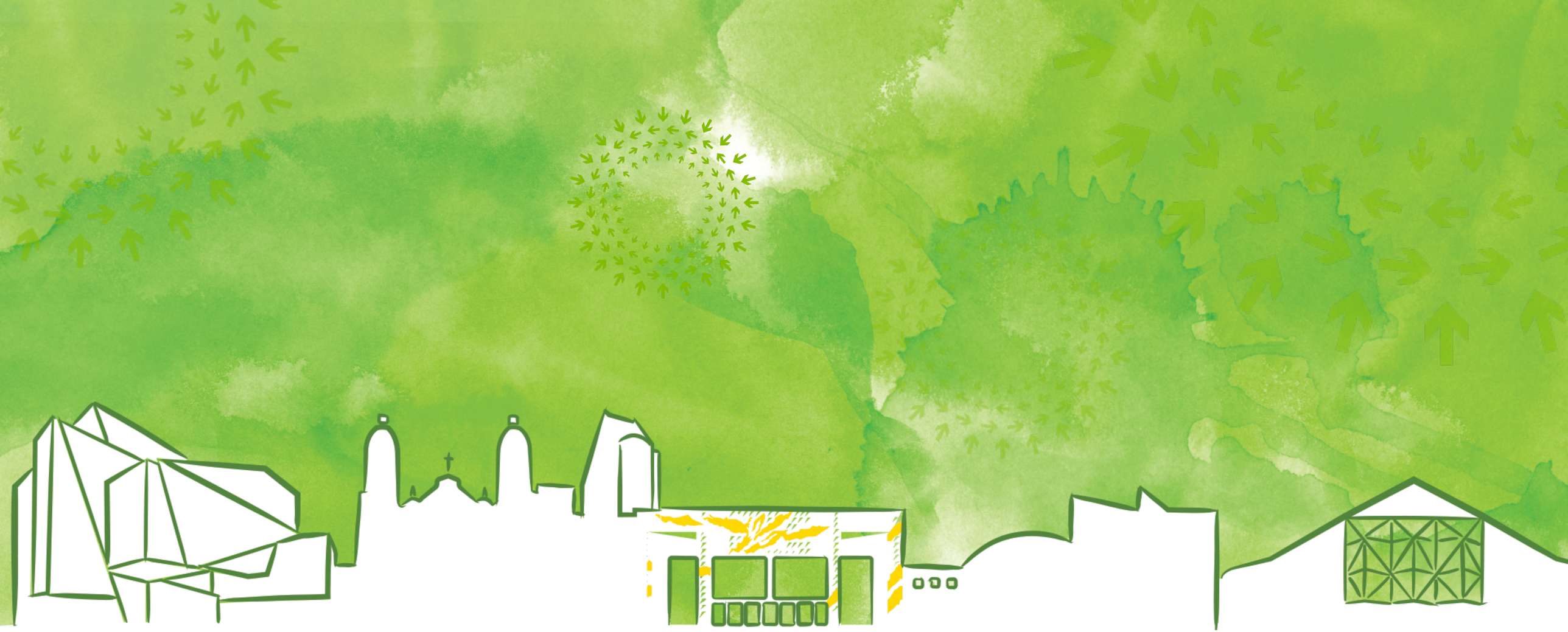


OCP Engineering Workshop 25 September 2017| Dallas, TX

OCP Engineering Workshop – 25 September 2017 – Dallas, TX

OCP NIC 3.0 Connector

Amphenol

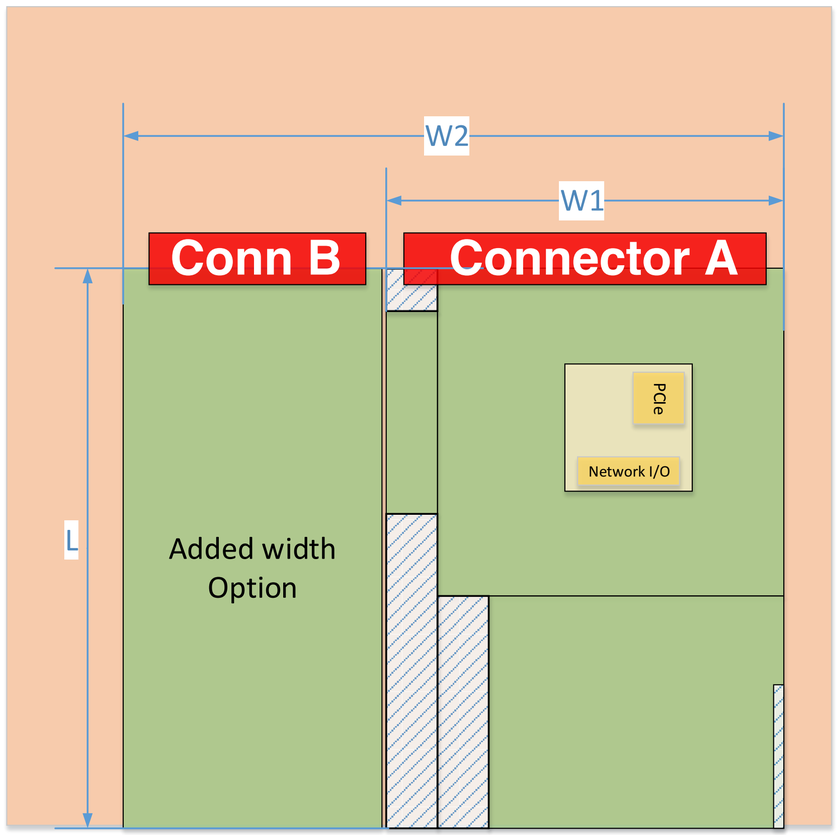
Albert Chen
Field Applications Engineer

Enumeration of #14

☆Updated

- **Connector Definition and Enabling 1**

Option 14



	Connector	Description
Connector A	"4C" style of TA-1002 + 28 circuits OCP NIC sideband bay Total 168 circuits	16 PCIe + clock + Power +MISC + NC-SI
Connector B	"2C" style of TA-1002 Total 84 circuits	x8 PCIe + clock + Power +MISC

