WORK ORDER
1161916

AWOPRNTA Ver 1.84 Printed: 05/07/2010 11:40 2 Attachments

Haz Ops: N

Work Type OC **Target Completion Date:** 21-APR-2010 **W/O Pri:** 5 **Eq Crit:**

Status: WORKCO 26-APR-10 18:24 **PWO:** J005712001

Reported Dt: 16-DEC-2009 **Reported By:** Schipfer Eric **Phone:** 321/861-1872

OPR: LPHE **ROR:** NORMANCA Norman Charlie A **Phone:** 321/861-7653

Mission: STS-132 **Event:** **Cat:** 2

Frequency: N

Location: 14957 KSC-WIDE Launch Processing System

Equipment:

Reference 1: **Reference 2:**

TITLE/WORK DETAILS **JOBPLAN:** 19307 **Rev:** 042

Work Order Description: FR4 & RPS to PAD-A FOTE Line Verifications for STS-132

The purpose of this Job Plan is to provide 'Site Specific' Work Instructions to perform Line Verifications of FOTE circuits between any Firing Room, RPS in the LCC and any MLP at Pad-A. In this case, the sites are: FR4 and RPS, PAD-A/MLP-2, OV-104 for STS-132

Jobplan Description: **FR-X & RPS TO PAD-A FOTE LINE VERIFICATION**

LABOR: **LEAD SHOP:** CCMT

Labor Code:	Operation Step:
RPMT	
CCOP	
CCMT	

Parent Work Order
1161914

CONSTRAINTS: **NO ACTIVE CONSTRAINTS**

CONSTRAINTS LIST:

Constraining Work Order: 1161916 Active? N
Rationale: No constraint, test support only
Modified By: SHORTJF Modified Date: 05-APR-10 Index: 323663

Constraint To:

Constrained Work Order: WAD Index No.:
Document Type: Constrained:
Sequence/Operation: Step: Run:
Subelement: Element/Use: STS:

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ATTACHMENT LIST: 1161916

Document	Description	Disposition
090024e184b616e6	figure 1.pdf	Attached with Report
090024e184bdacc4	figure 2.pdf	Attached with Report

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MATERIALS - PLAN: NO MATERIALS

TOOLS - PLAN:

Step	Tool ID	Description	QTY
	1134	Oscilloscope, TEK	6
	1150	Headset, OIS-D	5
	1152	Simulator, Data D/L	1
	1153	LDB Wrap Tool	2

SEQUENTIAL/NON-SEQUENTIAL ORDER

The Tasks in this Work Order may be worked out of sequence.

This Workorder Contains NO Lock Out Tag Out Procedures

Operations
SHOP: RPMT

STEP TASK DESCRIPTION

1 Safety Information

Performed by SMITHSK **Date** 22-Apr-10

Reference Safety Documentation
Number Rev Title

KNPR 8715.3 LI KSC SAFETY PRACTICES PROCEDURAL REQUIREMENTS
USA006100 LI USA FLORIDA SAFETY OPERATING PLAN

2 Special Instructions:

Performed by SMITHSK **Date** 22-Apr-10

General Job Plan Instructions:

1. This Job plan is based on a Task Team Lead concept and is to be executed only on a recorded OIS channel. The Task Team Lead is responsible for

completion of this Work Order. The TTL Call sign will be specified at the Pre-Task Briefing.

2. Pre-Operation Support Setup steps are to be bought off by each participant prior to Call-To-Stations. For the remote stations, the Pre-Ops buys can be accomplished after returning from the field as the indication of their completion is accomplished over the OIS Channel.

3. When working sequences of substeps, each participant verbally indicates the action at each substep. At the conclusion of the sequence of substeps, the Task Team Lead buys the entire sequence, indicating the sequence has been completed. Failures of particular substeps, lines, circuits, or LRU's will be noted in Observations with the WAD tracking number specified at the failing substep.

4. Major sequences (compete circuit paths, ie; MA1, LDB 1 U/L, EIU 2, etc.) may be worked in any order. Within major sequences, substeps must be performed in sequence.

5. Verification is based on QA witness of circuit specifications at designated critical points in sub-steps and monitoring of circuit specifications for remote locations over a recorded OIS channel. The QA Work Order Lead will verify circuit completion at major steps and record supporting QA's stamps in Observation.

Technical Job Plan Instructions:

1. When a Ref. Des. contains an 'X' (i.e. Ref. Des. 6881AX, X92, FR-X) 'X' refers to the applicable MLP or LCC Firing Room.

2. For measurements/adjustments associated with the PCM or WDM FO Digital Receivers, adjust the Output EQ to reduce signal overshoot or roll-off (adjusting EQ fully CCW causes ground noise).

3. Adjust gain of components, as required, to the indicated amplitude.

4. Use only "In Cal" Test Equipment - verify Calibration dates.

5. Use matched oscilloscope probes (Use same model number probes).

6. When measuring a 1.0 to 1.2 Volt signal, set Channel 1 and 2 'Vertical Gain to the 200 mvolt/div.

7. When measuring for 6.0 Volt signals, set Channel 1 and 2 'Vertical Gain' to the 1 volt/div.

8. When measuring for 15.0 Volt signals, set Channel 1 and 2 'Vertical Gain' to the 5 volt/div.

9. The nominal Oscilloscope Horizontal Time Base is 5 usec.

10. For Differential Measurements, Math Mode is Ch.1 minus Ch.2.

11. Do not change horizontal or vertical scale factors in Math Mode.

a. Exit Math Mode.
b. Adjust scale factors as required.
c. Re-enter Math Mode.

12. If a measurement is out of specifications, announce the concern and verify the following:

a. Proper Scope setup.
b. Correct Ref. Des.
c. Correct Work Order and Operation.
d. Both 'Tip' and 'Ring' signals are present.

13. Record the 'Pre-Adjustment' level of any 'Out of Spec' signal in the 'Observations Block.

14. Contact the Task Team Lead for assistance if in doubt about the measurement, test equipment, or technique.

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9 Verify Task Team briefing complete.

Performed by	Date
SMITHSK	22-Apr-10

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10 [LPS] [LPQA] Verify Pre-Operation Support Set-up as follows:

Performed by	Date
RICHARBA	22-Apr-10
QV	**Date**
THEODOTM	22-Apr-10

1. Disable the following FEPs from the support CDBFR

X60 X62 X64
X65 X66 X69
X70 X78 X81

2. [LPS] [LPQA]
Verify Patching to support
FR-X to Pad-A Line Verification.

3. [LPS] [LPQA]

a. Remove patch 0158A2A31J14 (KFRL U/L Secondary) to
0158A2A19J40 (for LCC2)
0158A2A21J40 (for LCC3)
0158A2A11J40 (for LCC4)

b. Install patch 0158A2A23J11 to the LDB/PCM 158A2 patch panel at
0158A2A19J40 (for LCC2)
0158A2A21J40 (for LCC3)
0158A2A11J40 (for LCC4)

4. [LPS] [LPQA]
Verify patch X92A1A10J32 to the LDB/PCM patch panel at
X92A1A10J20 (for LCC2)
X92A1A10J40 (for LCC3/LCC4)

5. Set FEP Bit Syncs to - 'Manual Mode', 'Source 1', and 'Bit Rate' as follows:

FEP	Bit Rate
X62	128 KBPS
X64	64 KBPS
X65	64 KBPS
X66	64 KBPS
X70	128 KBPS
X78	128 KBPS
X81	128 KBPS

6. Record NTID in Performed By and record labor hours: LPS:
_____

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20 [CXMT] Verify Pre-Operation Support Setup as follows:

Performed by LAJARAAR **Date** 22-Apr-10

1. Verify Roll-Around SCSI and CRT are connected to FEP X60.

2. FEP X60 Boot #3001.

3. Enter SEQ LDBCON.

4. Verify SEQ LDBCON diagnostics are loaded but not running.

5. Verify the following personnel for FR-X are 'On Station' and ready to proceed.

LPS	1 Ea.
Technician	1 Ea.
QA	1 Ea.

