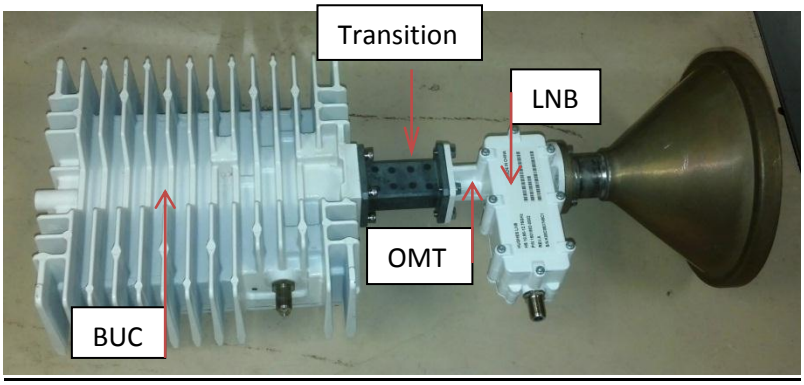
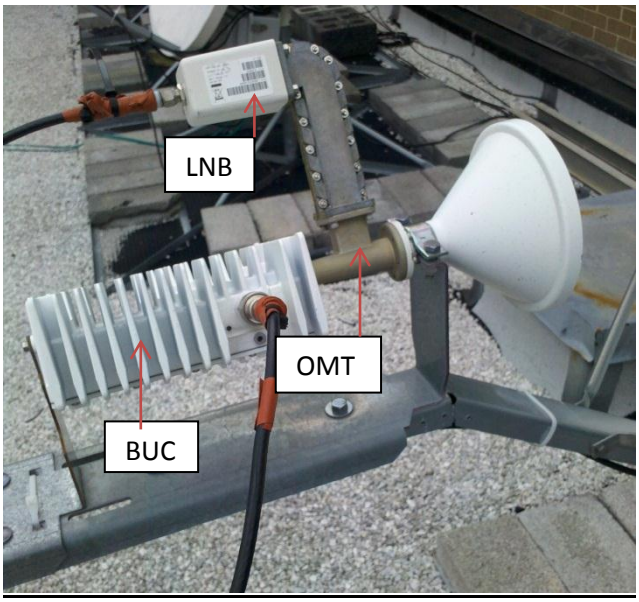
HX-200/Linear Installation Procedure

Revision A.04

When installing a Pre-Commissioned HX 200 follow the procedure in Appendix C

1. Assemble and install the antenna mount as per instructions included with unit.
2. Assemble the antenna and install on the mount as per instructions included with unit
3. Pull and terminate 2 IFL cables from the antenna location to the HX-200 IDU location
4. Assemble the Linear Radio (BUC, LNB, OMT, Transition, and Feed horn. Attach the assembly to the antenna. Reference Appendix A (this instruction also included with the unit)





5. Connect the IFL cables to RFU and HX200

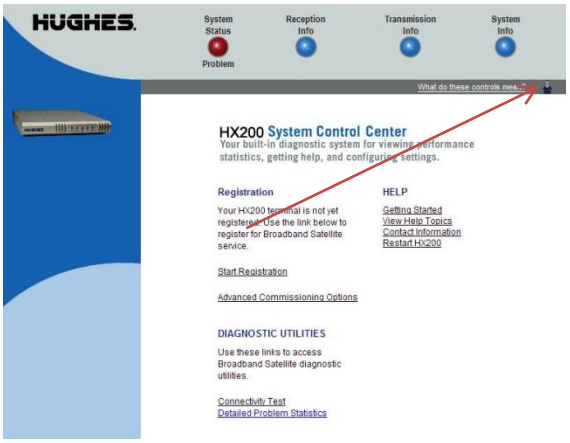
- LNB of RFU to SAT IN on HX200
- BUC of RFU to SAT OUT LINEAR

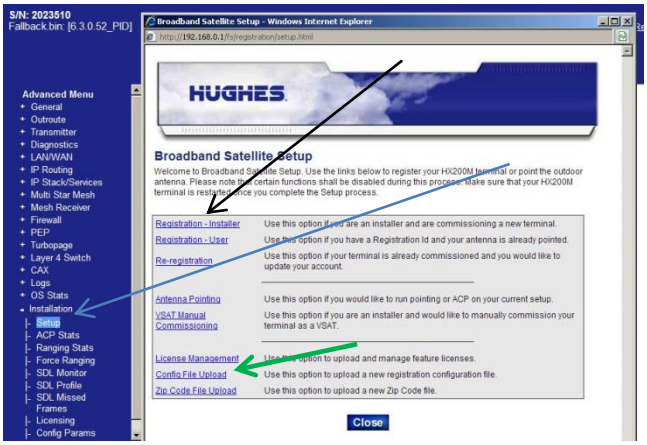
6. Connect your laptop to LAN port 1 of the HX200
7. Configure your laptop's Network Interface Card (NIC) with the following IP Address, Subnet Mask and Default Gateway:

Installer's Laptop

IP Address: 192.168.0.2
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.0.1

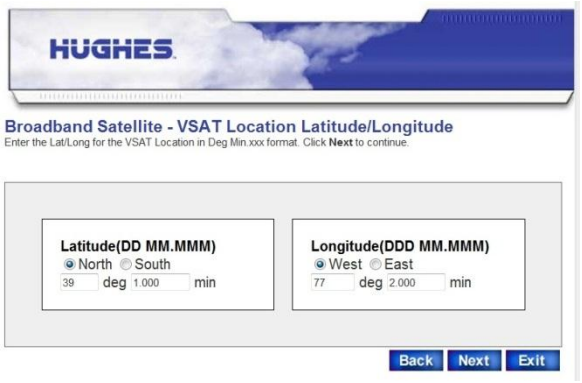
8. Start the SCC on the HX200 by entering 192.168.0.1 in the URL address bar. Select the Advanced Page (**Red** Arrow).
9. Check the fallback.bin version on the upper left corner on the advanced page on the HX200. Update the HX200 with the Fallback updater ONLY if the version is **not** equal or greater than the version from the install portal. See Appendix B for detailed procedure
10. Upload the SBC.cfg file (latest version on the portal). select *Config File Upload* (**Green** arrow) and browse to the folder on the laptop which contains the sbc file. Upload the file.
11. Then select the *Installation* tab (**Blue** Arrow) in the left hand column. Select *Setup* and once the page comes up select *Registration Installer*.

