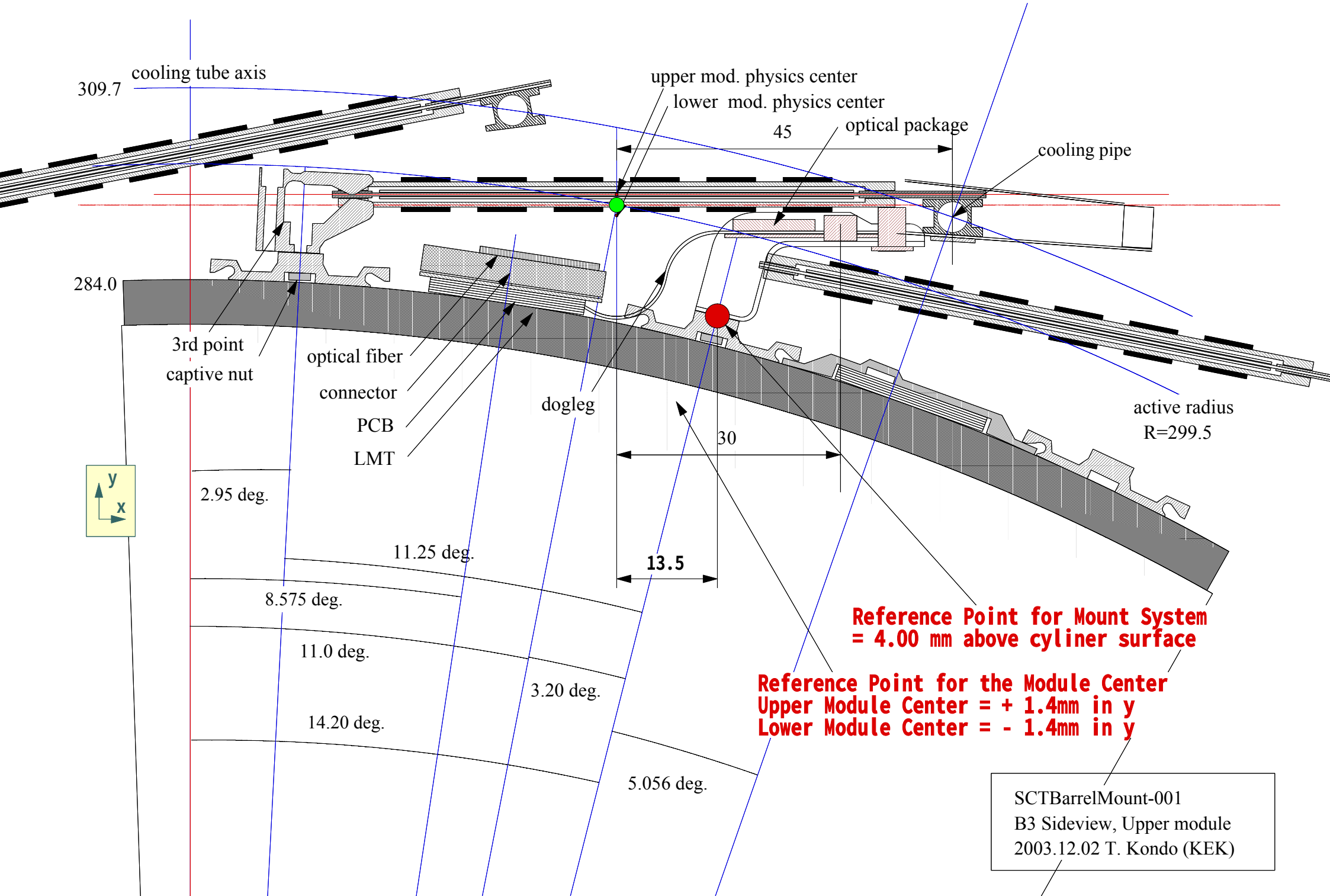
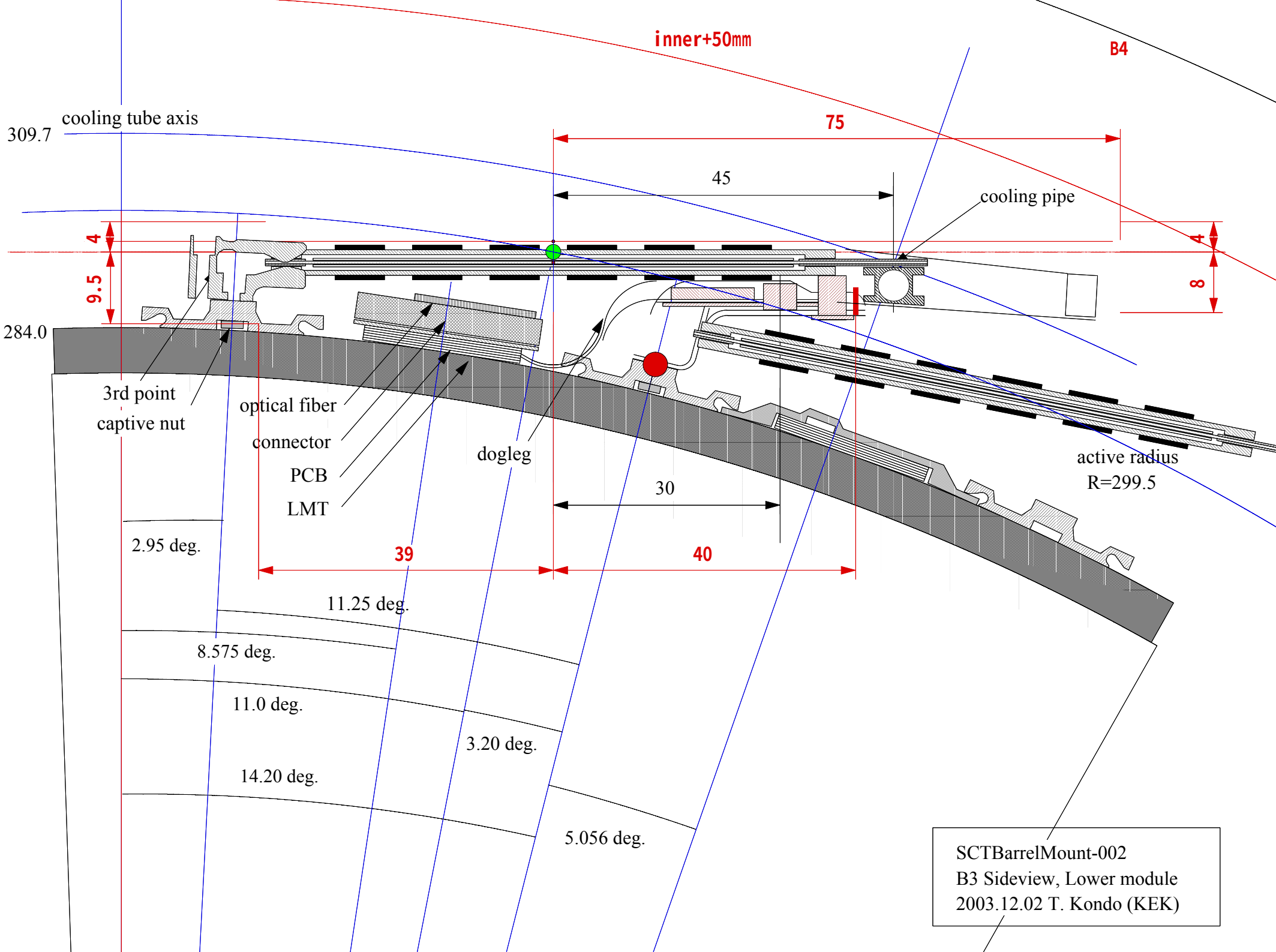
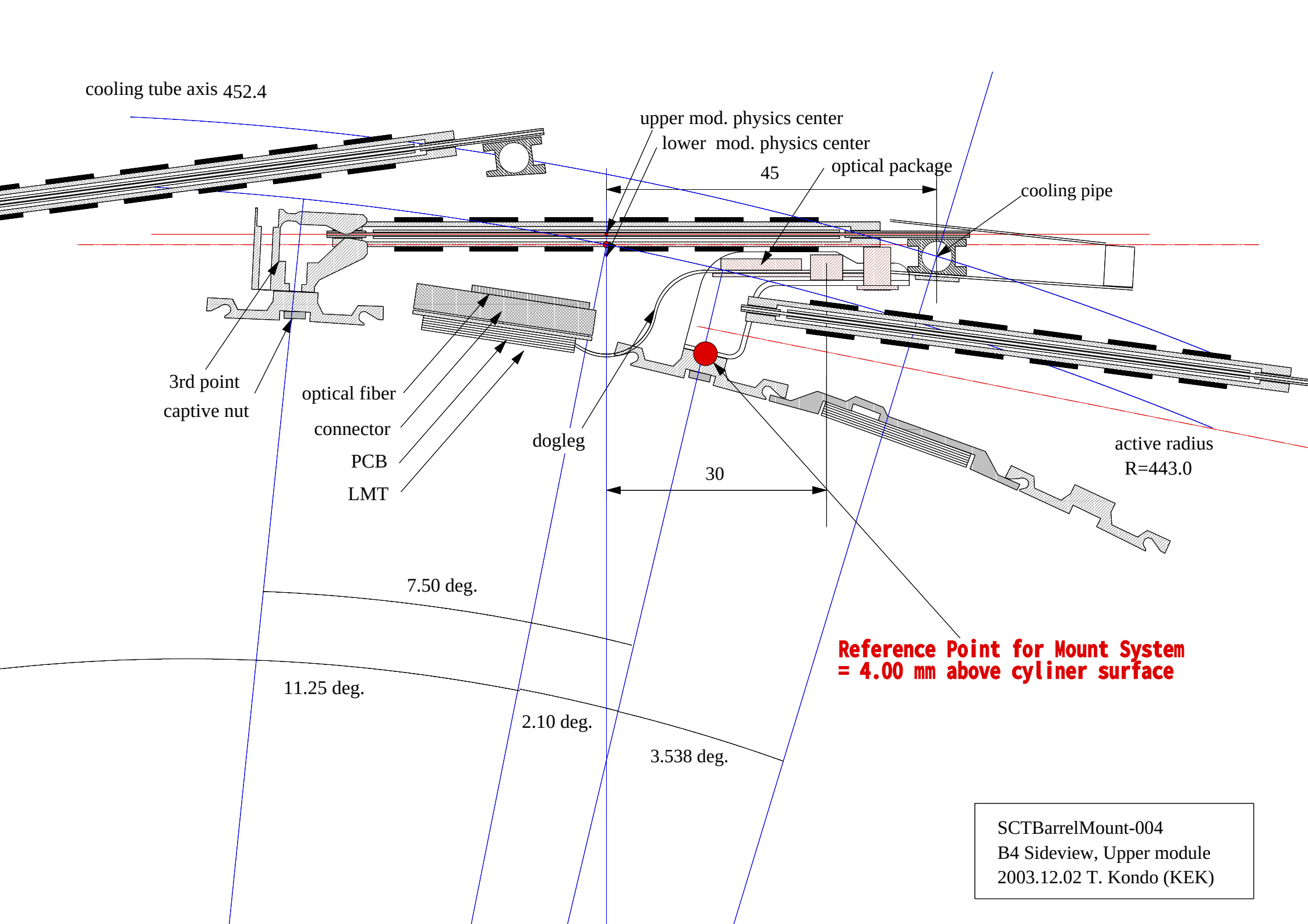
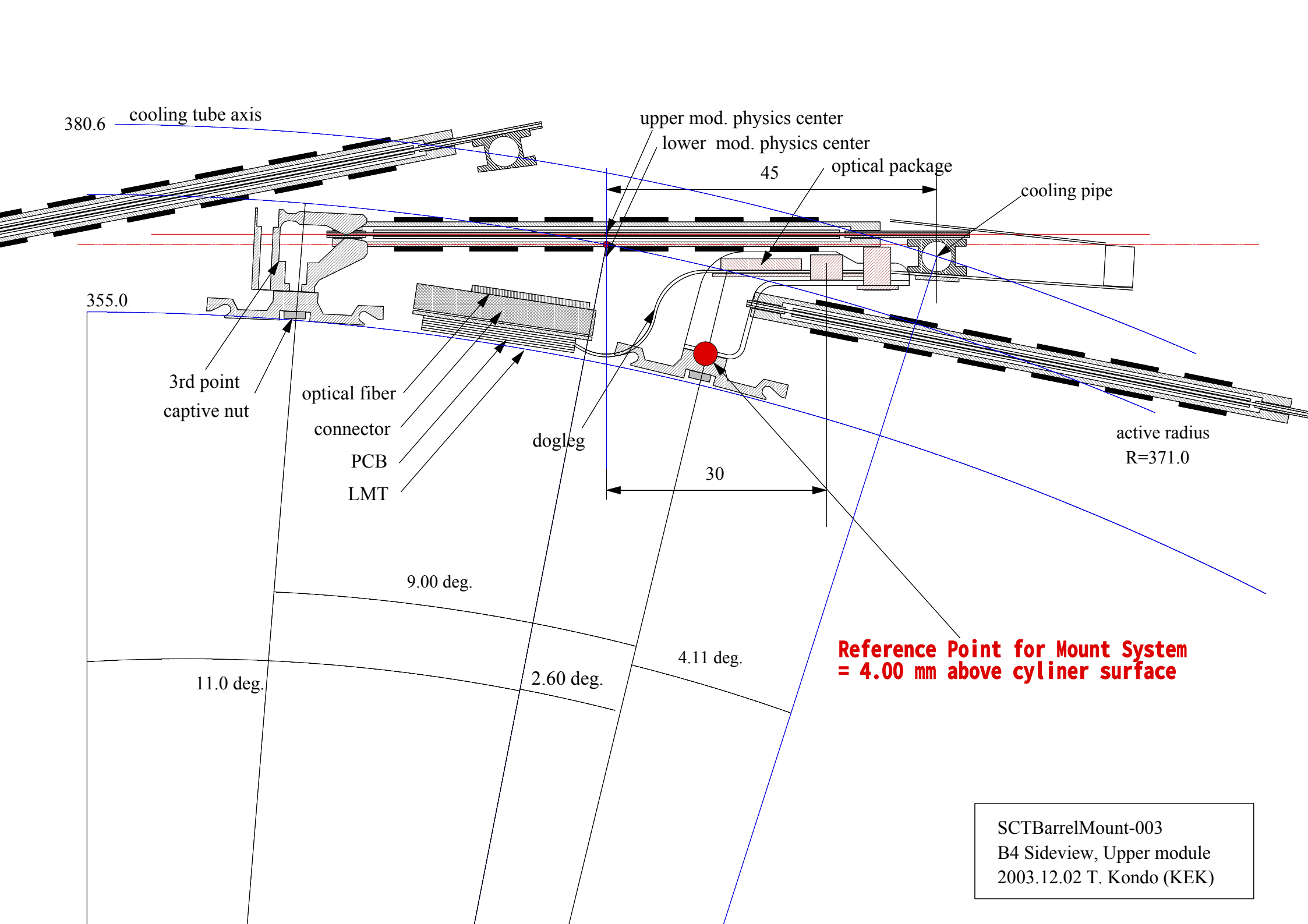
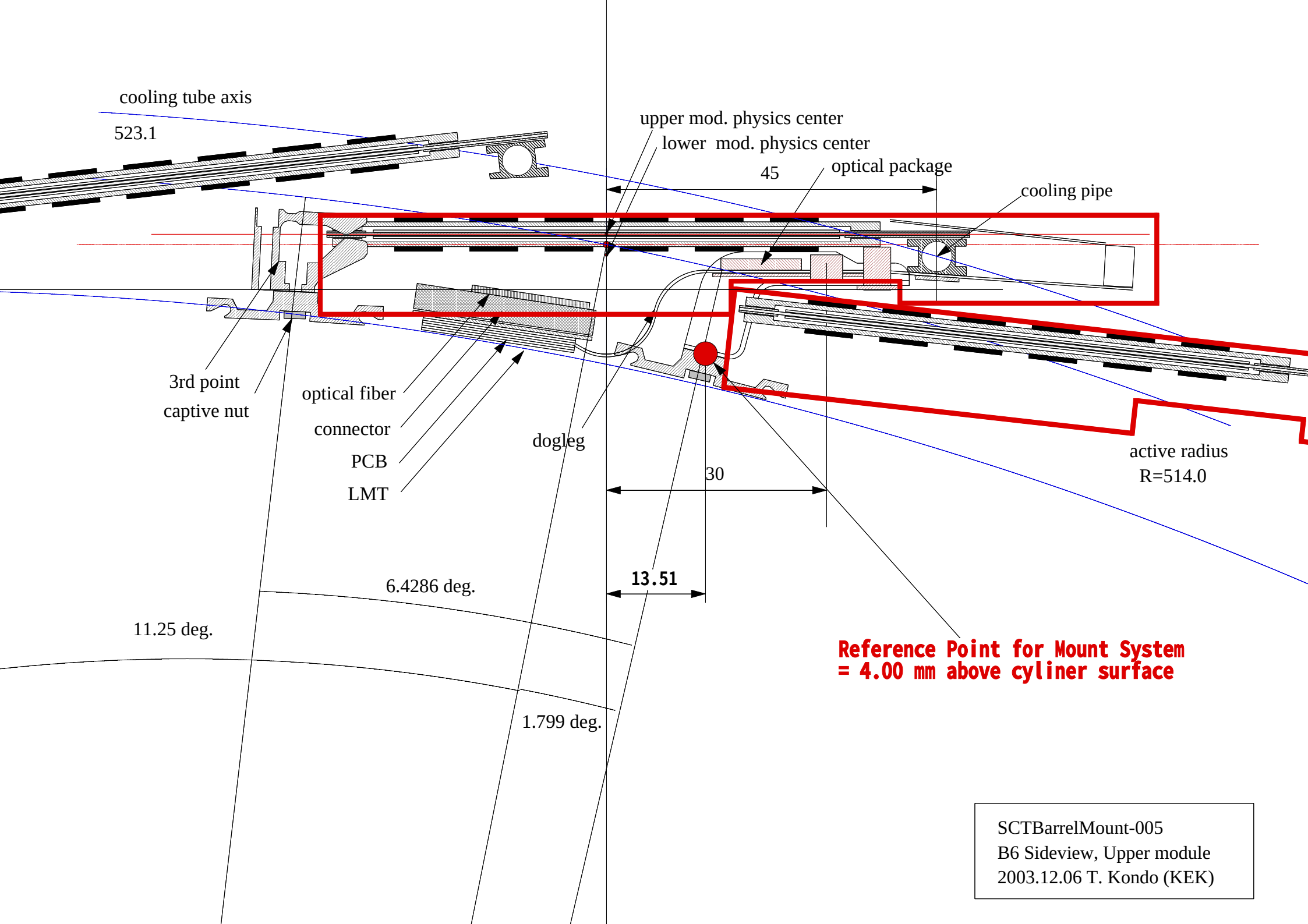