6. Record Test Equipment and labor hours:

CXMT: _____ Scope: _____

CXMT2: _____ Scope: _____

7. Perform Lamp Test on PCM Bit Syncs and correct any deficiencies prior to beginning Line Validations on the following FEP's: X62, X64, X65, X66, X70, X78, X81 (FR2/FR3 Only)

8. Verify SCE PDP's Input Main Breaker, CB1, CB2, CB3, CB4 and CB5 (Utility Outlet) are on - (UP)

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Observation Long: CXMT: Y25915
CXMT2: Y33739

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30 **[C1FT] Verify Pre-Operation Support Setup as follows:**

Performed by DOWNSKC **Date** 22-Apr-10

1. Verify all necessary FOTE keys are obtained before dispatching personnel.

2. Verify FOTE PDP Input Main Breaker, CKT1, CKT2, CKT3, and Utility Outlet are - On (Up)

Ref. Des.
40199A4A40/A43
40199A5A40/A43

3. Verify FOTE Power Monitor Panel (PMP) Status LED's:

Ref. Des. Power Status (Green) Pri & Sec. (Red)
40199A4A38 On Off
40199A5A38 On Off

4. Verify alarms are enabled.

5. Verify FOTE green power Status LED's:

Ref. Des. Power Supply TX RX
40199A4 On On On
40199A5 On On On

6. Verify R&QA has recorded unsealing of all necessary racks.

7. Verify 1 Ea. FR-X Technician (Rm 3P14) 'On Station' and 'Ready to Proceed'.

8. Record Test Equipment and labor hours:

C1FT: _____ Scope: _____

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40 [QMNT] Verify Pre-Operation Support Setup as follows:

Performed by SMITHSK **Date** 22-Apr-10

1. Verify all personnel entering the MLP are cleared for access.

3. Verify all necessary V&DA keys are obtained before dispatching personnel.

3. Power up Orbiter LPS - Signal Adaptor (OLSA) PDP (Ref Des 6882AXA9) in the order below.

a. Position Input Main Breaker - On (Closed)
b. Position Utility Outlet - On (Up)

4. Verify 1 Ea. MLP Technician 'On Station' and 'Ready to Proceed'.

5. Record Test Equipment and labor hours:

QMNT: _____ Scope: _____

6. Verify 1 Ea. QA on station and Ready to Proceed.

Observation: Y25330

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50 [PMNT] Verify Pre-Operation Support Setup as follows:

Performed by ROUTHIAJ **Date** 22-Apr-10

1. Verify all personnel entering the PTCR are cleared for access.

2. Verify all necessary FOTE keys are obtained before dispatching personnel.

3. Verify FOTE PDP Input Main Breaker, CKT1, CKT2, CKT3, and Utility Outlet are - On (up):

Ref. Des.
5163A1A40/A43
5164A1A40/A43

4. Verify FOTE PMP status LED's:

Ref. Des. Power Status (Green) Pri. & Sec. (Red)
5163A1A38 On Off
5164A1A38 On Off

5. Verify alarms are disabled.

6. Verify FOTE green power status LED's:

Ref Des Power Supply TX RX

5163A1 On On On
5164A1 On On On

7. Turn Transmitter Range Switch - High

5164A1A30A5 - BMU #1
5164A1A30A6 - BMU #2
5164A1A30A7 - BMU #3
5164A1A30A8 - BMU #4
5163A1A22A4 - SSR2 (OPS RCDR)
5163A1A22A6 - MADS PCM 1
5163A1A26A5 - OI 64-1
5163A1A26A6 - OI 64-2
5163A1A26A7 - P/L SP OUT
5163A1A26A8 - MTU
5164A1A18A4 - TRUNK 1
5164A1A18A5 - TRUNK 2
5164A1A18A6 - TRUNK 3
5164A1A18A7 - TRUNK 4
5164A1A18A8 - TRUNK 5
5164A1A22A4 - TRUNK 6
5164A1A22A5 - TRUNK 7
5164A1A22A6 - TRUNK 8
5164A1A22A7 - TRUNK 9
5164A1A22A8 - TRUNK 10
5164A1A26A5 - TRUNK 11
5164A1A26A6 - TRUNK 12
5164A1A26A7 - TRUNK 13
5164A1A26A8 - TRUNK 14
5163A1A22A5 - SSR1 (P/L RCDR)

8. Verify R&QA has recorded unsealing of all necessary racks.

9. Verify 1 Ea. PTCR Technician 'On Station' and 'Ready to Proceed'.

10. Record Test Equipment and labor hours:

PMNT: _____ Scope: _____

11. Verify 1 Ea. QA on ois channel and Ready to Proceed.

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60 [RPST] Verify Pre-Operation Support Setup as follows:

Performed by HARTMAMA **Date** 22-Apr-10

1. Verify RPS TC released equipment from support.

2. Record Balanced Line P/P Rack (Ref. Des. 3443 or 3452) and Splitter Amp Rack (Ref Des 3441 or 3454) information in Observations Block.

Bal. Line P/P Rack: _____ (Ref. Des.)

Splitter Amp Rack: _____ (Ref. Des.)

3. Verify I/F No. 1 Rack (Ref. Des. 3401A16) for Pad A is Patched as follows:

Source Lines Support Lines

OI 128-1 OI 128-1
OI 128-2 OI 128-2
EIU 1 EIU 1
EIU 2 EIU 2
EIU 3 EIU 3
NSP 192 H/L NSP 192 H/L

4. Verify Balanced Line P/P Rack (Ref. Des. 3443 or 3452) is Patched from P/P A25 to P/P A33 (PCM Splitter Amp Inputs).

5. Verify Oscilloscope Input Impedance is set to 1M OHM for Splitter Amp output readings, or 50 OHMS for Fiber Optic Receiver "Post Equalization" readings.

6. Verify FOTE Power Monitor Panel (PMP) Status LED's:

Ref Des Power Monitor Panel (Green) Pri. & Sec. (Red)
3450A33 On Off

7. Verify Alarms are - 'Enabled'

8. Verify FOTE Power LED Status:

Ref. Des. Power Supply RX
3450 On Off

9. Verify 1 Ea. RPS Technician 'On Station' and 'Ready to Proceed'.

10. Record Test Equipment and labor hours:

RPST: _____ Scope: _____

11. Verify 1 Ea. QA on OIS channel and 'Ready to Proceed'.

Observation Long: Bal. Line P/P rack: 3443
Splitter Amp rack: 3441

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70 [TTL] Call To Stations:

Performed by SMITHSK **Date** 22-Apr-10

1. Record any Personnel Data and Test Equipment Tracking Numbers in each Operations Support Setup step not previously annotated..

2. Verify Personnel participating in 'FOTE Line Verification' are 'On Station and Ready To Proceed'.

3. Verify personnel have been briefed.

4. Verify FR-X LPS has released equipment for Line Verifications.

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80 **[TTL] Verify Pre-Operation Support Setups Complete and notify the listed personnel that Line Verification Operations are to commence.**

Performed by SMITHSK **Date** 22-Apr-10

CXMT C1FT QMNT PMNT RPST LPQA LPS

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90 **If CXMT is replaced then new technician buy this step and record step change took place in observations.**

Performed by NP **Date** 22-Apr-10

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91 **If C1FT is replaced then new technician buy this step and record step change took place in observations.**

Performed by NP **Date** 22-Apr-10

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92 **If QMNT is replaced then new technician buy this step and record step change took place in observations.**

Performed by NP **Date** 22-Apr-10

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93 **If PMNT is replaced then new technician buy this step and record step change took place in observations.**

Performed by NP **Date** 22-Apr-10

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94 **If RPST is replaced then new technician buy this step and record step change took place in observations.**

Performed by NP **Date** 22-Apr-10

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1000 [TTL] [LPQA] Verify/Adjust to specifications circuit MA1 128 KB as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Completion of steps 1000-4010 is a constraint to LPS Orbiter Power-Up.

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

1. [QMNT] [LPQA] Configure portable Downlink Data Simulator (DDS) in support of 'MA1 at 128 Kbps' Line Verification'.

   a. Position portable Downlink Data Simulator (DDS):
   Rate select switch to 128 Kbps
   Module select switch to TX,RX
   Volts select switch to 5
   b. Remove IM&A Module from Ref. Des. 6882AXA2A8.
   c. Install IM&A Module on V&DA Extender Board (Figure 1).
   d. Connect DDS to V&DA Extender Board (Figure 2).
   e. Re-install the Extender and Module.

