LIGO HANFORD OBSERVATORY
PO BOX 159
RICHLAND WA 99352

TEL: 509.372.8106
FAX: 509.372.8137

MEMORANDUM

DATE: September 21, 2015

TO: ISC team
FROM: Daniel Sigg, Koji Arai
SUBJECT: EOM/AOM Diver Modifications
Refer to: LIGO-E1500353-v3

This modifications apply to D0900761-B, D0900847-B, D0900848-C and D1000216-B to bring them to revisions C, C, D and C, respectively.

The affected serial numbers are S1500117 to S1500128.

Power Board D0900848-C

Change 1:

Capacitors need to be added to prevent the AD829 driving the pass transistor from oscillating.

C20, C35, C36, C37, C50, C51, C52, and C63 → 1nF
C91 → add a 100pF between U6 op27 (PIN6) and VREFP (PIN7)
should fit between the pads of C22 and R32
W1 → remove solder jumper

Change 2:

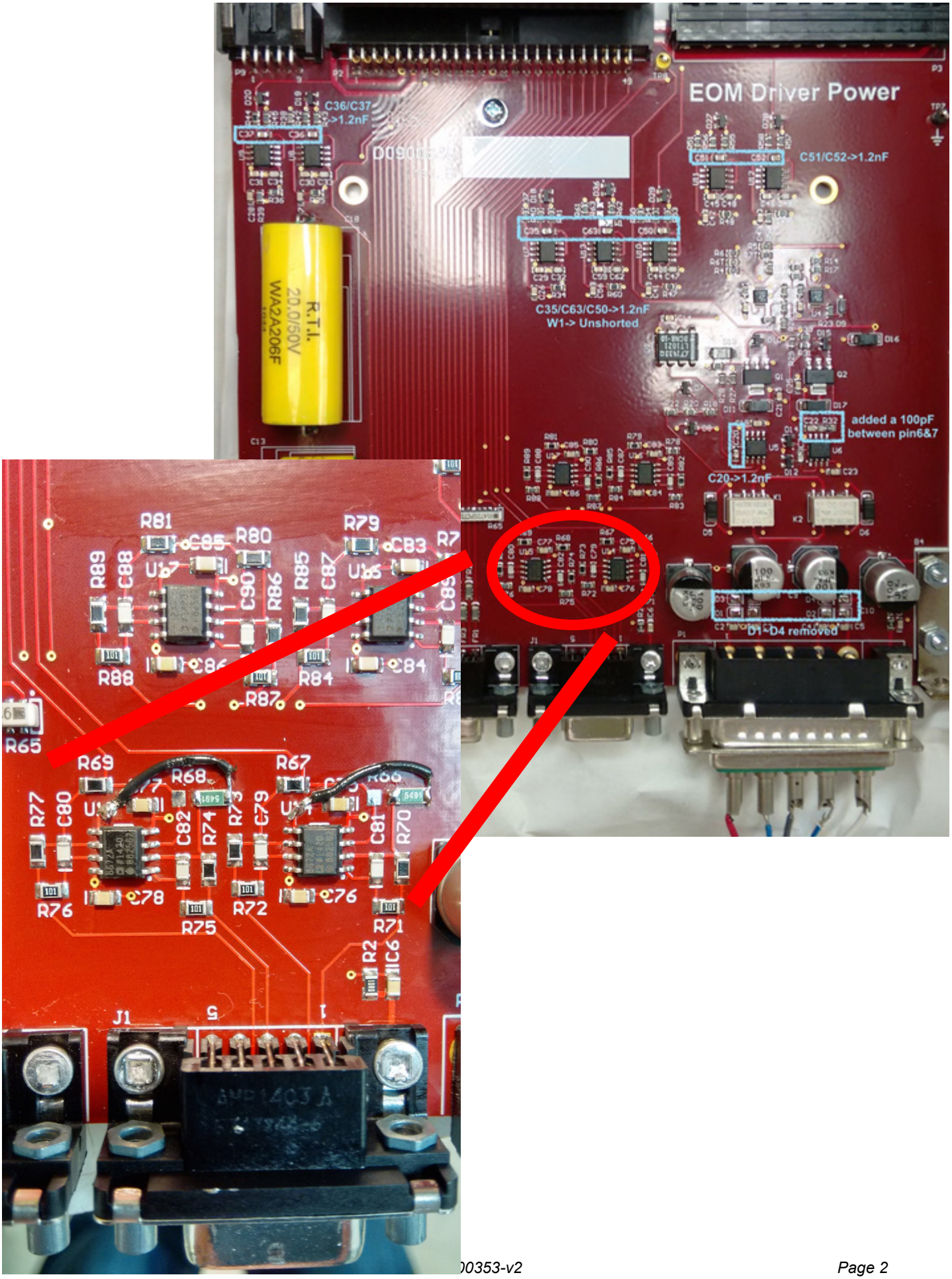
Remove the protection diodes which are no longer needed with the use of the power sequencing relays

