NOAO

ENGINEERING CHANGE ORDER

BOARD NAME	Torrent LCB		ECO#	**TRNT-0003**	DATE APRIL 2009
BRD SERL#	ALL	REV	ART#		
PN#		REV			REV
ASBLY#	TRNT-EL-04-0004	REV OD	PCB#		REV
BOM#		REV	SCH#	TRNT-EL-04-2001	REV OD
COGNIZANT ENGNR	Peter Moore/ Dave Sawyer		CHARGE#		

REASON FOR MODIFICATION:

Installation of parts not in stock at the time of build
stabilize clock signals, ability to ground test probes

DRAWINGS AFFECTED:	NEW REV
TRNT-EL-04-2001 rOD	-1.0
TRNT-EL-04-0001 rOD	-1.0

DESCRIPTION OF MODIFICATION:

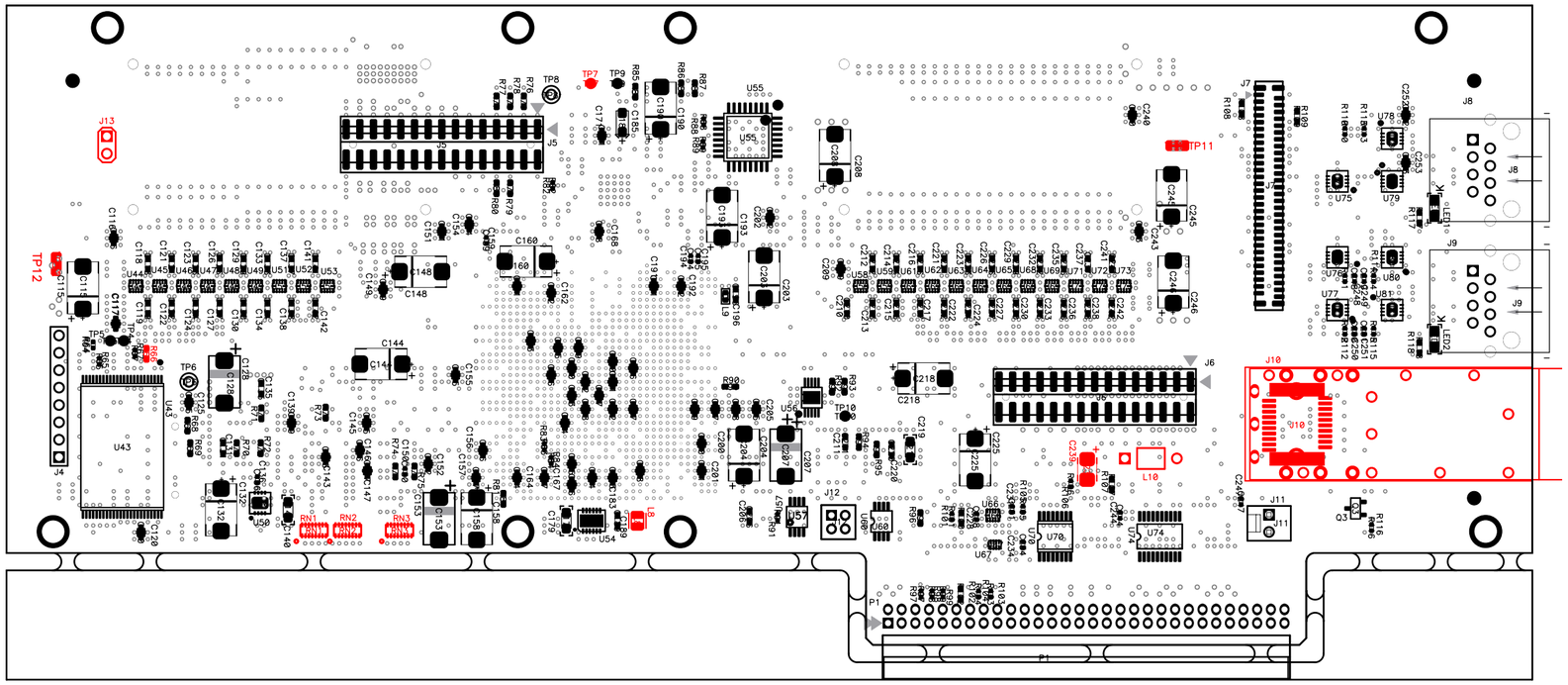
Figure 1 – overall view, high lighted components top & bottom.

1. TOP Side Install & wire adds:
    - 1.1 D1 item 91, (Fig 2)
    - 1.2 TP13 & TP14: Item 89 (Fig 2)
    - 1.3 U20 & U37 modifications (rework done by contractor) (Fig 3, 3a, 3b)

