AN/TSC-167B (V) SATCOM Transportable Terminal (STT)
Quick Reference Guide

Ref Document: M100514 Rev. C

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STT Start-up Sequence

Determine PRIME Power Source

Note: If Generator Power Is the PRIME source of power continue w/ generator sequence. If not, skip to Main Power - Up.

Generator

"Perform walk-around visual check. (Oil, Fuel, Engine Coolant Leaks)
Energize generator or connect to commercial power
Switch Generator Main Line Breaker to the "ON" position.

Note: This Line breaker Is a 35A breaker switch located on the generator control panel.

Switch power for Generator Gauges to the 'ON' position and check gauges for proper operating levels (Water Temperature -160 to 220 "F@ operating temp. Oil Pressure - approx 50 psi. and Battery Charging Volts -12 to

14VDC) Perform walk-around visual check. (Oil. Fuel, Engine Coolant Leaks)

Main Power - Up

Energize breakers L1, L2, Inv. 1 & 2. Battery Charger and ECU

Note: These breakers are located in the Main Circuit panel on the driver side of the electronic equipment housing.

HPA

"Verify that the High Power Amplifier 'Power On' switch Is in the 'ON' position.

Note: HPA located on the antenna boom.

Electronic Equipment Rack (A2)

Switch the DC to Inverter Power Switch to the 'ON' position. (Battery Disconnect) (A2A8)

Switch the AC Output of the DC Inverter (A2A10) on by pressing the AC OUTPUT switch

Note: This breaker is located on right side of unit.
Note: Verify Inverters display "STANDBY" message.

Start the DC Inverter by pressing the On/Off button

Note: This button is located on the left side of Inverter

Electronic Equipment Rack (A1)

Switch the AC Output of the DC Inverter (A1A7) on by pressing the AC OUTPUT switch.

Note: This breaker Is located on right side of unit.

Note: Verify Inverters display "STANDBY" message.

Start the DC Inverter by pressing the On/Off button.

Note: This button Is located on the left side of Inverter.

Electronic Equipment Rack (A2)

Switch the breaker on front of the Battery Charger (A2A9) to the 'ON' position.

Switch the breaker for the AC Distribution Surge Arrestor (A2A8) to the 'ON' position

Electronic Equipment Rack (A1)

Switch the breaker for the AC Distribution Surge Arrestor (A1A6) to the 'ON" position.

Switch the breaker for the PDU (Power Drive Unit) (A1A3) to the 'ON' position.

Switch the breaker tor the ACU (Antenna Control Unit) (A1A2) to the 'ON' position.

Press the On/OFF switch for the Spectrum Analyzer (A1A1) and power ON.

STT Equipment Pre-sets

Navigate the following Menus/Screens and enter the settings described below:

Spectrum Analyzer (A1A1)

Center Frequency (CF) = Receive Beacon Frequency

CF-- Beacon Frequency - LNB LO Frequency (e.g., 12.501 MHz - 11250 MHz =1249 MHz)

Span = 20 MHz./Reference Level -50 dBm./ Res Bandwidth- 1OOKhz

Connect Spectrum Analyzer to Rx Sample port of the L-Band Patch Panel (A1A3)

Antenna Control Unit (ACU) (A1A2)

Setup Screen RF, set the LO Frequency of the LNB as per the L-8and/RF conversion table. Frequency Screen FREQUENCY, set the Beacon Frequency In GHz (reference cut sheet).

CODEM (A2A5A1)

Set: the following parameters:

Mode = Fiber

Input = NRZ

Data Rate = Data Rate [kbs] (reference cut sheet)

Clock Source = Fiber

Test Pattern = Zeros

Test Mode = Off

Loop = Off

FDMA Modem (A2A6)

Network Specs: Closed Net (Mod/DeMod)

Strap Codes: 026 (Mod/DeMod)

Modulator menu: IF

Frequency: Transmit frequency calculated from transmission plan:

FORMULA: Modulator L-band = U/L frequency - BUC frequency.