Preliminary; under discussion in OCP NIC subgroup

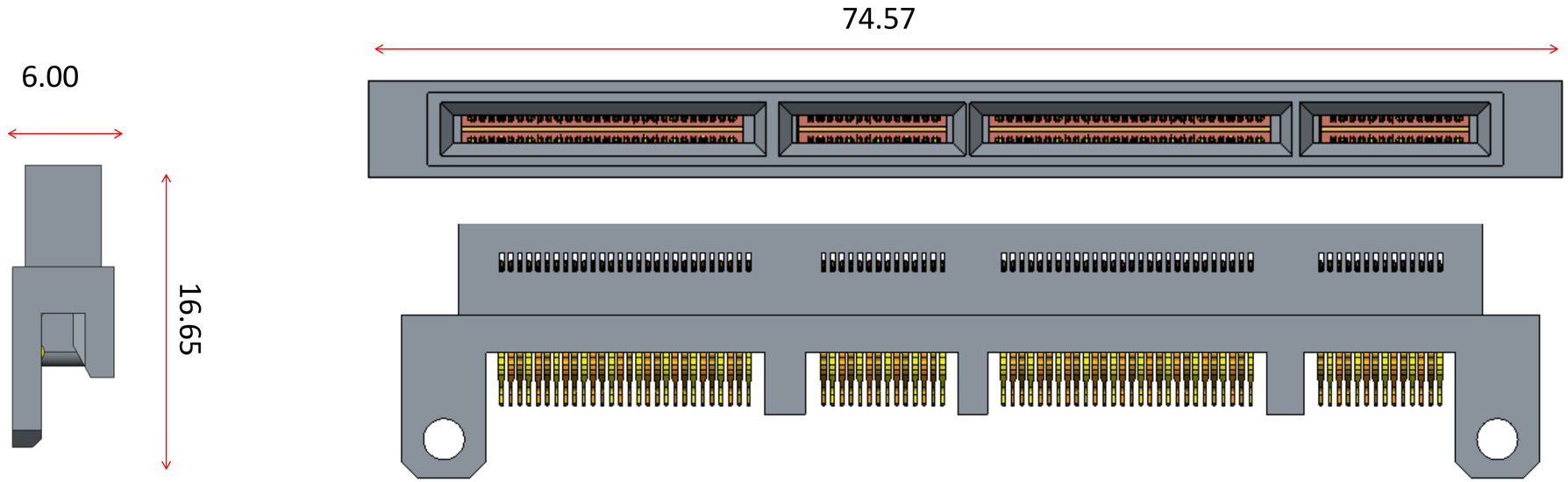
Style	RA/SM	Baseboard Thickness	Circuit Count	Notes – based on SFF-TA-1002
RA1-168	Right Angle	N/A	168	- Adjust Right angle offset from center of add on card to top surface of baseboard from 3.05mm to 3.80mm - Add one extra 28 circuit bay
RA1-84	Right Angle	N/A	84	- Adjust Right angle offset from center of add on card to top surface of baseboard from 3.05mm to 3.80mm
SM1-168	Straddle Mount	62mil +/-10%	168	- Base on 4C, Add one extra 28 circuit bay
SM1-84	Straddle Mount	62mil +/-10%	84	- Straddle Mount of SFF-TA-1002 2C
SM2-168	Straddle Mount	76mil +/-10%	168	- Base on 4C, Add one extra 28 circuit bay
SM2-84	Straddle Mount	76mil +/-10%	84	- Straddle Mount of SFF-TA-1002 2C
SM3-168	Straddle Mount	93mil +/-10%	168	- Base on 4C, Add one extra 28 circuit bay
SM3-84	Straddle Mount	93mil +/-10%	84	- Straddle Mount of SFF-TA-1002 2C
SM4	Straddle Mount	120mil +/-10%	168/84	- Request SI and feasibility study only

*Expect 168 circuits being more common

Connector candidate is based on SFF-TA-1002
https://ta.snia.org/higherlogic/ws/public/download/1137/SFF-TA-1002%20Specification%20Multi%20Lane%20High%20Speed%20Connector%200.0.9.pdf

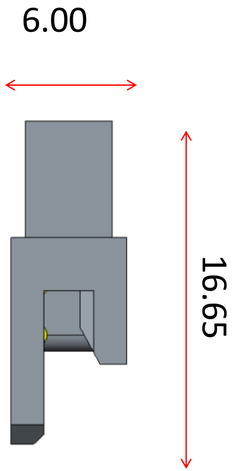
SMx-168 (4C + 28pin)

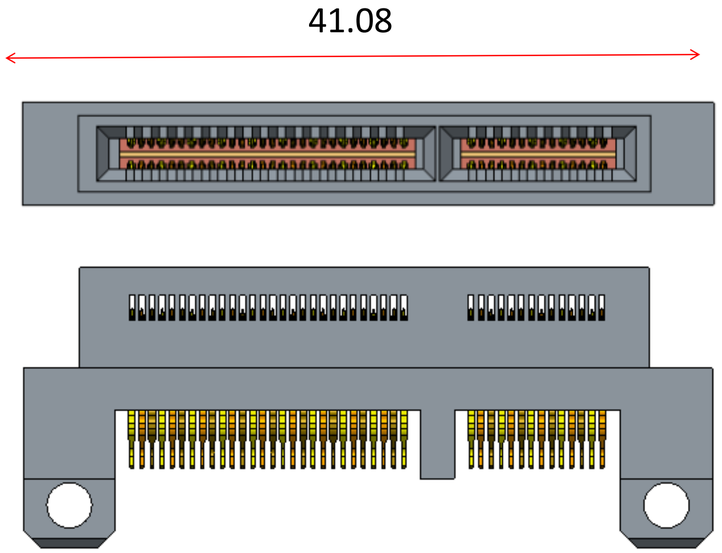
- **Fully compatible with TA1002 mating interface**
- **Add screw lock features for robust purpose**



SMx-84 (2C)

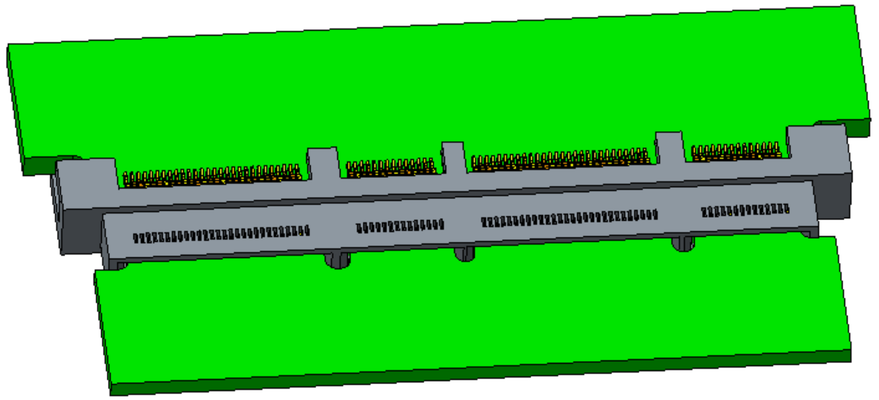
- **Fully compatible with TA1002 mating interface**
- **Add screw lock features for robust purpose**



