

WAFA –
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[HX50 Installation guide](#)

1 Overview

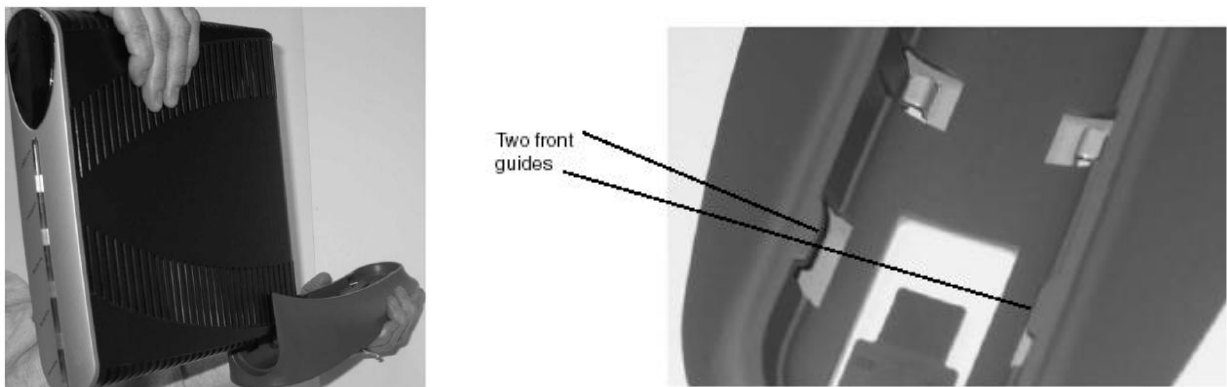
This document assumes prior knowledge of HNSE HN products (HN6000/HN7000).

Please read this entire document before attempting your first HX50 installation. If you are unsure of any part of this procedure contact our technical support team for further advice.

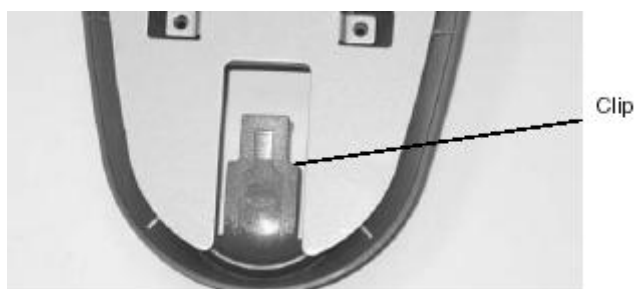
2 Equipment Preparation

- The HX50 is an integrated receive and transmit modem with a LAN interface
- Power specification of these ODU's is 2 watt
- IF cables: RG6 type for transmission and reception, two separate cables are required. It is important that the right quality cable is used in order to achieve the right signal levels depending on the cable length. Please review the table attached in Appendix B at the end of this document.
- The HX50 is supplied with a stand; ensure that this is fitted to the unit. This is important for heat dissipation.
- You need a valid VSAT Parameters form for the site for the site to be commissioned. Ensure you have this before attending site.
- Ensure your antenna is installed and accurately aligned before you start to configure the HX50

Connect the base to the HX50 as shown below:



Slide the base in from the rear of the unit, by using the locating guides.



Ensure the clip is locked in position; the clip can also be de-pressed to remove the base.

