Programming Changes for the August 2009 SatMex5 Beam 1 to SatMex5 Beam 2 Satellite Frequency Move for Training Gear

Overview
We need to move the training antenna from one set of frequencies on the northern Ku-band HiSeasNet satellite (SatMex5b1) to a set of frequencies on the more southern Ku-band HiSeasNet satellite (SatMex5b2). We also need to change the shore-to-ship data rate since the satellite carriers are not the same data rates. This change requires modification of the shipboard antenna tracking parameters and the Comtech modem frequencies and data rates. Additionally, changes need to be made at the earth station to adjust the receive path for the new inbound signals.

Assuming the ship is still online, the changes on the ship need to be made roughly simultaneously with the changes in San Diego, as we will lose the satellite telephone/data communications during the changeover. We will likely make the changes at the earth station first at the designated time. These changes will knock the ship offline, but the ship modem should stay locked on the old carrier until changes are made on the ship. The ship can make the changes any time before or after the scheduled time, but will only be working online when both shore and ship are both using the same settings. The system should be back online when both earth station and ship changes are complete. Be sure to have an Inmarsat/Iridium phone available if you have any trouble. Steve Foley’s phone number is 858-822-3356. If you are still having trouble 1 hour after the designated time and have not been in touch with Steve, try Brian Battistuz at 858-776-0083.

To navigate the Comtech modem's menus, press the back key to go to the previous menu. The enter key should go into the selected menu. The screen with the serial number on it is the first screen. The arrow keys should move the cursor until it is over the desired menu, number, or option. For more information about changing Comtech or DAC settings, see the respective manuals.

DAC Controller Changes
Your DAC-2202 controller should be looking at an L-band signal that is visible on both transceivers. We have found the best signals on the SatMex5b2 transceiver are at 1358 MHz and 1378 MHz. These are SCPC carriers, so set the frequency FEC="SCPC" then set the IF correctly (0 KHz). Use whichever frequency works best.

Comtech Satellite Modem and Codan Transceiver Changes
1. Turn the modem's transmit signal off before we change it (CONFIG / TX / ON/OFF to “OFF”)
   Note: it should have said “RTI” (or possibly “ON”) before the change.
2. Set the modem's new receive frequency (CONFIG / RX / FREQ to “1386.065” MHz)
   Note: it should have said “1014.6891” MHz before the change.
3. Set the modem's new receive data rate (CONFIG / RX / DATA to “256.000” kbps)
   note: it should have said “192.000” kbps before the change.
4 Confirm the modem's receive error correction (CONFIG / RX / FEC / TURBO is “3/4 Q”)
   If it wasn’t set to “3/4 QPSK”, please set it to “3/4 QPSK”.
5. Set the modem’s new transmit frequency (CONFIG / TX / FREQ to “1013.725”)
   Note: it should have said 1385.4909 MHz before the change.
6. Verify the modem’s transmit data rate (CONFIG / TX / DATA at “64.000” kbps).
   If it wasn’t set to “64.000”, please set it to “64.000”.
7. Boost the transmit power level a little as the new beam is less powerful (CONFIG / TX / PWR / MANUAL up 2 dB)
   Since the level is measured in negative dB, the power should be 2 dB less negative (ie set to –9 dB up from –11 dB)

***Double-check that all of the preceding parameters have been set correctly, and that the modem regains lock before proceeding***

7. Turn on the modem's transmit signal (CONFIG / TX / ON/OFF to “RTI”)
8. Confirm the AGC readings (before and after) from the DAC and Eb/No readings (before and after if possible) from the Comtech to the HiSeasNet earth station staff (hiseasnet@ucsd.edu) (MONIT / RX-PARMS / RX:EbNo = XX.X dB).
   Additional status values (az/el, lat/lon, threshold, AGC, etc.) would be most appreciated. Thanks!