HUGHES NETWORK SYSTEMS

FIELD SERVICE BULLETIN

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☐ **NEXT SERVICE CALL**

☐ **OTHER:**

COMMENTS: This Field Service Bulletin (FSB) provides installation tips for Ka-band sites.

REMOVED MATERIAL DISPOSITION

SHIP TO	N/A
ATTENTION	N/A
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Ka-band Installation Tips

ver. 5 4/16/08

IMPORTANT: A CD with all the Ka Installation Guides, training material, a site to site achievable SQF estimate tool, and other valuable documents is available from your dealer. The information in this CD also provides much more valuable information and detail than can be provided in these tips alone. Make sure that you copy the contents of this CD on your Installer Laptop, so that the information is available to you whenever you need it. You can also download these documents from the Installer Portal, where you go to access the Onsite Validation Tool for Ku-band installs.

1. Configure static IP address of 169.254.10.10 on your laptop to communicate with the HN9000

On the Installer Laptop, click “Start – Settings – Network Connections” to open the “Network Connections” window. Right click on “Local Area Connection” and click on “Properties” to open the “Local Area Connection Properties” window. Highlight “Internet Protocol (TCP/IP)” and click on “Properties” to open the “Internet Protocol (TCP/IP) Properties” window. Click on “Use the Following IP Address”.

a) Set the IP address to 169.254.10.10. Click on the Subnet mask window which will auto-populate to 255.255.0.0. If it does not, enter these values manually.
b) Set Default Gateway to 169.254.0.1.
c) Set Preferred DNS server to 66.82.4.8. See Figure 1 below.