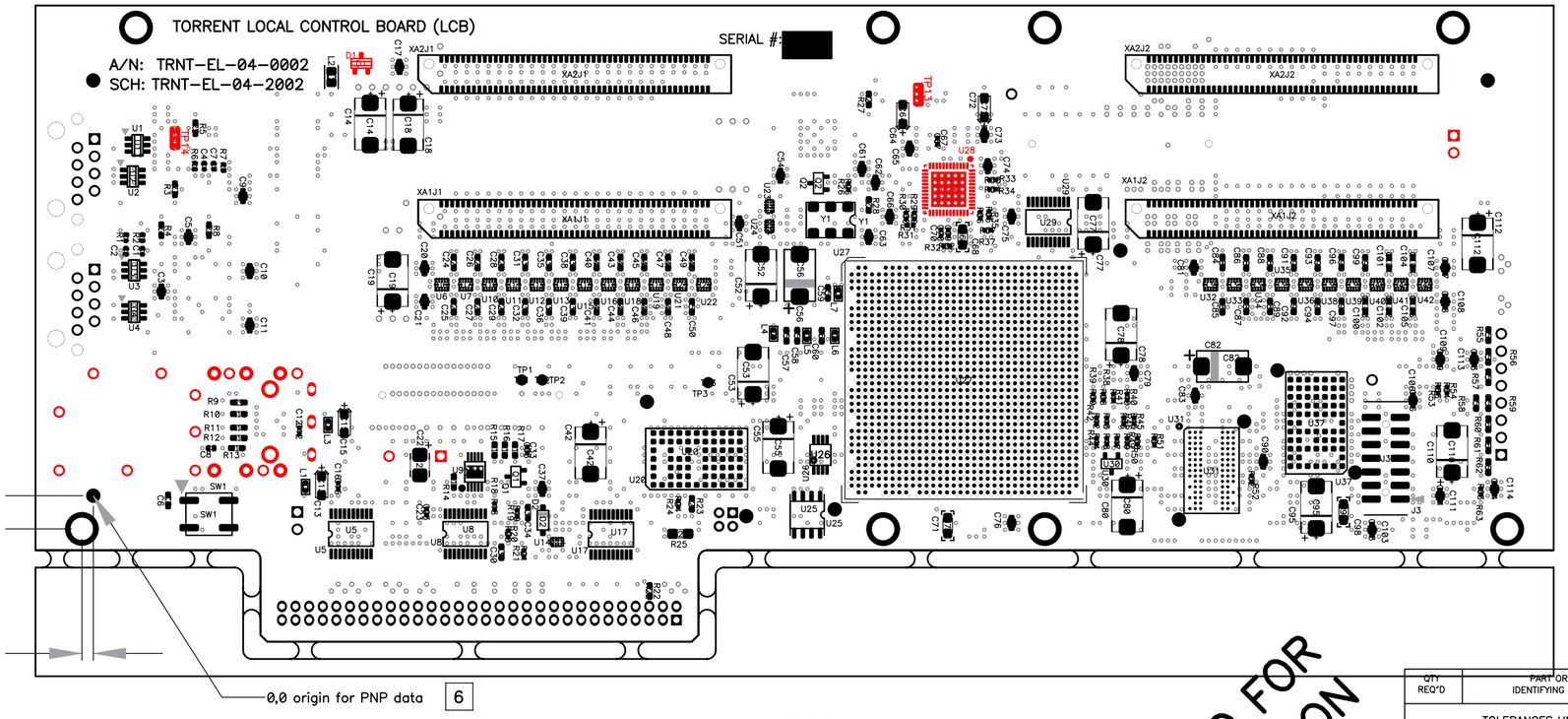
2. Bottom Side Install & wire adds:
    - 2.1 Add Low pass filter (U28-32 to 5.6nF to GND) (U28-32 to 10nF cap via a 1% 3.65K resistor to ground) component adds are on the bottom of the board see figure 4. C255, C254, R119 should be glued to the board. Abut and solder one terminal of R119 & C254 together at location shown, add wire to the opposite terminal of R119 to ground via (shown in Fig 4). Add wire from opposite terminal of C254 to TP7. C255 – wire add 1 terminal to TP7 and the other terminal to ground via (shown in Fig. 4).
    - 2.2 Install L8, Item #32 (Fig 5)
    - 2.3 RN1, RN2, RN3, Item 74 (Fig 5)
    - 2.4 J13, Item 88 & TP12 Item 89 (Fig 5)
    - 2.5 Install L10, Item #33 (Fig 6)
    - 2.6 C239, Item 23 (Fig 6)
    - 2.7 J10 (2 parts), Item 76 & 77 (Fig 6)
    - 2.8 Ground test point TP11 Item 89 (Fig 6)
    - 2.9 remove R66, tie U27-N22 to ground (wire add see Fig 7)

FIGURE 1

	OD	INITIAL RELEASE		24MAR09	DMS	
	−1	see ECO for details	TRNT−0003	27JUL09	DMS	



BOTTOM
ASSEMBLY



TOP
ASSEMBLY

NOTES:
1. Before installing any components check all boards using an ohm meter for shorts between all power and ground nodes.
2. All polarized caps are marked with a plus (+) sign closest to the positive node.
3. Diode orientation: D2 cathode marking is heavy bar. LED1 LED2 cathode marking is letter "K".
4. All holes and lands of uninstalled components shall be kept free of solder.
5. Do not cover serial number area with vendor labels or markings. Use a blank area near board identification text for vendor label and marking placement.
6. PNP report origin
7. If modifications are performed on this board, the cleaning process should be confined to the modified areas. Do not subject the board to any all−over cleaning processes.

VENDOR NOTE: NOTIFY NOAO OF ANY CONFLICTING REQUIREMENTS OR IF BOARDS CANNOT BE MANUFACTURED TO MEET THE REQUIREMENTS, DUE TO VENDORS PROCESS AND/OR TECHNIQUES OR BECAUSE PHOTO TOOLS AND/OR SPECIFICATIONS ARE INADEQUATE.