309.7
cooling tube axis
upper mod. physics center
lower mod. physics center
45
optical package
cooling pipe
284.0
3rd point
captive nut
optical fiber
connector
PCB
LMT
dogleg
active radius
R=299.5
30
y
x
2.95 deg.
11.25 deg.
8.575 deg.
11.0 deg.
3.20 deg.
14.20 deg.
5.056 deg.
13.5
Reference Point for Mount System
= 4.00 mm above cyliner surface
Reference Point for the Module Center
Upper Module Center = + 1.4mm in y
Lower Module Center = - 1.4mm in y
SCTBarrelMount-001
B3 Sideview, Upper module
2003.12.02 T. Kondo (KEK)


inner+50mm
B4
cooling tube axis
309.7
75
45
cooling pipe
4
9.5
4
8
284.0
3rd point
captive nut
optical fiber
connector
PCB
LMT
dogleg
active radius
R=299.5
30
2.95 deg.
39
40
11.25 deg.
8.575 deg.
11.0 deg.
3.20 deg.
14.20 deg.
5.056 deg.
SCTBarrelMount-002
B3 Sideview, Lower module
2003.12.02 T. Kondo (KEK)

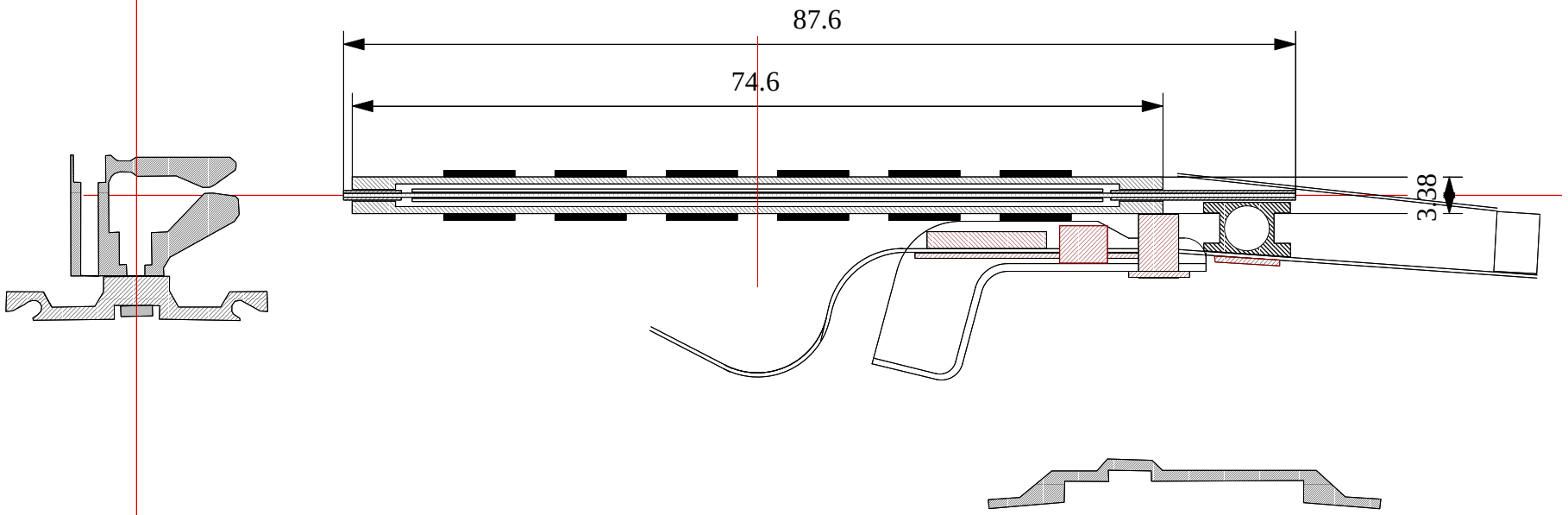


SCTBarrelMount-004
B4 Sideview, Upper module
2003.12.02 T. Kondo (KEK)