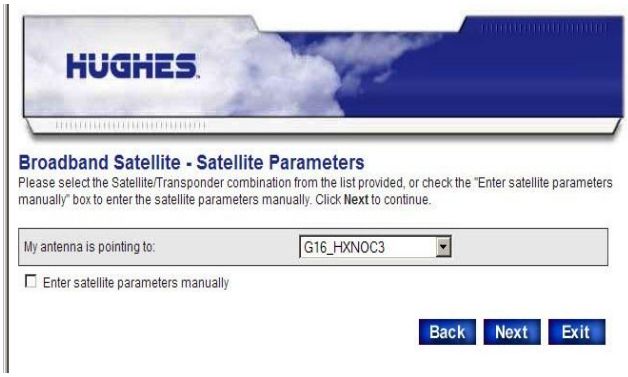


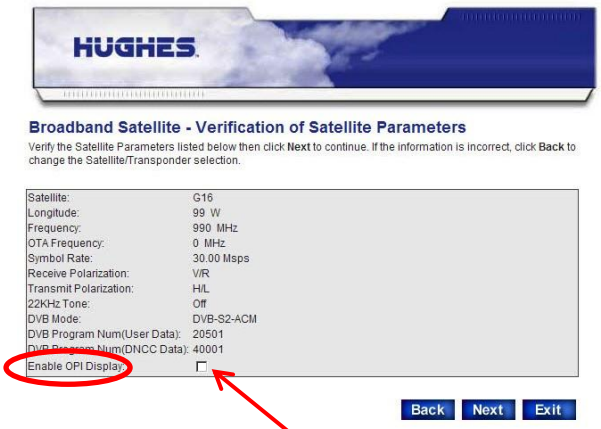


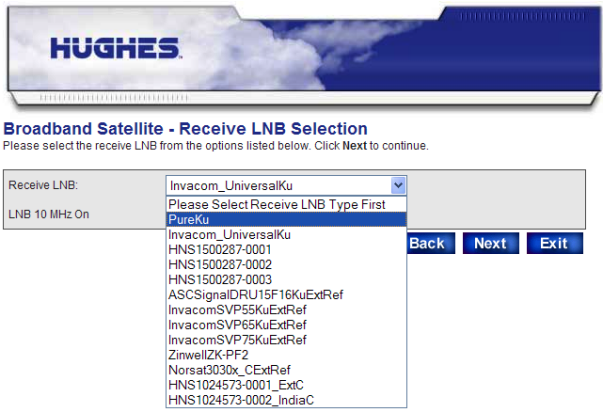
12. Enter your Latitude and Longitude taken by your GPS at the antenna location. Select *Next*

13. Select the Satellite from the pull down menu. Select *Next*.

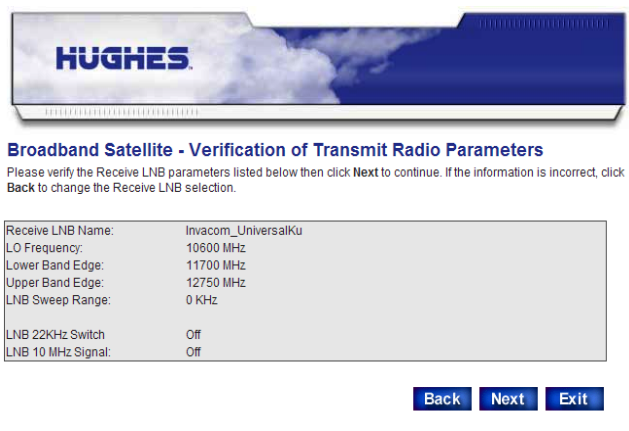


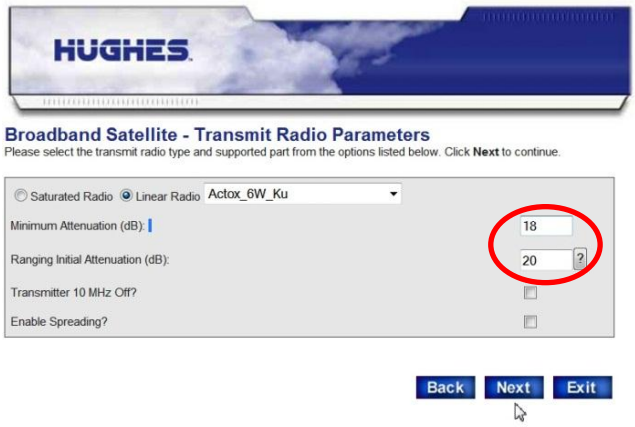






14. Select *Enable OPI Display* on the Verification of Satellite Parameters page. Make note of the Receive Polarization. This will be needed to calculate the course polarization in a following step. Select *Next*
15. Select the appropriate LNB type from the pull down menu, then select *Next*. This will bring up the verification page. Select *Next* to move on to TX Radio Parameters.





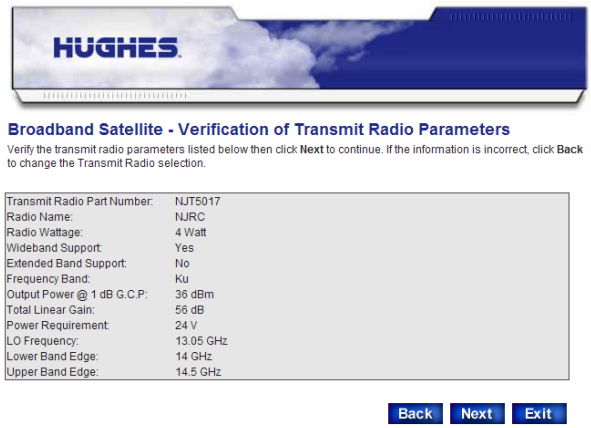
16. Select Linear Radio and the Radio from the pull down menu.

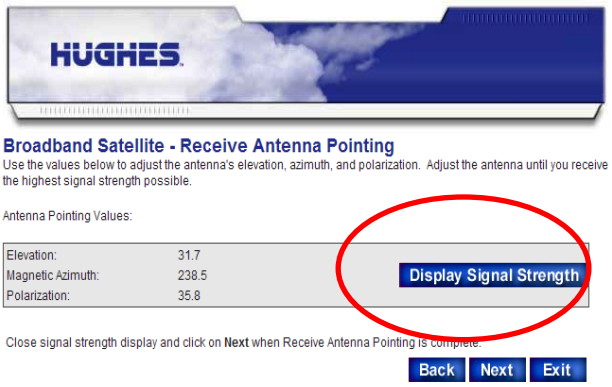
The following step is critical to complete correctly. Failure to do so will compromise the performance of the system

17. Calculate the Minimum Attenuation and Ranging Initial Attenuation. To accomplish this you will need to know the following: Note: these values are obtained from the manufactures data sheet.
    - Radio Gain
    - Radio Max Power
    - IFL loss

    Subtract the Radio Max power from the Radio Gain
    Subtract the IFL loss from the value calculated in the previous step. This value will be the Minimum Attenuation.
    The Ranging Initial Attenuation is the Minimum Attenuation plus six (6)
    Example: Radio Gain = 63 db Radio Max Power = 38 dbm IFL loss =10 db
    63 – 38 = 25
    25 – 10 = **15 Minimum Attenuation**
    15 + 6 = **21 Ranging Initial Attenuation**

18. Enter these values and Select *Next*
19. The Tx Verification page will be displayed. Once the values are verified, select *Next.* The Rx Antenna Pointing page is displayed.