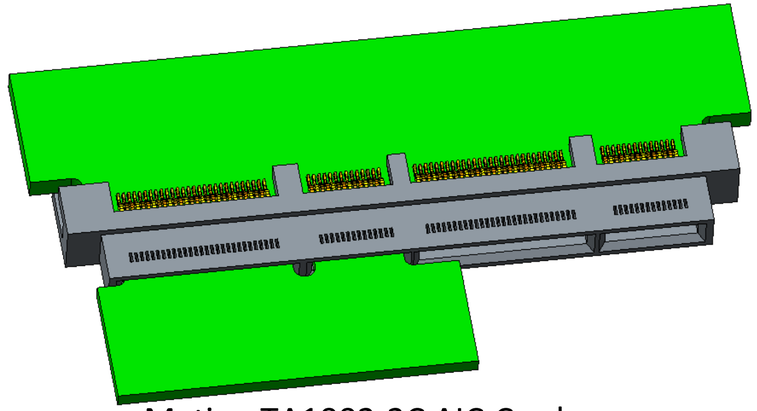


- 168 Pin Connector And AIC Card Interoperability

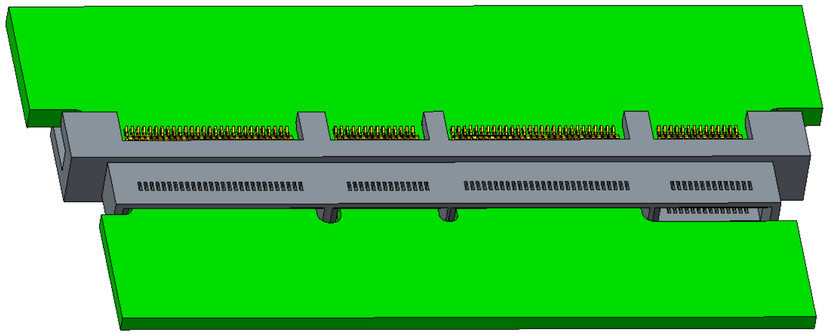
SMx-168 Connector and AIC Interop



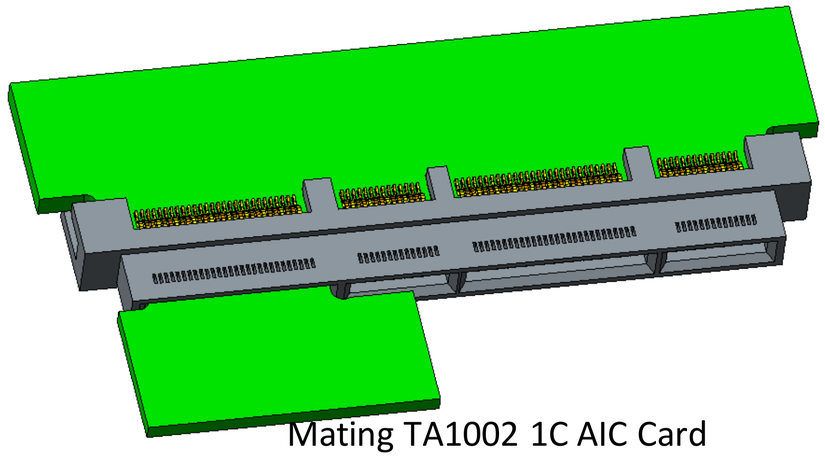
Mating 168PIN AIC Card



Mating TA1002 2C AIC Card
And mating 84PIn Straddle mount AIC card

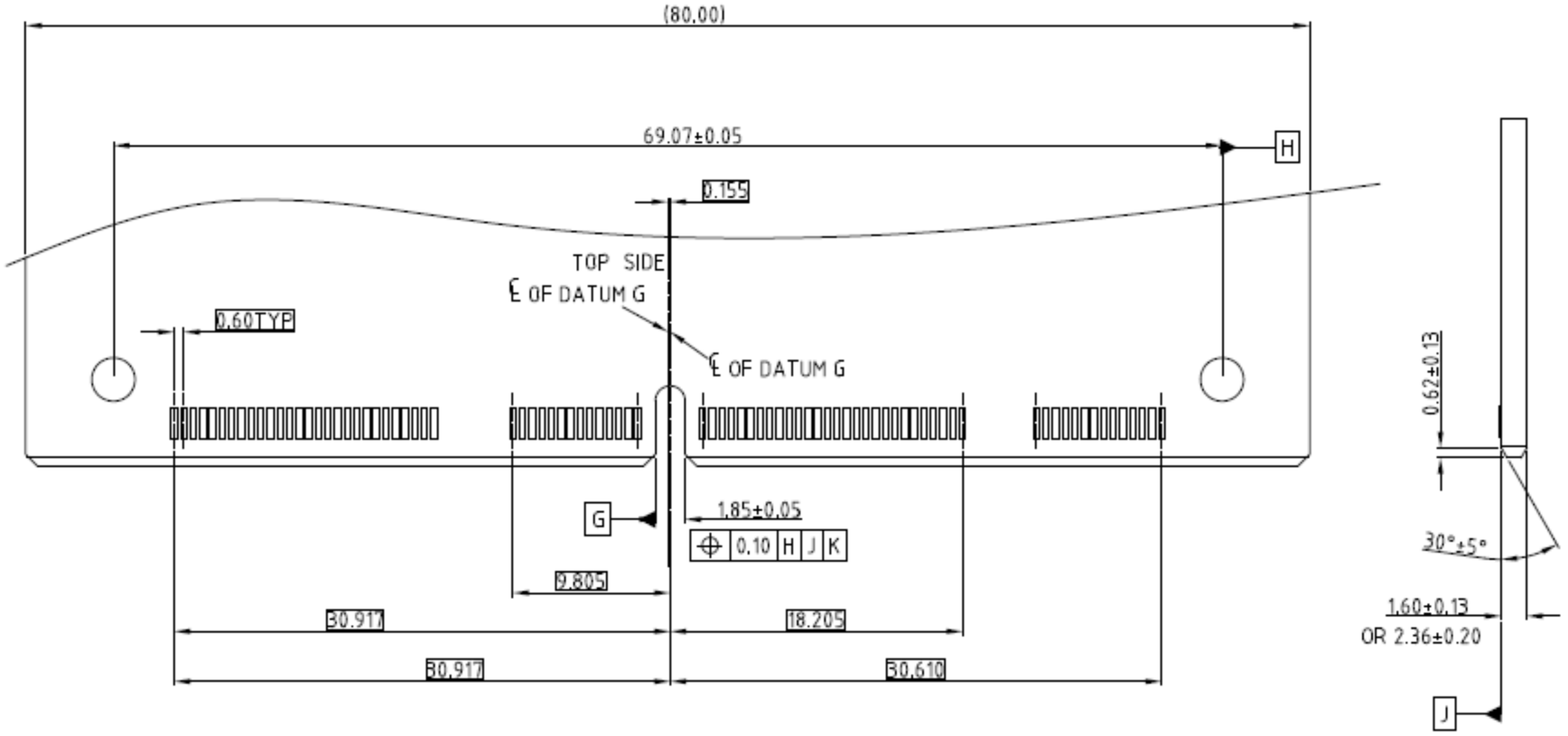