2. [QMNT] [LPQA] Adjust the IM&A in Ref. Des. 6882AXA2A8 to between. +1.8V to +2.2V P-P.

3. [PMNT] Verify PCM FO Digital TX Input (Ref. Des. 5164A1A10A8) is between: +1.8V to +2.2V P-P.

4. [C1FT] Verify/Adjust PCM FO Digital RX Output EQ and Gain (Ref. Des. 40199A4A26A8) to between: + 3.8V to + 4.2V P-P.

5. [RPST] Verify OI 128-1 PCM Splitter Amp Output is at least 1.0V P-P as measured with an Oscilloscope, with 1M OHM input impedance.

6. [CXMT] [LPQA] Verify/Adjust Dual Splitter Amp J2 Monitor Port (Ref. Des. X92A2A10A3) to between +1.8V to +2.2V P-P.

7. [CXMT] [LPQA] Verify/Adjust SCE Summer Amp J1 Monitor Port (Ref. Des. X92A2A10A4) to between +1.8V to +2.2V P-P.

8. [CXMT] [LPQA] Verify/Adjust SCE Splitter Amp J1 Monitor Port (Ref. Des. X92A2A10A5) to between +1.8V to +2.2V P-P.

9. [CXMT] [LPQA] Verify/Adjust SCE Splitter Amp J1 Monitor Port (Ref. Des. X92A2A10A6) to between +1.8V to +2.2V P-P.

10. [CXMT2] [LPQA] Verify FEP X62, X70 (LCC4 only), X78, X81 Input (FEP Scope Test Point Bit Sync Input 1 (128 DL Twinax in LCC4)) is between: +1.8V to +2.2V P-P.

11. [CXMT2] [LPQA] Verify 'Sync Lock' on PCM Bit Sync at FEP X62, X70, X78, & X81

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12. [QMNT] [LPQA] Reinstall IM&A Module as follows:

a. Disconnect DDS from V&DA Extender Board.
b. Remove IM&A Module and V&DA Extender Board from Ref. Des. 6882AXA2A8.
c. Install previously removed IM&A Module in Ref. Des. 6882AXA2A8.

Observation: See LD
Observation Long: LCC4 & 10492: QA 0449

1010 [TTL] [LPQA] Verify/Adjust to specifications circuit MA2 128 KB as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

1. [QMNT] [LPQA] Configure portable Downlink Data Simulator (DDS) in support of 'MA2 at 128 Kbps' Line Verification'.

a. Position portable Downlink Data Simulator (DDS):
Rate select switch to 128 Kbps
Module select switch to TX,RX
Volts select switch to 5
b. Remove IM&A Module from Ref. Des. 6882AXA3A2.
c. Install IM&A Module on V&DA Extender Board (Figure 1).
d. Connect DDS to V&DA Extender Board (Figure 2).
e. Re-install the Extender and Module.

2. [QMNT] [LPQA] Adjust the IM&A in Ref. Des. 6882AXA3A2 to between. +1.8V to +2.2V P-P.

3. [PMNT] Verify PCM FO Digital TX Input (Ref. Des. 5164A1A14A8) is between: +1.8V to +2.2V P-P.

4. [C1FT] Verify/Adjust PCM FO Digital RX Output EQ and Gain (Ref. Des. 40199A4A30A8) to between: + 3.8V to + 4.2V P-P.

5. [RPST] Verify OI 128-2 PCM Splitter Amp Output is at least 1.0V P-P as measured with an Oscilloscope, with 1M OHM input impedance.

6. [CXMT] [LPQA] Verify/Adjust Dual Splitter Amp J2 Monitor Port (Ref. Des. X92A2A15A3) to between +1.8V to +2.2V P-P.

7. [CXMT] [LPQA] Verify/Adjust SCE Summer Amp J1 Monitor Port (Ref. Des. X92A2A15A4) to between +1.8V to +2.2V P-P.

8. [CXMT] [LPQA] Verify/Adjust SCE Splitter Amp J1 Monitor Port (Ref. Des. X92A2A15A5) to between +1.8V to +2.2V P-P.

9. [CXMT] [LPQA] Verify/Adjust SCE Splitter Amp J1 Monitor Port (Ref. Des. X92A2A15A6) to between +1.8V to +2.2V P-P.

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10. [CXMT2] [LPQA] Verify FEP X62, X70 (LCC4 only), X78, X81 Input (FEP Scope Test Point Bit Sync Input 1 (128 DL Twinax in LCC4)) is between: +1.8V to +2.2V P-P.

11. [CXMT2] [LPQA] Verify 'Sync Lock' on PCM Bit Sync at FEP X62, X70, X78, & X81

12. [QMNT] [LPQA] Reinstall IM&A Module as follows:

a. Disconnect DDS from V&DA Extender Board.
b. Remove IM&A Module and V&DA Extender Board from Ref. Des. 6882AXA3A2.
c. Install previously removed IM&A Module in Ref. Des. 6882AXA3A2.

13. [CXMT2] [LPQA] Configure FEP's X62, X70, X78, X81 for normal support.

a. Set Bit Sync to 'Remote' - (LCC3, LCC4 only)
b. Set Bit Sync to: Program Mode (LCC2 only)
c. Set Bit Rate Rotary Switchs to: Freq. indicated by the Bit Rate LED's (LCC2 only)

Observation: LCC4 & 10492: QA 0449

2000 [TTL] [LPQA] Verify/Adjust to specifications circuit LDB 1 U/L as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

CAUTION: Test Failure Hazard.

Do not start diagnostics before [QMNT] Work Step is Complete.

1. [QMNT] [LPQA] Configure V&DA Rack for 'LDB 1 Line Verification'.

a. Remove LDB I/F Module from Ref. Des. 6881AXA4A3.
b. Install LDB Wrap Tool in Ref. Des. 6881AXA4A3.
c. Record LDB Wrap Tool serial number in Observations Block.
S/N: _____

2. [CXMT2] [LPQA] Perform Diagnostics as follows:

Wait until [QMNT] Operational Work Step is Complete.

a. FEP X60 Boot #3001.
b. Perform 'SEQ LDBCON' on LDB 1.

1. Enter: SEQ LDBCON

2. Enter: CLE
3. Enter: TEST05 ADD NOSS NOOP NERR LOOP
4. Enter: RUN

3. [CXMT2] [LPQA] Verify FEP X60 (FEP Scope Test Point T/R 1 U/L) Output is between: +1.8V to +2.2V P-P.
(Reference Job Plan #18357 for adjustment procedure)

4. [CXMT] [LPQA] Verify/Adjust SCE Summer Amp J1 monitor Port (Ref. Des.X92A4A10A3) to between +1.8V to +2.2V P-P.

5. [C1FT] Verify WDM FO Digital TX Input (Ref Des 40199A4A26A4) is between: +1.8V to +2.2V P-P.

6. [CXMT] [LPQA] Verify/ Adjust Dual Splitter Amp J2 Monitor Port (Ref. Des.X92A4A20A3) to between +1.8V to +2.2V P-P.

7. [PMNT] Per QMNT direction, Verify/Adjust WDM FO Digital RX Output EQ and Gain RX (Ref. Des. 5163A1A14A6) between: +5.5V to +6.5V P-P at LDB Wrap Tool (Ref. Des. 6881AXA4A3) 71 Ohm Output Test Points.

Observation: s/n:001

2010 [TTL] [LPQA] Verify/Adjust to specifications circuit LDB 1 D/L as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

1. [PMNT] Verify WDM FO Digital TX Input (Ref. Des. 5163A1A14A7) is between: +1.0V to +1.6V P-P.

2. [C1FT] Verify/Adjust WDM FO digital RX output EQ and Gain (Ref. Des. 40199A4A26A5) to between: +1.8V to +2.2V P-P.

3. [CXMT] [LPQA] Verify/ Adjust SCE Splitter Amp J1 Monitor Port (Ref. Des. X92A4A10A4) to between +1.8V to +2.2V P-P.

4. [CXMT2] [LPQA] Verify FEP X60 Input (FEP Scope Test Point T/R 1 D/L) is between: +1.8V to +2.2V P-P.