20. This page will provide the coarse values to point the antenna using the DAPT.
21. Calculate the course polarization value

    For Horizontal Receive:
    Multiply the value listed by negative one (-1)

    For Vertical Receive:
    Multiply the value listed by negative one (-1)
    Add or Subtract 90 based on your location in relation to the Satellite.
    - Sites East of the Satellite- Add 90 (+90)

- Sites West of the Satellite- Subtract 90 (-90)

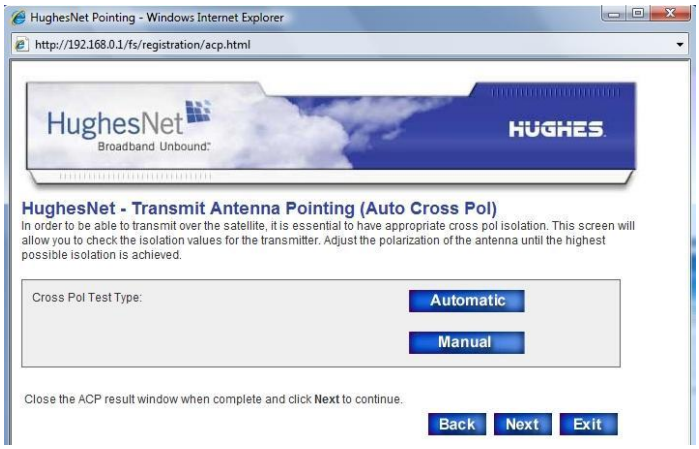
Or Simply, if your calculated value is negative add 90, if your calculated value is positive subtract 90.

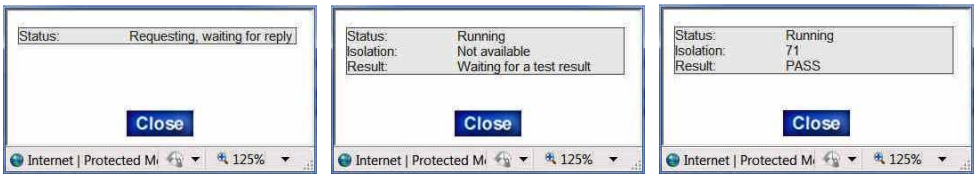
22. Set your RFU polarization by rotating the unit Counter Clockwise for setting a negative polarization value or Clockwise for setting a positive polarization value as viewed from the rear of the RFU. Note that the RFU pictured below is currently set to Zero (0)

23. Once the coarse antenna pointing values (shown above) have been obtained and the DAPT is inline on the Rx IFL cable at the RFU, select *Display Signal Strength* and begin the antenna pointing process.

as seen at the DAPT

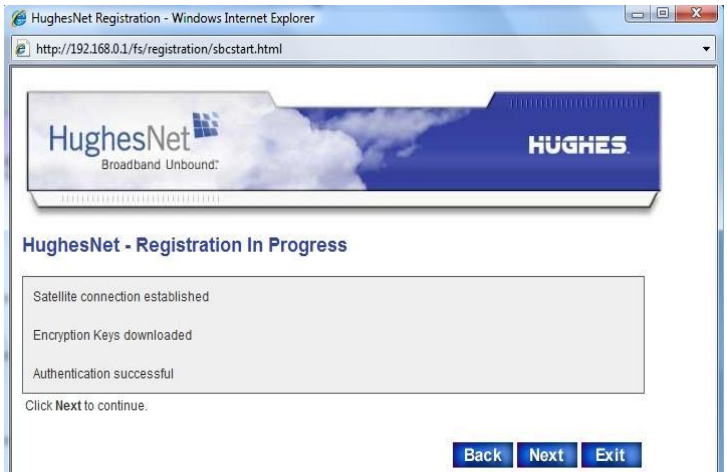
24. Peak the antenna for the best obtainable SQF by adjusting the Azimuth and Elevation of the Antenna. Once complete, close the Signal Strength indicator and select *Next* at the Rx Antenna Pointing page in order to begin Tx Antenna Pointing (Auto Cross-Pol) (ACP).





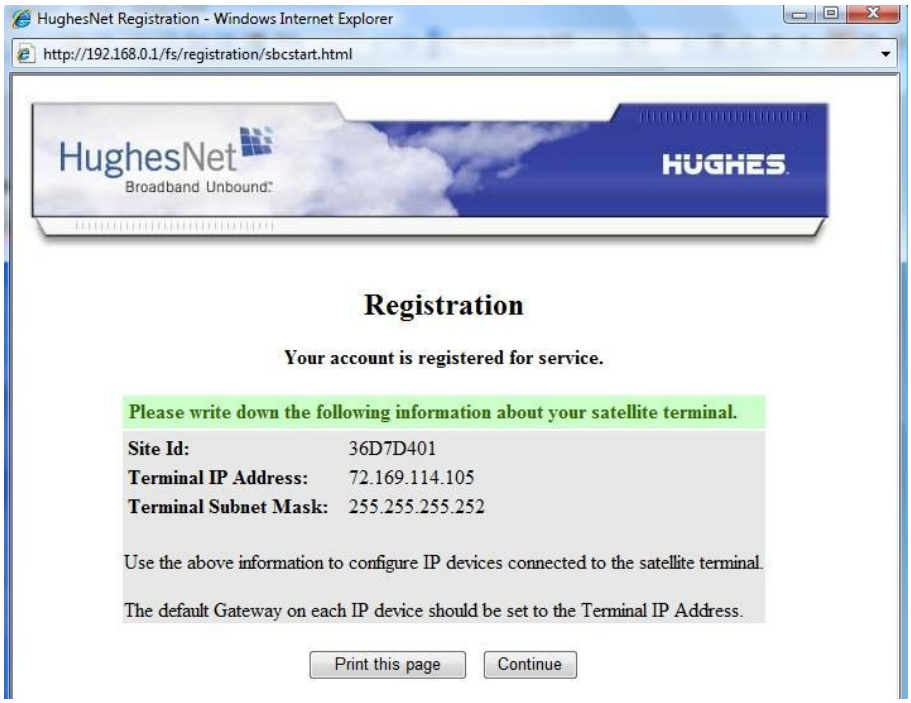
25. Select *Manual* mode and rotate the RFU slightly Clockwise and Counter Clockwise to obtain the highest Isolation value possible.
26. Tighten the hardware and close the window that displayed the test results
27. Select *Automatic* for one final check.
28. Once complete, close the window that displayed the test results and select *Next*.