Mating TA1002 4C AIC Card

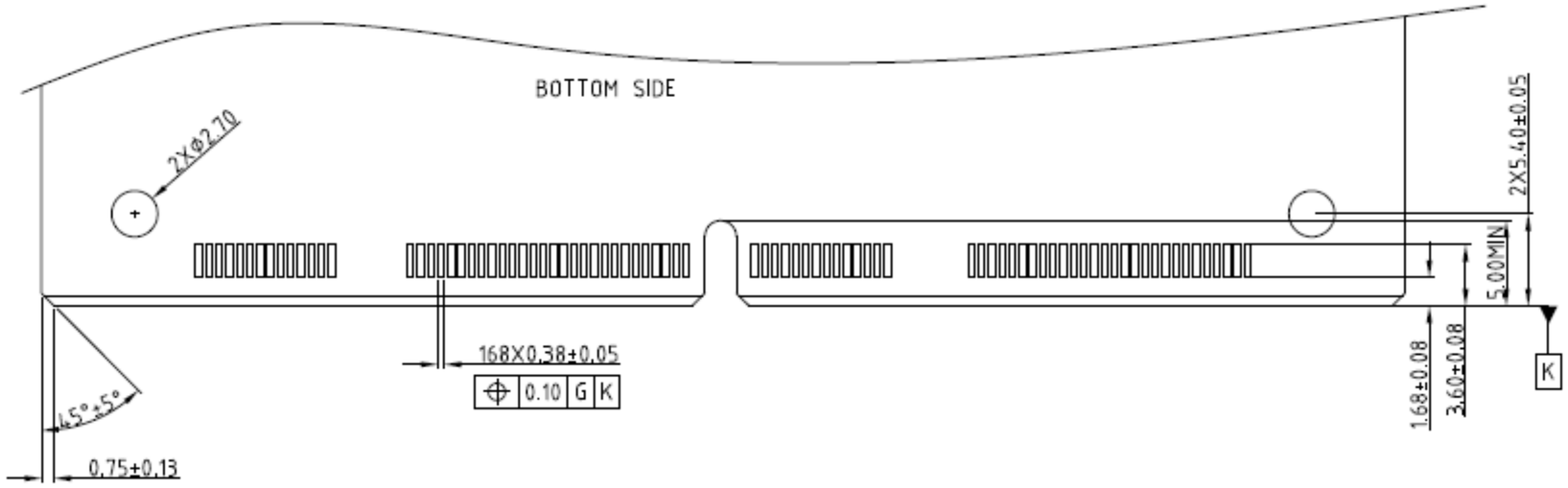


Mating TA1002 1C AIC Card

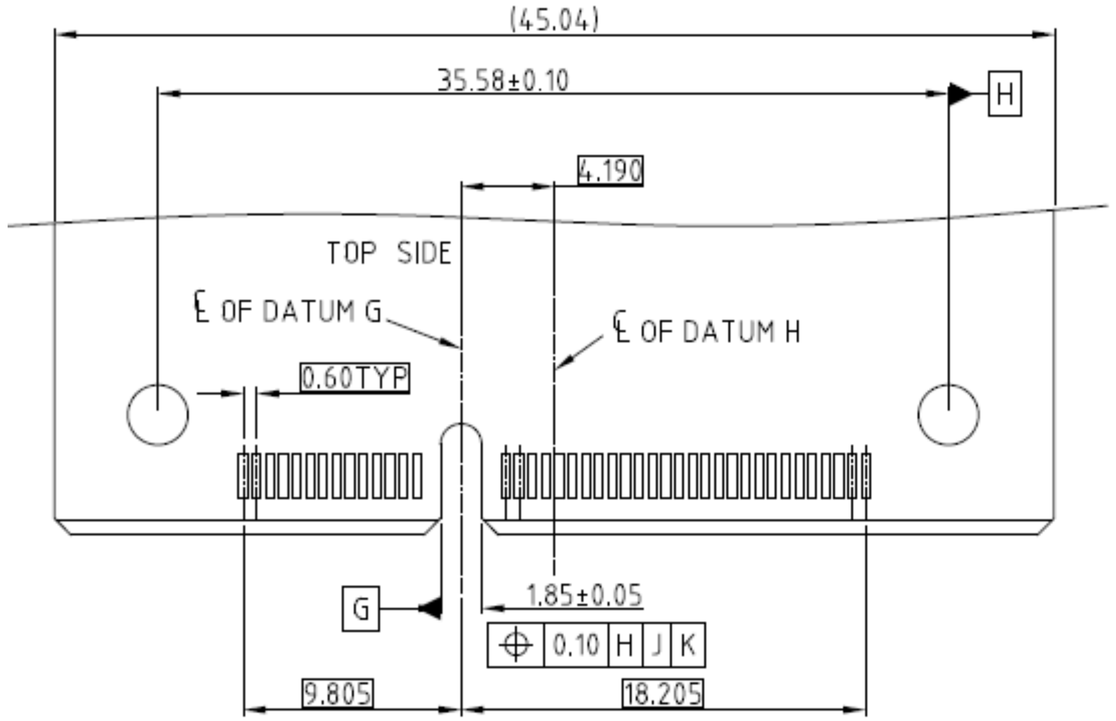
SMx-168 Footprint

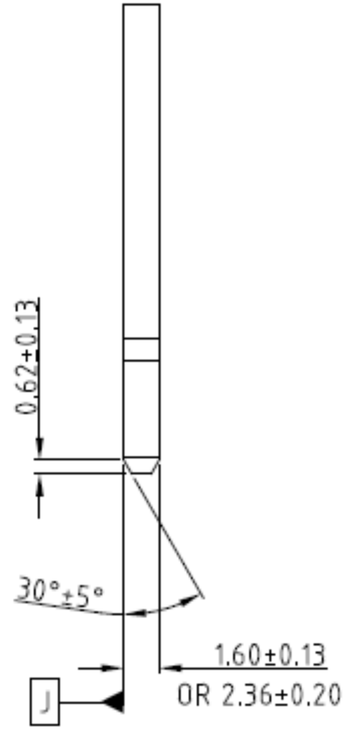


SMx-168 Footprint

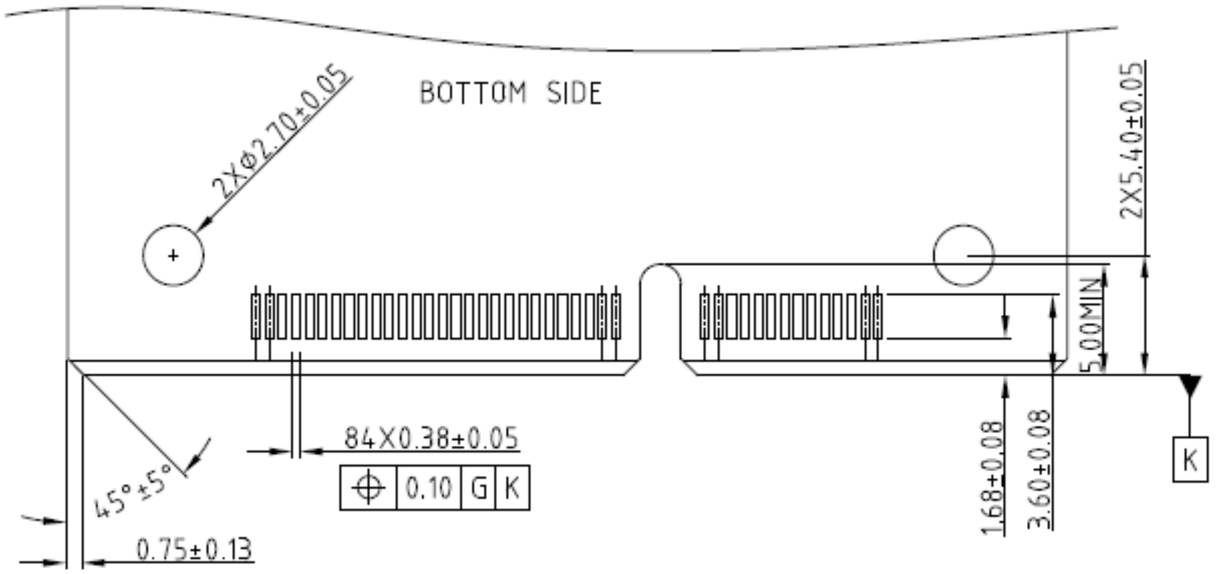


SMx-84 Footprint

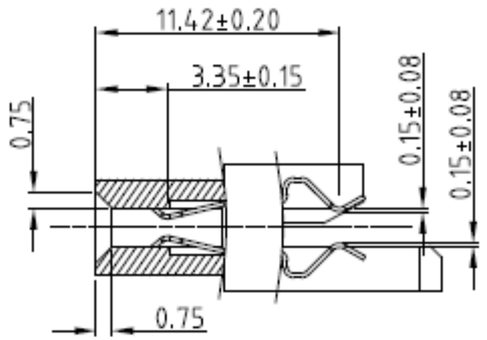