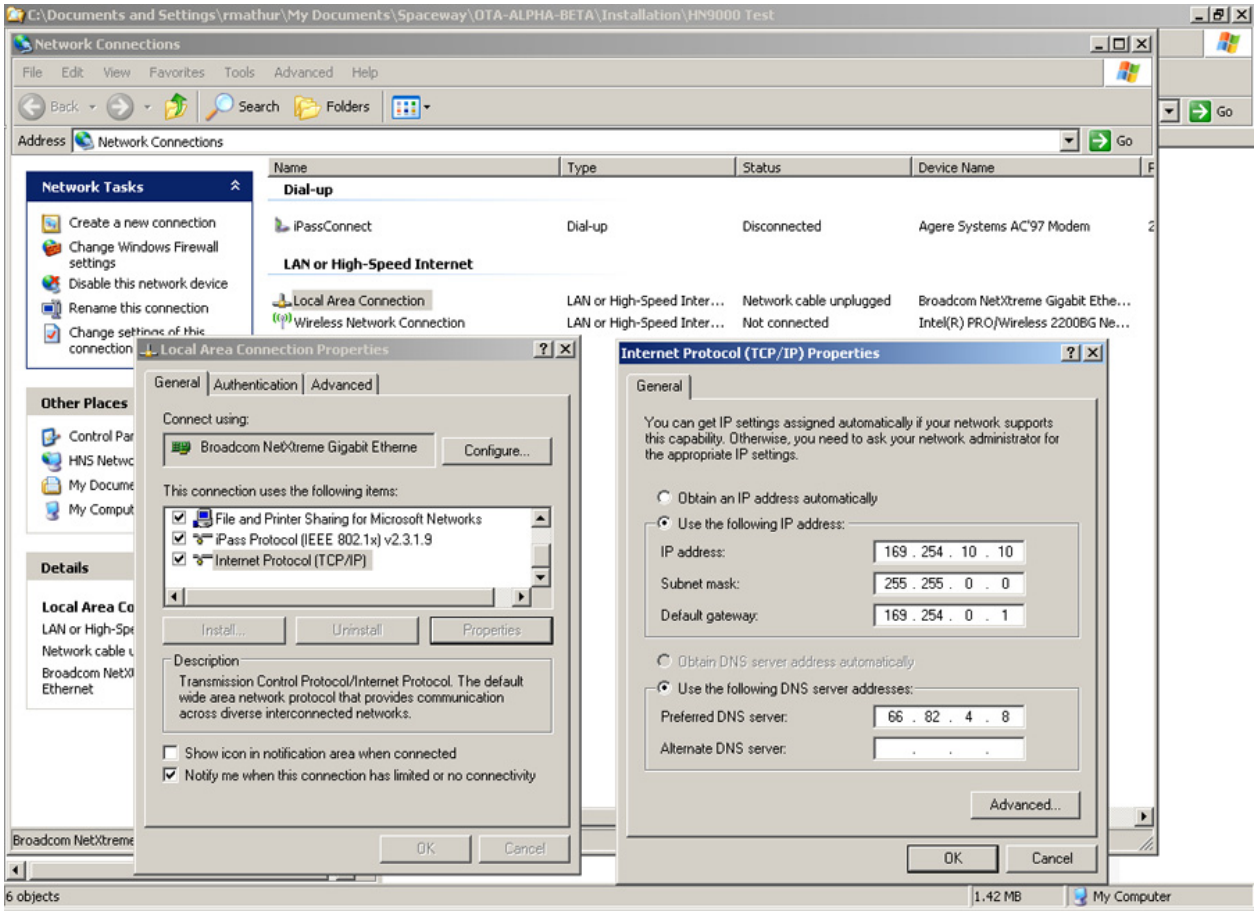

Figure 1. Installer laptop IP address settings for connecting to the HN9X00

d) Save your settings and close all windows. These settings should take effect immediately. If not, reboot the Installer Laptop for these new settings to take effect.
e) Connect the Installer Laptop to the HN9X00 and type in 169.254.0.1 to access the HN9000 LUI.

2. **Enter The FSO CPE Parameters into the HN9X00 LUI (on the Advanced Configuration and Statistics Parameter Entry Page).**

   The "Terminal Site Name" is not the same as the Master Account # or SAN (Site Account Number) by itself. It is the SAN with a prefix. This is a very common error that will cost you time. Refer to the CPE Parameters of the Installation Reference Sheet and enter the TERMINAL_SITE_NAME exactly as shown on the IRS. An example of a Terminal Site Name is HNSDSS100123456. An example of a SAN is DSS100123456.

   Latitude and Longitude: Use your GPS at the site to determine the latitude and longitude for entry into the HN9X00 Parameter Entry Page. Set the display format of your GPS to degrees, and minutes (to three decimal places). Example: 39 deg 22.375 min.

   No other format will be accepted by the HN9X00. Note that if you do not get an accurate measurement of the latitude and longitude at the site, the HN9X00 will not be able to communicate properly with the satellite, and **will not** register.

3. **Set the Transmit Polarization on the radio assembly**

   The HN9X00 LUI Local User Interface (LUI) displays the required uplink polarization setting for the radio assembly, see Figure 2. There is no default factory setting, it can be LHCP or RHCP as supplied.