29. The server is displayed in the pull down box Select *Next*.
30. The following status page is displayed. Once the Click Next to continue message is displayed Select *Next*

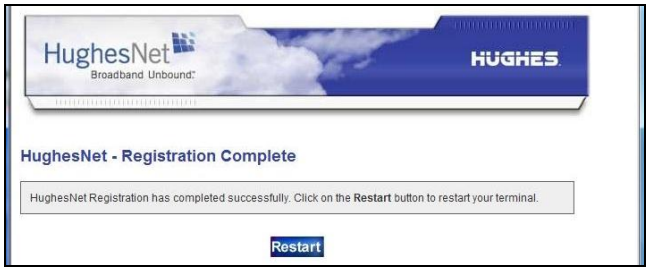


31. Enter your Site ID (in CAPS) to continue. Double check the serial number shown to be that of the unit you will be attempting to register.

32. Once the serial number has been verified and the Site ID correctly entered, select *Continue*. You will be Prompted to “Please Wait” while unit is registering with the Network.
33. The following will be displayed once complete. Select *Continue*



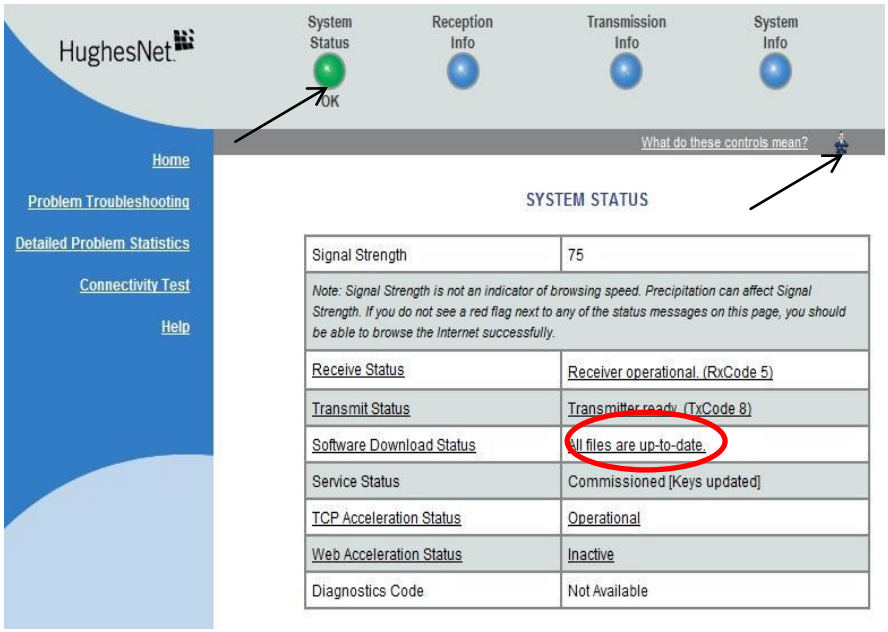
NOTE: Record the IP Addresses displayed on the screen. If the HX200 LAN port is configured for a static IP Address and DHCP is disabled, you will need these IP Addresses to configure your laptop IP Address in order to access the HX200 later in the procedure.



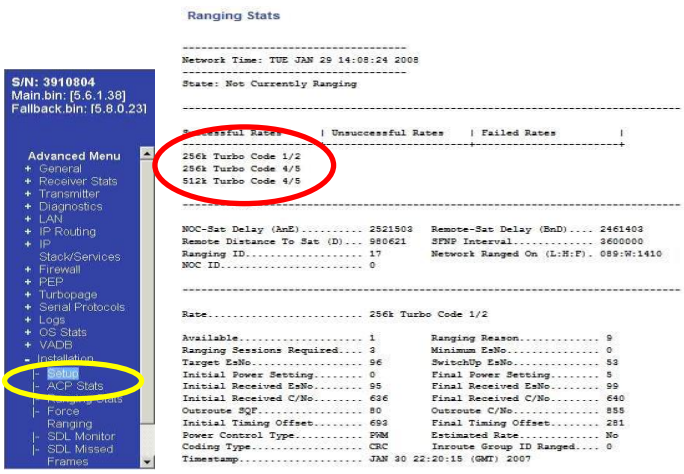
The unit will download a series of configuration data.

34. When the Terminal Reset screen is displayed Select Close. The unit will reset.
35. Once the unit has completed the reset, log back into the System Control Center using your laptop Web browser. Your laptop IP Address may need to be configured at this time if the HX-200 LAN configuration does not have DHCP enabled. You may also need to enter the LAN 1 IP Address of the HX200 in the browser URL field.
36. Select the System Status button and monitor Software Download Status.

37. Once the files have completed download the unit will reset again.
38. Access the unit once the unit has completed the reset with your laptop Web browser and confirm the Software Download Status is indicating ‘All files are up-to-date’. It may take a minute or so for this status to update



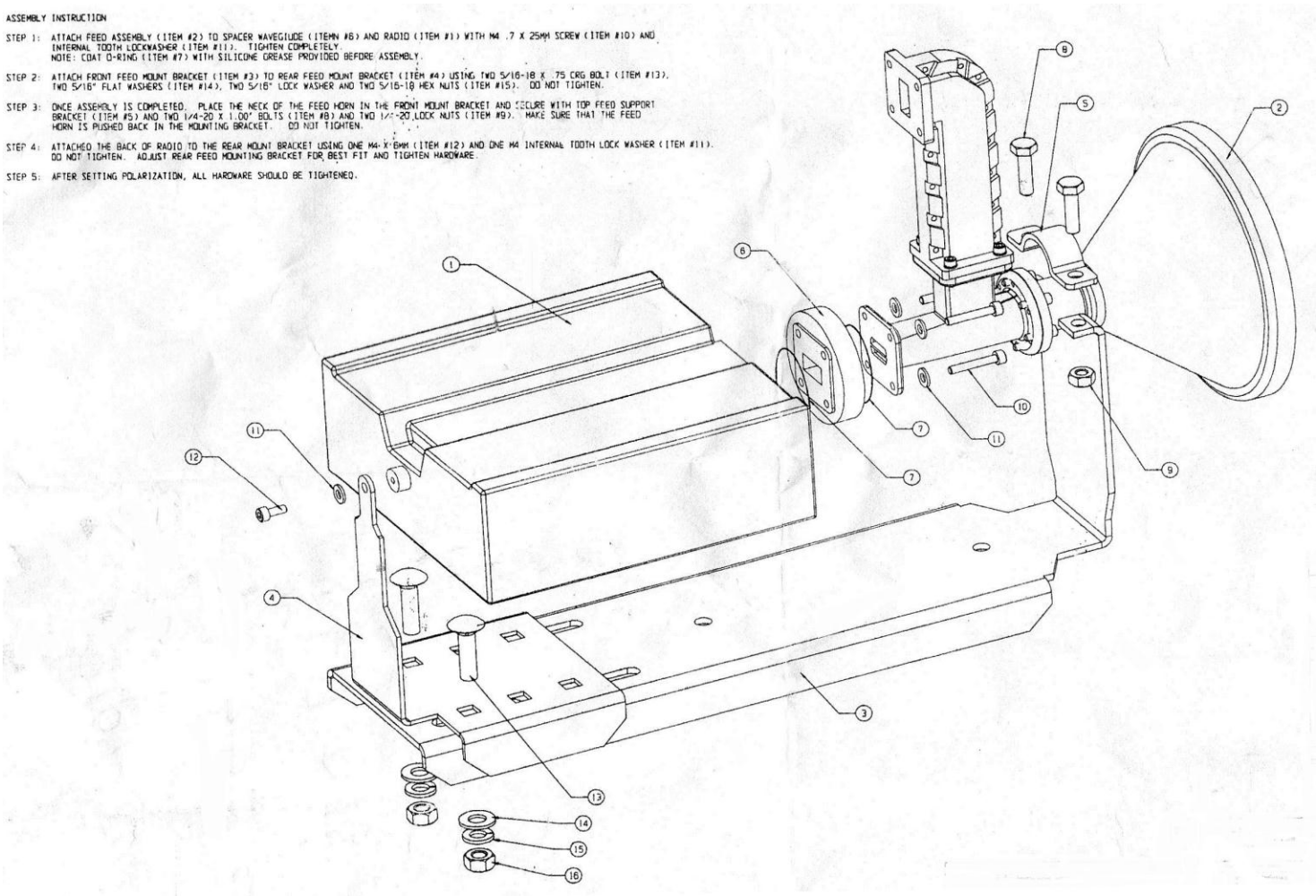
In order to check ranging rates Select the Icon on the SCC to gain access to the Advanced page. From the left hand menu, select *Installation*, then *Ranging Stats.* The Successful Rates should include the rate expected for this site.