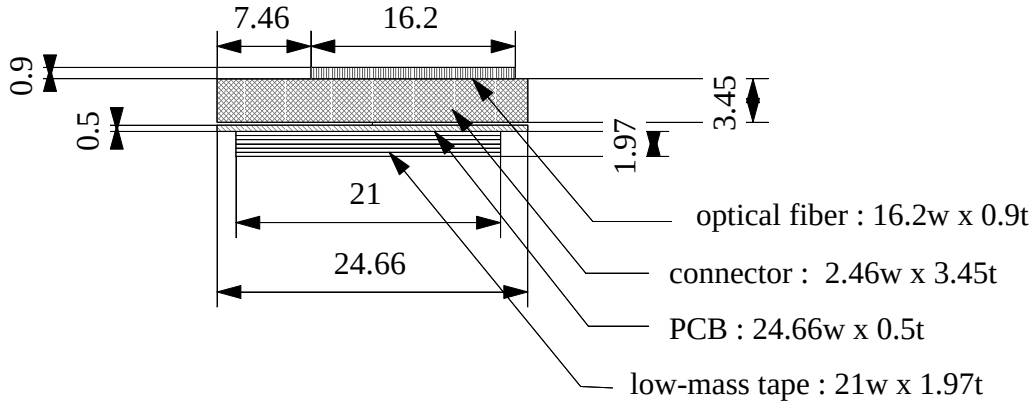

380.6
cooling tube axis
upper mod. physics center
lower mod. physics center
45
optical package
cooling pipe
355.0
3rd point
captive nut
optical fiber
connector
PCB
LMT
dogleg
30
active radius
R=371.0
9.00 deg.
11.0 deg.
2.60 deg.
4.11 deg.
Reference Point for Mount System
= 4.00 mm above cyliner surface
SCTBarrelMount-003
B4 Sideview, Upper module
2003.12.02 T. Kondo (KEK)



SCTBarrelMount-005
B6 Sideview, Upper module
2003.12.06 T. Kondo (KEK)

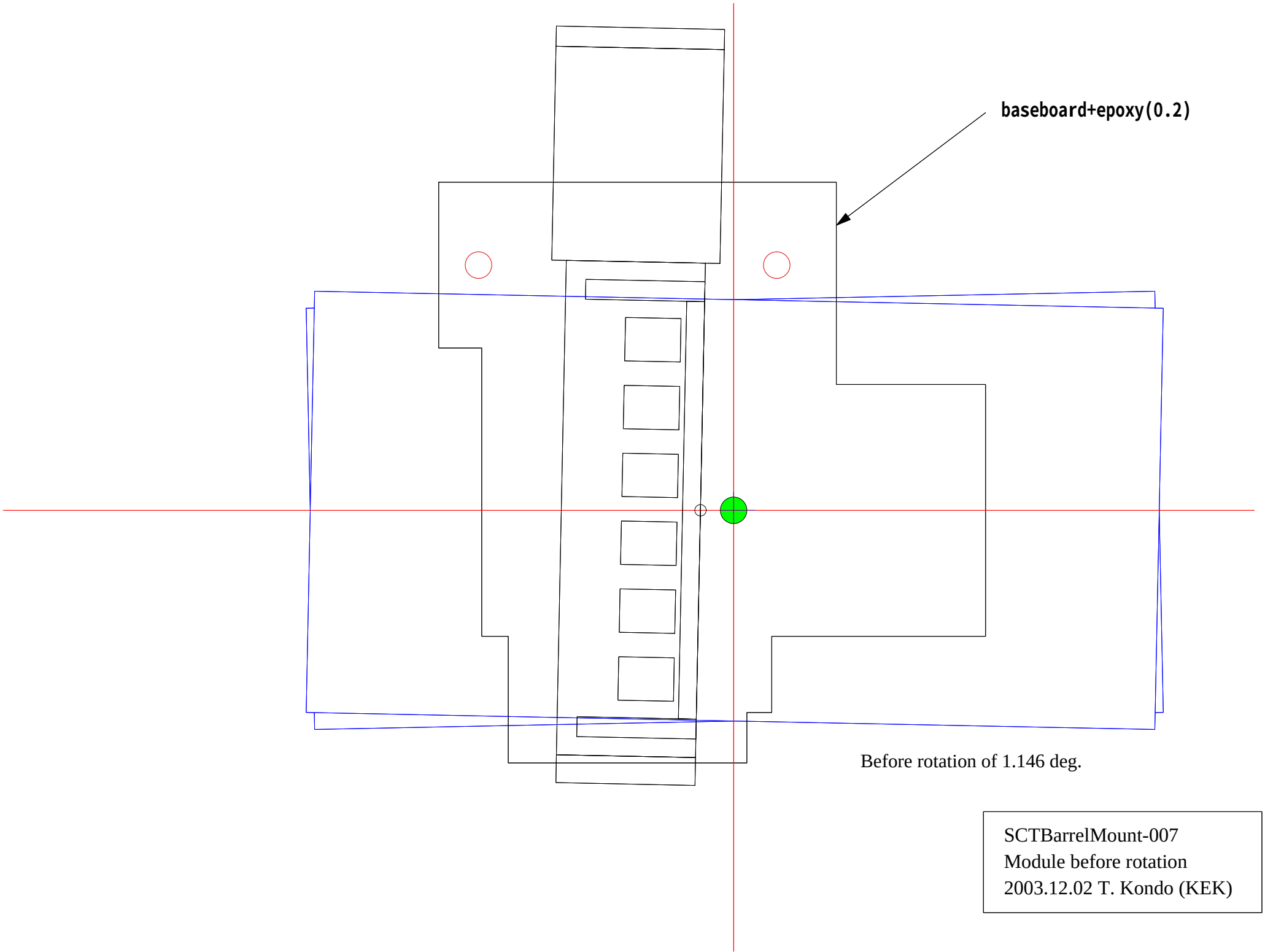


rotate 19.825 deg.



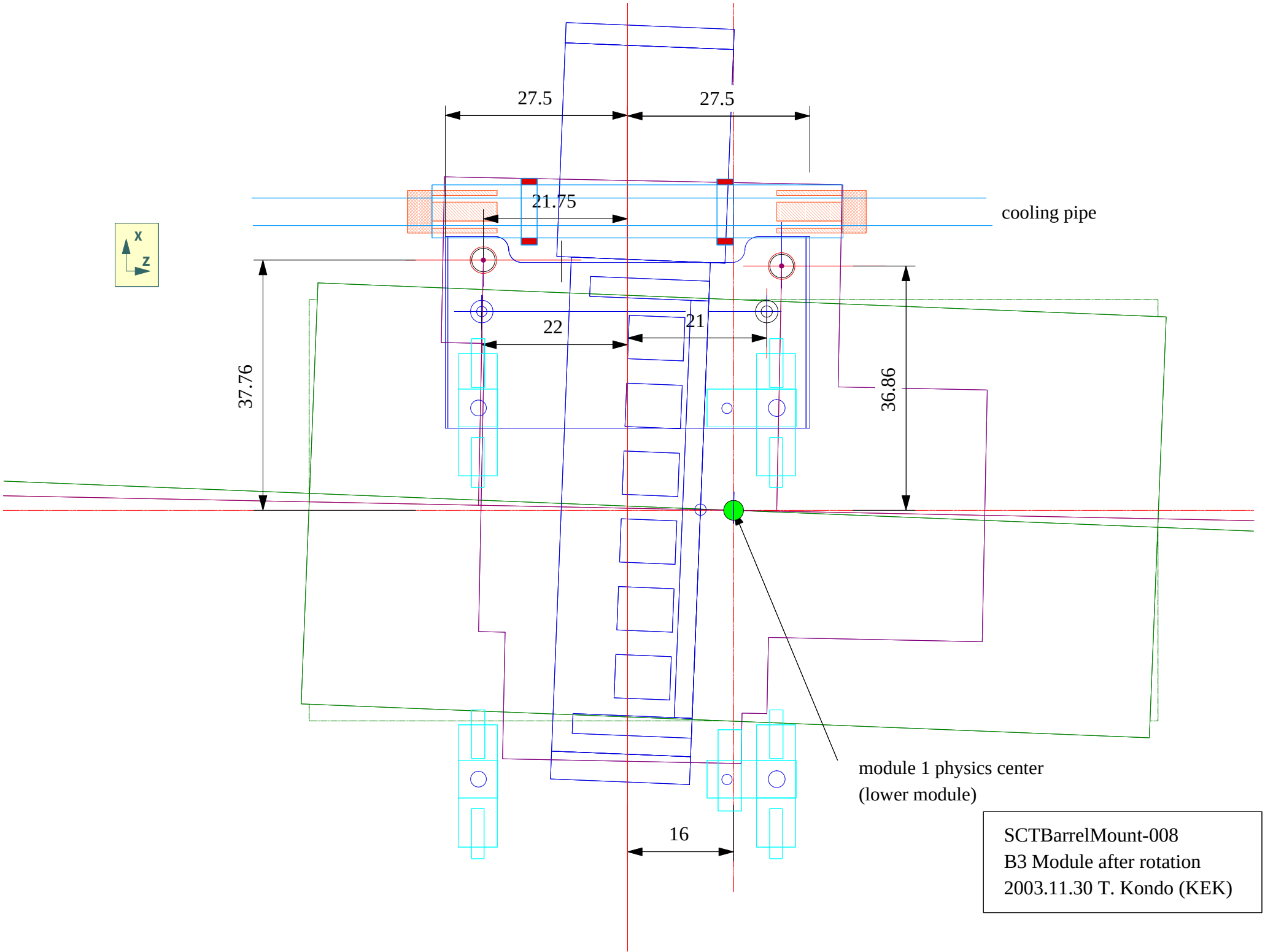
module standard 2003.11.29

SCTBarrelMount-006
Upper module and other parts
2003.11.29 T. Kondo (KEK)