Note: Value must be between 950-1450

Power Uplink Power -25 dBm: Carrier   Off;   Spectrum: Normal;
Modulation: (From transmission plan).: Spectral   Mask: Intelsat 0.35

Modulator Menu; DATA

Date Rate (bps): Per satellite transmission plan: Symb Rate (bps): Auto
calculated; Inner FEC: Per satellite transmission plan;

Diff Encoding: If FEC = TPC, then Diff Encoding = Disabled, if FEC =
other, then Diff Encoding = Enabled: Scrambler If FEC = TPC, then
Scrambler = TPC, If FEC other, then Scrambler = V.35 (IESS);
Scrambler Ctrl: Enabled; Sat Framing: None; Terr Framing: Nona; Date
Polarity: None; Reed Solomon: Per satellite transmission plan.

Demodulator Menu: IF

Frequency: Receive frequency calculated from transmission plan.
FORMULA: Demodulator L-band = D/L Frequency-LO Frequency.

Note: Value must be between 950 to 1700 MHz

Spectrum: Normal: Modulation: From transmission plan: Spectral mask:
Intelsal 0.35; Sweep range: +/-25 kHz; Sweep Delay: 1.0 sec;
Reacq Range: +/-500 Hz; Adj Carrier Pwr: Normal;
Fast Acquisition: Disabled; Input Threshold: -71 dBm;
EB/NO Alarm: 1 dB threshold.

Demodulator Menu: DATA

Date Rate (bps): Per satellite transmission plan
Symb Rate (bps): Auto calculated
Inner FEC: per satellite transmission plan
DM Encoding: If FEC = TPC, then Diff Encoding = Disabled,
if FEC = other, then Diff Encoding ' Enabled
Scrambler If FEC = TPC, then Scrambler = TPC,
if FEC = other, then Scrambler = V.35 (IESS)
Scrambler Ctrl: Enabled
Sat Framing: None

Terrestrial Framing: None
Data Polarity; None
Reed Solomon: Per satellite transmission plan.

Interface Menu:

TX Setup: Terr Interlace: RS-422 serial: Tx clk scte: Kte: Tx clk pol: normal: Sct clk arc: internal Drop and Insert: (Skip)

RX Setup: Terr Interface: RS-422 serial; Buff size: 32msecs; Buffer clk arc: scte; Buffer clock pol: normal.

General: Ext clk src: none: Ext freq (MHz): 10 MHz: Ref freq src: High Stability Ref freq(MH2): 10MHz

TX Async Mode: TX es enhanced: disabled

RX Async Mode,: RX es enhanced: disabled

Test Menu:
TX test pattern: none
RX test pattern: none
Pattern Sync: yes
Tst Pat Err Cnt: 0
TstPatBER:0;
Restart Tst Patt: (skip)
Carrier cw during acquisition (otherwise, Normal)

TDMA Modem (A2A1)

Using a Cisco cable (Blue) connect serial connection end to the serial port of a PC, connect RJ-45 connection to console interface, "LINKWAY CONSOLE PORT".

Open a Hyper Terminal session.

Note: !f MS Window [Hyper Terminal] is found by navigating MS Windows Start, Programs, Accessories, Communications, Hyper Terminal.

MS Windows (Conneclion Description); Enter name in "NAME" field. Click the "OK" button.

MS Windows [Connect To]: Select "COM 1", for "Connect To" field. Click the "OK' button.

MS Windows [COM 1 Properties]: Select Bits per second: 9600. Data Bits: 8: Parity None; Stop Bit 1: Flow control: Hardware. Click the "OK" button.

Upon Start of Hyper Terminal session:

Press the <ENTER> key several times to ensure user logon and communication with the Linkway modem.

MS Window [Hyper Terminal] Select "Transfer" from Menu Bar.

Click "Send Text File" from pull down menu.

MS Window [Send Text File]: Select "All flies (*.*)' in the "Files of type" pull down menu.

Navigate to stored location of the target boot file.
Select the file. Click the 'Open" Button.

Verify the Boot file RAM write commands appear on the Hyper Terminal window.

Verify matching checksums (actual and expected).

MS Window [hyper Terminal]: Type "**hw**" at prompt. Press the <ENTER> key.

Verify the Linkway TDMA Modem reboots and loads the boot files Into the modem.

AES Router (A2A3)

For all configuration and troubleshooting issues on the AES router. See the local network engineer.

Acquire the Satellite

Obtain boot files and cut sheets from the NOC.

Allow a few minutes for the ACU to complete initialization process.

Enter GUI menu Setup/Cal/GPS, verify GPS Status Quality value +8,

Verify tilt is less than 5 degrees.

On the ACU press "DEPLOY", then "Execute". Select Track (Track Mode to GEO), then enter the satellite LON and enter polarization based on receive setting on cut sheet.