39. The HX-200 Installation is now complete.

Appendix A

RFU / Antenna Assembly



FallBack Updater Procedures

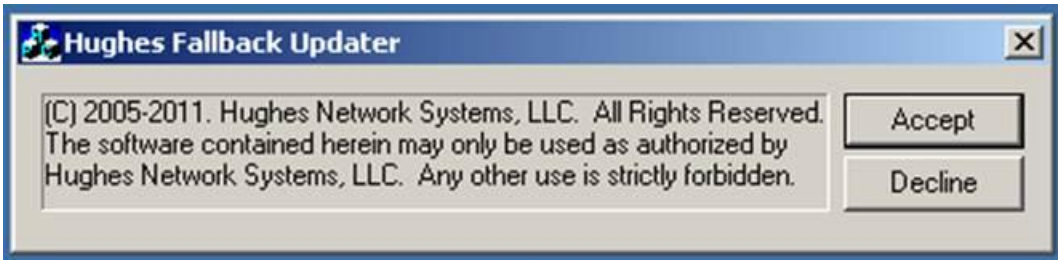
Repeat this procedure for each unit installed:

- Connect the PC and HX200/HX260 via the LAN (LAN1 connector on the HX200/HX260).
- Open the Windows Explorer and navigate to the default directory where the files were unzipped. The latest version is found on Portal and loaded to the installers PC.
- Double-click on HUGHES_Updater.

Results

The following messages will be generated if the fallback update operation is successful.

STEP 1

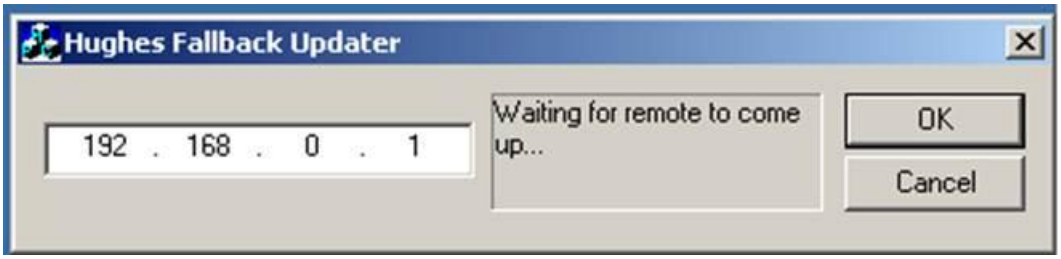


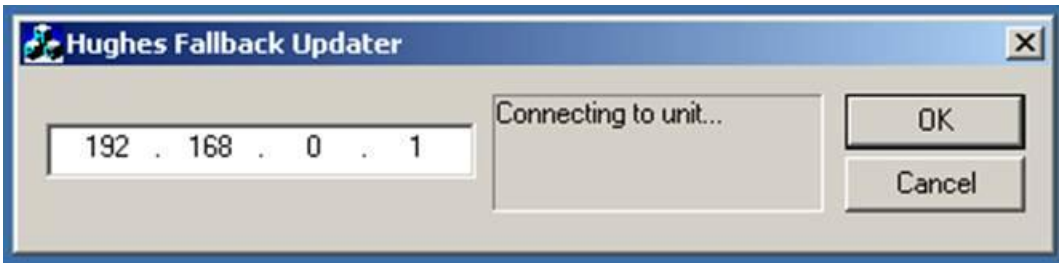
Click on the *Accept* button to acknowledge the restricted use condition.

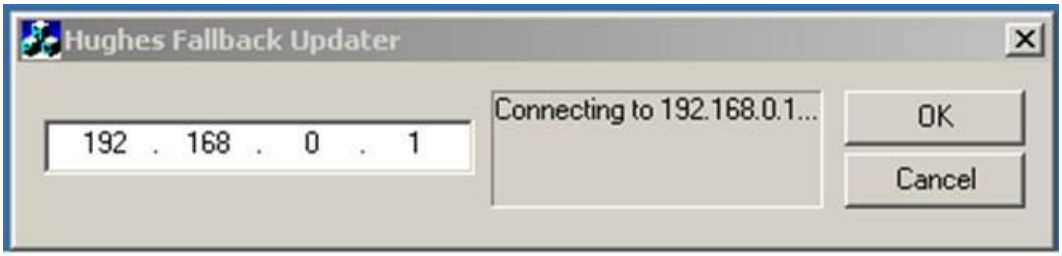
STEP 2

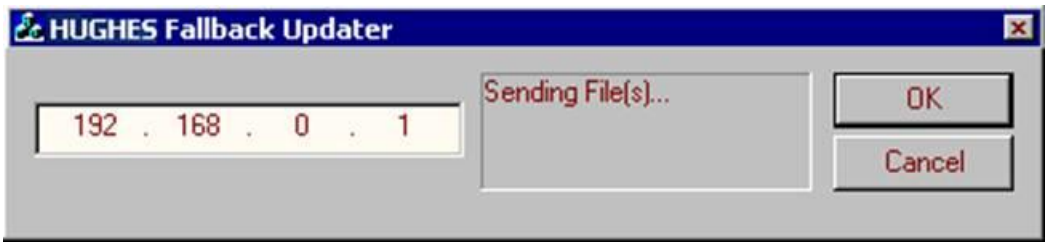
Click on the *OK* button to begin the update process.