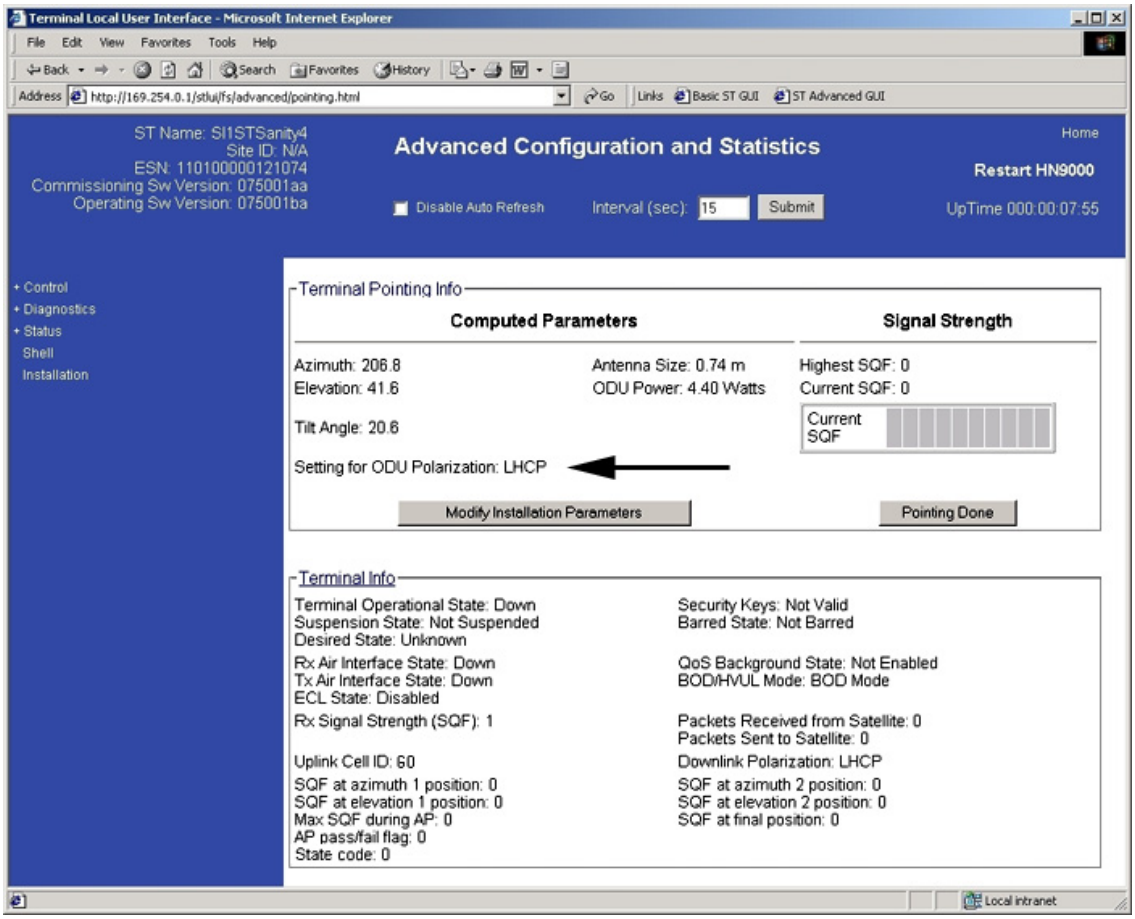

Figure 2. The HN9000 LUI display after submitting the parameters showing the transmit polarization setting should be LHCP

Check the ODU Polarization (also called the Uplink Polarization) on the radio assembly. If it is not the same as required for the site, change it to the required polarization. Since the collars and the Feed Horn have to be removed to change the Transmit Polarization, it is better to do this with the radio assembly on the ground to avoid losing screws. Photos of radio assemblies with LHCP (Left Hand Circular Polarization) and RHCP (Right Hand Circular Polarization) are shown on the next page.