5. [CXMT2] [LPQA] Perform Diagnostics as follows:

a. Toggle Console Interrupt SW on FEP X60 Control Panel.
b. Perform 'SEQ LDBCON' on LDB 1.
   1. Enter: CLE
   2. Enter: TEST05 ADD NOOP
   3. Enter: TEST06 ADD NOOP
   4. Enter: RUN

6. [CXMT2] [LPQA] Verify 'SEQ LDBCON' TEST05 and TEST06 pass with no

errors.

7. [CXMT2] Toggle Console Interrupt SW on FEP X60 Control Panel.

8. [QMNT] [LPQA] Install previously removed LDB I/F Modules as follows:

Note: To avoid sending Test Data to the Orbiter, diagnostics must be terminated prior to installing LDB I/F Modules.

a. Remove LDB Wrap Tool from Ref. Des. 6881AXA4A3.
b. Install LDB I/F Module previously removed from Ref. Des. 6881AXA4A3.

Observation: LCC4 & 10492: QA 0449

2020 [TTL] [LPQA] Verify/Adjust to specifications circuit LDB 2 U/L as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

CAUTION: Test Failure Hazard.

Do not start diagnostics before [QMNT] Work Step is Complete.

1. [QMNT] [LPQA] Configure V&DA Rack for 'LDB 2 Line Verification'.

a. Remove LDB I/F Module from Ref. Des. 6881AXA4A7.
b. Install LDB Wrap Tool in Ref. Des. 6881AXA4A7.
c. Record LDB Wrap Tool serial number in Observations Block.
S/N: _____

2. [CXMT2] [LPQA] Perform 'SEQ LDBCON' on LDB 2 to verify LDB 2 using FEP X60.

a. Enter: CLE
b. Enter: TEST05 ADD VAR1=#0001 NOSS NOOP NERR LOOP
c. Enter: RUN

3. [CXMT2] [LPQA] Verify FEP X60 Output (FEP Scope Test Point T/R 2 U/L) is between: +1.8V to +2.2V P-P.
(Reference Job Plan #18357 for adjustment procedure)

4. [CXMT] [LPQA] Verify/Adjust SCE Summer Amp J1 Monitor Port (Ref. Des. X92A4A15A3) to between +1.8V to +2.2V P-P.

5. [C1FT] Verify WDM FO Digital TX Input (Ref. Des. 40199A5A26A4) is between: +1.8V to +2.2V P-P.

6. [CXMT] [LPQA] Verify/ Adjust Dual Splitter Amp J2 Monitor Port (Ref. Des. X92A4A20A4) to between +1.8V to +2.2V P-P.

7. [PMNT] Per QMNT direction, Verify/Adjust WDM FO Digital RX Output EQ and Gain (Ref. Des. 5164A1A14A6) between: +5.5V to +6.5V P-P at LDB Wrap Tool (Ref. Des. 6881AXA4A7) 71 Ohm Output Test Points.

Observation: s/n:005

2030 [TTL] [LPQA] Verify/Adjust to specifications circuit LDB 2 D/L as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

1.[PMNT] Verify WDM FO Digital TX Input (Ref. Des. 5164A1A14A7) is between: +1.0V to +1.6V P-P.

2.[C1FT] Verify/Adjust WDM FO Digital RX Output EQ and Gain (Ref. Des. 40199A5A26A5) to between: +1.8V to +2.2V P-P.

3. [CXMT] [LPQA] Verify/ Adjust SCE Splitter Amp J1 Monitor Port (Ref. Des. X92A4A15A4) to between +1.8V to +2.2V P-P.

4. [CXMT2] [LPQA] Verify FEP X60 Input (FEP Scope Test Point T/R 2 D/L) is between: +1.8V to +2.2V P-P.

5. [CXMT2] [LPQA] Perform Diagnostics as follows:

a. Toggle Console Interrupt SW on FEP X60 Control Panel.
b. Perform 'SEQ LDBCON' on LDB 2.
   1. Enter: CLE
   2. Enter: TEST05 ADD VAR1=#0001 NOOP
   3. Enter: TEST06 ADD VAR1=#0001 NOOP
   4. Enter: RUN

6. [CXMT2] [LPQA] Verify 'SEQ LDBCON' TEST05 and TEST06 pass with no errors.

7. [CXMT2] Toggle Console Interrupt SW on FEP X60 Control Panel.

8. [CXMT2] Disconnect Roll-around SCSI and CRT from FEP X60.

CAUTION: Test Failure Hazard.

Do not install LDB I/F Modules until diagnostics are terminated.

9. [QMNT] [LPQA] Install previously removed LDB I/F Module as follows:

Note: To avoid sending Test Data to the Orbiter, diagnostics must be terminated prior to installing LDB I/F Modules.

a. Remove LDB Wrap Tool from Ref. Des. 6881AXA4A7.
b. Install LDB I/F Module previously removed from Ref. Des. 6881AXA4A7.

Observation: LCC4 & 10492: QA 0449

3000 [TTL] [LPQA] Verify/Adjust to specifications circuits BMU PCM DNLK as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: The following Operations 3,010, 3,020, 3,030, & 3,040 must be worked concurrently for each of the BMU Lines being Verified.

Note: Each Operation is to remain open until completion of each of the BMU Line Verifications is complete.

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

Observation: LCC4 & 10492: QA 0449

3010 [QMNT] If no 'Live Data' is present, Then portable Downlink Data Simulator (DDS) must be used to verify the 4 Ea. BMU Lines as follows:

Performed by	Date
NP	22-Apr-10

Note: Operations 3,020, 3,030, & 3,040 must be worked concurrently for each of the BMU Lines being verified.

Note: No 'Live Data' on all 4 BMU Lines must be true for completion of this Step.

Note: This Operation is to remain open until completion of each of the BMU Line Verification is complete.

1. [QMNT] Configure portable Downlink Data Simulator (DDS)

a. Position portable Downlink Data Simulator (DDS):
Rate select switch to 128 Kbps
Module select switch to TX,RX
Volts select switch to 5

2. [QMNT]

a. Remove IM&A Module and install on V&DA Extender Board (Figure 2).
b. Connect DDS to V&DA Extender Board.
c. Re-install the Extender and Module at locations called in sequence #3020, step #2.

3020 [QMNT] [PMNT] [RPST] Using 'Live Data' or portable Downlink Data Simulator (DDS), verify the 4 Ea. BMU Lines as follows:

Performed by SMITHSK **Date** 22-Apr-10

Note: Operations of sequence 3,020, & 3,030 must be worked concurrently for each of the BMU Lines being Verified.

Note: This Operation is to remain open until each of the BMU Line Verifications is complete.

1. [QMNT]

a. Verify/Adjust IM&A Module Attenuation to obtain between: +4.5V to +5.1V P-P Output as measured on the 124 Ohm Test Points of the IM&A Module.

2. [QMNT]

Repeat previous sub-step for each BMU Line listed below.

MLP-X REF DES	IM&A Circuit
6885AXA1A2	BMU #1
6885AXA1A4	BMU #2
6885AXA1A6	BMU #3
6885AXA1A8	BMU #4

3. [PMNT]

Verify/Adjust FM FO Analog Transmitter gain to obtain between: +0.8V to +1.2V P-P as measured with a 50 Ohm In-line Terminator and RG-58 Coax Cable connected from 'Post Equal Mon' to an Oscilloscope.

4. [PMNT]

Repeat previous sub-step for each BMU Line listed below.

FIBER OPTIC	CIRCUIT
5164A1A30A5	BMU #1
5164A1A30A6	BMU #2
5164A1A30A7	BMU #3
5164A1A30A8	BMU #4

5. [RPST]

Verify/Adjust FM FO Receiver gain to obtain between: +0.8V to +1.2V P-P as measured with an RG-58 Coax Cable

from the 'Post Equal Mon' (on Fiber Optic Receiver) to an Oscilloscope, with 50-ohm load selected.

6. [RPST]

Repeat previous sub-step for each BMU Line listed below.