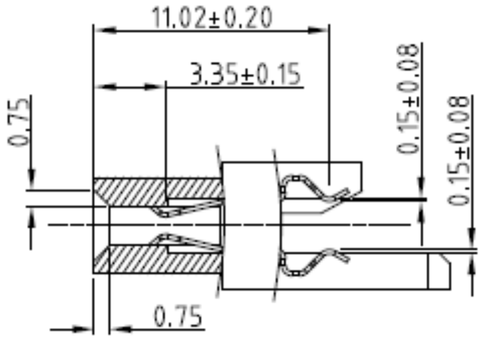
SMx-84 Footprint



SMx support of different PCB thickness



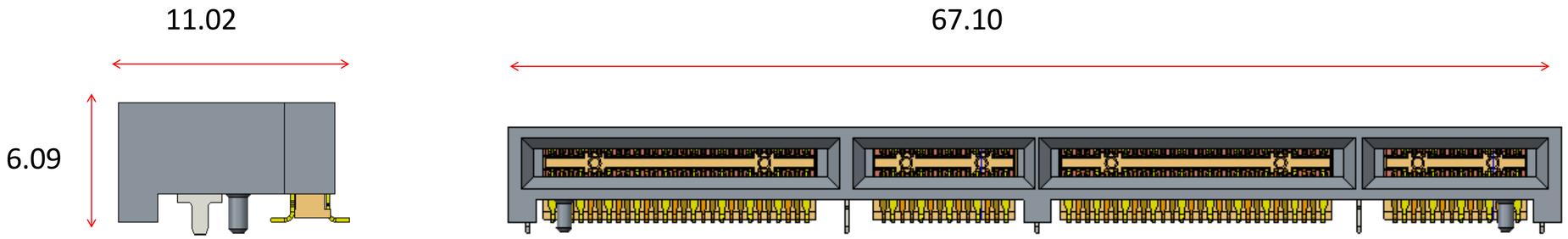
Cross Section for 168PIN and 84PIN design
for 1.60mm thick mother board



Cross Section for 168PIN and 84PIN design
for 2.36mm thick mother board

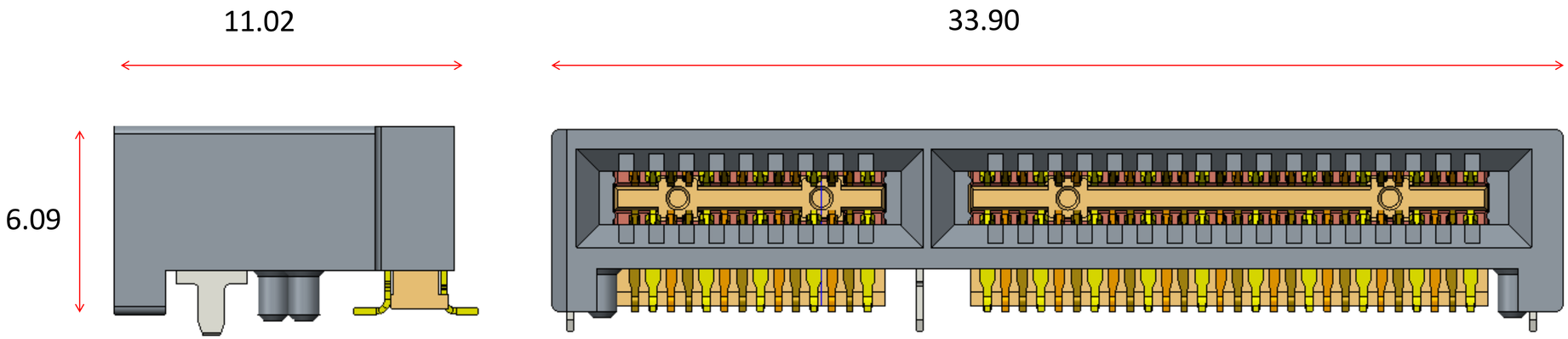
RA-168 (4C +28pin)