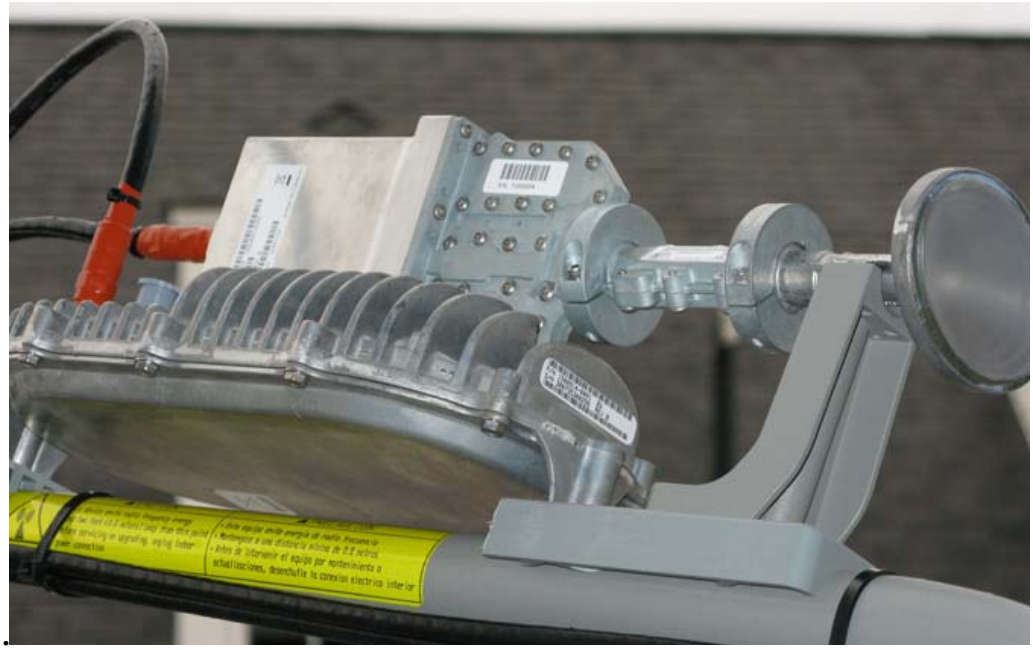

Figure 3. LHCP setting – Polarizer tilted to left when looking from the back of the radio

Also note that the seams of the Feed Horn and Polarization collars are aligned with the seam of the Wave Guide. **Failure to align the collars with the Wave Guide will damage the Wave Guide as the collars are tightened. See FSB 080326_01B for details.**

Figure 4. RHCP setting – Polarizer tilted to the right when looking from the back of the radio

4. **Assemble the 0.74 m antenna <u>on the ground</u> as follows:**

    a) Attach tailpiece to the bracket on the reflector
    b) Attach feed arm to the tailpiece
    c) Attach the radio assembly to the feed arm

    Then install the completed antenna assembly to the mount.

    Note that the antenna must not be moved by grabbing the reflector. It will result in bending the reflector and making it impossible to point correctly. If the AzEL cap is tight, insert the end of a screw driver in the seam of the clasp and use the handle of the screw driver to move the dish assembly left or right as necessary for rough pointing. Once rough pointed tighten the clasp on the mast. <u>The Fine Az Tool built into the antenna should be used for fine Az adjustments</u>

5. **An HN9X00 Antenna Pointing Video** is posted on the Installation Portal, and you can download it if you do not have the Ka Installer CD containing all the Ka Installation Guides and Training.

6. **Cable Length:** There must be at least 25 feet of cable between the IDU and ODU.

7. **Schedule 40 galvanized pipe** is required for pole mount Ka installations in order to reduce the sway of the pole during high winds**.**

8. **Pointing**

    When coarse pointing the Antenna the DAPT displays the highest SQF value reached at any time during the pointing. Try to reach the highest value displayed before starting the Pointing Validation process. The final SQF as read at the DAPT or from the IDU should be a minimum of 145 regardless of where you are in the country. If the SQF is below 145 there is something wrong with the install. 145 is not the target SQF but simply a guide value to give the installer an opportunity to improve the installation during the install.

    A separate Advanced Guide to Ka Antenna Pointing describes the tips to get fast and accurate pointing. A tool similar to the On Site Validation Tool now used with Ku installations will be coming out with in the next few months.

9. **Squinting**

    The Squinter position should be horizontal or vertical using the bubble levels, even when the reflector is skewed.

10. **DAPT Display**

    If the DAPT shows “Find Sys 0”, the HN9000 is currently performing cell selection. Cell selection can take anywhere from 2 to 10 minutes. Resetting the HN9000 during this time will not speed up cell selection – you will just have to start again (so rebooting here will actually slow things down). Also pressing buttons on the DAPT during cell selection <u>will not</u> speed things up.

    Just wait until the DAPT shows “Find Sys Done” and then press button 3 and continue with the installation. If after 10 minutes cell selection has not completed or the DAPT shows “Find Sys Failed” check that the SQF is OK. If SQF is OK, there is most likely a network issue that cannot be resolved by the installer.

11. Weatherproofing for connectors

Figure 5 shows an example of weatherproofing. Make sure the weatherproofing extends from the connector to over both the cable and fitting.

Figure 5. Weather proofing of connectors

12. Change of HN9X00 IP address after registration and commissioning

a) After HN9000 Registration and Commissioning is complete, you will see the screen shown in Figure 6.