Fiber Optic Receiver	RPS Circuit	Patch Panel
3450 A14 A5	BMU #1	34XXA25J42
3450 A14 A6	BMU #2	34XXA25J43
3450 A14 A7	BMU #3	34XXA25J44
3450 A14 A8	BMU #4	34XXA25J45

Observation: Syclo Observation
Observation Long: ROUTHIAJ 04/22/10 10:21AM --BMU#4 LOW ADJ TO 1.2VPP

3030 [QMNT] If using 'Live Data', Then remove (momentarily) BMU IM&A Modules in sequential order and verify with [PMNT] and [JRPS] loss of signal.

Performed by	Date
SMITHSK	22-Apr-10

3040 [QMNT] If portable Downlink Data Simulator (DDS) was used, Then reinstall IM&A Module as follows:

Performed by	Date
NP	22-Apr-10

a. Disconnect DDS from V&DA Extender Board.
b. Remove IM&A Module and V&DA Extender Board
c. Install previously removed IM&A Module.

IM&A Circuit	MLP-X
BMU #1	6885AXA1A2
BMU #2	6885AXA1A4
BMU #3	6885AXA1A6
BMU #4	6885AXA1A8

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4000 [TTL] [LPQA] Verify/Adjust to specifications circuit MTU as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

1. [QMNT] [LPQA]

Configure portable Downlink Data Simulator (DDS) in support of circuit verifications as follows:

a. Position portable Downlink Data Simulator (DDS):
Rate select switch to 128 Kbps
Module select switch to TX,RX
Volts select switch to 5

2. [QMNT] [LPQA]

a. Remove Transformer Module and install on V&DA Extender Board (Figure 1).
b. Connect DDS to V&DA Extender Board (Figure 2).

MLP-X REF DES IM&A Circuit
6881AXA5A1 MTU

3. [PMNT]

Verify/Adjust FM FO Analog Transmitter gain to obtain between: +0.8V to +1.2V P-P as measured with a 50 Ohm In-line Terminator and RG-58 Coax Cable connected from 'Post Equal Mon' to an Oscilloscope.

FIBER OPTIC CIRCUIT
5163A1A26A8 MTU

4. [RPST]

Verify/Adjust FM FO Receiver gain to obtain between: +0.8V to +1.2V P-P as measured with an RG-58 Coax Cable from the 'Post Equal Mon' (on Fiber Optic Receiver) to an Oscilloscope, with 50-ohm load selected.

FIBER OPTIC RECEIVER CIRCUIT 3450 A21 A5 MTU
RPS PATCH PANEL 3531A8J38

5. [QMNT] [LPQA]

Reinstall Transformer Module as follows

a. Disconnect DDS from V&DA Extender Board.
b. Remove Transformer Module and V&DA Extender Board

c. Install previously removed Transformer Module.

6. [PMNT]

Turn Transmitter Range SW (on MTU Circuit 5163A1A26A8) to - Med

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4010 [TTL] Notify LPS that 'Critical Circuit' Line Verification is complete.

Performed by	Date
SMITHSK	22-Apr-10

Note: Verification of all remaining lines is to be performed on a 'Non-Interference Basis' while the Firing Room may be supporting Orbiter Power-up.

5000 [TTL] [LPQA] Verify/Adjust to specifications circuit EIU 1 as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

1. [QMNT] [LPQA] Configure portable Downlink Data Simulator (DDS) for EIU-1 Verifications

a. Position portable Downlink Data Simulator (DDS):
Rate select switch to 64 Kbps
Module select switch to TX,RX
Volts select switch to 5
b. Remove IM&A Module from Ref. Des. 6882AXA2A2.
c. Install IM&A Module on V&DA Extender Board (Figure 1).
d. Connect DDS to V&DA Extender Board (Figure 2).
e. Re-install the Extender and Module.

2. [QMNT] [LPQA] Adjust the IM&A in Ref. Des. 6882AXA2A2 to between. +1.8V to +2.2V P-P.

3. [PMNT] Verify PCM FO Digital TX Input (Ref. Des. 5163A1A10A8) is between: +1.8V to +2.2V P-P.

4. [C1FT] Verify/Adjust PCM FO Digital RX Output EQ and Gain (Ref. Des. 40199A4A14A8) to between: +3.8V to +4.2V P-P.

5. [RPST] Verify EIU 1 PCM Splitter Amp Output is at least 1.0V P-P as measured with an Oscilloscope, with 1M OHM input impedance.

6. [CXMT] [LPQA] Verify/ Adjust Dual Splitter Amp J1 Monitor Port (Ref. Des. X92A2A10A3) to between +1.8V to +2.2V P-P.

7. [CXMT2] [LPQA] Verify FEP X64 Input (FEP Scope Test Point Bit Sync Input 1 (128 DL Twinax in LCC4)) is between: +1.8V to + 2.2V P-P.

8. [CXMT2] [LPQA] Verify 'Sync Lock' on PCM Bit Sync at FEP X64.

9. [QMNT] [LPQA] Reinstall IM&A Module as follows:

a. Disconnect DDS from V&DA Extender Board.
b. Remove IM&A Module and V&DA Extender Board from Ref. Des. 6882AXA2A2.
c. Install previously removed IM&A Module in Ref. Des. 6882AXA2A2.

10. [CXMT2] [LPQA] Configure FEP X64 for normal support

a. Set Bit Sync to 'Remote' - (LCC3, LCC4 only)
b. Set Bit Sync to: Program Mode (LCC2 only)
c. Set Bit Rate Rotary Switchs to: Freq. indicated by the Bit Rate LED's (LCC2 only)

Observation: LCC4 & 10492: QA 0449

5010 [TTL] [LPQA] Verify/Adjust to specifications circuit EIU 2 as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

1. [QMNT] [LPQA] Configure portable Downlink Data Simulator (DDS) for EIU-2 Verifications

a. Position portable Downlink Data Simulator (DDS):
Rate select switch to 64 Kbps
Module select switch to TX,RX
Volts select switch to 5
b. Remove IM&A Module from Ref. Des. 6882AXA2A4.
c. Install IM&A Module on V&DA Extender Board (Figure 1).
d. Connect DDS to V&DA Extender Board (Figure 2).
e. Re-install the Extender and Module.

2. [QMNT] [LPQA] Adjust the IM&A in Ref. Des. 6882AXA2A4 to between. +1.8V to +2.2V P-P.

3. [PMNT] Verify PCM FO Digital TX Input (Ref. Des. 5163A1A14A8) is between: +1.8V to +2.2V P-P.

4. [C1FT] Verify/Adjust PCM FO Digital RX Output EQ and Gain (Ref. Des. 40199A4A18A8) to between: +3.8V to +4.2V P-P.

5. [RPST] Verify EIU 2 PCM Splitter Amp Output is at least 1.0V P-P as measured with an Oscilloscope, with 1M OHM input impedance.

6. [CXMT] [LPQA] Verify/ Adjust Dual Splitter Amp J1 Monitor Port (Ref. Des. X92A2A15A3) to between +1.8V to +2.2V P-P.

7. [CXMT2] [LPQA] Verify FEP X65 Input
(FEP Scope Test Point Bit Sync Input 1(128 DL Twinax in LCC4))
is between: +1.8V to + 2.2V P-P.

8. [CXMT2] [LPQA] Verify 'Sync Lock' on PCM Bit Sync at FEP X65.

9. [QMNT] [LPQA] Reinstall IM&A Module as follows:

a. Disconnect DDS from V&DA Extender Board.
b. Remove IM&A Module and V&DA Extender Board from Ref. Des. 6882AXA2A4.
c. Install previously removed IM&A Module in Ref. Des. 6882AXA2A4.

10. [CXMT2] [LPQA] Configure FEP X65 for normal support

a. Set Bit Sync to 'Remote' - (LCC3, LCC4 only)
b. Set Bit Sync to: Program Mode (LCC2 only)
c. Set Bit Rate Rotary Switchs to: Freq. indicated by the Bit Rate LED's (LCC2 only)

Observation: LCC4 & 10492: QA 0449

5020 [TTL] [LPQA] Verify/Adjust to specifications circuit EIU 3 as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

1. [QMNT] [LPQA] Configure portable Downlink Data Simulator (DDS) for EIU-3 Verifications

a. Position portable Downlink Data Simulator (DDS):
Rate select switch to 64 Kbps
Module select switch to TX,RX
Volts select switch to 5
b. Remove IM&A Module from Ref. Des. 6882AXA2A6.
c. Install IM&A Module on V&DA Extender Board (Figure 1).
d. Connect DDS to V&DA Extender Board (Figure 2).

e. Re-install the Extender and Module.