APPROVED FOR CONSTRUCTION 03−24−09

Modified Date: Mon Jul 27, 2009

QTY REQ'D	PART OR IDENTIFYING NO	ITEM DESCRIPTION		ITE

TOLERANCES UNLESS OTHERWISE NOTED
.XX ± .03
.XXX ± .010
ANGULAR ±.5°

THIRD ANGLE PROJECTION

NATIONAL OPTICAL ASTRONOMY OBSERVATORIE
OPERATED BY THE
ASSOCIATION OF UNIVERSITIES FOR RESEARCH IN ASTRONOMY
UNDER COOPERATIVE AGREEMENT WITH
NATIONAL SCIENCE FOUNDATION

DO NOT SCALE DRAWING

NEXT ASSEMBLY: TRNT−EL−02−xxxx

REFER TO SCHEMATIC: TRNT−EL−04−2002

NAME: ASSEMBLY
LOCAL CONTROL BOARD (LCB)

USED ON: TORRENT

REF:

DWG SIZE: C

REV: −1

SCALE:	DESIGNED BY	DATE	CHECKED BY	DATE	DWG NO	
FULL	Dee Stover	10MAR09			TRNT−EL−04−0002	
DWG PRODUCED USING	DRAWN BY	DATE	APPROVED BY	DATE	RELEASED	SHEET 1 OF 1

FIGURE 2

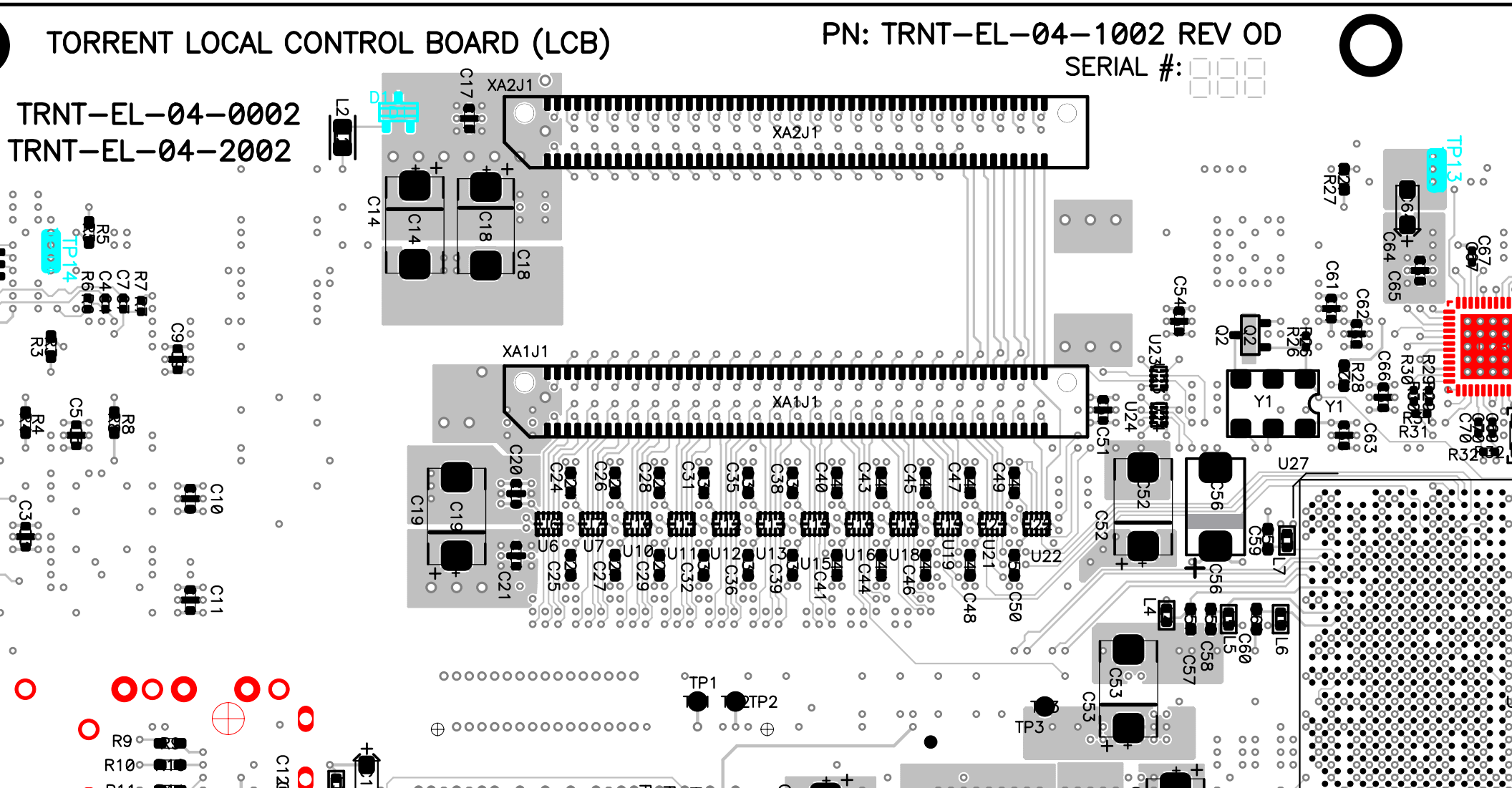
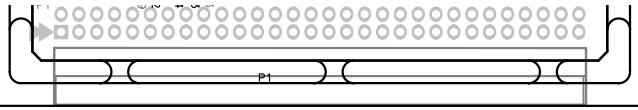
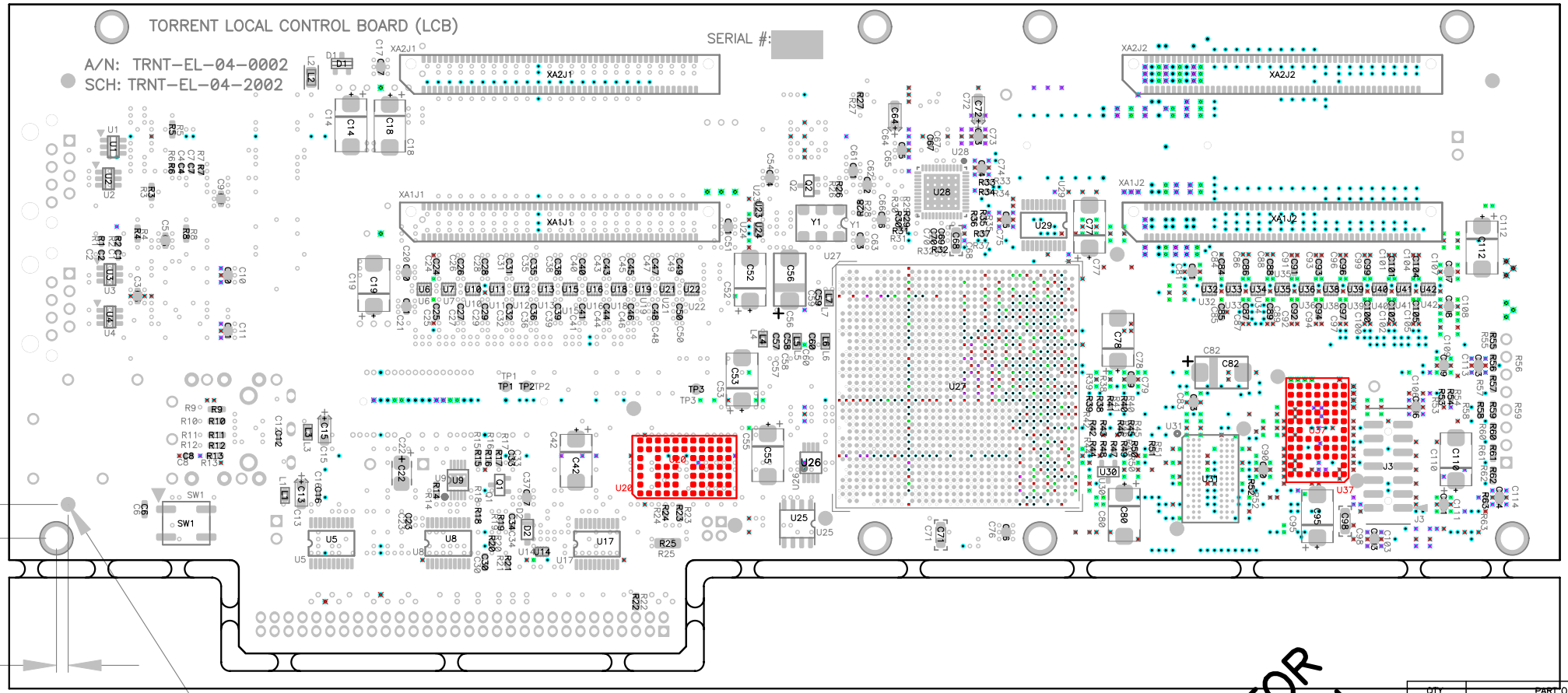