- **Fully compatible with TA1002 mating interface**
- **Fully compatible with Straddle mating interface**

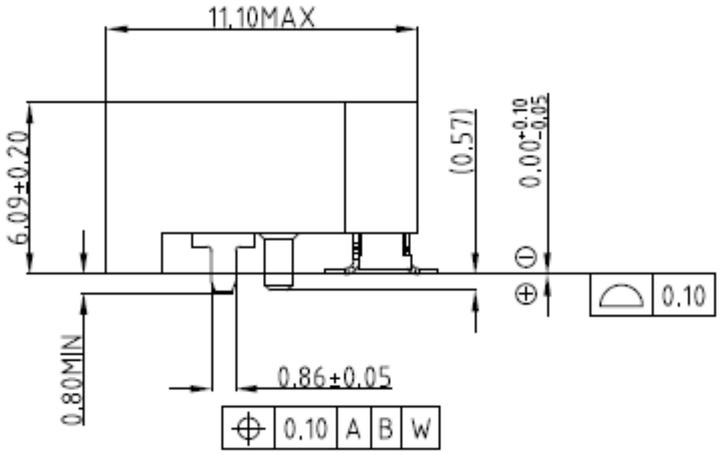


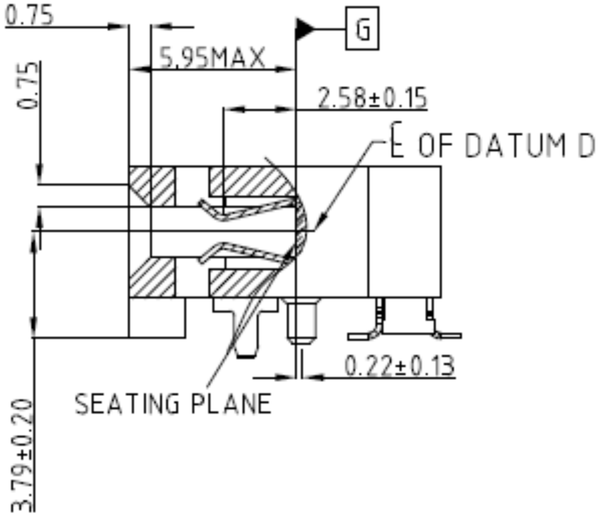
RA1-84 (2C)

- **Fully compatible with TA1002 2C footprint**
- **Fully compatible with Straddle mating interface**