2. [QMNT] [LPQA] Adjust the IM&A in Ref. Des. 6882AXA2A6 to between. +1.8V to +2.2V P-P.

3. [PMNT] Verify PCM FO Digital TX Input (Ref. Des. 5163A1A18A8) is between: +1.8V to +2.2V P-P.

4. [C1FT] Verify/Adjust PCM FO Digital RX Output EQ and Gain (Ref. Des. 40199A4A22A8) to between: +3.8V to +4.2V P-P.

5. [RPST] Verify EIU 3 PCM Splitter Amp Output is at least 1.0V P-P as measured with an Oscilloscope, with 1M OHM input impedance.

6. [CXMT] [LPQA] Verify/ Adjust Dual Splitter Amp J1 Monitor Port (Ref. Des. X92A2A20A3) to between +1.8V to +2.2V P-P.

7. [CXMT2] [LPQA] Verify FEP X66 Input (FEP Scope Test Point Bit Sync Input 1 (128 DL Twinax in LCC4)) is between: +1.8V to + 2.2V P-P.

8. [CXMT2] [LPQA] Verify 'Sync Lock' on PCM Bit Sync at FEP X66.

9. [QMNT] [LPQA] Reinstall IM&A Module as follows:

a. Disconnect DDS from V&DA Extender Board.
b. Remove IM&A Module and V&DA Extender Board from Ref. Des. 6882AXA2A6.
c. Install previously removed IM&A Module in Ref. Des. 6882AXA2A6.

10. [CXMT2] [LPQA] Configure FEP X66 for normal support

a. Set Bit Sync to 'Remote' - (LCC3, LCC4 only)
b. Set Bit Sync to: Program Mode (LCC2 only)
c. Set Bit Rate Rotary Switchs to: Freq. indicated by the Bit Rate LED's (LCC2 only)

Observation: LCC4 & 10492: QA 0449

6000 [TTL] [LPQA] Verify/Adjust to specifications circuit NSP SP Out as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

1. [QMNT] [LPQA] Configure portable Downlink Data Simulator (DDS) NSP SP Out at 192 Kbps Verifications.

a. Position portable Downlink Data Simulator (DDS): Rate select switch to 192 Kbps

Module select switch to TX,RX
Volts select switch to 5
b. Remove IM&A Module from Ref. Des. 6882AXA1A6.
c. Install IM&A Module on V&DA Extender Board (Figure 1).
d. Connect DDS to V&DA Extender Board (Figure 2).
e. Re-install the Extender and Module.

2. [QMNT] [LPQA] Adjust the IM&A in Ref. Des. 6882AXA1A6 to between. +1.8V to +2.2V P-P.

3. [PMNT] Verify PCM FO Digital TX Input (Ref. Des. 5163A1A18A6) is between: +1.8V to +2.2V P-P.

4. [C1FT] Verify/Adjust PCM FO Digital RX Output EQ and Gain (Ref. Des. 40199A4A30A6) to between: +3.8V to +4.2V P-P.

5. [RPST] Verify NSP 192 H/L PCM Splitter Amp Output is at least 1.0V P-P as measured with an Oscilloscope, with 1M OHM input impedance.

6. [QMNT] [LPQA] Reinstall IM&A Module as follows:

a. Disconnect DDS from V&DA Extender Board.
b. Remove IM&A Module and V&DA Extender Board from Ref. Des. 6882AXA1A6.
c. Install previously removed IM&A Module in Ref. Des. 6882AXA1A6.

Observation: LCC4 & 10492: QA 0449

6010 [TTL] [LPQA] Verify/Adjust to specifications circuits NSP In and P/L SP as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

CAUTION: Test Failure Hazard.

Test Data may reach the Orbiter if the following steps are not followed in the order provided.

Diagnostics must not be performed before the IM & A Modules are terminated properly in the following steps:

1. [QMNT] [LPQA] Configure IM&A Module to support 'NSP In and P/L SP In Verification'.

a. Remove IM&A Module from Ref. Des. 6881AXA2A3.
b. Connect 71 Ohm Terminator to V&DA Extender Board.
c. Install IM&A Module on V&DA Extender Board (Figure 1).
d. Re-install the Extender and Module in Ref. Des. 6881AXA2A3.
e. Remove IM&A Module from Ref. Des. 6881AXA1A3.

2. [CXMT2] Configure FEP X69 to support 72KB U/L Verifications as follows:

a. Set/Verify Frequency Synthesizer (Bit Clock) for 144KBS.
   1. SI-80A - 14400, rightmost Led ON
   2. SI-102 - 014400M, leftmost Led ON
   (Note: Sub-step (a) not required for LCC3 or LCC4)

b. Connect Roll-around SCSI and CRT to FEP X69.
c. Boot #3001 and Load SEQ FSGVMX

3. [CXMT2] Perform Diagnostics as follows:

a. Enter: CLE
b. Enter: TEST02 ADD
c. Enter: RUN

4. [CXMT] [LPQA] Verify/Adjust SCE Splitter Amp J1 Monitor Port (Ref. Des. X92A2A20A6) to between +1.8V to +2.2V P-P.

5. [C1FT] Verify PCM FO Digital TX Input (Ref. Des. 40199A4A30A5) is between: +1.8V to +2.2 V P-P.

6. [PMNT] Verify/Adjust PCM FO Digital RX Output EQ and Gain (Ref. Des. 5163A1A18A5) to between: +14V to +16V P-P.

7. [QMNT] [LPQA] Verify IM&A Module 71 Ohm Output (Ref. Des. 6881AXA2A3) to between: +4.5V to +5.5V P-P.

8. [QMNT] [LPQA] Reinstall previously removed IM&A Module as follows:

a. Remove IM&A Module and V&DA Extender Board from Ref Des 6881AXA2A3.
b. Retain IM&A Module for later installation.
c. Install previously removed IM&A Module (from Ref. Des. 6881AXA1A3) on V&DA Extender Board.
d. Install IM&A Module on V&DA Extender Board in Ref. Des. 6881AXA1A3.

9. [CXMT] [LPQA] Verify/Adjust SCE Splitter Amp J1 Monitor Port (Ref. Des. X92A2A20A6) to between +1.8V to +2.2V P-P.

10. [C1FT] Verify PCM FO Digital TX Input (Ref. Des. 40199A4A30A7) is between: +1.8V to +2.2V P-P.

11. [PMNT] Verify Adjust PCM FO Digital RX Output EQ and Gain (Ref. Des. 5163A1A18A7) to between: +14V to +16V P-P.

12. [QMNT] [LPQA] Verify/Adjust IM&A Module 71 Ohm Output (Ref. Des. 6881AXA1A3) to between: +4.5V to +5.5V P-P.

13. [CXMT2] Terminate 'SEQ FSGVMX' on FEP X69.

a. Press Console Interrupt.
b. Press Halt.
c. Verify 'SEQ FSGVMX' terminates.

14. [CXMT2] Disconnect Roll-around SCSI and CRT from FEP X69.

15. [QMNT] [LPQA] Remove IM&A Module and V&DA Extender Board from Ref. Des. 6881AXA1A3.

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16. [QMNT] [LPQA] Install IM&A Modules as follows:

a. Install IM&A Module previously removed from Ref Des 6881AXA1A3.
b. Install IM&A Module previously removed from Ref Des 6881AXA2A3.

Observation: LCC4 & 10492: QA 0449

6020 [LPS][LPQA] Perform Post-Operation Instructions.