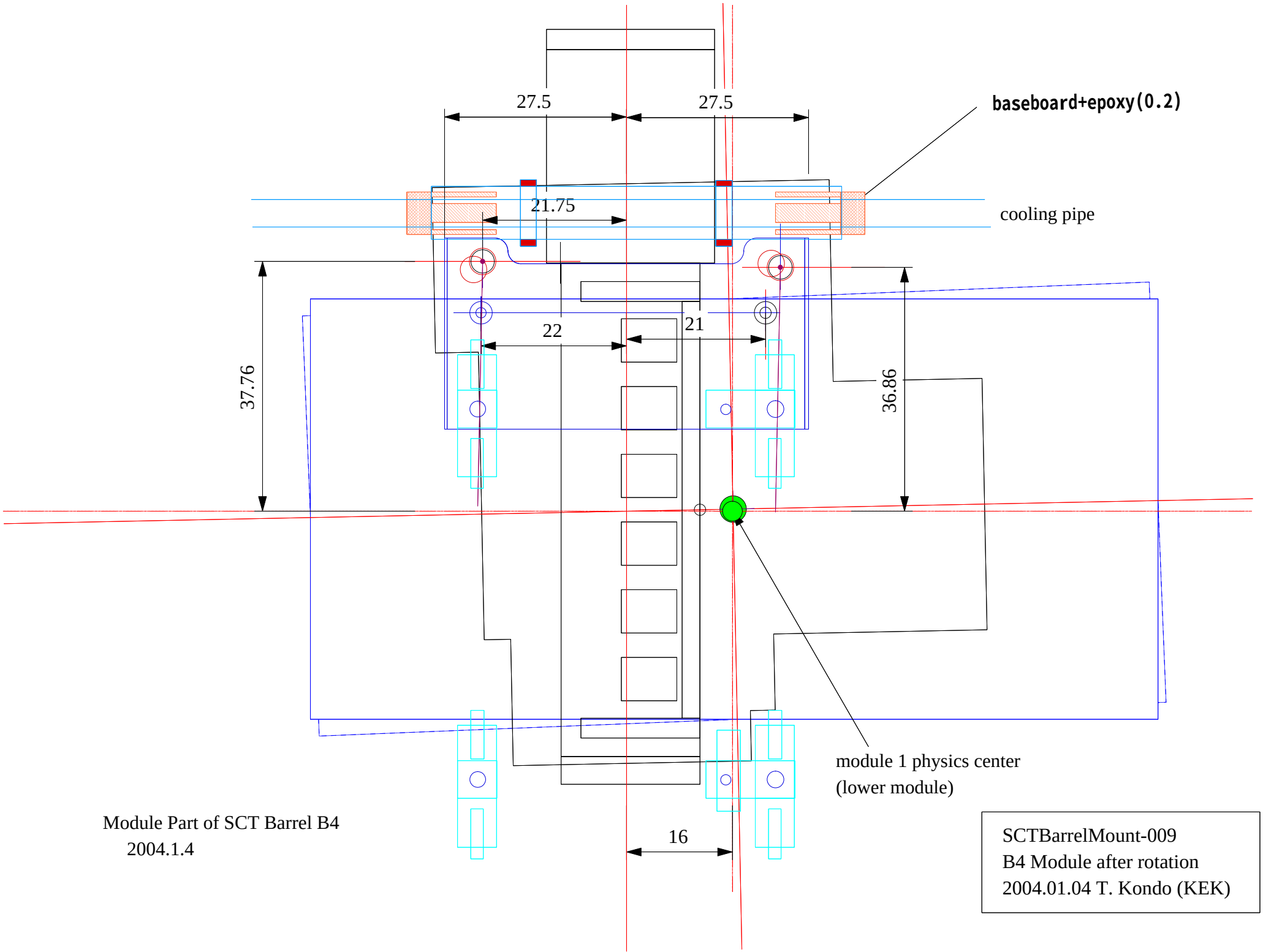


Before rotation of 1.146 deg.

SCTBarrelMount-007
Module before rotation
2003.12.02 T. Kondo (KEK)

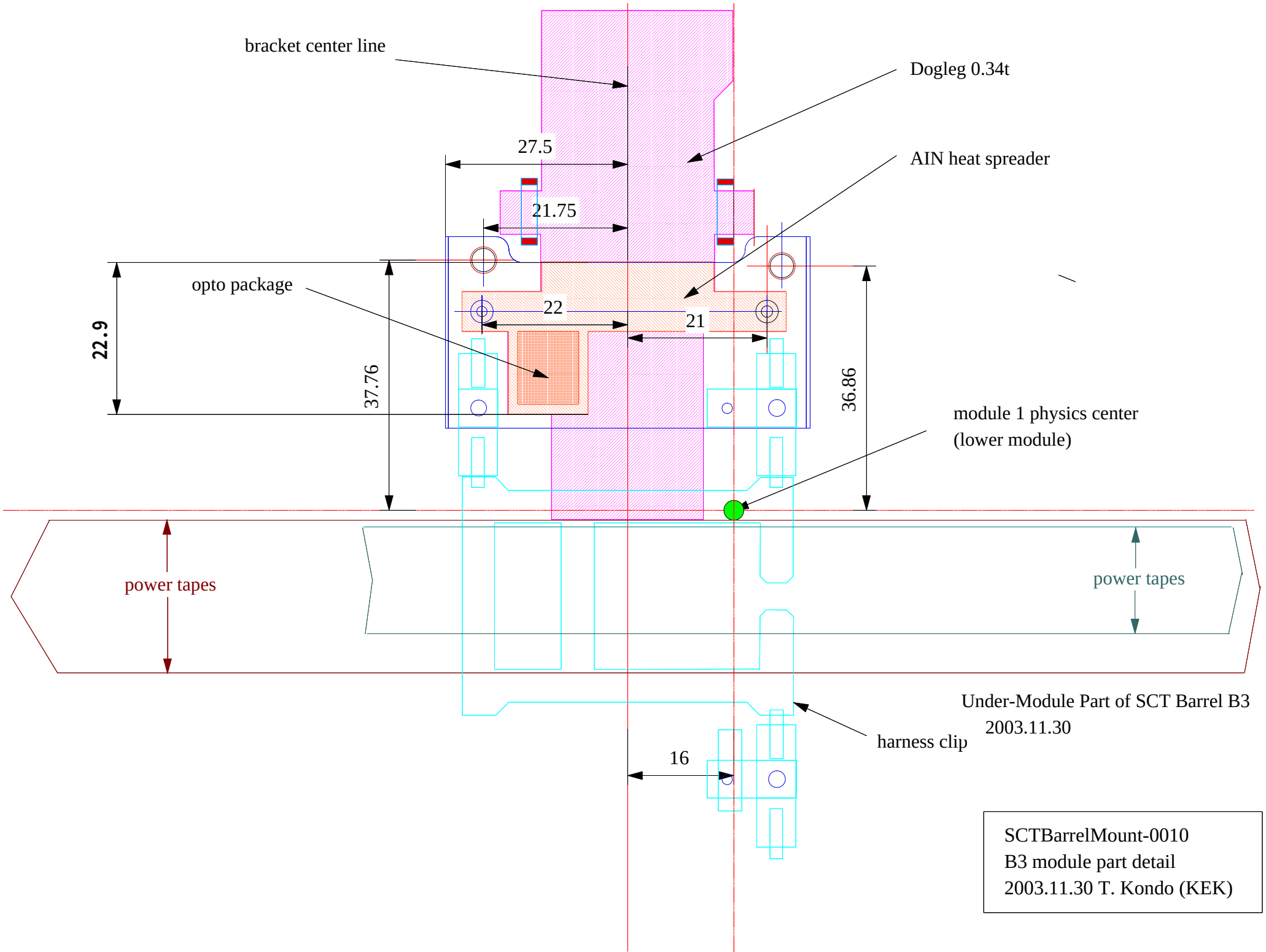


SCTBarrelMount-008
B3 Module after rotation
2003.11.30 T. Kondo (KEK)