TORRENT LOCAL CONTROL BOARD (LCB)
PN: TRNT-EL-04-1002 REV OD
SERIAL #:
TRNT-EL-04-0002
TRNT-EL-04-2002
XA2J1
XA1J1
TP1
TP2
TP3
TP13
TP14
Y1
U27

FIGURE 3



BOTTOM
ASSEMBLY



TOP
ASSEMBLY

APPROVED FOR
NSTRUCTION
4-09

QTY REQ'D	PART OR IDENTIFYING NO

TOLERANCES UNLESS
OTHERWISE NOTED
.XX ± .03
.XXX ± .010

DO NOT SCALE D

NEXT ASSEMBLY
TRNT-EL-02

FIGURE 3A

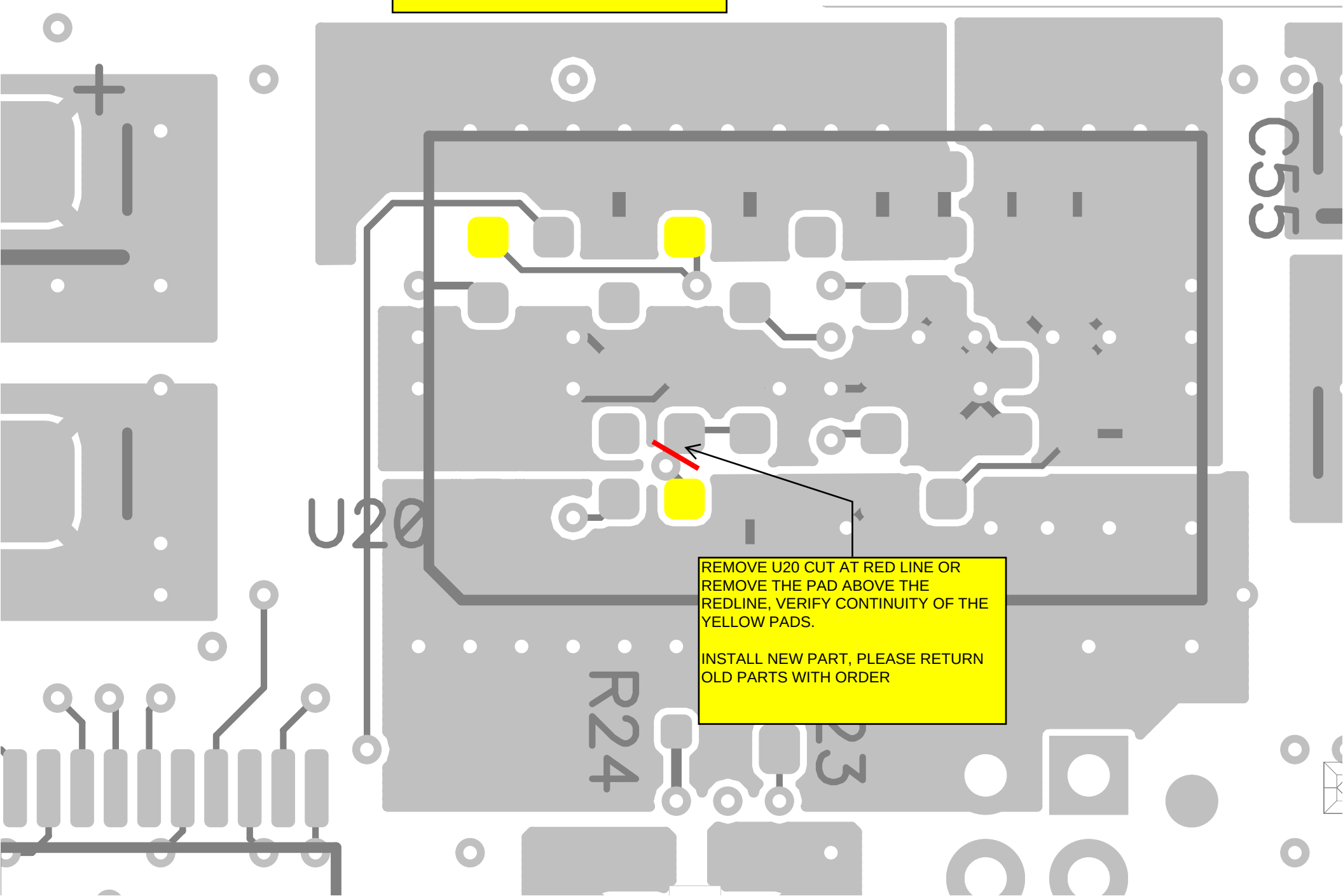

C55
U20
R24
REMOVE U20 CUT AT RED LINE OR REMOVE THE PAD ABOVE THE REDLINE, VERIFY CONTINUITY OF THE YELLOW PADS.
INSTALL NEW PART, PLEASE RETURN OLD PARTS WITH ORDER