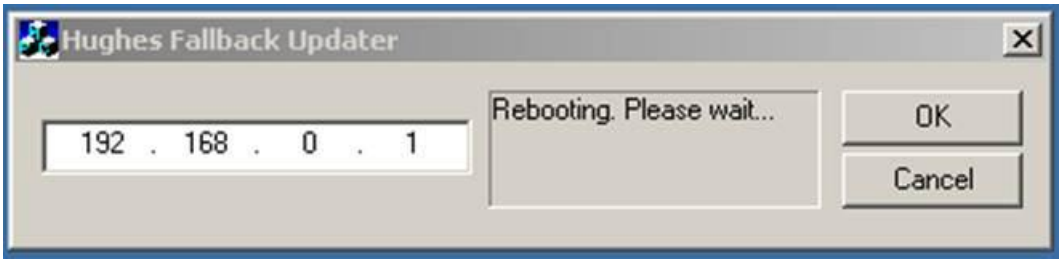
STEP 3


Hughes Fallback Updater
192 . 168 . 0 . 1
Waiting for remote to come up...
OK
Cancel

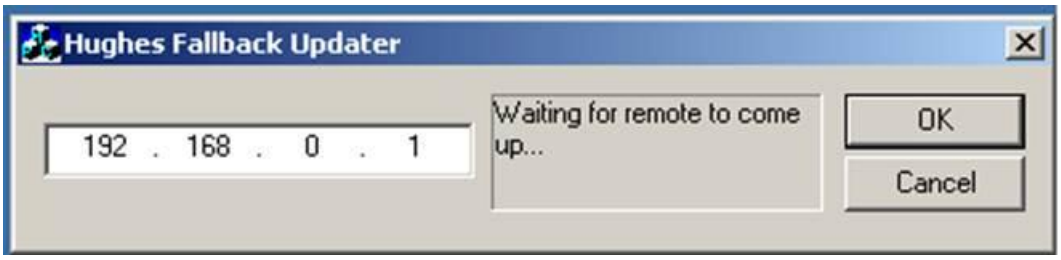

Hughes Fallback Updater
192 . 168 . 0 . 1
Connecting to unit...
OK
Cancel

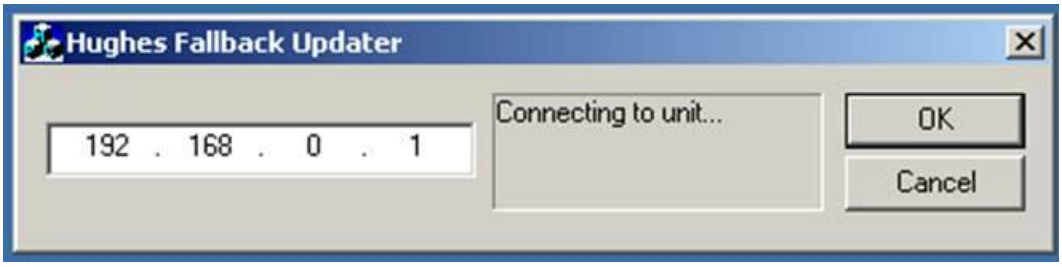

Hughes Fallback Updater
192 . 168 . 0 . 1
Connecting to 192.168.0.1...
OK
Cancel


HUGHES Fallback Updater
192 . 168 . 0 . 1
Sending File(s)...
OK
Cancel

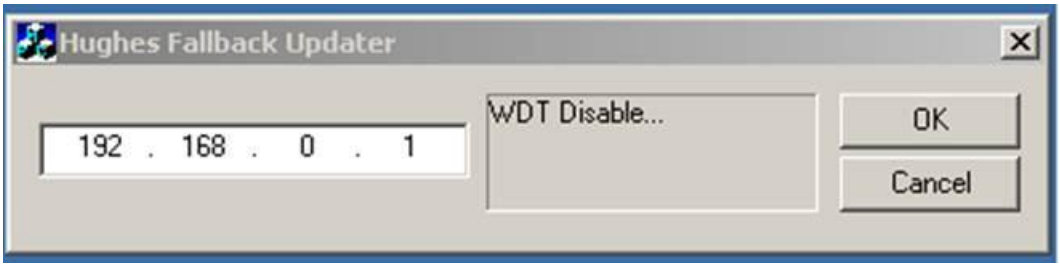

Hughes Fallback Updater
192 . 168 . 0 . 1
Rebooting. Please wait...
OK
Cancel

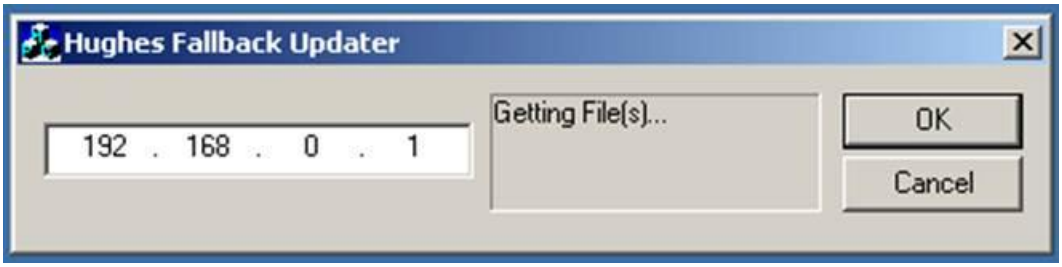
STEP 4

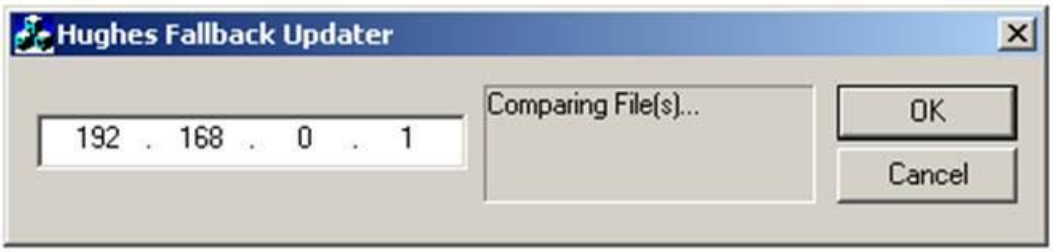

Hughes Fallback Updater
192 . 168 . 0 . 1
Waiting for remote to come up...
OK
Cancel