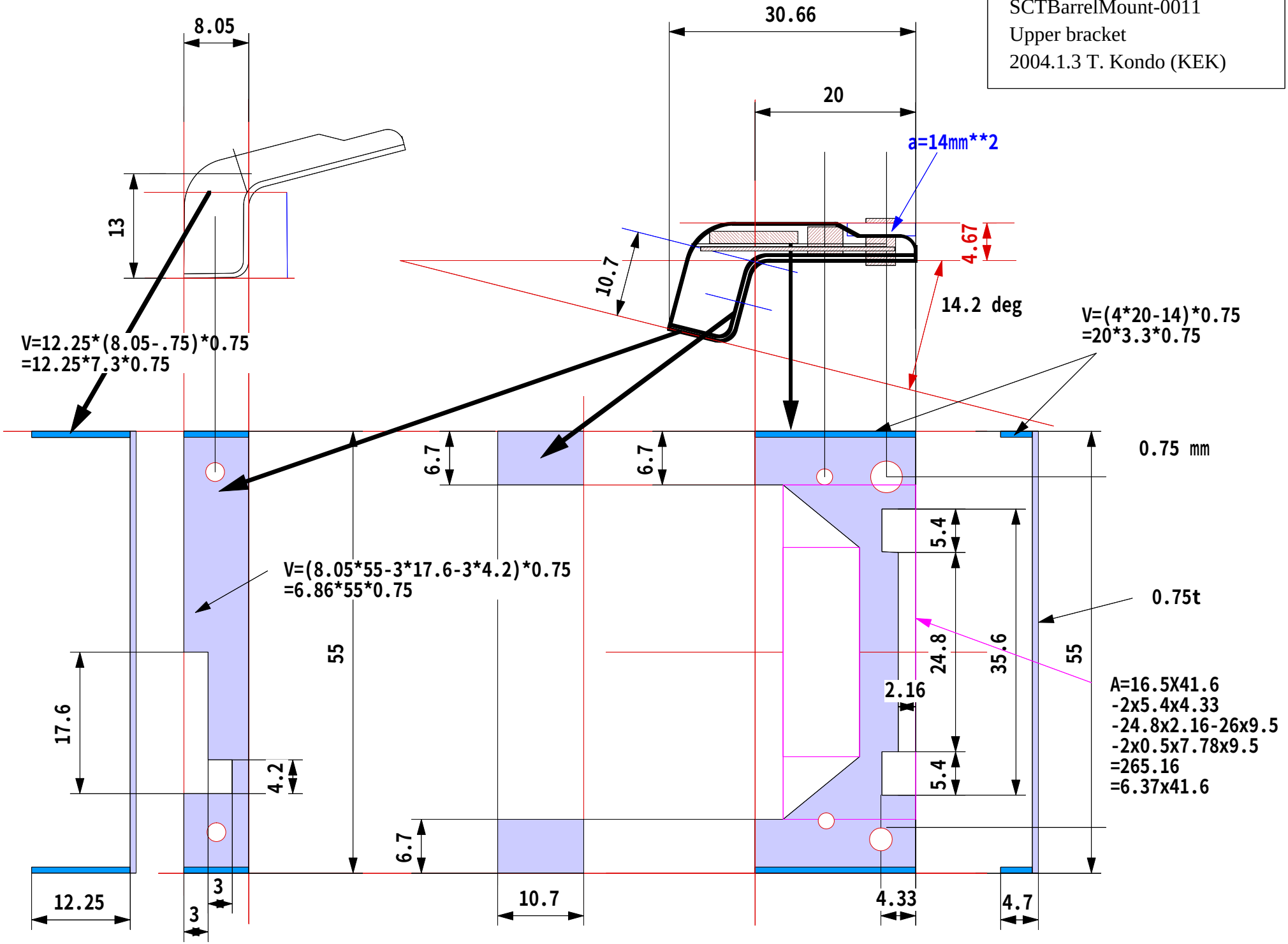


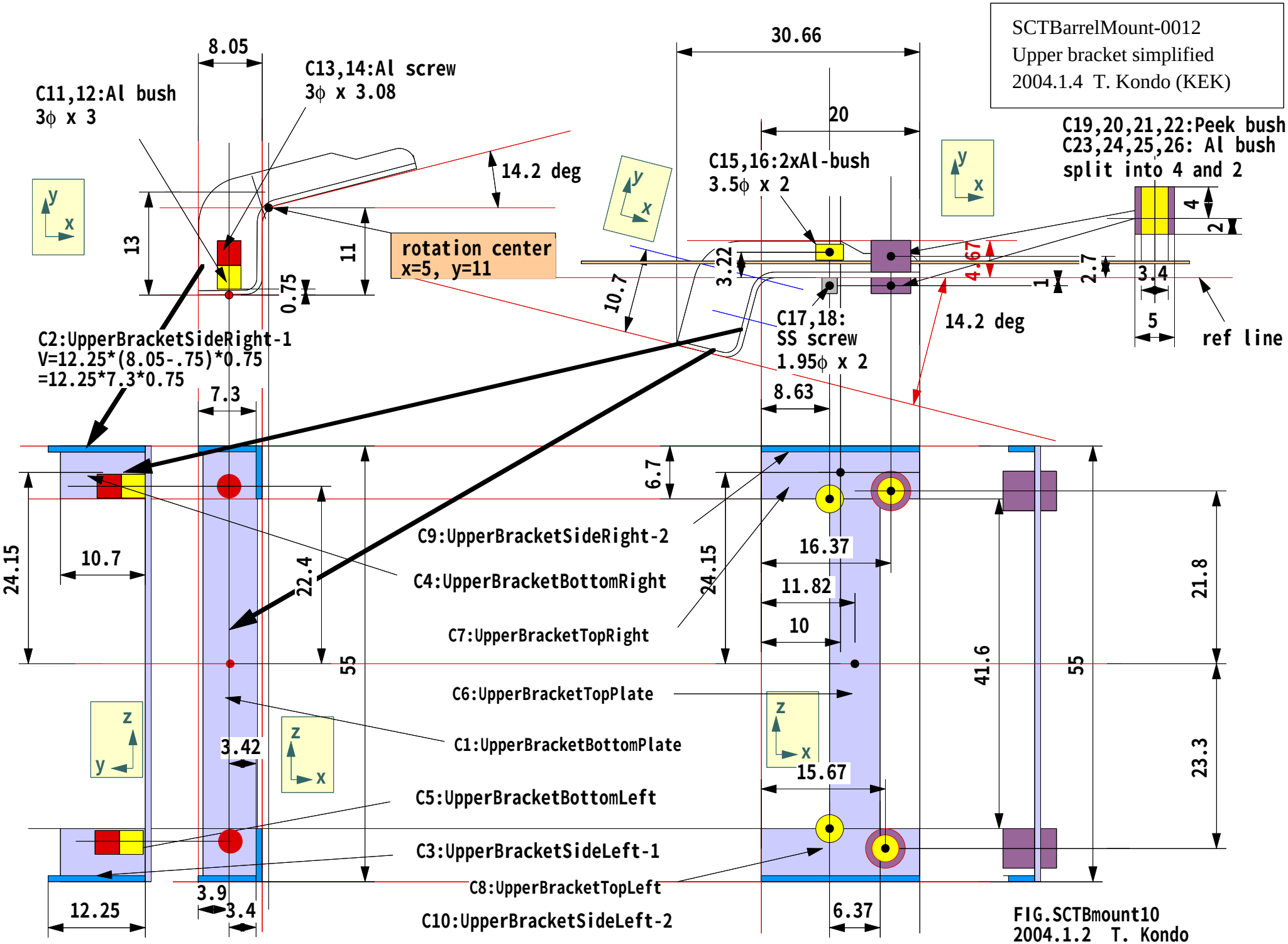
Module Part of SCT Barrel B4
2004.1.4

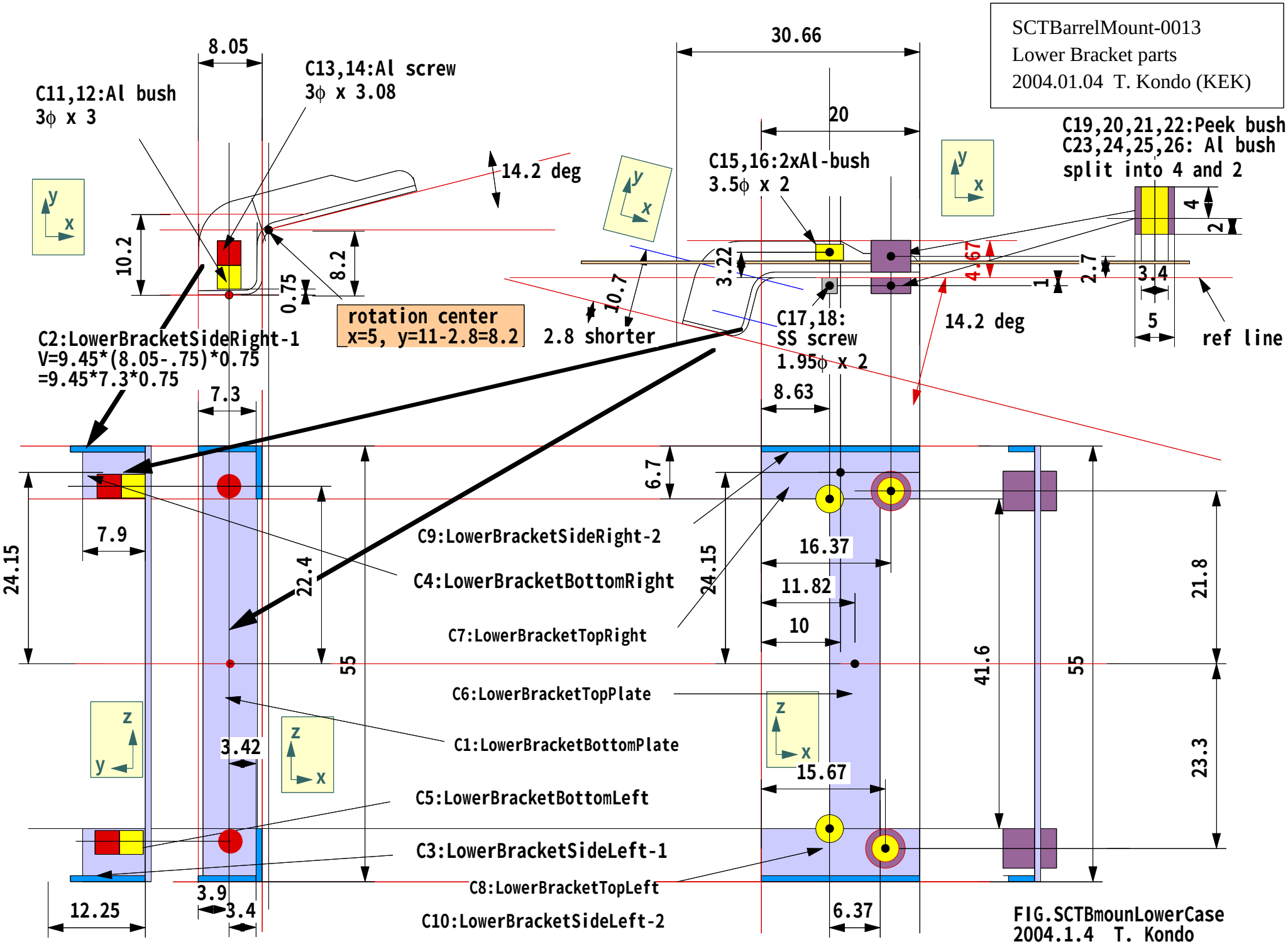
SCTBarrelMount-009
B4 Module after rotation
2004.01.04 T. Kondo (KEK)

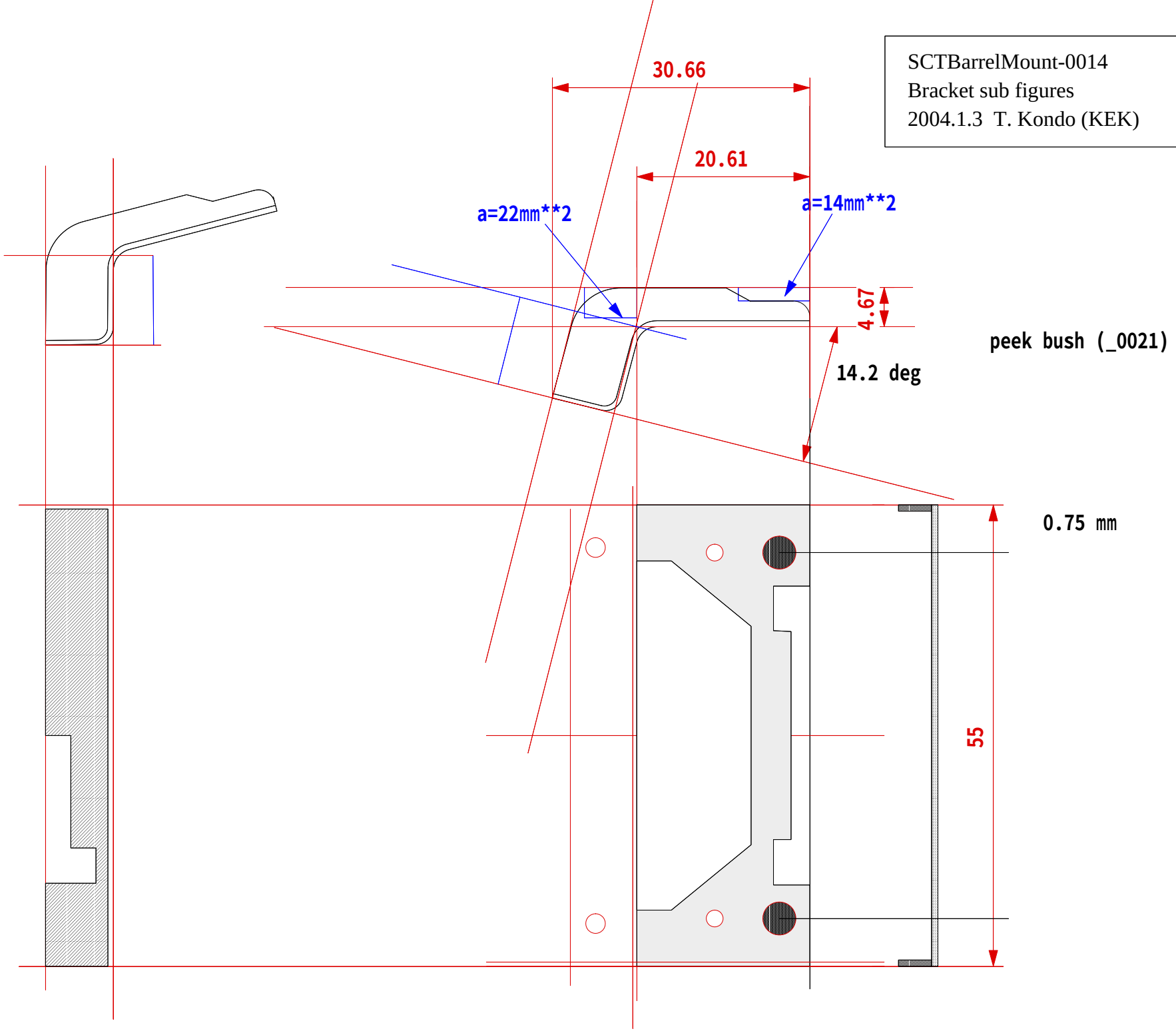

bracket center line
Dogleg 0.34t
27.5
AIN heat spreader
21.75
opto package
22.9
22
21
37.76
36.86
module 1 physics center
(lower module)
power tapes
power tapes
Under-Module Part of SCT Barrel B3
2003.11.30
harness clip
16
SCTBarrelMount-0010
B3 module part detail
2003.11.30 T. Kondo (KEK)