FIGURE 3B

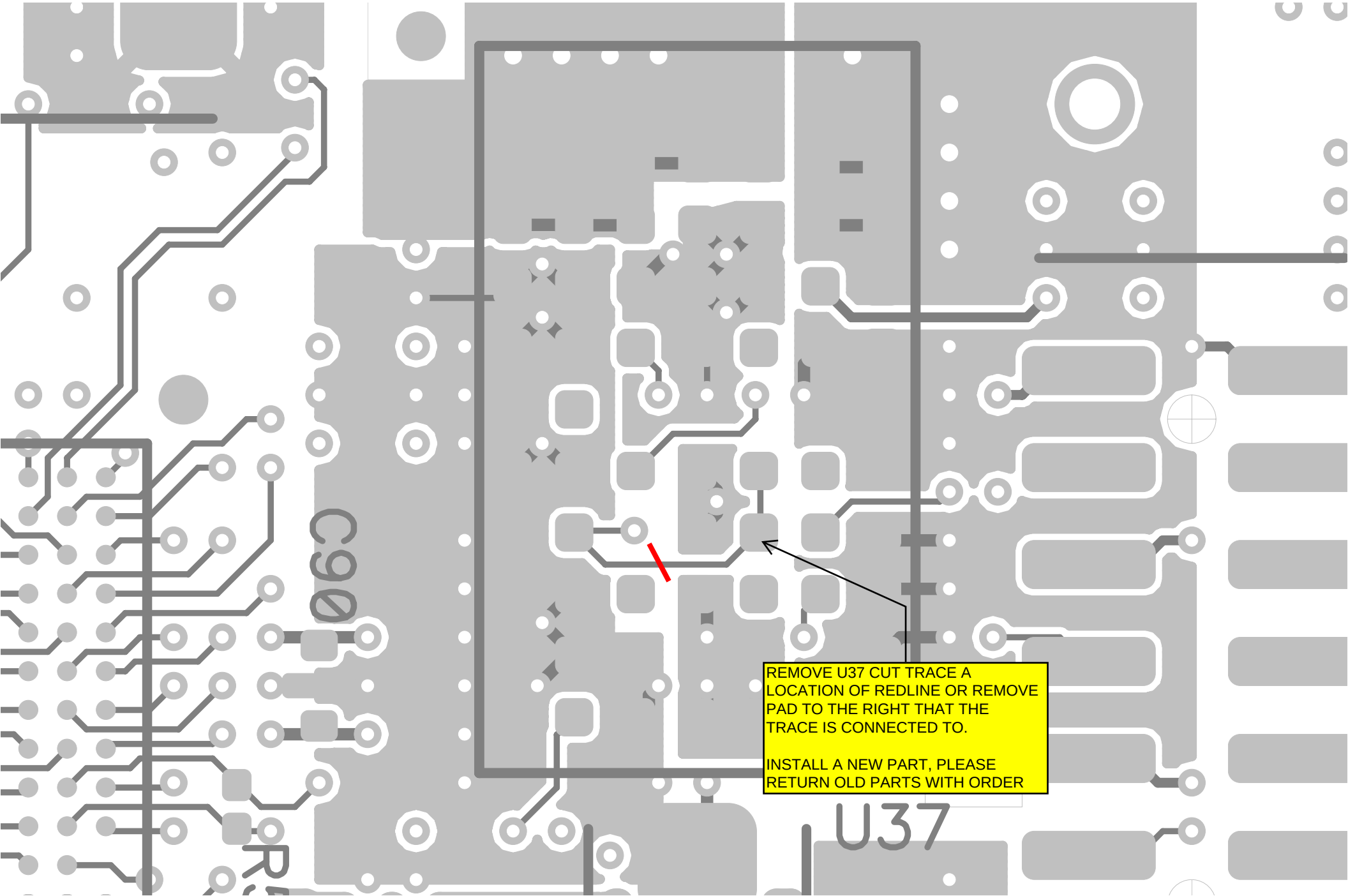

C90
U37
REMOVE U37 CUT TRACE A LOCATION OF REDLINE OR REMOVE PAD TO THE RIGHT THAT THE TRACE IS CONNECTED TO.