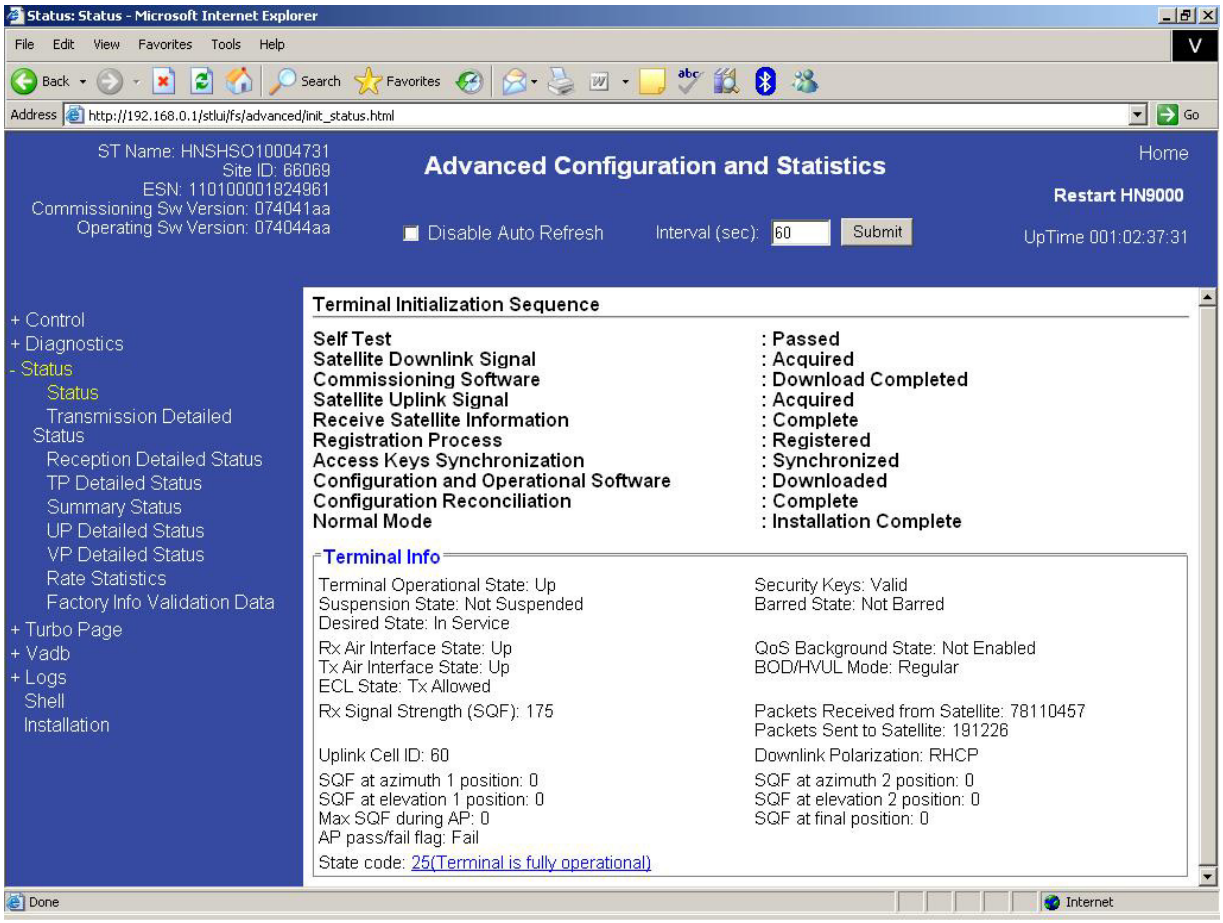

Figure 6. Registration and Commissioning of the HN9000 is complete. The IP address of the HN9000 will have changed from 169.254.0.1 to 192.168.0.1 following "Installation Complete."

b) When the Normal Mode entry in the Terminal Initialization Sequence (Figure 6) shows Installation Complete, the HN9000 will implement an IP address of 192.168.0.1 in addition to 169.254.0.1. The installer should continue to use the address 169.254.0.1.

c) Click on the Home link at the top right hand of the screen to display the Home page with the Activation link.