D1, D2, D3, D4 → remove

Change 3:

Fix the gain in the differential output stages.

R66, R68 → 5.49K, shift and use only the pad above R70 and R74
J1, J2 → add a jumper wire from the free end to ground (see pic)


EOM Driver Power
C36/C37
->1.2nF
C51/C52->1.2nF
C35/C63/C50->1.2nF
W1-> Unshorted
added a 100pF
between pin6&7
C20->1.2nF
D1-D4 removed
R.T.I.
20.0/50V
WA2A206F
R81
R80
R79
R89
C88
C85
C83
R88
R84
R87
R65
R69
R68
R67
R77
C80
C82
C79
C81
R70
R76
R75
R72
R71
R2
IC6
J1

Servo Board D0900847-B

Change 1:

Reduce the high frequency gain of the servo to allow for better phase margin.

R69 → 66.5
C49 → 1nF
R71 → 3.3K
R67 → 3.3K

Change 2:

Add capacitor at the output drive to ground to reduce the backfeed of RF from the attenuator board.

C58 → 1nF, add between signal and ground pin of SMA connector J5

Attenuator Board D1000216-B

Change 1:

Add capacitor at the control input to ground to reduce the backfeed of RF to the servo board.

C2 → 1nF, add between signal and ground pin of SMA connector J3

Controller Board D0900761-B

Change 1:

Double the gain of the monitor points.