INSTALL A NEW PART, PLEASE RETURN OLD PARTS WITH ORDER

FIGURE 4

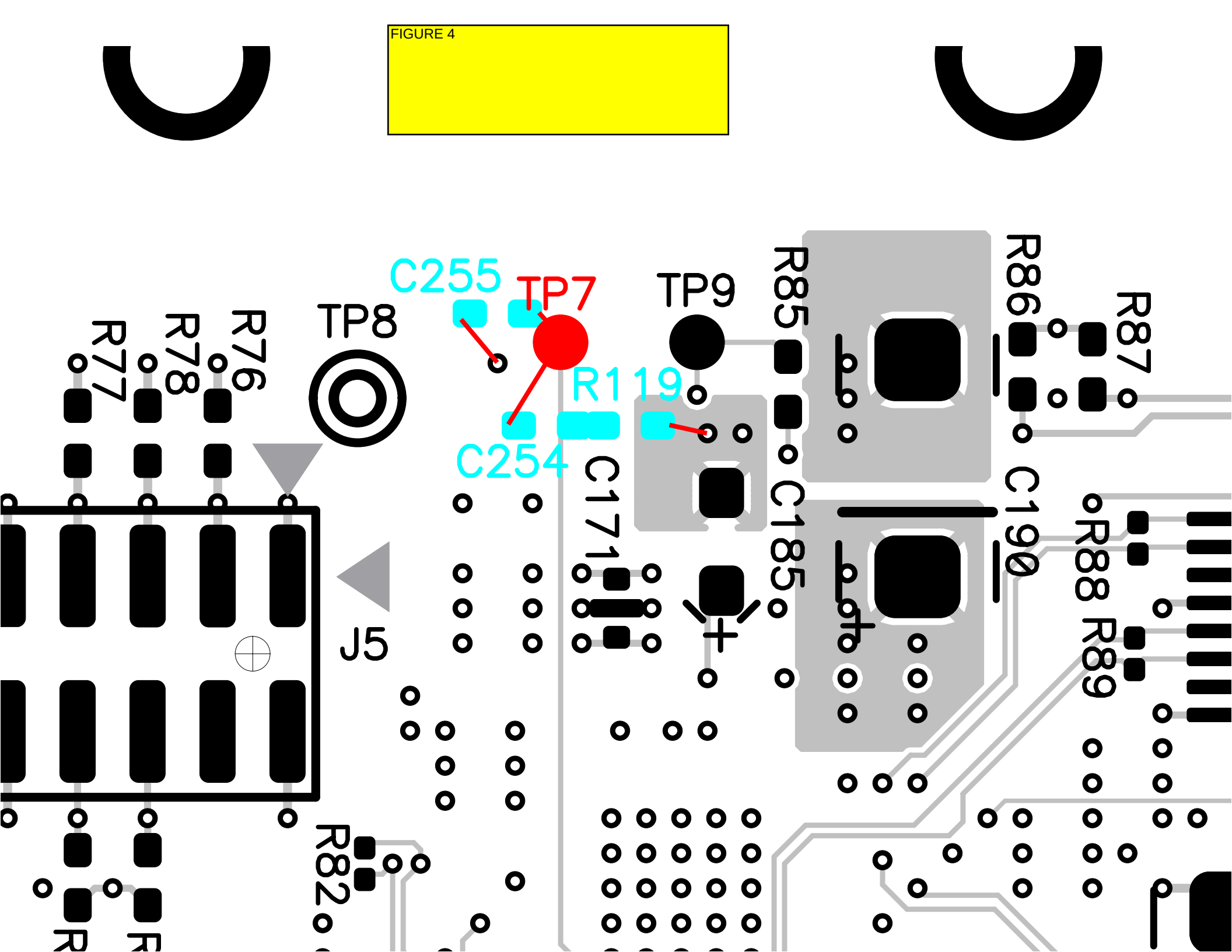
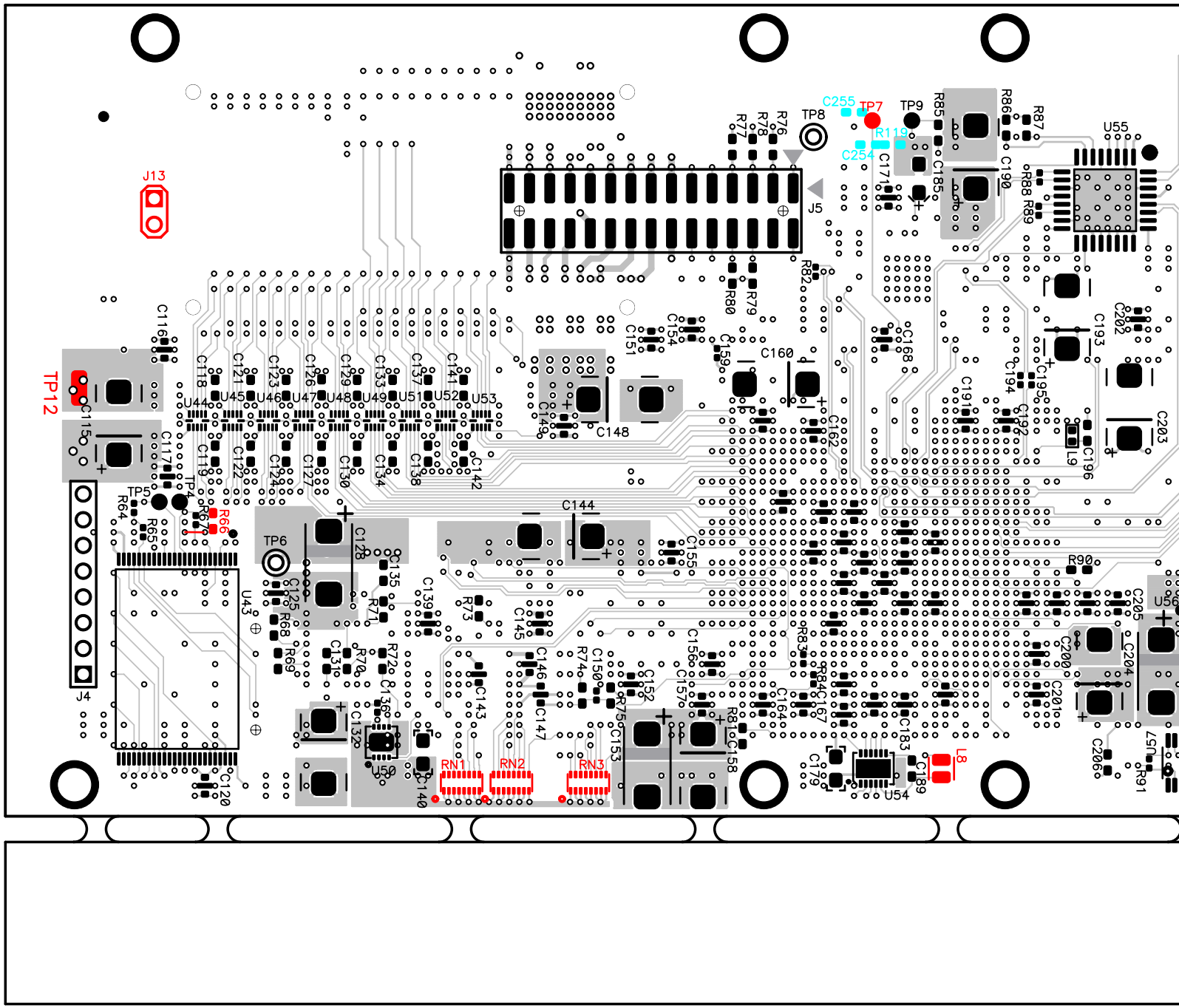