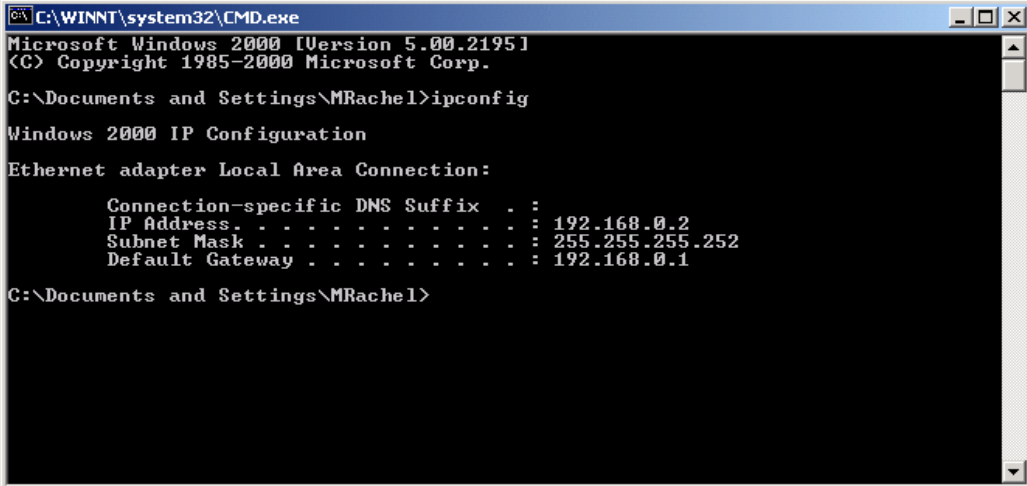
3 HX50 configuration

Do you have a valid VSAT Parameters form?

- Attach the CAT5 cable between your PC and the HX50.

Note: The HX50 auto detects the type of cables you have (Crossover or Straight Cat5)

- The HX50's IP address is preset to 192.168.0.1 If your PC's network card is set for DHCP, the HX50 will automatically allocate you the IP address of 192.168.0.2 (DHCP is also enabled for normal operation on a commissioned system, you will see your own unique IP's after commissioning is complete)
- At your PC, open the command prompt and type "ipconfig" <enter>
- Your window should look like this:



```
C:\WINNT\system32\CMD.exe
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\Documents and Settings\MRachel>ipconfig

Windows 2000 IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . .                : 192.168.0.2
    Subnet Mask . . . . .              : 255.255.255.252
    Default Gateway . . . . .          : 192.168.0.1

C:\Documents and Settings\MRachel>
```

3.1 SBC File upload

Note: If you do not have to upload a SBC-LowBand.cfg file to the satellite router, skip this section and go to page 6 of Commissioning the HX50. WFA will let you know if an SBC.cfg file is needed and send with RPR if needed.

- Open a browser on the installer laptop.
- Type <http://192.168.0.1/fs/registration/setup.html> in the address bar and press **ENTER**. If an alternate IP address was assigned to the satellite router at the HX system gateway, enter that IP address instead. The Broadband Satellite Setup screen appears as shown in Figure 6.
- Click “Config File Upload”.

Note: Do not click Zip Code File Upload; this link is used to update the ZIP code table in the satellite router.