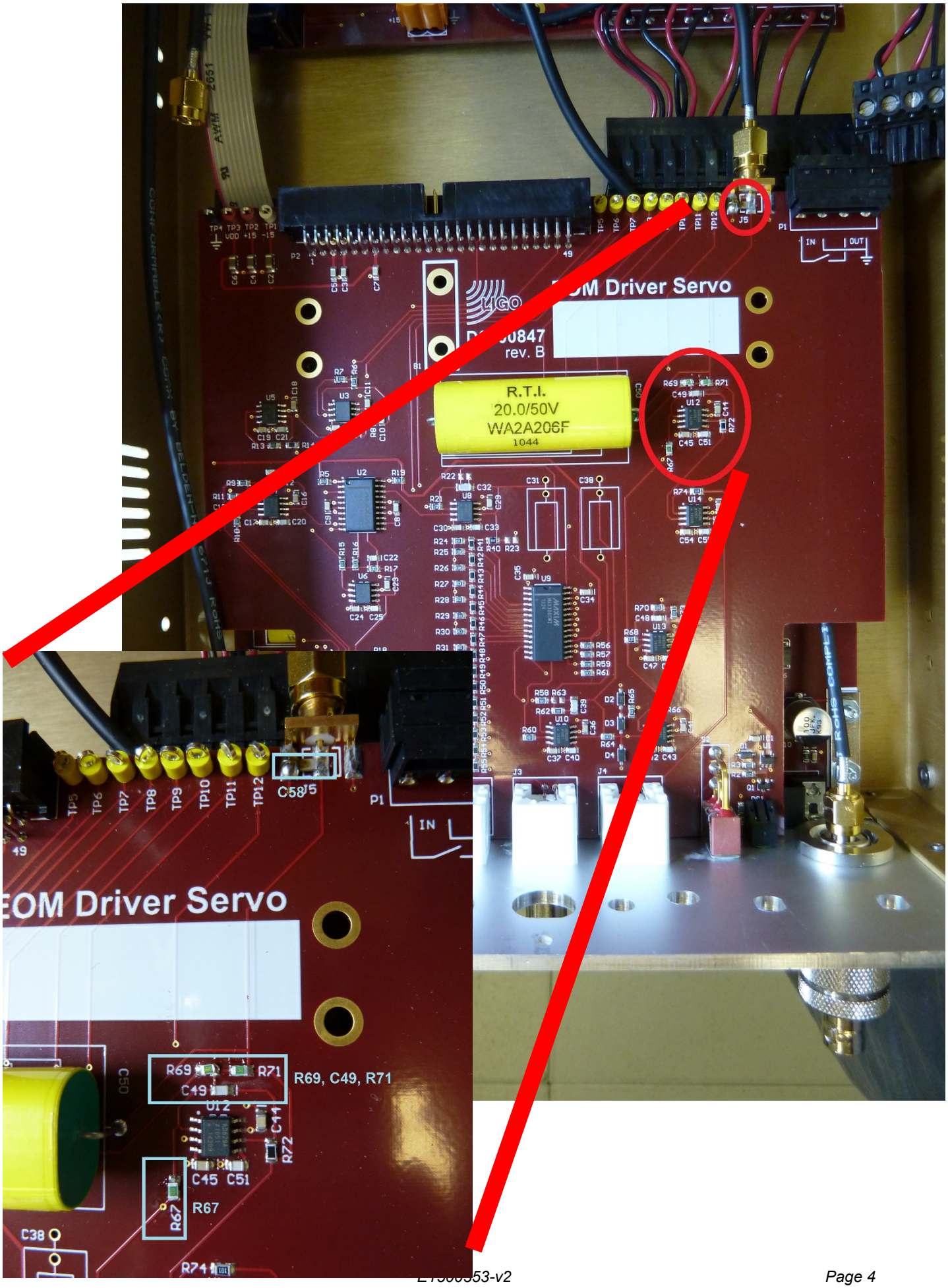
R27A, R27B → 6.65K

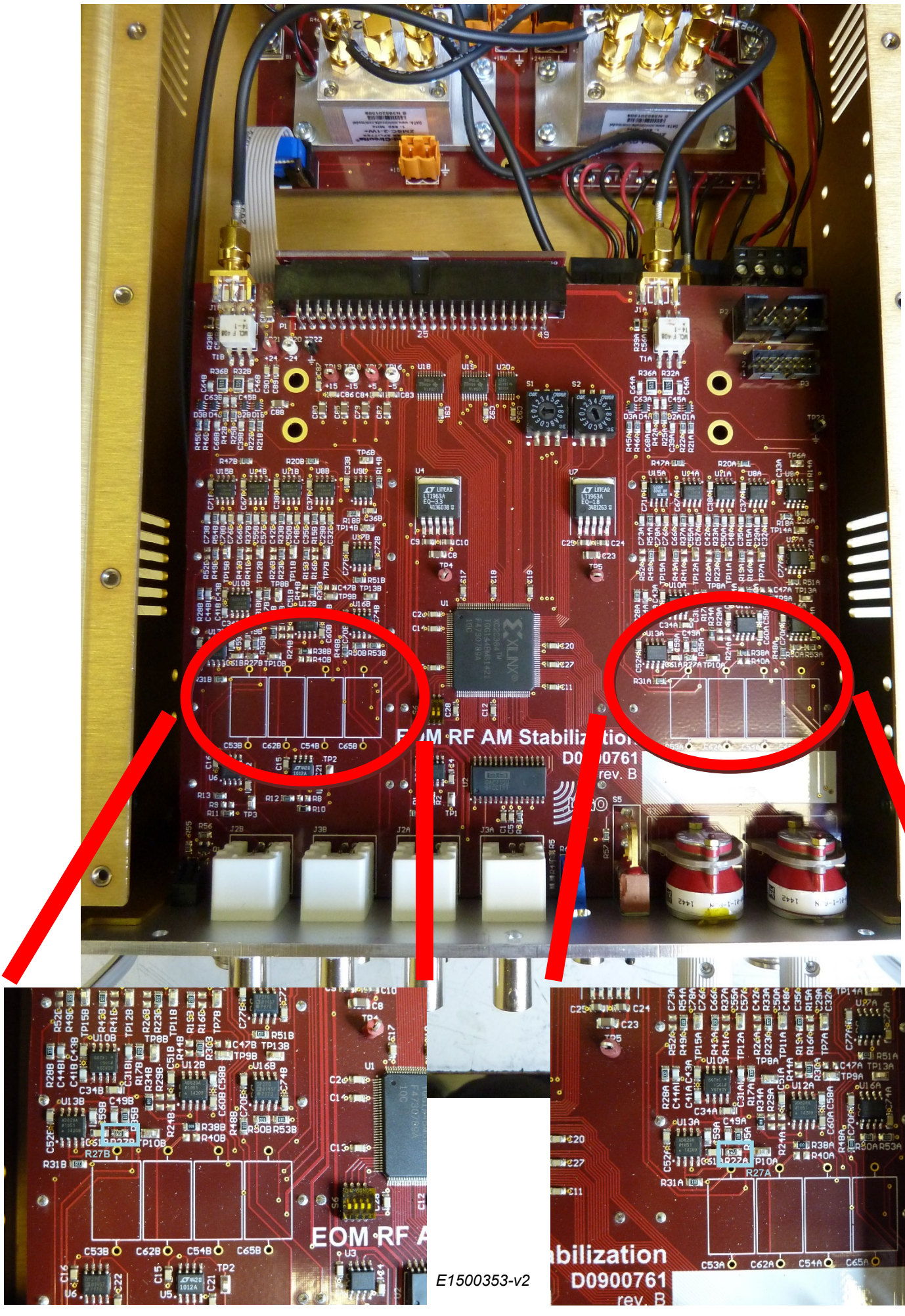
Final Checks:

After re–assembling the chassis the following checks should be performed:

Check 1: Test the tabs of Q3 to Q9 on the power board for shorts with the rear panel. (Powering up the chassis with a short will damage the transistor.)

Check 2: Make sure the backplane board is inserted center into the rear connectors. (It is possible to offset the backplane by one row and damage Q1 or Q2 on the power board.)


R.T.I.
20.0/50V
WA2A206F
1044
J5
P1
IN
OUT
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
C58
R69
R71
C49
U12
C45
C51
R67
R69, C49, R71
C38
R74


EOM RF AM Stabiliz
D0900761
rev. B
EOM RF A
bilization
D0900761
rev. B

E1500353-v2

BOM (for 12 units):

Qty	Item	Distributor	Description
108	311-1122-1-ND	Digi-Key	1nF, 0805, NPO Power board: C20, C35, C36, C37, C50, C51, C52, and C63 Servo board: C49
12	311-1111-1-ND	Digi-Key	100pF, 0805, NPO Power board: C91
24	P5.49KDACT-ND	Digi-Key	5.49K, 0805, 0.1% Power board: R66, R68
12	P66.5DACT-ND	Digi-Key	66.5, 0805, 0.1% Servo board: R69
24	P3.3KDACT-ND	Digi-Key	3.3K, 0805, 0.1% Servo board: R67, R71
24	478-1492-1-ND	Digi-Key	1nF, 1206, NPO Servo board:C58 Attenuator board: C2
24	*P6.65KDACT-ND*	Digi-Key	6.65K, 0805, 0.1% Controller board: R27A, R27B
1	6710 BK005-ND	Digi-Key	Hook-up wire