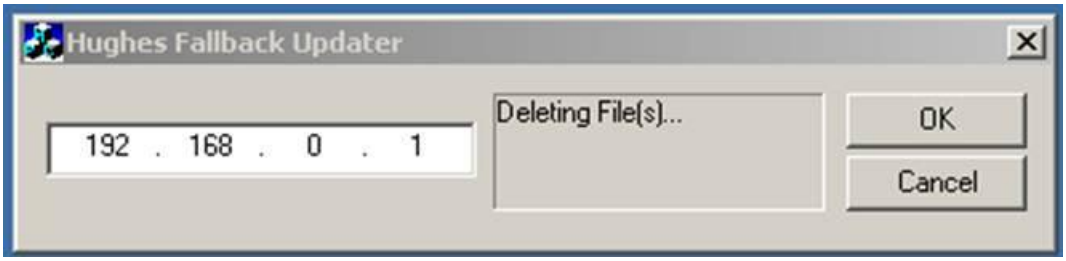

Hughes Fallback Updater
192 . 168 . 0 . 1
Connecting to unit...
OK
Cancel

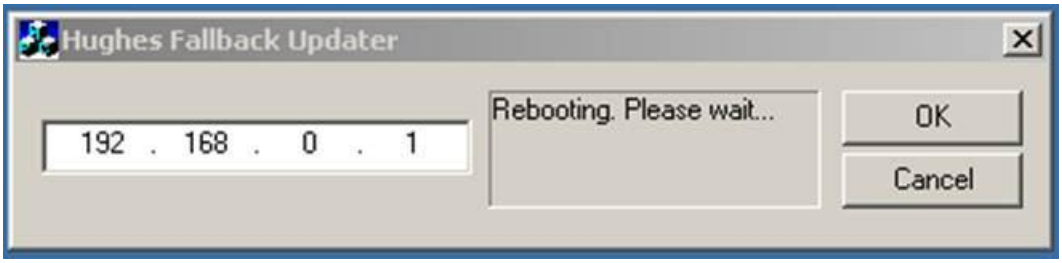
.
.
.


Hughes Fallback Updater
192 . 168 . 0 . 1
WDT Disable...
OK
Cancel


Hughes Fallback Updater
192 . 168 . 0 . 1
Getting File(s)...
OK
Cancel


Hughes Fallback Updater
192 . 168 . 0 . 1
Comparing File(s)...
OK
Cancel


Hughes Fallback Updater
192 . 168 . 0 . 1
Deleting File(s)...
OK
Cancel

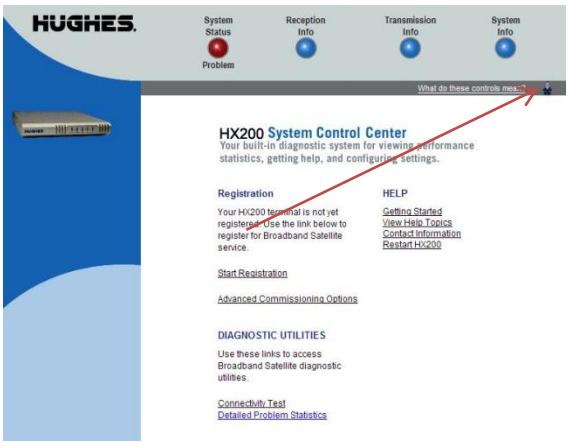


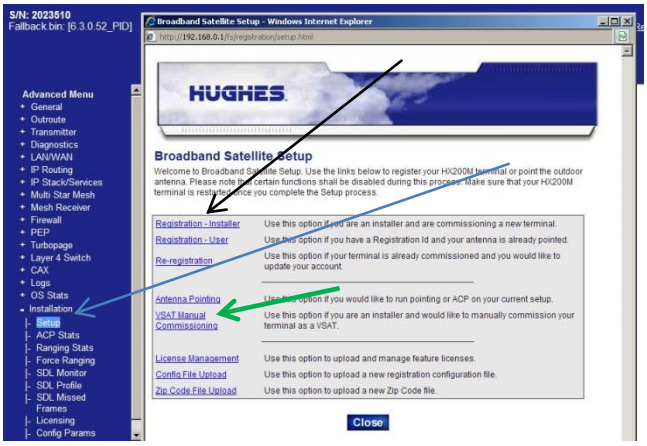
After the above operation is completed the user interface automatically exits. After the unit boots up, verify on the Advanced page that the banner date of the software is correct.

Appendix C

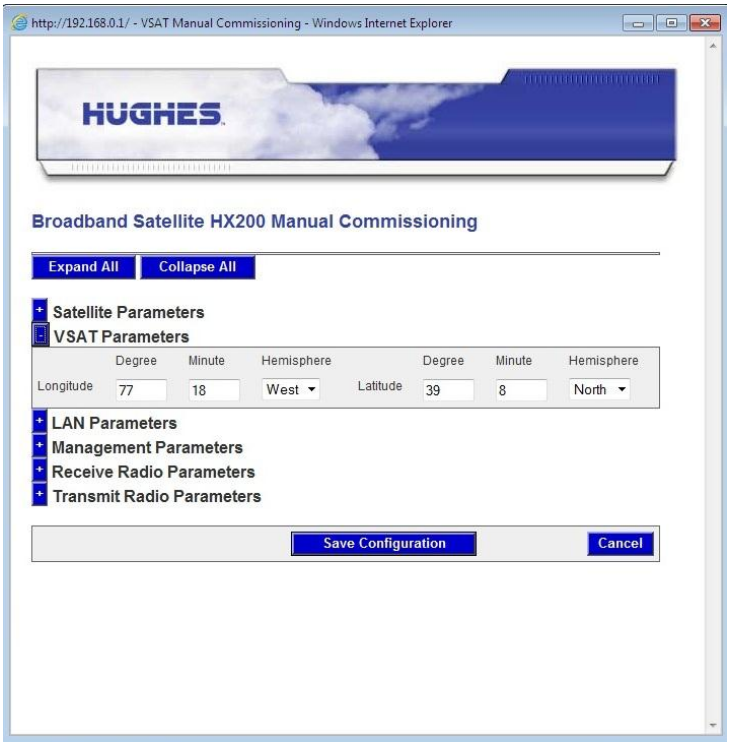
Installation of a Pre-Commissioned HX 200

1. Select the Advanced Page (**Red** Arrow).
2. Select the *Installation* tab (**Blue** Arrow) in the left hand column. Select *Setup* and once the page comes up select *VSAT* Manual Commissioning (**Green Arrow** Arrow)