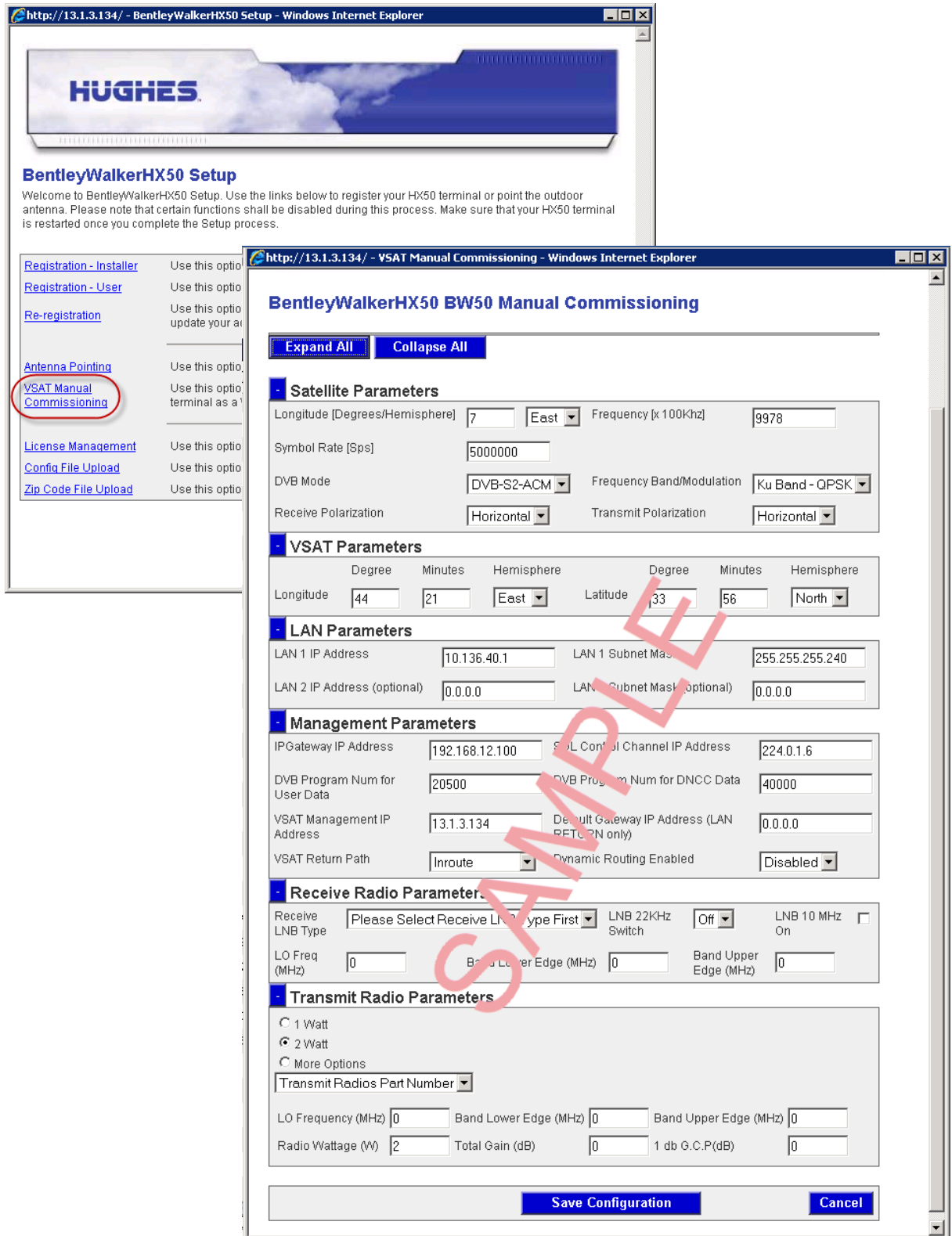
- On the Configuration File Upload screen, click Browse and navigate to the location on the installer PC where the sbc.cfg file is saved.

Note: Rename the appropriate file to “SBC.cfg”

- Select the file and click Open.
- Click Upload.
- Click Close to return to the Setup screen.

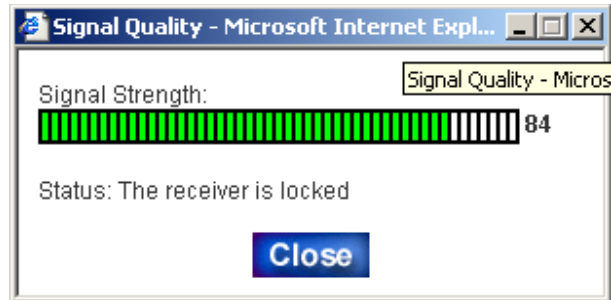
3.2 Manual Commissioning

- Next open Internet Explorer and browse to <http://192.168.0.1/fs/registration/setup.html> and select the Manual Commissioning.



- This window allows you to change the Satellite parameters, VSAT LATS & LONGS, IP/LAN parameters & network management parameters. All the information required to complete this stage is on your site specific VSAT Parameters form, with the exception the VSAT LATS & LONGS (use your GPS).

- Double check all parameters before selecting *Save Configuration*, The HX50 will reset.
- When the unit restarts, browse back to <http://192.168.0.1/fs/registration/setup.html>
- Then select Antenna Pointing > display Signal Strength (The HX50 RX LED should now be lit)



- Depending on your location, you should have a signal strength of between 80 > 95

Note: If no signal is displayed (29 or less) check cabling and the satellite parameters are enter correctly into the HX50 (check with your VSAT Parameters).