SCTBarrelMount-0011
Upper bracket
2004.1.3 T. Kondo (KEK)

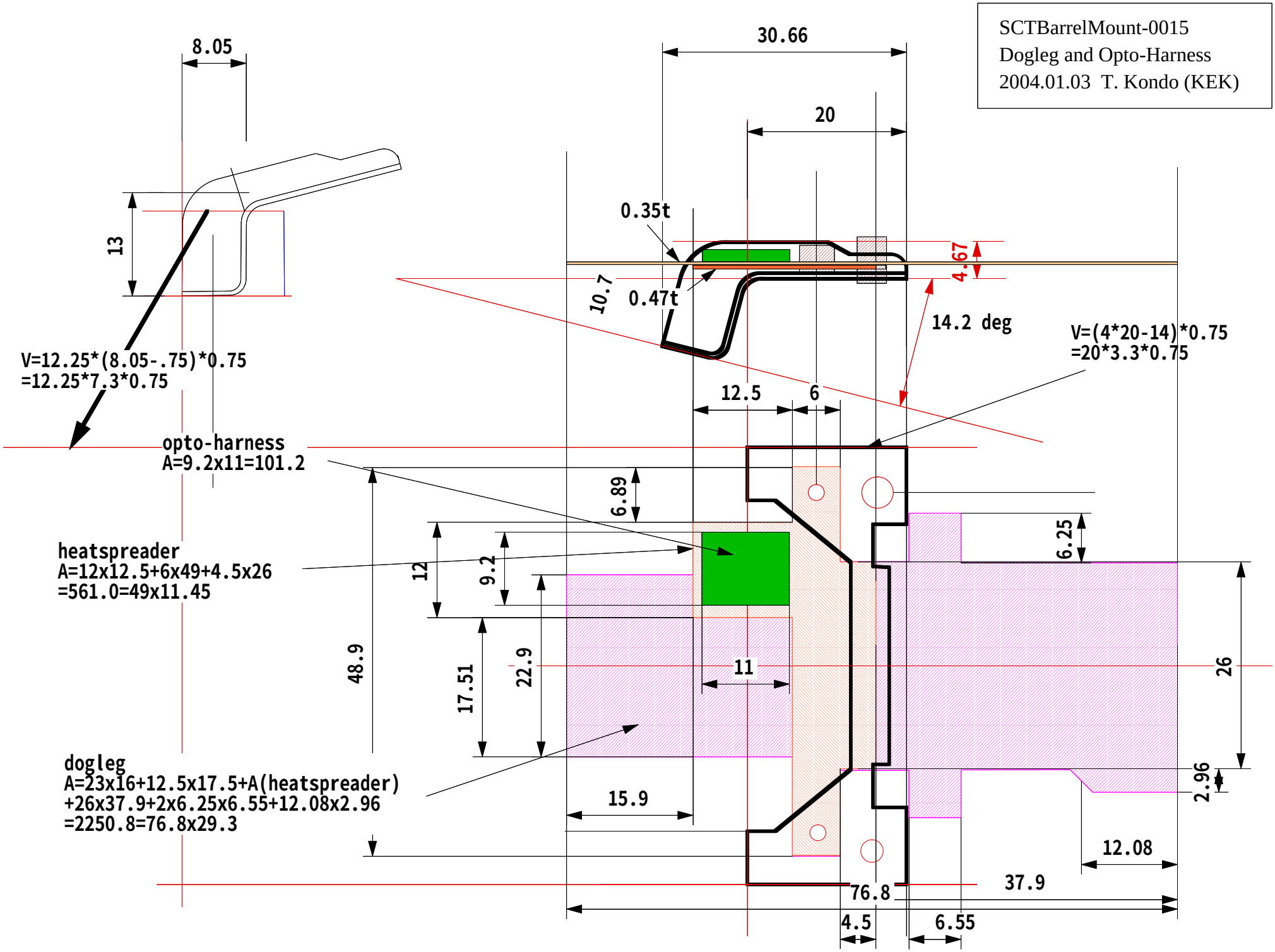


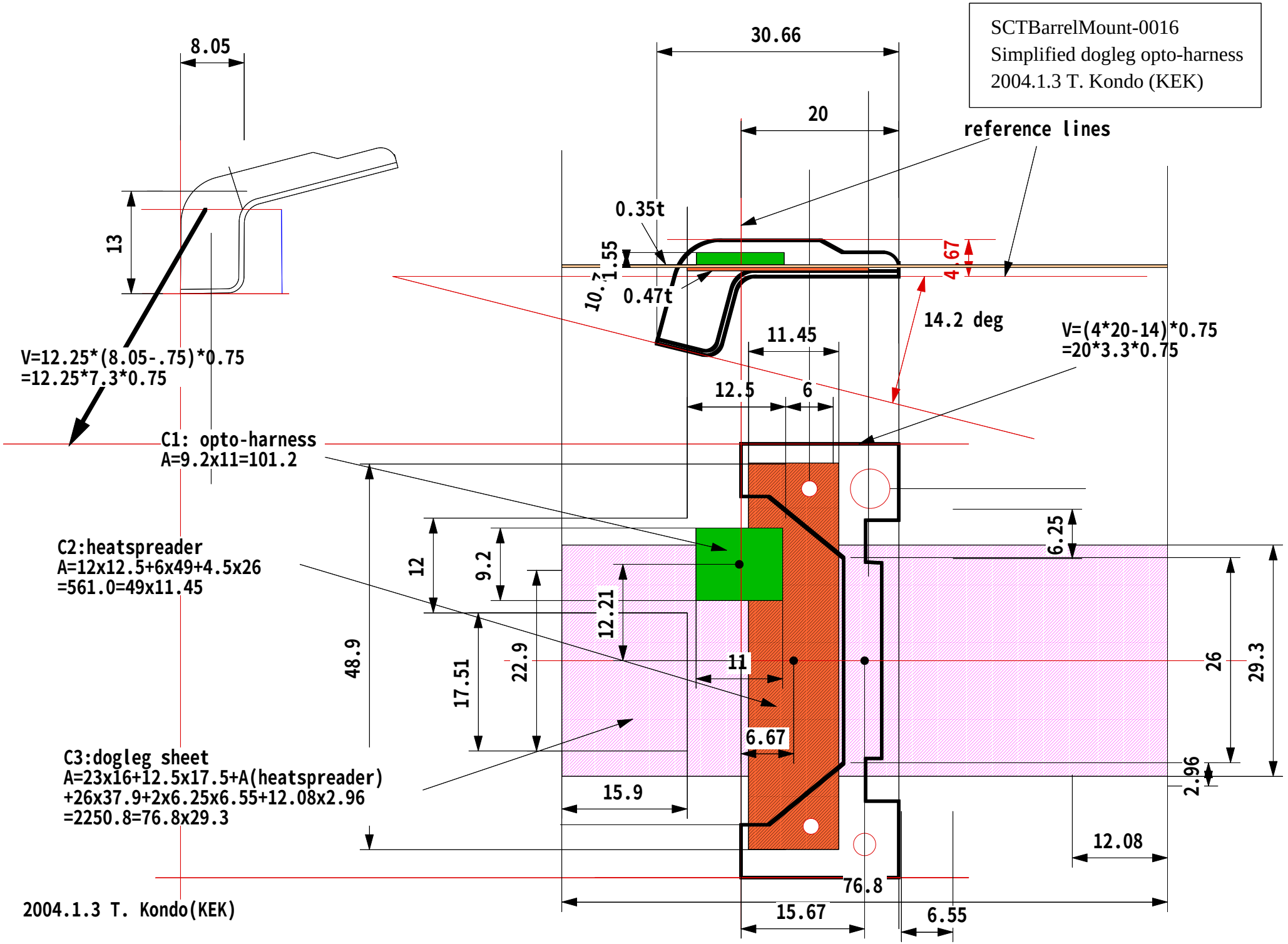

SCTBarrelMount-0012
Upper bracket simplified
2004.1.4 T. Kondo (KEK)
8.05
C11,12:Al bush
3ϕ x 3
C13,14:Al screw
3ϕ x 3.08
14.2 deg
13
11
0.75
rotation center
x=5, y=11
C2:UpperBracketSideRight-1
V=12.25*(8.05-.75)*0.75
=12.25*7.3*0.75
7.3
30.66
20
C15,16:2xAl-bush
3.5ϕ x 2
C19,20,21,22:Peek bush
C23,24,25,26: Al bush
split into 4 and 2
4
2
10.7
3.22
4.67
1
2.7
3.4
5
ref line
C17,18:
SS screw
1.95ϕ x 2
14.2 deg
8.63
6.7
24.15
10.7
22.4
C9:UpperBracketSideRight-2
C4:UpperBracketBottomRight
C7:UpperBracketTopRight
C6:UpperBracketTopPlate
C1:UpperBracketBottomPlate
C5:UpperBracketBottomLeft
C3:UpperBracketSideLeft-1
C8:UpperBracketTopLeft
C10:UpperBracketSideLeft-2
16.37
11.82
10
15.67
55
41.6
21.8
23.3
3.42
3.9
3.4
12.25
6.37
FIG.SCTBmount10
2004.1.2 T. Kondo


SCTBarrelMount-0013
Lower Bracket parts
2004.01.04 T. Kondo (KEK)
8.05
C11,12:Al bush
3ϕ x 3
C13,14:Al screw
3ϕ x 3.08
14.2 deg
10.2
8.2
0.75
rotation center
x=5, y=11-2.8=8.2
C2:LowerBracketSideRight-1
V=9.45*(8.05-.75)*0.75
=9.45*7.3*0.75
7.3
30.66
20
C15,16:2xAl-bush
3.5ϕ x 2
C19,20,21,22:Peek bush
C23,24,25,26: Al bush
split into 4 and 2
4
2
3.22
4.67
2.7
1
3.4
5
10.7
2.8 shorter
C17,18:
SS screw
1.95ϕ x 2
14.2 deg
ref line
8.63
6.7
24.15
7.9
22.4
C9:LowerBracketSideRight-2
C4:LowerBracketBottomRight
C7:LowerBracketTopRight
C6:LowerBracketTopPlate
C1:LowerBracketBottomPlate
C5:LowerBracketBottomLeft
C3:LowerBracketSideLeft-1
C8:LowerBracketTopLeft
C10:LowerBracketSideLeft-2
16.37
11.82
10
55
41.6
21.8
23.3
3.42
15.67
3.9
3.4
12.25
6.37
FIG.SCTBmounLowerCase
2004.1.4 T. Kondo


SCTBarrelMount-0014
Bracket sub figures
2004.1.3 T. Kondo (KEK)
30.66
20.61
a=22mm**2
a=14mm**2
4.67
peek bush (_0021)
14.2 deg
0.75 mm
55

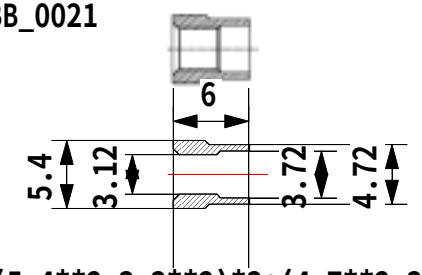
SCTBarrelMount-0015
Dogleg and Opto-Harness
2004.01.03 T. Kondo (KEK)