Performed by	Date
RICHARBA	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

1. [LPS] [LPQA] Remove Patch: 0158A2A23J11 to the LDB/PCM 158A2 patch panel at

0158A2A19J40 (for LCC2)
0158A2A21J40 (for LCC3)
0158A2A11J40 (for LCC4)

2. [LPS] [LPQA] Re-install Patch 0158A2A31J14 (KFRL U/L Secondary) to

0158A2A19J40 (for LCC2)
0158A2A21J40 (for LCC3)
0158A2A11J40 (for LCC4)

Observation: LCC4 & 10492: QA 0449

7000 [TTL] Release Support Personnel - Station C1FT and CXMT

Performed by	Date
SMITHSK	22-Apr-10

8000 [TTL] [LPQA] Verify/Adjust to specifications circuits SSR2 (OPS RCDR), MADS PCM 1, OI 64-1 & 2, and P/L SP OUT as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

1. [QMNT] [LPQA]

Configure portable Downlink Data Simulator (DDS) in support of circuit verifications as follows:

a. Position portable Downlink Data Simulator (DDS):
Rate select switch to 128 Kbps
Module select switch to TX,RX
Volts select switch to 5

2. [QMNT] [LPQA]

a. Remove IM&A Module and install on V&DA Extender Board (Figure 1).
b. Connect DDS to V&DA Extender Board (Figure 2).
c. Verify/Adjust IM&A Module Attenuation to obtain between:
+4.5V to +5.1V P-P Output as measured on the 124 Ohm
Test Points of the IM&A Module.

MLP-X REF DES	IM&A Circuit
6882AXA3A8	SSR2 (OPS RCDR)
6882AXA4A8	MADS PCM 1
6882AXA3A4	OI 64-1
6882AXA3A6	OI 64-2
6882AXA1A2	P/L SP OUT

3. [PMNT]

Verify/Adjust FM FO Analog Transmitter gain to obtain between:
+0.8V to +1.2V P-P as measured with a 50 Ohm In-line
Terminator and RG-58 Coax Cable connected from 'Post Equal Mon'
to an Oscilloscope.

FIBER OPTIC	CIRCUIT
5163A1A22A4	SSR2 (OPS RCDR)
5163A1A22A6	MADS PCM 1
5163A1A26A5	OI 64-1
5163A1A26A6	OI 64-2
5163A1A26A7	P/L SP OUT

4. [RPST]

Verify/Adjust FM FO Receiver gain to obtain between:
+0.8V to +1.2V P-P as measured with an RG-58 Coax Cable
from the 'Post Equal Mon' (on Fiber Optic Receiver) to an
Oscilloscope, with 50-ohm load selected.

FIBER OPTIC RECEIVER	CIRCUIT	RPS PATCH PANEL
3450 A17 A3	SSR2 (OPS RCDR)	34XXA25J37
3450 A17 A5	MADS PCM 1	34XXA25J39
3450 A17 A8	OI 64-1	34XXA25J29
3450 A21 A3	OI 64-2	34XXA25J30
3450 A21 A4	P/L SP OUT	34XXA35J55

5. [QMNT] [PMNT] [RPST] [LPQA]

Repeat previous four sub-steps to validate SSR2 (OPS RCDR), MADS 1, OI 64-1&2, and P/L SP OUT lines.

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6. [QMNT] [LPQA]

Reinstall IM&A Module as follows

a. Disconnect DDS from V&DA Extender Board.
b. Remove IM&A Module and V&DA Extender Board
c. Install previously removed IM&A Module.

Observation: Syclo Observation
Observation Long: ROUTHIAJ 04/22/10 10:22AM --MADS PCM1 HIGH ADJ TO 1.2VPP

9000 [TTL] [LPQA] Verify/Adjust to specifications Trunk Lines as follows:

Performed by	Date
SMITHSK	22-Apr-10

QV	Date
BROWNAT	22-Apr-10

Note: Ref. SPECIAL INSTRUCTIONS Line Item 13.

1. [QMNT] [LPQA]

Configure portable Downlink Data Simulator (DDS) in support of circuit verifications as follows:

a. Position portable Downlink Data Simulator (DDS):
Rate select switch to 128 Kbps
Module select switch to TX,RX
Volts select switch to 5

2. [QMNT] [LPQA]

a. Remove patch cable at circuit's patch panel location.
b. Connect DDS into circuit's patch panel location.
c. Adjust IM&A Module Attenuation to between: +4.5V to +5.1V P-P Output as measured on the 124 Ohm Test Points of the IM&A Module.

PATCH PANEL IM&A
CIRCUIT 6884AX MLP-X
TRUNK 1 A4J15 6885AXA3A4
TRUNK 2 A4J16 6885AXA3A6
TRUNK 3 A4J17 6885AXA3A8
TRUNK 4 A4J18 6885AXA4A2
TRUNK 5 A4J19 6885AXA4A4
TRUNK 6 A4J20 6885AXA4A6
TRUNK 7 A8J1 6885AXA4A8
TRUNK 8 A8J2 6885AXA5A2
TRUNK 9 A8J3 6885AXA5A4
TRUNK 10 A8J4 6885AXA5A6
TRUNK 11 A8J5 6885AXA5A8
TRUNK 12 A8J6 6885AXA6A2

TRUNK 13 A8J7 6885AXA6A4
TRUNK 14 A8J8 6885AXA6A6
SSR1 (P/L RCDR) A8J18 6885AXA2A2

3. [PMNT]
Verify/Adjust FM FO Analog Transmitter Gain to between:
+0.8V to +1.2V P-P as measured with a 50 Ohm In-line
Terminator and RG-58 Coax Cable connected from
'Post Equal Mon' to an Oscilloscope.

FIBER OPTIC
TRANSMITTER CIRCUIT
5164A1A18A4 TRUNK 1
5164A1A18A5 TRUNK 2
5164A1A18A6 TRUNK 3
5164A1A18A7 TRUNK 4
5164A1A18A8 TRUNK 5
5164A1A22A4 TRUNK 6
5164A1A22A5 TRUNK 7
5164A1A22A6 TRUNK 8
5164A1A22A7 TRUNK 9
5164A1A22A8 TRUNK 10
5164A1A26A5 TRUNK 11
5164A1A26A6 TRUNK 12
5164A1A26A7 TRUNK 13
5164A1A26A8 TRUNK 14
5163A1A22A5 SSR1 (P/L RCDR)

4. [RPST]
Verify/Adjust FM FO Receiver gain to obtain between:
+0.8V to +1.2V P-P as measured with an RG-58 Coax Cable
from the 'Post Equal Mon' (on Fiber Optic Receiver)
to an Oscilloscope, with 50-ohm load selected.

REF. DES. REF. DES.
FIBER OPTIC RPS
RECEIVER CIRCUIT PATCH PANEL

3450 A8 A3 TRUNK 1 34XXA25J1
3450 A8 A4 TRUNK 2 34XXA25J2
3450 A8 A5 TRUNK 3 34XXA25J3
3450 A8 A6 TRUNK 4 34XXA25J4
3450 A8 A7 TRUNK 5 34XXA25J5
3450 A8 A8 TRUNK 6 34XXA25J6
3450 A11 A3 TRUNK 7 34XXA25J7
3450 A11 A4 TRUNK 8 34XXA25J8
3450 A11 A5 TRUNK 9 34XXA25J9
3450 A11 A6 TRUNK 10 34XXA25J10
3450 A11 A7 TRUNK 11 34XXA25J11
3450 A11 A8 TRUNK 12 34XXA25J12
3450 A14 A3 TRUNK 13 34XXA25J13
3450 A14 A4 TRUNK 14 34XXA25J14
3450 A17 A4 SSR1 (P/L RCDR) 34XXA25J38

5. [QMNT] [PMNT] [RPST] [LPQA]
Repeat previous sub-steps for each of the Trunk Lines listed.

6. [QMNT] [LPQA]

Reinstall IM&A Module as follows

a. Disconnect DDS from circuit's patch panel location.
b. Patch circuit's patch cable into original patch panel location.

10000 [TTL] Perform Post-Operation Instructions.