If your signal is a solid 30, it possible that your polarization is incorrect.

If your signal is 31 and above you are locked onto the correct satellite but you need to refine the polarization and/or pointing.

4 Ranging

- When the HX50 locks onto the RX carrier the TX will auto-enable, it will automatically range in on its allocated inroute; the speed of the inroute will vary from site to site depending on the sites data requirements/level of service.
- You can now check the TX power level at the remote site without the intervention of the NOC operator (they will check this anyway but it's just for your own information and a trouble shooting aid)
 - Browse to <http://192.168.0.1/fs/advanced/advanced.html>
 - Then select Transmitter then Ranging Stats

The example below shows an EsNo of 40 on a 256k 1/2 Rate code on the inroute, the threshold is 70, a minimum level would be considered as 80 on the fastest inroute speed being used by a particular site. Check the EsNo of the fastest successful ranged rate, to ensure a reliable service (check pointing/skew if marginal), consult Wafa for further advice if in doubt regarding antenna size and power levels.

HX50 System Control Center - Windows Internet Explorer
 http://13.100.2.135/fs/advanced/advanced.html

S/N: 1892740
 Main bin: [8.2.0.15]
 Fallback bin: [5.8.0.35_PID]

Advanced Configuration and Statistics

Enable Auto Refresh: Interval (sec): Startup Timestamp: MON JAN 03 2011 12:20:28

Advanced Menu

- + General
- + Outroute
- Transmitter
 - | General Stats
 - | Debug Stats
 - | TxMonitor
 - | ACP Stats
 - | Freq Offsets
 - | **Ranging Stats**
 - | Power Save
 - | Allowed Inroutes
 - | Hdr Compr
 - | Inrt Cfg
 - | OD Streaming
 - | CLT Stats
 - + AIS
 - + ACSP
 - + CBR - More
 - + -- More --
- + Diagnostics
- + LAN/WAN
- + IP Routing
- + IP Stack/Services
- + Firewall
- + PEP
- + Turbopage
- + Serial Protocols
- + Logs
- + OS Stats
- + VADB
- + Installation

Ranging Stats

Network Time: TUE JAN 04 11:53:31 2011

State: Not Currently Ranging

[Previous Ranging Info \[1\]](#)
[Previous Ranging Info \[2\]](#)
[Previous Ranging Info \[3\]](#)
[Previous Ranging Info \[4\]](#)
[Previous Ranging Info \[5\]](#)

| Successful Rates | Unsuccessful Rates | Failed Rates |
|---------------------|--------------------|--------------|
| 256k Turbo Code 1/2 | | |
| 256k Turbo Code 2/3 | | |
| 256k Turbo Code 4/5 | | |

NOC-Sat Delay (AnE)..... 2529580 Remote-Sat Delay (EnD).... 2460666
 Remote Distance To Sat (D)... 980 Sp. Interval..... 3600000
 Ranging ID..... 16 Network Ranged On (L:H:F). 007:E:1247
 NOC ID..... 0 Ranged In Bootstrap Mode.. 0
 Ranging Record Version.....

Rate..... 256k Turbo Code 1/2

| | |
|---------------------------------|-------------------------------|
| Available..... 1 | Ranging Reason..... 6 |
| Ranging Sessions Rejected.... 0 | Minimum EsNo..... 29 |
| Target EsNo..... 39 | SwitchUp EsNo..... 50 |
| Initial Power Setting..... 0 | Final Power Setting..... 173 |
| Initial Received EsNo..... 122 | Final Received EsNo..... 40 |
| Initial Received C/No..... 663 | Final Received C/No..... 581 |
| Outroute SQF..... 82 | Outroute C/No..... 769 |
| Initial Timing Offset..... 816 | Final Timing Offset..... 467 |
| Power Control Type..... PWM | Estimated Rate..... No |
| Coding Type..... BCH | Inroute Group ID Ranged.... 1 |