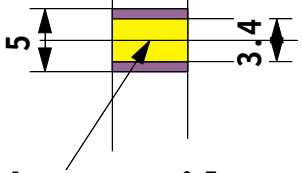

SCTBarrelMount-0016
Simplified dogleg opto-harness
2004.1.3 T. Kondo (KEK)
8.05
30.66
20
reference lines
13
0.35t
1.55
4.67
10.7
0.47t
14.2 deg
V=(4*20-14)*0.75
=20*3.3*0.75
V=12.25*(8.05-.75)*0.75
=12.25*7.3*0.75
11.45
12.5
6
C1: opto-harness
A=9.2x11=101.2
C2:heatspreader
A=12x12.5+6x49+4.5x26
=561.0=49x11.45
12
9.2
12.21
6.25
48.9
17.51
22.9
11
26
29.3
6.67
C3:dogleg sheet
A=23x16+12.5x17.5+A(heatspreader)
+26x37.9+2x6.25x6.55+12.08x2.96
=2250.8=76.8x29.3
15.9
2.96
12.08
76.8
2004.1.3 T. Kondo(KEK)
15.67
6.55

peek bush

ATLISBB_0021

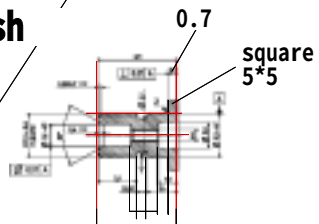


V=pi/4*((5.4**2-3.3**2)*3+(4.7**2-3.7**2)*3)
=251.23 mm**3/4
=pi/4*(5**2-3.4**2)*6



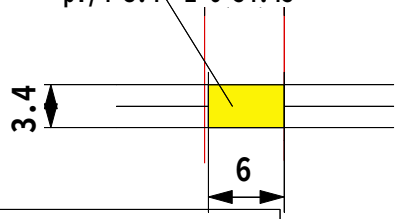
aluminum bush

ATLISBB_0022



put together

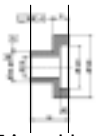
V=pi/4*[(3.5**2-1.9**2)*6.3+
(1.9**2-1**2)*2.2-(3.5**2-2.7**2)*0.8]
+0.7*{5*5-pi/4*3.5**2}
=pi/4*[54.43+5.74-3.97]+10.77=54.89
====> pi/4*3.4**2*6=54.45



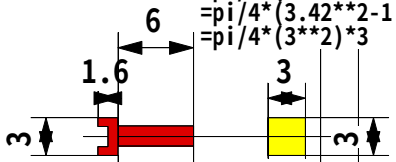
SCTBarrelMount-0017
Bracket parts
2003.12.29 T. Kondo (KEK)

Al bush (bracket pad)

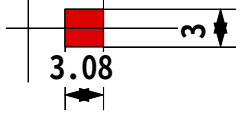
ATLISBB_0023



V=pi/4*[(2.5**2-1.7**2)*1.8
+(5**2-1.7**2)*0.5+(5**2-3.4**2)*0.7]
=pi/4*(6.048+11.055+9.408)=20.81
=pi/4*(3.42**2-1.7**2)*3 or
=pi/4*(3**2)*3

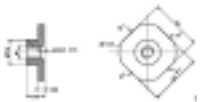


M1.6x6, Al screw
V=pi/4*(1.6**2*6+3**2*1.6-1.6**2*0.8)
=pi/4*(27.712)=pi/4*(3**2*3.08)
=



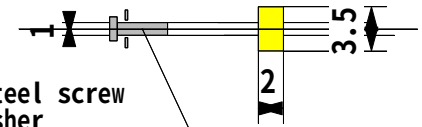
Al bush (heatspreader)

ATLISBB_0024

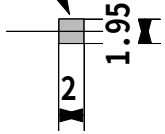


2 bushes used

V=2*pi/4*(2**2*0.9+4.5**2*0.5-1**2*1.4)
=2*pi/4*(3.6+10.125-1.4)
=2*pi/4*(3.13**2-1**2)*1.4 or
=pi/4*(3.5**2*2)



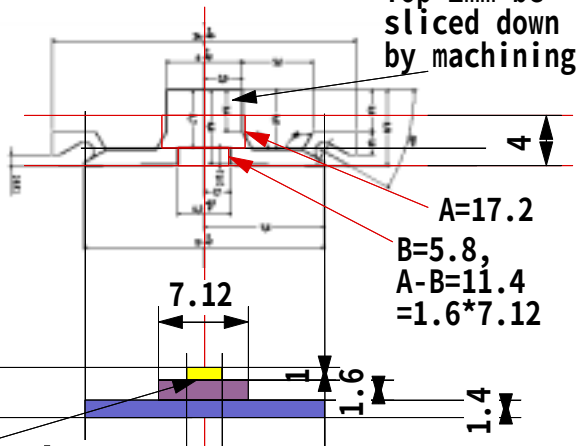
Stainless steel screw
M1x4 and washer
V=pi/4*(1**2*4+1.9**2*0.6
+(3**2-1.4**2)*0.2)
=pi/4*(7.574)
=pi/4*(1.376**2*4) or
=pi/4*(1.95**2*2)