d) Connect the customer's PC to the HN9000 and make sure that DHCP is enabled. Use the customer's PC for Activation. Do not use the Installer Laptop for Activation, unless the customer's PC is not working. If you use the Installer Laptop for Activation, close your browser on the Motive screen to prevent the Hughes Tools from being downloaded to your PC.

e) Type in 192.168.0.1 or www.systemcontrolcenter.com on the customer's browser to access the HN9000.

f) Wait two minutes from the time Registration is completed before pressing the Activation key. This ensures that all background processing has completed. Failure to way may result in a "Page Can Not Be Displayed" error message. Should this message be displayed, try pressing the Activation Key again. It is in the Activation screens that the customer must enters their SAN and PIN numbers and accepts the Hughes' Terms and Conditions. Activation should be done on the customer's computer.

g) If the customer's PC cannot access the HN9000 LUI, check the following
   - Pop-up blocker is disabled
   - The security setting on the customer's browser is not set to High

h) If the Motive process hangs for more than five minutes, it could be that the Activation process has not been successful. This can happen due to an error on the Activation Server in the NOC. To check if this is the case, open a second browser window, and navigate to the HN9X00 LUI by typing in 192.168.0.1. If you see the "Click Here to activate" link, then it means that the Activation process failed. Close the first browser window where the Motive process has hung, and click on the "Click Here to activate" link again to retry activation, and it should go through.

i) Wait until the Activation process is complete before closing the browser.

j) If you want to access the Internet (i.e. any site besides the HN9000 LUI including the activation screens) via the HN9X00 using the Installer Laptop after activation, enable DHCP on the Installer Laptop, and type in 192.168.0.1 or www.systemcontrolcenter.com on the browser.

Additional Troubleshooting Tips

A. Troubleshooting when an Installer/User Can't Access the LUI

1) If a user reports that www.systemcontrolcenter.com or 192.168.0.1 (on a plan without a public IP address) or the Public IP address on a plan with a Public IP address, the HN9000 may be in the process of a reboot.
2) In such case, in order to assist a user get to the LUI, ask the user to wait a few minutes for the HN9000 to come back up.
3) If that does not satisfy the user, ask the user to try 169.254.0.1. If this address does not work, go to the next step.
4) From the Windows Start menu, select Run. Enter "cmd" in the dialog box and click "OK". At the Windows Prompt ">", type "ipconfig". If the output of this command shows an IP address of "169.254.x.y" (x and y can by anything), then 169.254.0.1 should work – ask the user to try again.
5) If the ipconfig command indicates that "Media is disconnected" there could be a problem with the LAN cable between the PC and the HN9000, an intermediate router issue or simply that the HN9000 is still booting.
6) Note that once the HN9000 is operational (pre-activation) the 192.168.0.1 address will work. Once the HN9000 is operational and activated, the 192.168.0.1 address will still work as long as DHCP is activated in the user's PC. Check by going to Settings->N/W Connections->LAN->General tab (TCPIP)->Properties. Make sure the radio button "Obtain IP automatically" is set.

B. Configuration of Public IP Addresses (only relevant to service plans that support this feature)

1) An installer can always access the HN9000 LUI using the 169.254.0.1 address even on plans with a public IP address.
2) If the user has purchased a service plan that includes a public IP address(s), that address will be displayed at activation by the DSS. Once that screen is acknowledged, the user will be redirected to Motive.
3) Motive will configure the users PC to use the public IP address automatically.
4) Once the HN9000 is configured with a public IP address, the user's PC will not be able to automatically access the internet until the LAN cable between the user's PC and the HN9000 is removed for a couple of seconds and then replaced. This step forces the PC to re-activate the network interface. The same result can be achieved using an ipconfig /release followed by ipconfig /renew from a "cmd" window on the user's PC. From ISL onwards, it is planned that the HN9000 will perform this step for the user without the need for manual intervention.
5) On service plans that include 5 IP addresses, Motive in the user's PC will only assign the first IP offered. If the user wishes to use a specific IP address from the set available, the user will have to do that manually by going to Settings->N/W Connections->LAN->General tab (TCPIP)->Properties.