Performed by	Date
SMITHSK	22-Apr-10

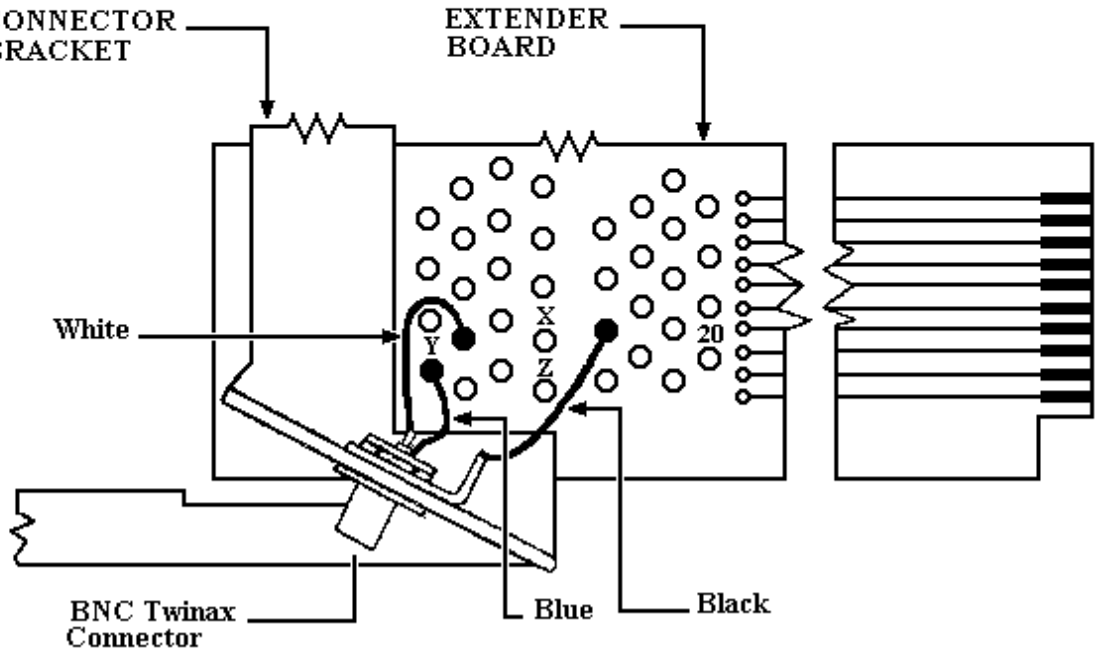
1. Release FR-X equipment to LPS for Support.
2. Release MLP equipment to LPS for Support.
3. Tighten Rack 6881AX V&DA Module hand-tight to snug fit.
4. Tighten Rack 6882AX V&DA Module hand-tight to snug fit.
5. Tighten Rack 6885AX V&DA Module hand-tight to snug fit.
6. Power down Orbiter LPS - Signal Adaptor (OLSA) PDP (Ref Des 6882AXA9) in the order below.

   a. Position Utility Outlet - Off (Down)
   b. Position Input Main Breaker - Off (Open)

7. Release FR-X 3P14 equipment to LPS for support.
8. Release PTCR equipment to LPS for support.
9. Release RPS equipment to RPS TC for support.
10. Notify R&QA that broken 'Integrity Seals' are ready to be re-sealed.

10010 Work Order Complete

Performed by	Date
SMITHSK	22-Apr-10

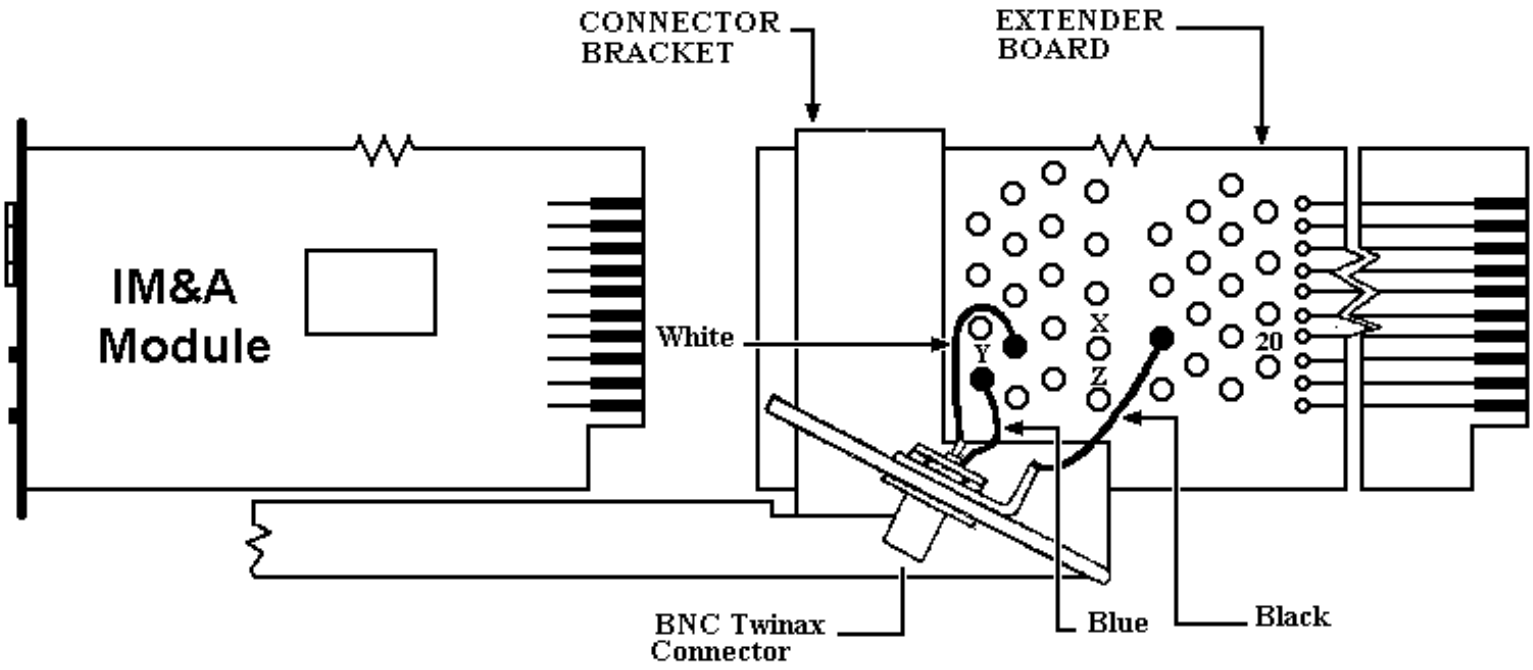


1. REMOVE SUITCASE JUMPERS FROM X, Y, AND 20,
   (LEAVE ALL OTHER SUITCASE JUMPERS IN EXTENDER BOARD.)

2. CONNECT TAPE PINS:

WIRE	JUMPER
WHITE	X (MODULE SIDE)
BLUE	Y (MODULE SIDE)
BLACK	20(MODULE SIDE)

FIGURE 1



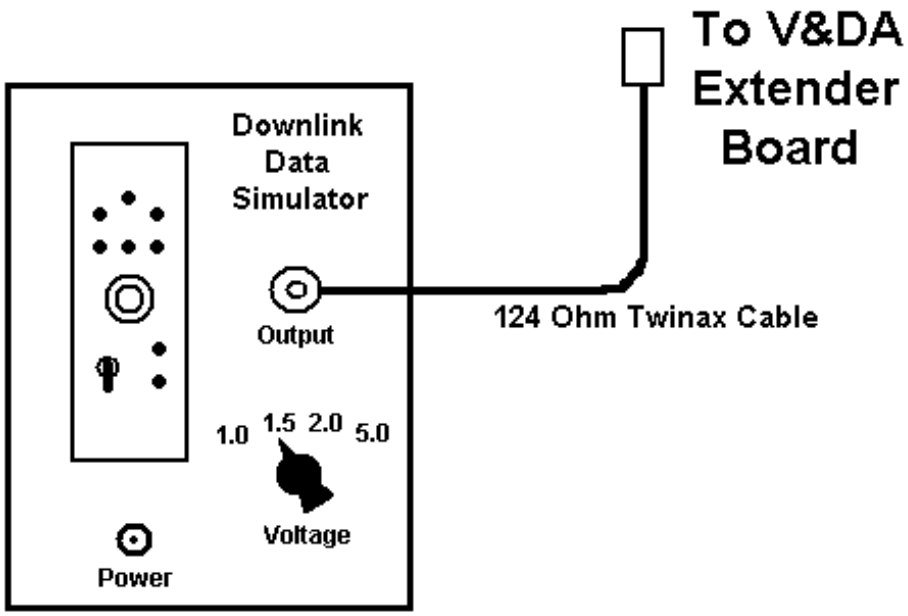


FIGURE 2