Timestamp..... AUG 09 09:02:26 (GMT) 2010

5 Verifying software download.

- The HX50 automatically downloads its software from the NOC, you can check its status form the software download monitor at <http://192.168.0.1>
- Then select **System Status**, look at the software download window for the current status.
- You should see various messages including:
 - SDL Initialization complete. Awaiting first heartbeat msg.
 - Received first heartbeat message.
 - Received File/Group message. Reconciling files...
 - MM loading...
 - Transferring MM to flash!
 - All files downloaded. Notifying CFM.

Note: It may take up to 10 minutes before the first heartbeat message is received, other messages may also appear i.e. IP delivered, WC delivered etc.

- Upon successful download, the HX50 automatically resets to reflect the new software. The new configuration takes effect. After reset, the HX50 goes through the boot-up sequence again.
- In the **System Status** you should see the messages
 - SDL Initialization complete. Awaiting first heartbeat msg.
 - All files downloaded. No pending changes.

Note: The HX50 power Led will also stop flashing when the software download is complete (a flashing power Led indicates the unit is operating on is factory fallback software)

- If the software download does not progress, check the following in the manual commissioning window:
 - SDL Control Channel Multicast Address, value entered and used are: 224.0.1.6
 - IP Gateway IP Address, value entered and used are the one in your VSAT PARAMETERS for this “site specific” parameter.
 - Also check the NOC have the correct serial number. Contact Wafa at this point

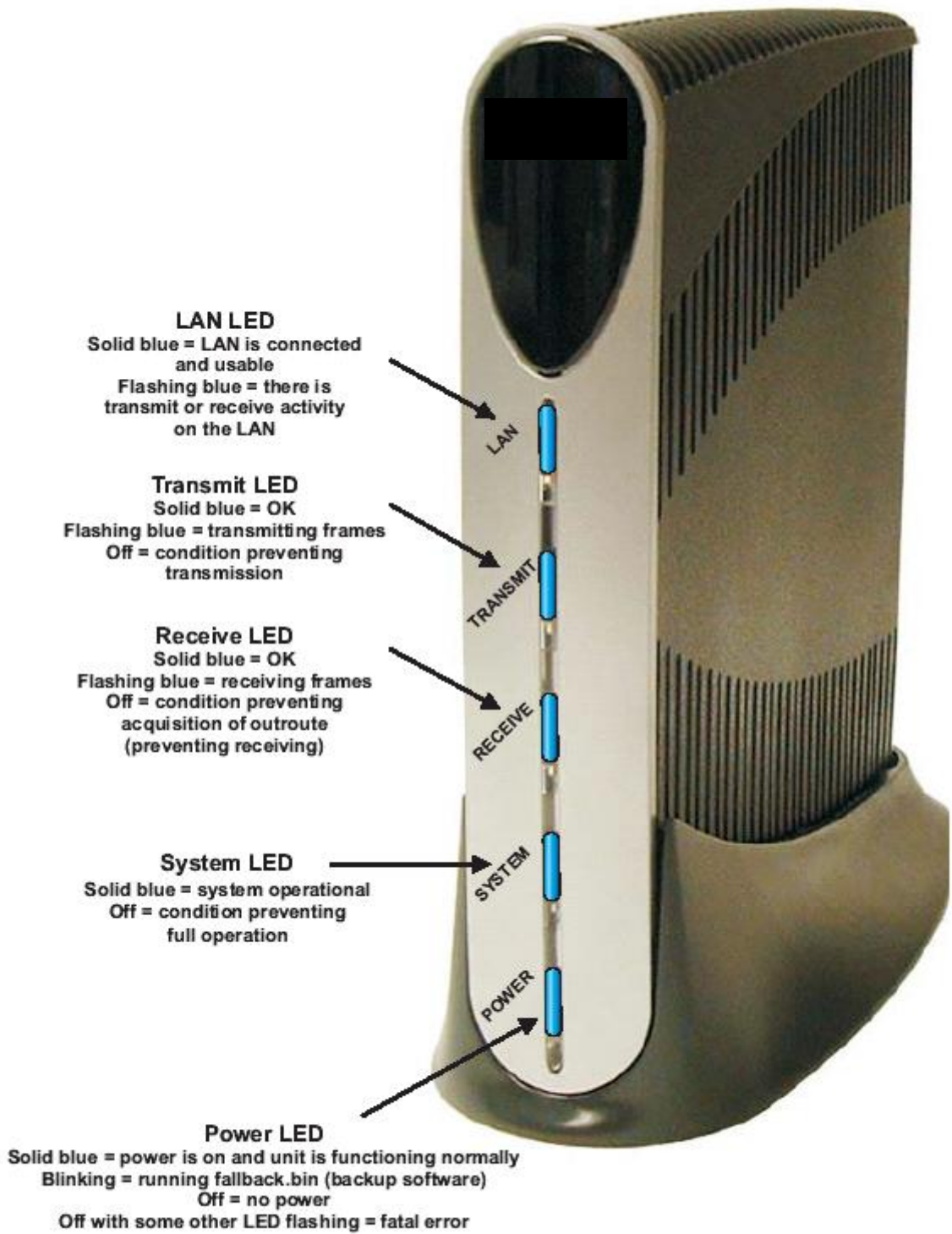
6 Verifying correct HX50 operation.

