

TEGA Landed Checkout I

Objectives:

This procedure checks that the instrument is still in good operational condition post landing. It will also get a background measurement at the end.

Block Name: tega_checkout.vml

Version #: R30

Configuration: Landed Operations: Surface Phase Characterization

Assumptions: TEGA can not be turned on below -50C

Gas(es) used: Calibration and Carrier Gas Tanks still sealed. Manifold will be pressurized with Mars ATM during valve checkout.

Filaments used: 0

SW Version (386): V513

SW Version (EGA): V321

Sweep and hop mode version(s): V112

Super modes and Sweep modes used: SM 1 & SM 2, Sweep Modes 37 & 38

Sequences used: 1B (& 2B), 3B (& 4B), 1A, 32A(&33A), 34A(&35A)

- 1) Turn TEGA ON (tega_power_on)
 - a) Add preheat pause as pass in duration determined by thermal environment
- 2) Turn EGA ON, restoring modes from EEPROM 0 (calls tega_ega_on, Restore modes Side 0)
 - a) EGA Transmit time 5 sec. (done within tega_ega_on)
 - b) Run Sweep Mode 37 dark. (done within tega_ega_on)
- 3) Change model power to Ramp1 for Cal Tank and Manifold Heater
- 4) Start Calibration Heater regulation at 20C
- 5) Start TA Manifold Heater regulation at 20C
- 6) Call tega_ega_prep (Filament 0)
 - a) Jplate 0 = -110V, Jplate 1= -92V

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- b) Filament current low current, low energy (0,0,0)
 - c) Start SM 1
 - d) MV ON @ 2800V
 - e) Ion Pump ON
 - f) Change filament current to low current, high energy (0,0,3)
 - g) Pause 2 minutes
 - h) Stop SM 1
- 7) Stop Manifold Heater regulation (~ 3 seconds has elapsed)
- 8) Call tega_ega_calibration_scans, Calibration Set 2
- a) MV @ 3200V
- 9) Turn Calibration Heater regulation OFF (~ 4 minutes have elapsed)
- 10) Call tega_ega_gain
- a) Start SM 2
 - b) Pause 1 minute
 - c) Set MV 2600 – 3400V (1 minute per voltage)
 - d) Remain at 3200V
 - e) Stop SM 2
 - f) Run Sweep 38
- 11) Start SM 2
- 12) HEATER TEST
- a) Plumbing 1 – ON Wait 5 secs
 - b) Plumbing 1 – OFF

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- c) Plumbing 2 – ON Wait 5 secs
- d) Plumbing 2 – OFF
- e) EGA Manifold – ON Wait 5 secs
- f) EGA Manifold – OFF
- g) EGA Plumbing – ON Wait 5 secs
- h) EGA Plumbing – OFF
- i) EGA Warmup – ON Wait 5 secs
- j) EGA Warmup - OFF
- k) Transfer Tube – ON Wait 5 secs
- l) Transfer Tube – OFF
- m) Wedge Heater – ON Wait 5 secs
- n) Wedge Heater – OFF

13) Call tega_select_oven

14) Setup for TA test

- a) Turn on engineering readings for TA test
- b) open door time to 10 sec
- c) close oven time to 10 sec
- d) LED min diff to -1
- e) Poke registers to setup oven, shield, and t-heater
- f) Change power model to Ramp2

15) Select Oven 0

- a) Open Door – 10 secs (This has a 30 sec timeout for GV_TEGA_TA_DONE)
- b) Open inlet – wait 5 sec

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- c) Close inlet –
 - d) Open Outlet – wait 5 sec
 - e) Close Outlet –
 - f) Start Oven fill – Shake for 15 secs (verifies LED operational)
 - i) Will not shake/LED Diff Parameters set to prevent
 - g) Close Oven – 10 secs (This has a 30 sec timeout for GV_TEGA_TA_DONE)
 - h) Poke registers for oven, shield, t-heater (allow enough time to get a linear temperature rise)
 - i) Turn off power to oven, shield, t-heater for one minute.
- 16) Repeat 23a-23i through Oven 7
- 17) Bypass OPEN – Wait 5 secs
- 18) ass CLOSED –
- a) Issue FPGA Register Dump
- 19) Carrier Valve OPEN – wait 3 sec
- a) Issue FPGA Register Dump
- 20) Carrier Valve CLOSE –
- a) Issue FPGA Register Dump
- 21) Calibration Valve OPEN – wait 3 secs
- a) Issue FPGA Register Dump
- 22) Calibration Valve CLOSE –
- a) Issue FPGA Register Dump
- 23) FPGA Dump to confirm valve states
- 24) Multiplier Voltage to 2800V

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25) Pause 1 minute

26) Stop SM 2

27) Run Sweep 38 (2800) and wait for it to finish

28) EGA OFF

29) TEGA OFF