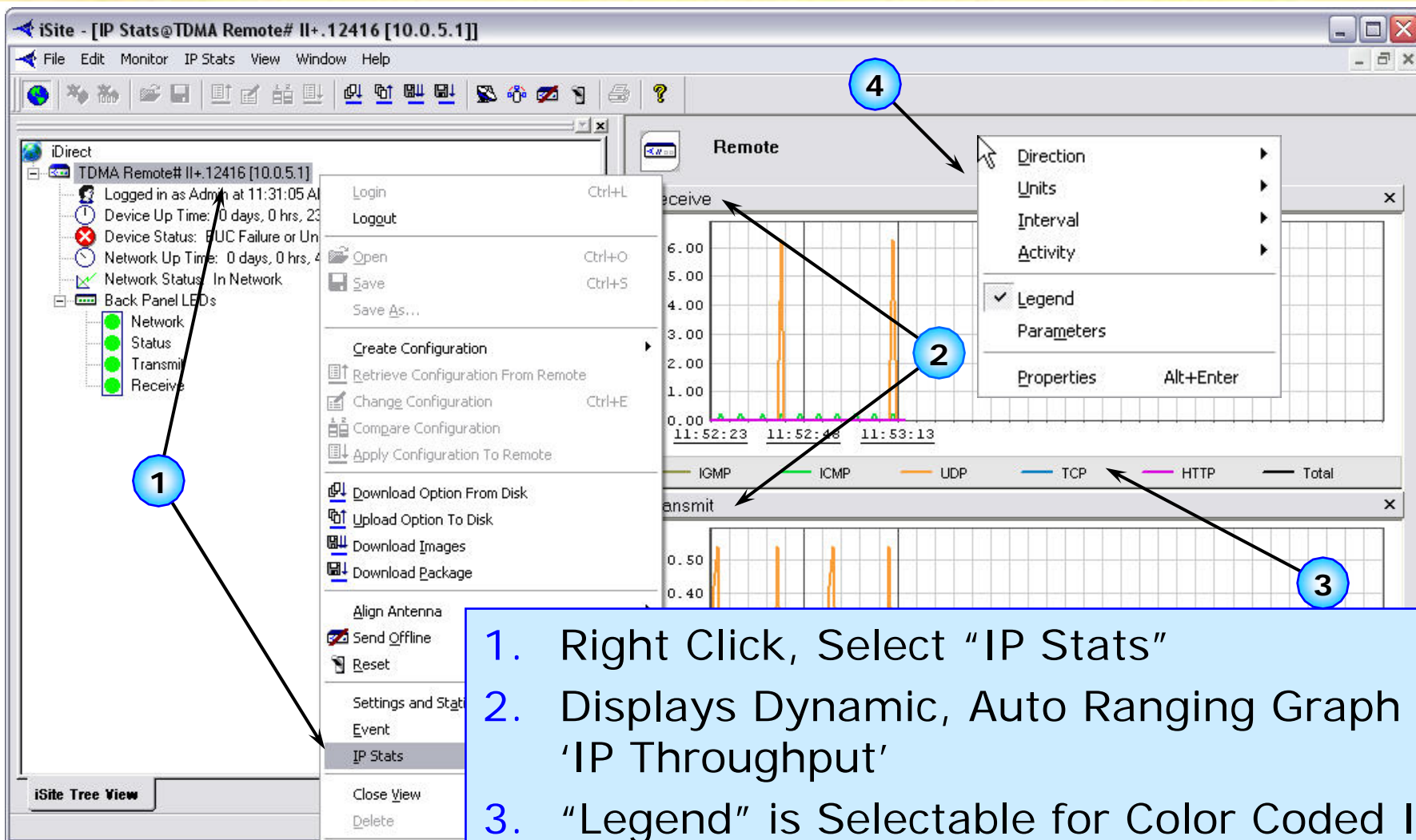|	
Lost Count:	1

1

2

3

Reset Stats

1. Review "Satcom Statistics" Tab for Detail
2. Observe "Tx–TDMA", "Rx–SCPC" & "Misc–TDMA" Statistics
3. Reset Statistics as Desired/Dynamically Updates

Ready

1. Right Click, Select "Events"
2. View Events, Dynamically for This Remote

1. Right Click, Select "IP Stats"
2. Displays Dynamic, Auto Ranging Graph of 'IP Throughput'
3. "Legend" is Selectable for Color Coded ID
4. Other Criteria Selected as Desired

1. **Right Click, Select Telnet**
2. **DOS/Telnet Window Opens Requesting Login**
3. **Once Logged In, Full Console Capability Attained**

1. Right Click, Select "Change Configuration" (iSCPC Only)
2. Displays the Same Tabs as for TDMA Remotes
3. Allows Parameter Fields to be Edited for iSCPC Option