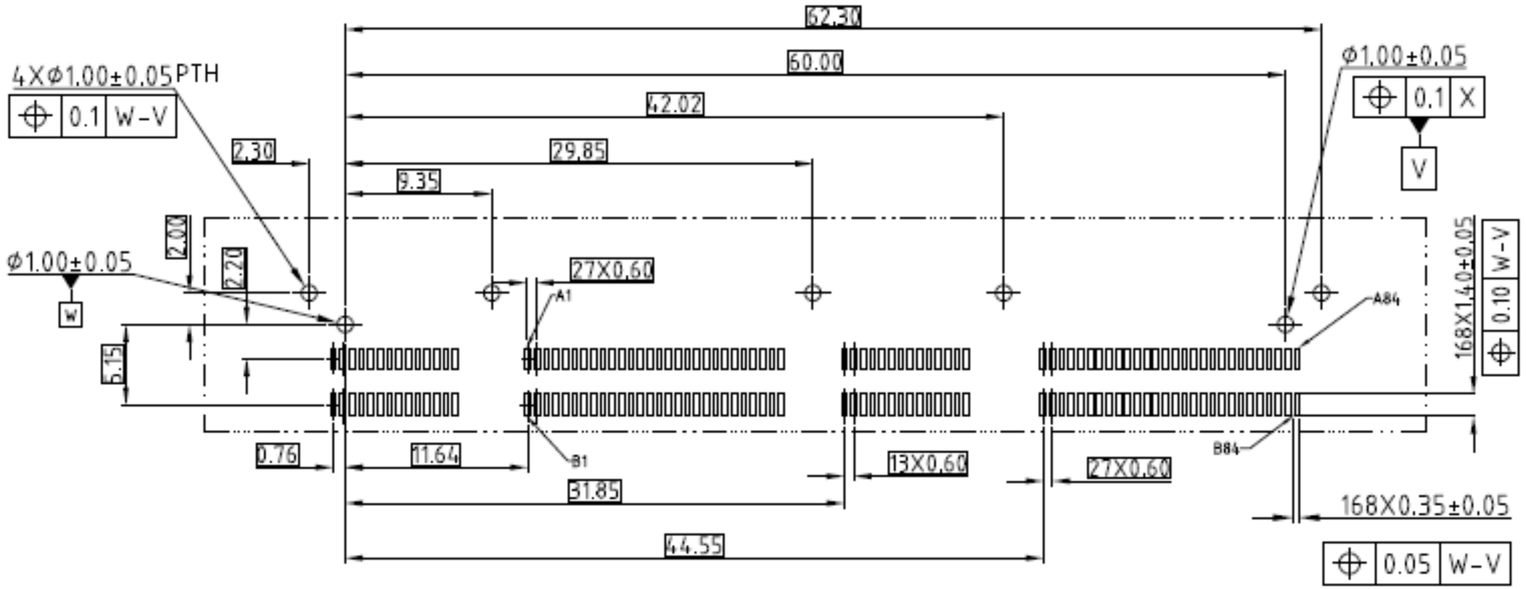


RA1 Height

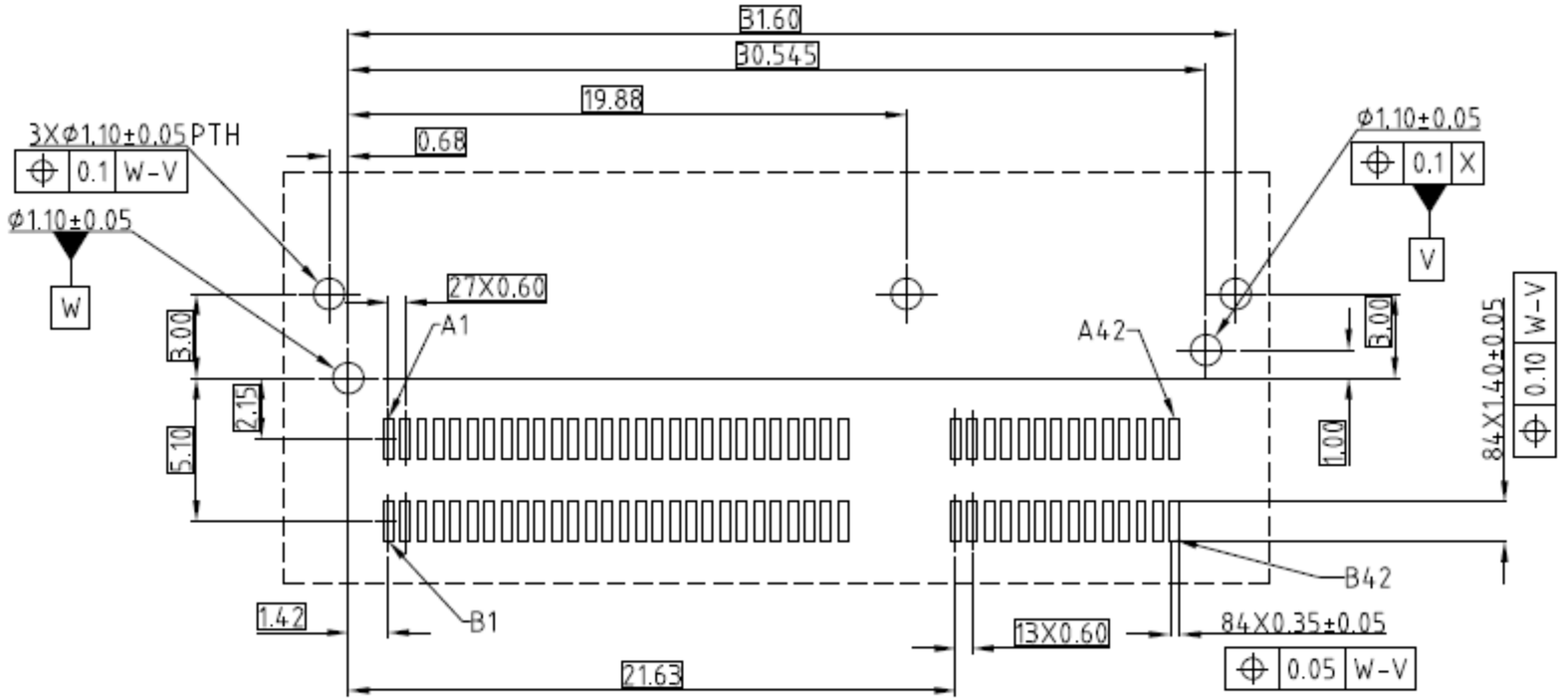

11.10MAX
6.09±0.20
(0.57)
0.00+0.10 -0.05
0.10
0.80MIN
0.86±0.05
0.10 A B W


0.75
G
5.95MAX
0.75
2.58±0.15
E OF DATUM D