Verify lock on satellite.

Load the boot files onto the TDMA (Linkway)

Note: See reverse side for Linkway loading procedures.

Set the TDMA. to a CW carrier and monitor It on the Tx Mon Port.

Note: Command the TDMA as follows: CW_-freq_(freq # L-band)_-power_-20

Note: Make sure the HPA is in Standby and RF off to start.

Contact the Satellite NOC.

Note: The NOC will require Name, Organization and Carrier ID number.

Note: Request that the unmodulated CW carrier be brought up to access the satellite. Upon request granted by NOC, set the Mode to "XMIT" and the RF to "ON" in the MTR1 HPA Controller menu.

Note: The NOC may request that the STT's carrier be peaked and polarization be rotated. To do this press the [ESC] button on the ACU. Press the [More] until the "Jog" submenu appears. Press [jog] and then [Execute] in the lower right portion of the Display you will see [CW] & [CCW], press either button to select rotation direction then select to move the polarization 1 degree.

At this time follow the NOC's Instructions.

Note: When the NOC is satisfied with the adjustments the NOC should direct you to drop the carrier.

Note: There are separate procedures for accessing the satellite with e TDMA and an FDMA modem. If the STT is a JNN trailer with both TDMA and FDMA links, the peak and polling Is only required using only one link (TDMA or FDMA). The FDMA link must still be power balanced on the satellite.

Drop the unmodulated carrier and begin transmitting the modulated carrier.

Note: At this Hyper Terminal prompt type "**hw**" into the TDMA. This performs a Hardware reset forcing the carrier to modulate

Note: Using the Spectrum Monitor verify the modem reboots and begins transmitting the normal modulated carrier.

Set the Antenna Control Unit to track   the satellite.

Note: In the ACU scroll menu to Track mode. Select [Track]

Note: Select the parameter [Position Track], Select [Execute]

STT Shutdown Procedure

At the HPA Controller set the HPA Mode to "Standby" and the RF to "Off".

Note: HPA tube temperature should be less than 35 degrees C for safe system shutdown. (Desert climates may not permit)

Stow the antenna.

Note: This Is done by navigating the main menu and pressing the button under "MORE- until "Stow" appears press the button under "Stow", and then the button under -Execute". The confirmation message "Accepted" should appear momentarily.

Note: After the antenna a properly Stowed in the cradle end the Antenna Control Unit display says "STOWED".

Begin System Shutdown

Electronic Equipment Rack (A1)

Press the On/OFF switch for the Spectrum Analyzer and power 'OFF' (A1A1)

Switch the breaker for the ACU (Antenna Control Unit) to the 'OFF position (A1A2)

Switch the breaker far the PDU (Power Drive Unit) to the 'OFF position (A1A3)

Switch the breaker for the AC Distribution (Surge Arrestor) to the 'OFF position (A1A6)

Turn off Inverter by first pressing the On/Off button on the left side, and then the AC Output Breaker on the right (A1A7)

Electronic Equipment Rack (A2)

Switch the breaker for the Battery Charger to the 'OFF position (A2A9)

Switch the breaker for the AC Distribution (Surge Arrester) to the 'OFF' position (A2A8)

Turn off Inverter by first pressing the On/Off button on the left side, and then the AC Output Breaker on the right (A2A10)

Switch the DC to Inverter Switch to the 'OFF position. (Battery Disconnect) (A2A9)

Main Power-Down

Battery Charger. Inverter 2. Inverter 1, L2 & L1 main breakers in the 'OFF' position.

Switch the ECU breaker to the 'OFF position.

Generator

Switch the 35A Line Breaker, fuel gauge and power for Generator Gauges to the 'OFF position.

Turn off the Generator.

Note Do this by pressing the lower portion of the Start/Stop Switch on the generator panel.

RF to L-Band Frequency Conversion Table.

Input D/L Frequency Range (GHz) to LNB	Output D/L Frequency Range (MHZ) from LNB	Translation Frequency (LO) (MHZ)
10.98-11.70	950-1450	10000
11.70-12.20	950-1450	10750
12.20-12.70	950-1450	11250
12.25-12.75	950-1700	11300
Input U/L Frequency Range (MHZ) to Upconverter	Output U/L Frequency Range (GHz) out of TDMA	Translation Frequency (LO) (MHZ)
950-1450	14.0-14.5	13050