C255
TP7
TP9
R85
R86
R87
TP8
R77
R78
R76
R119
C254
C171
C185
C190
R88
R89
J5
R82

FIGURE 5


J13
TP12
J4
J5
TP4
TP5
TP6
TP7
TP8
TP9
U43
U44
U45
U46
U47
U48
U49
U50
U51
U52
U53
U54
U55
U56
U57
RN1
RN2
RN3
L8
L9
C255
C254
R119
R64
R65
R66
R67
R68
R69
R70
R71
R72
R73
R74
R75
R76
R77
R78
R79
R80
R82
R83
R84
R85
R86
R87
R88
R89
R90
R91
C115
C116
C117
C118
C119
C120
C121
C122
C123
C124
C125
C126
C127
C128
C129
C130
C131
C132
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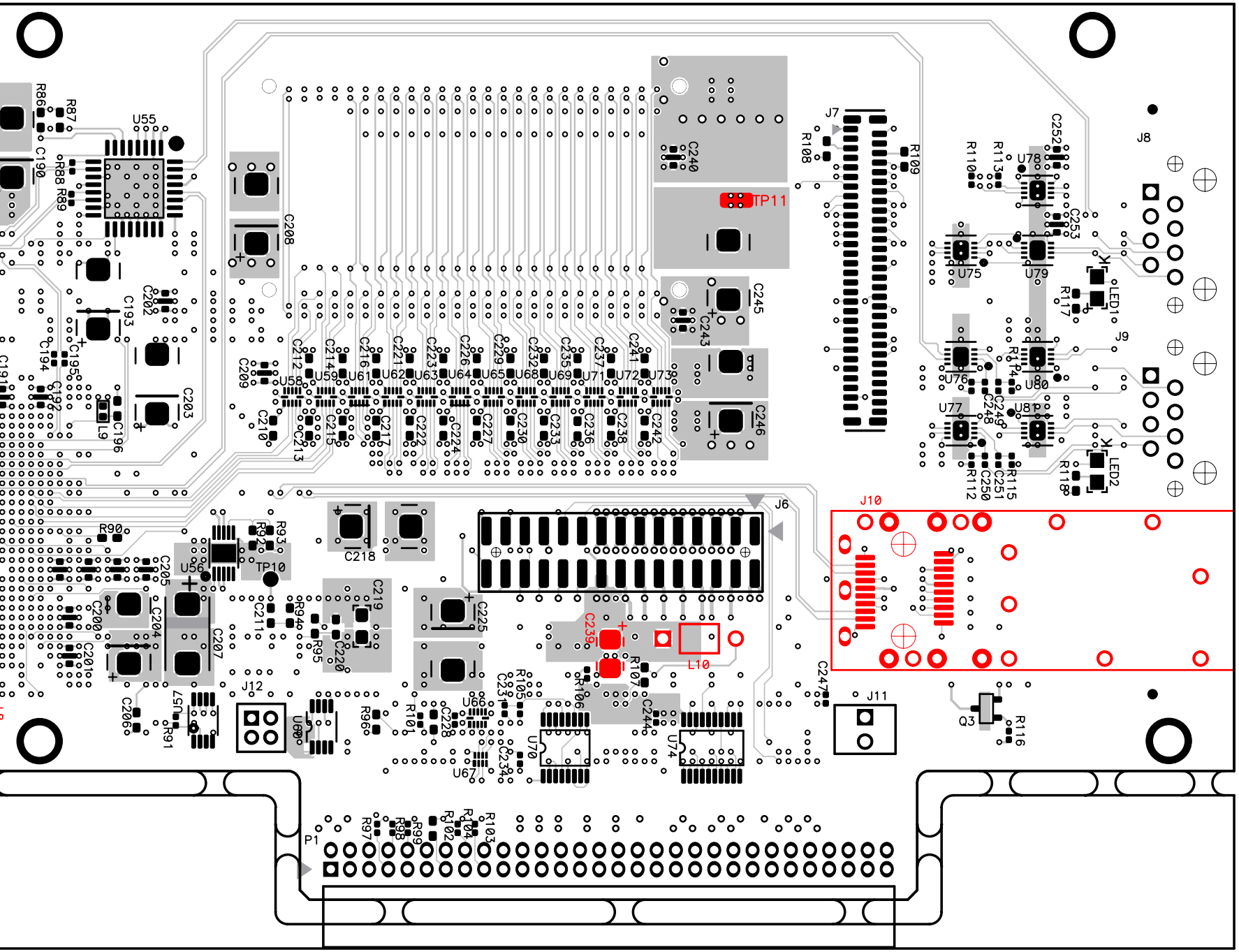
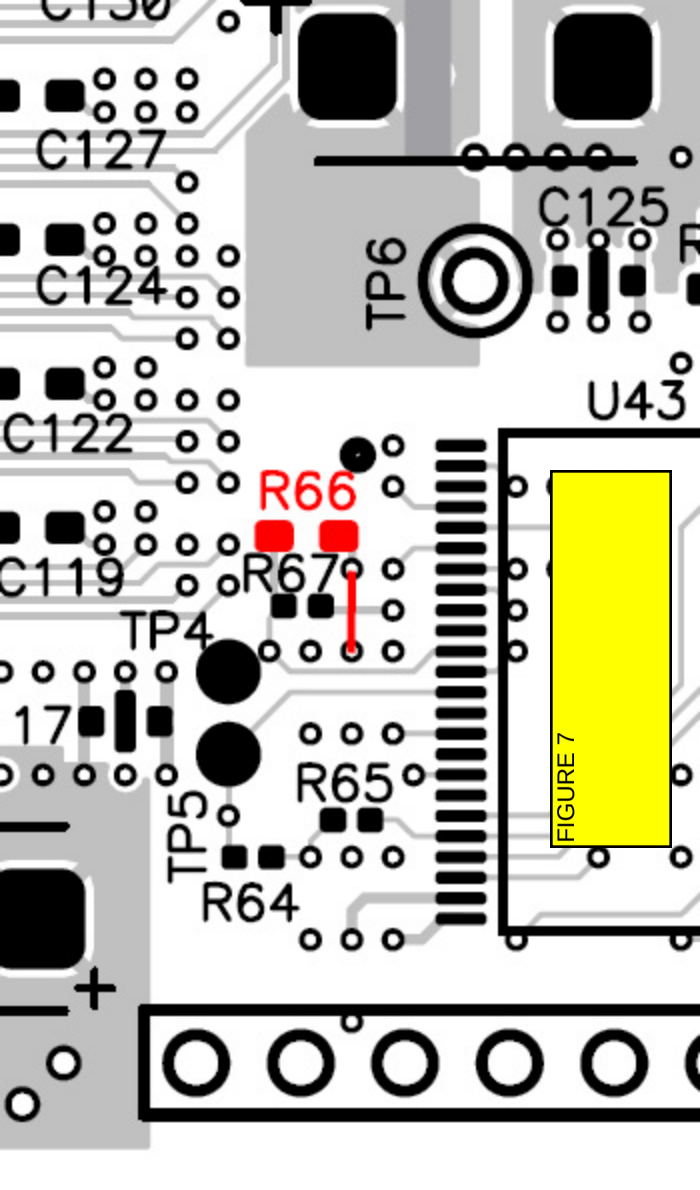
C157
C158
C159
C160
C162
C164
C167
C168
C171
C179
C183
C185
C189
C190
C191
C192
C193
C194
C195
C196
C200
C201
C202
C203
C204
C205
C206

FIGURE 6



BOTTOM SIDE CONDUCTORS (LAYER–12) SECONDARY


C127
C124
C122
C119
TP4
TP5
R64
R65
R66
R67
TP6
C125
U43
FIGURE 7