3. Select VSAT Parameters



4. Enter your Latitude and Longitude taken by your GPS at the antenna location.
5. *Select Transmit Parameters*

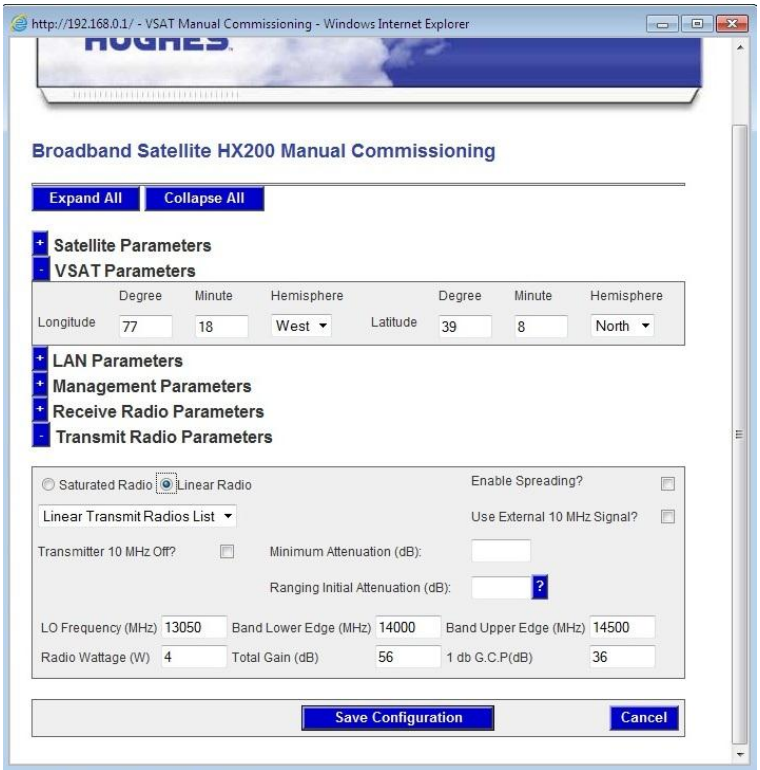
The following step is critical to complete correctly. Failure to do so will compromise the performance of the system

6. Calculate the Minimum Attenuation and Ranging Initial Attenuation. To accomplish this you will need to know the following: Note: these values are obtained from the manufactures data sheet.
   Radio Gain
   Radio Max Power
   IFL loss

Subtract the Radio Max power from the Radio Gain
Subtract the IFL loss from the value calculated in the previous step. This value will be the Minimum Attenuation.
The Ranging Initial Attenuation is the Minimum Attenuation plus six (6)
Example: Radio Gain = 63 db Radio Max Power = 38 dbm IFL loss =10 db

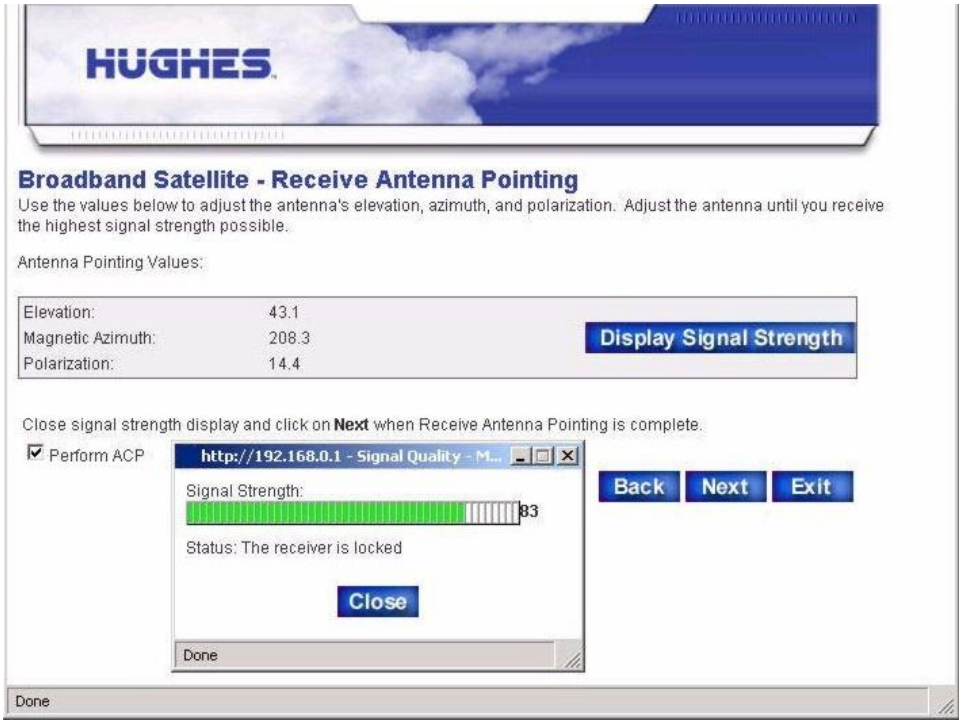
63 – 38 = 25
25 – 10 = **15 Minimum Attenuation**
15 + 6 = **21 Ranging Initial Attenuation**

7. Select *Linear Radio* Button.
8. Select the Radio from the Pull Down.
9. Enter calculated Attenuation values.
10. Select *Save Configuration*.



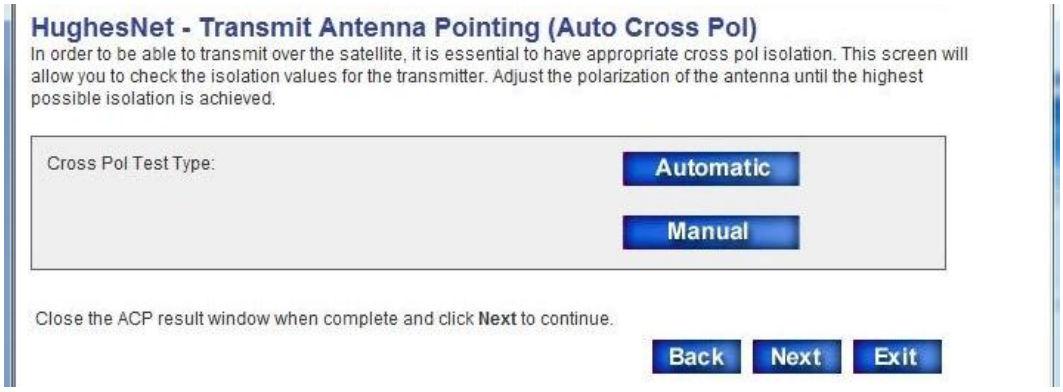
11. Select Antenna Pointing. If using a pointing device, select “Enable OPI” before clicking *Next.*

12. Select *Display Signal Strength.* Point and Peak the Antenna for best SQF value.



13. Close “Signal Strength Test” and check *Perform ACP*. Select *Next*.

14. Run ACP and set the polarization and peak for the best Isolation.



15. Exit Antenna Pointing.

16. Select Force Range. *Start Ranging.*

17. Once ranging is complete the HX-200 should now be ready for use.