Short pad

ATLISBB_0012

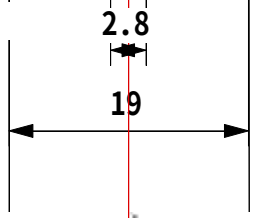
Top 2mm be
sliced down
by machining



Short Captive nut

ATLISBB_0027

length=9mm
material=aluminum
move to top for
simplicity

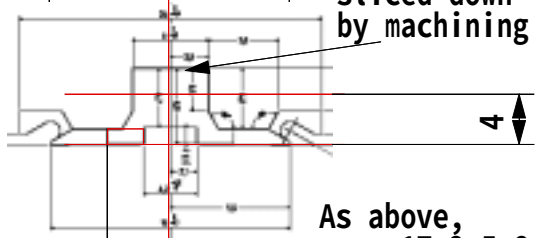


length=6mm
material=peek

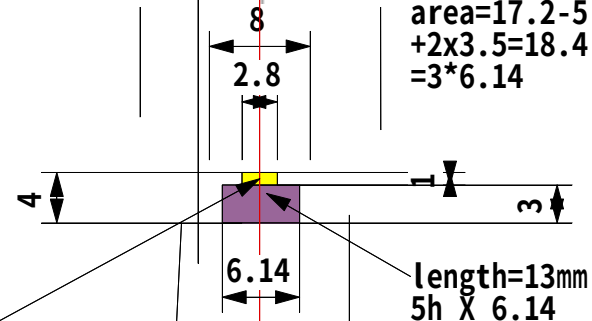
Long pad

ATLISBB_0013

Top 2mm be
sliced down
by machining



As above,
area=17.2-5.8
+2x3.5=18.4
=3*6.14

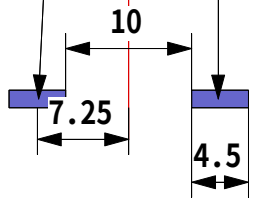


length=13mm
5h X 6.14

Long Captive nut

ATLISBB_0026

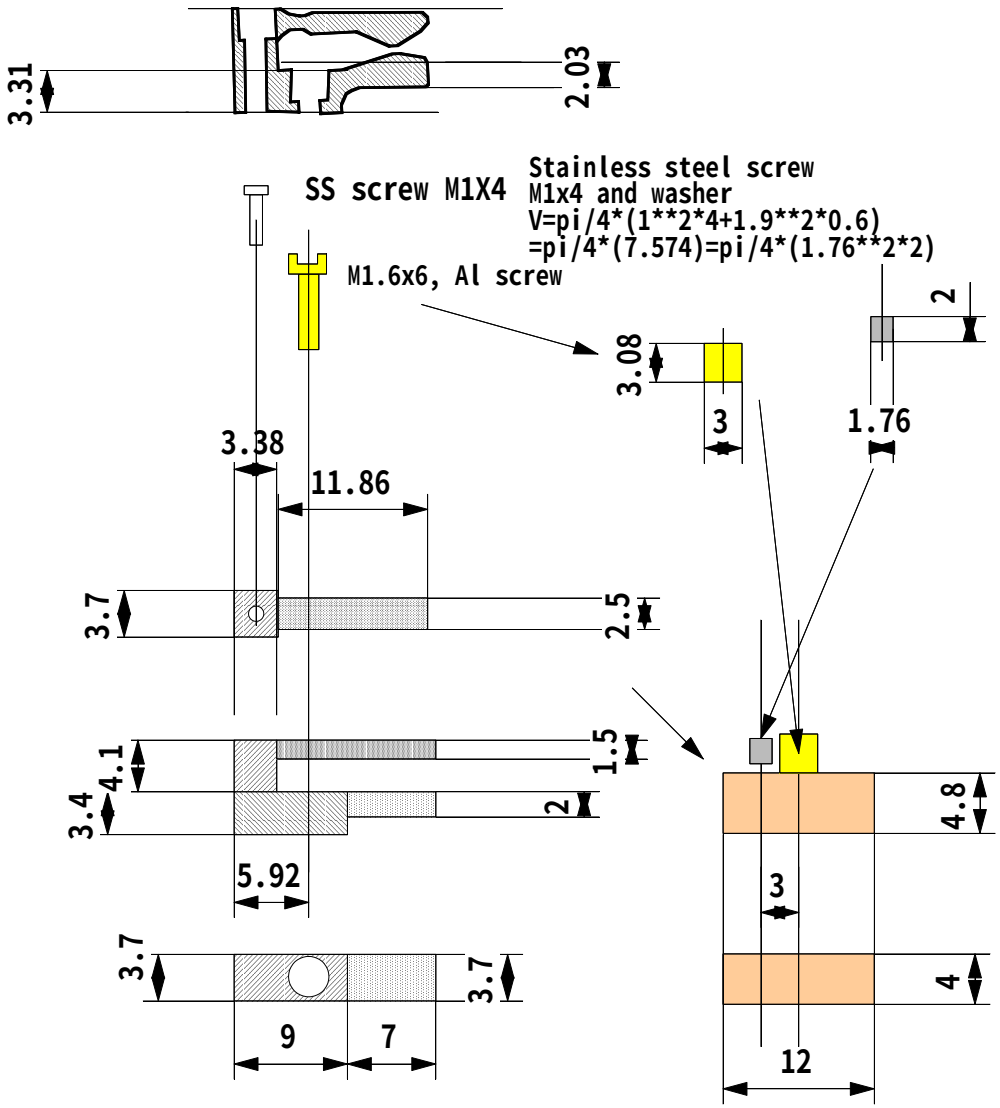
length=14.5mm
material=aluminum



length of this
part = 6mm
4.5 X 1.4h

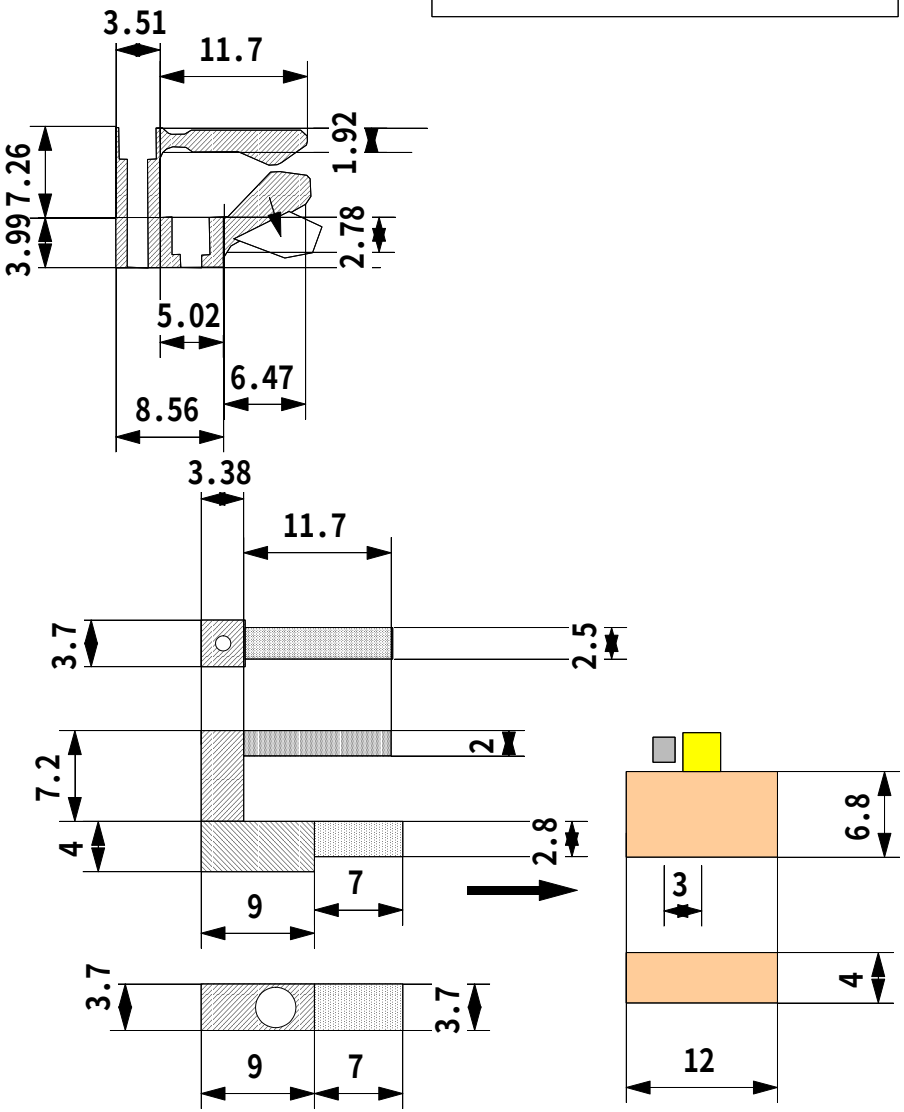
SCTBarrelMount-0018
Third point mount
2004.01.04 T. Kondo (KEK)

Lower Third Point



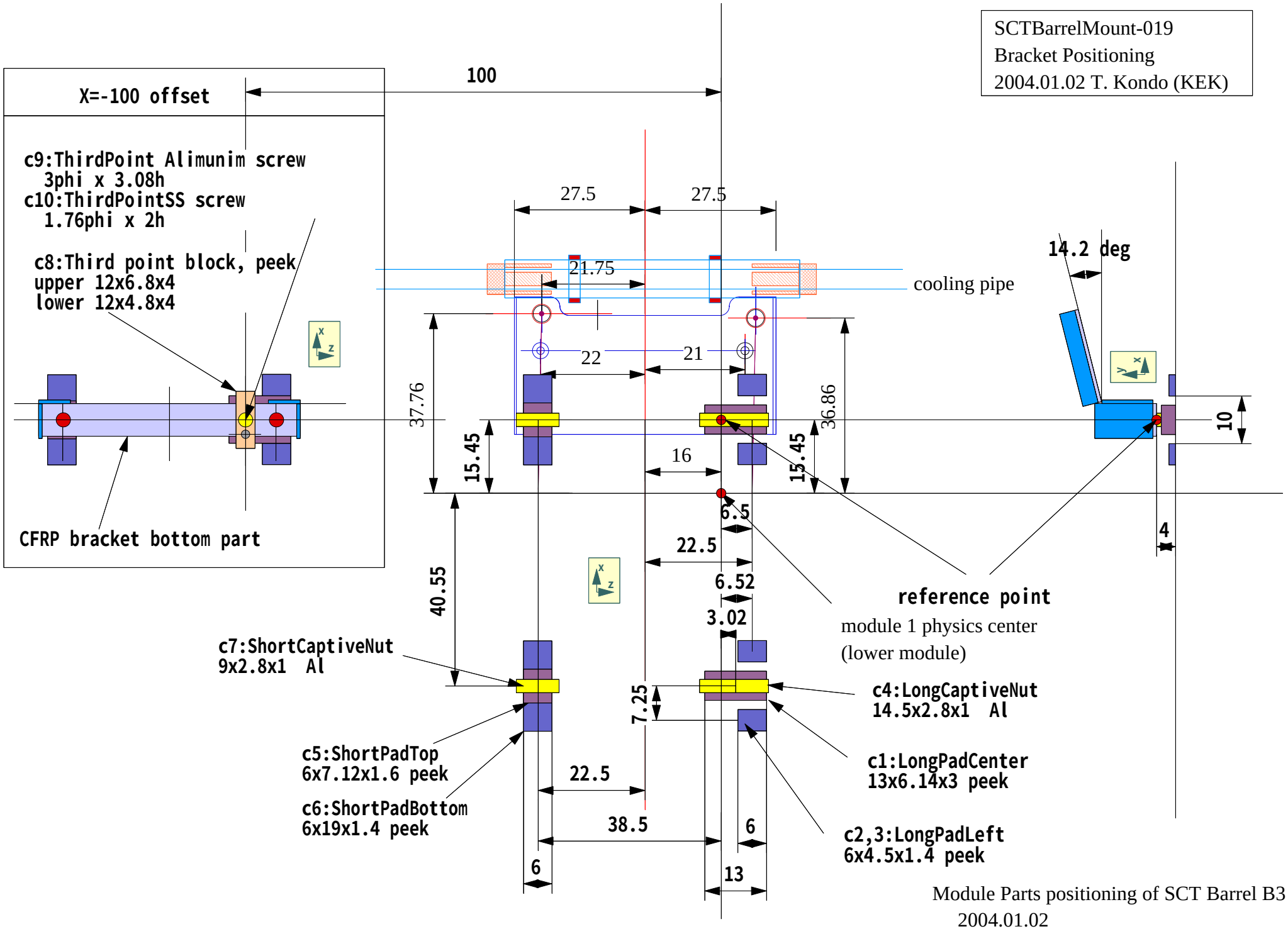
c1:short 3rd point
V=2.5x11.86x1.5+3.38x3.7x4.1+3.4x3.7x9+3.7x7x2-pi/4x3x3x3.4
=232.5=4(width)x4.8(h)x12(length)

Upper Third Point



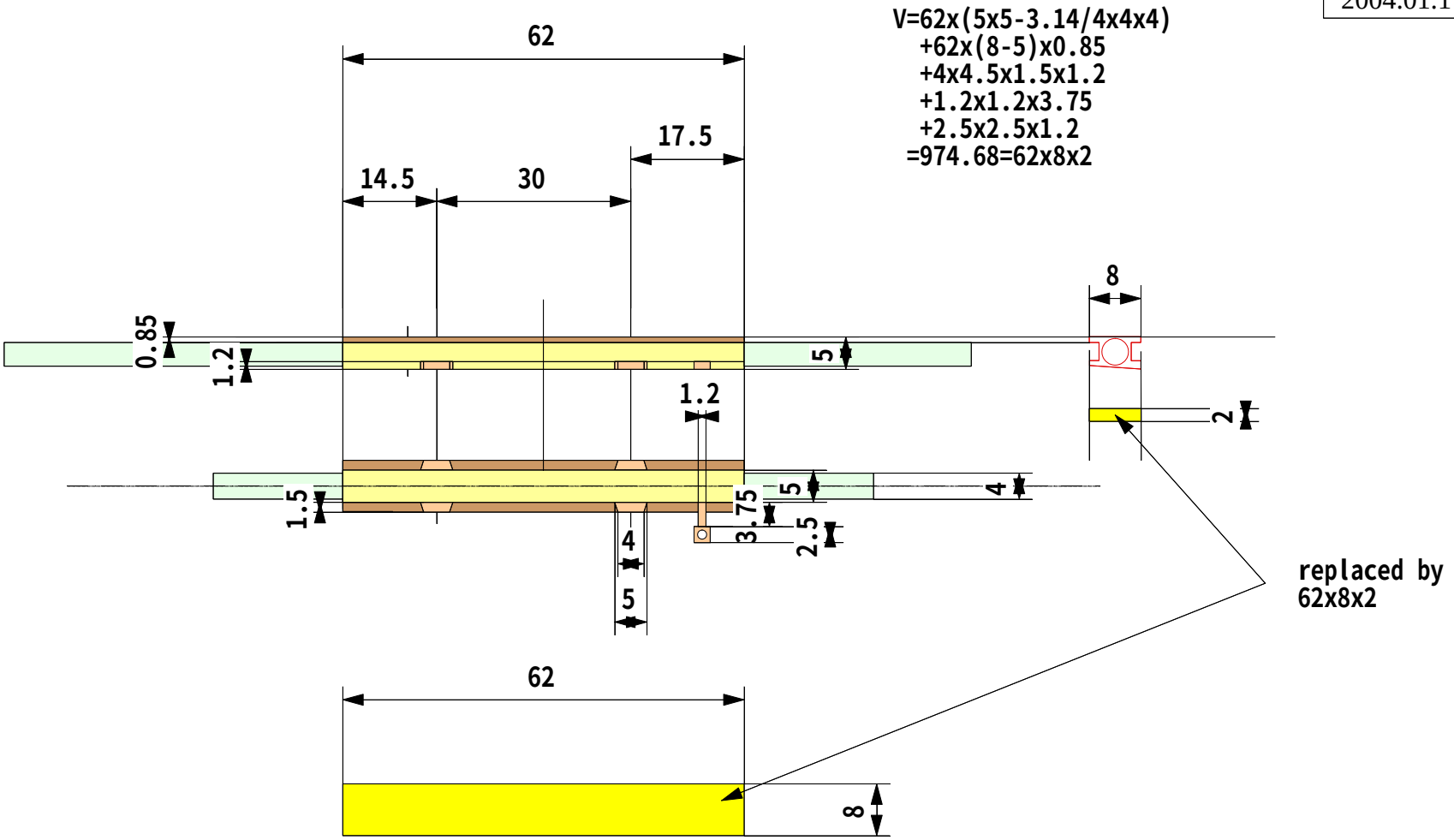
c1:long 3rd point
V=2.5x11.7x2+3.38x3.7x7.2+4x3.7x9+3.7x7x2.8-pi/4x3x3x4
=326.0=4(width)x6.8(h)x12(length)

SCTBarrelMount-019
Bracket Positioning
2004.01.02 T. Kondo (KEK)



Module Parts positioning of SCT Barrel B3
2004.01.02

SCTBarrelMount-020
Cooling pipe
2004.01.17 T. Kondo (KEK)



cooling block dimensions are taken from the real sample (T.Kondo, 2004.1.17)