- Browse to <http://192.168.0.1> and check the system status light is green in the browser, check the following:
 - Signal quality factor
 - Frames received
 - Receive Status operational
 - Transmit Status available

Power cycle reboot.

1. Unplug the power supply to the HX50 (at least for 30 seconds)
2. Plug the power supply back into the HX50 (wait for the **Power** and **RX** lights to flash back and forth)
3. Confirm that the **System** light on HX50 remain steady, and **LAN** light flashes as the HX50 boots up completely (you will also see the **LAN** led flash when your are passing traffic)

7 HX50 Status LED's



8 Appendix a

ACRONYMS

| | |
|--------------|---|
| GWH: | Gateway Host |
| IDU: | Indoor Unit |
| IFL: | Inter Facility Link (cable between IDU and ODU) |
| IPGW: | IP Gateway |
| IRU: | Indoor Receive Unit |
| ITU: | Indoor Transmit Unit |
| LAN: | Local Area Network |
| ODU: | Outdoor Unit |
| RFU: | Radio Frequency unit (same as ODU) |
| SDL: | Software Download |
| VSAT: | Very Small Aperture Terminal |

9 Appendix B

SAMPLE RG6 CABLE LENGTHS

| Vendor Part Number | Description | DC Conductor Resistance | DC Shield Resistance | DC Limit (meters) | TX Limit (meters) | RX Limit (meters) | Overall (meters) |
|--------------------|--|-------------------------|----------------------|-------------------|-------------------|-------------------|------------------|
| 5729 | RG6 w/ Solid Copper Center Conductor | 6.40 | 10.50 | 92 | 112 | 145 | 92.00 |
| 5730 | RG6 w/ Plated Steel Center Conductor | 32.00 | 10.50 | 36 | 113 | 145 | 36 |
| 5781 | RG6 w/ Solid Copper Center Conductor & Quad Shield | 6.50 | 5.30 | 133 | 111 | 134 | 111 |
| 5916 | RG11 w/ Plated Steel Center Conductor | 14.29 | 4.80 | 82 | 180 | 189 | 82 |
| Special | RG11 w/ Solid Copper Center Conductor | 3.00 | 3.70 | 234 | 180 | 189 | 180 |
| LDF4-75A | 1/2" Heliac Cable | 1.15 | 0.58 | 908 | 370 | 417 | 370 |
| 2229V | RG6 w/ Solid Copper Center Conductor & Quad Shield | 6.50 | 5.30 | 133 | 89 | 118 | 89 |