0.22±0.13
SEATING PLANE
3.79±0.20

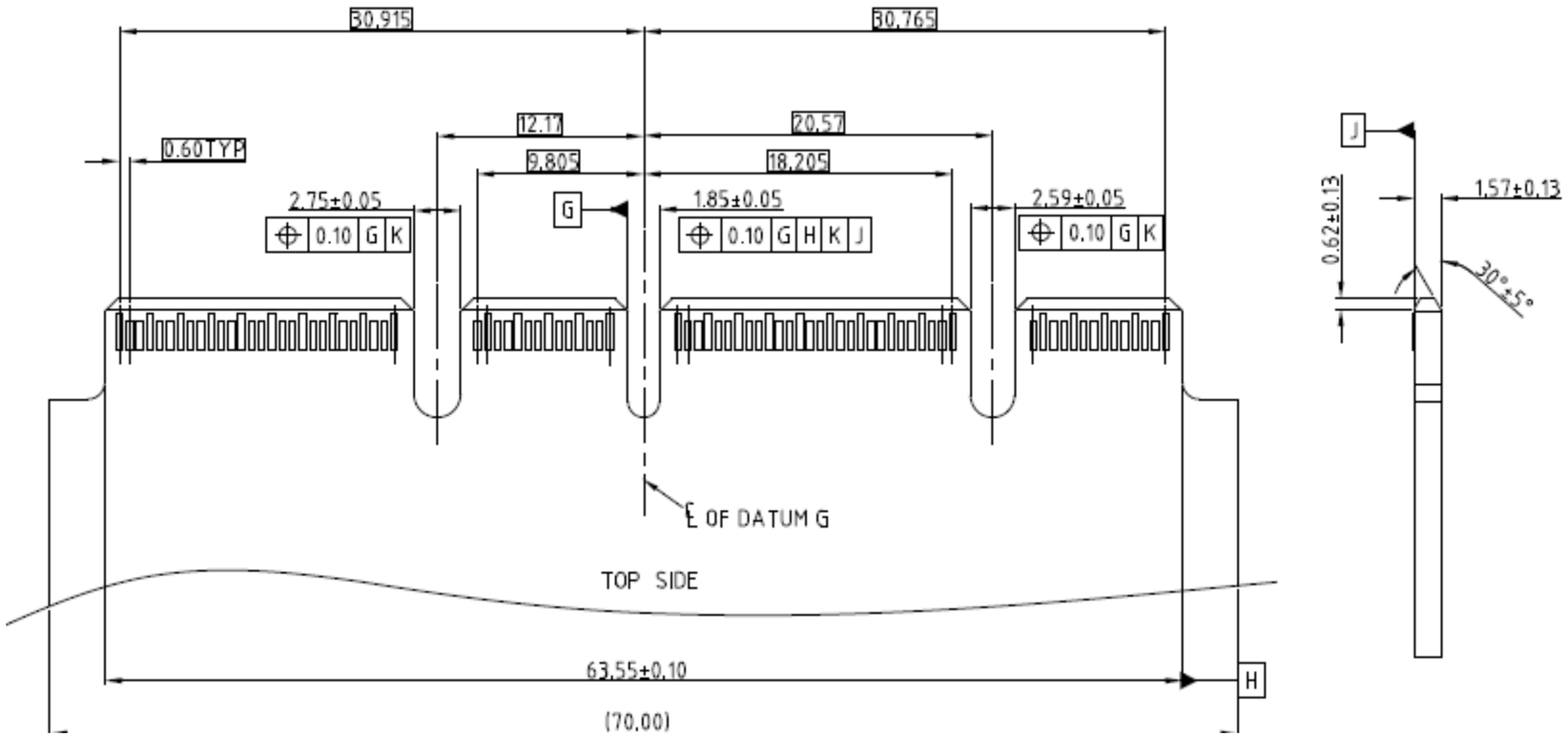
RA1-168 Footprint



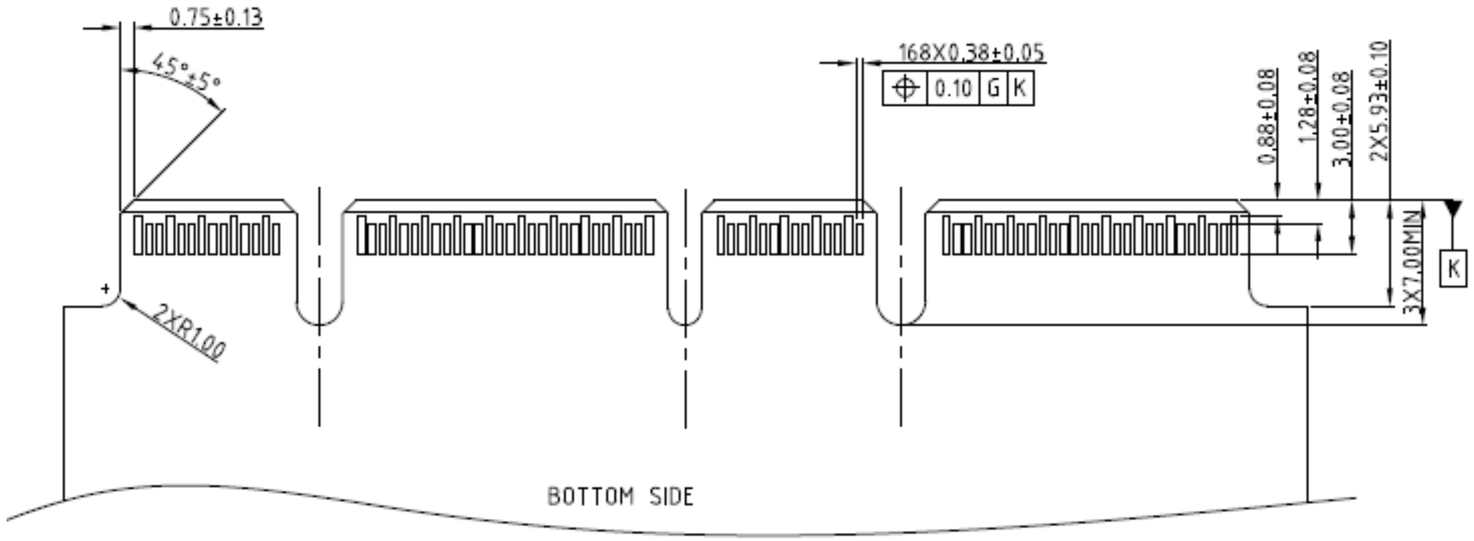
RA1-84 Footprint



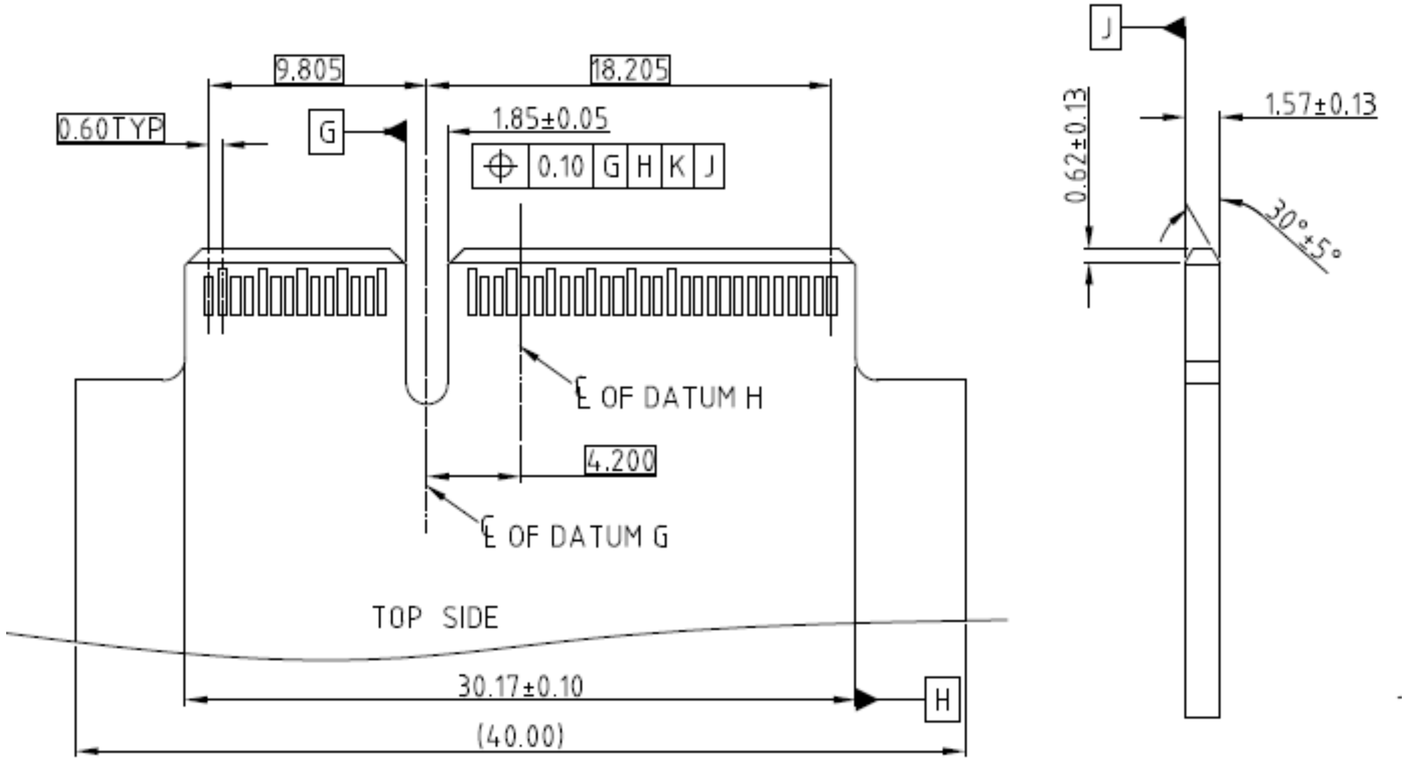
SMx & RA1-168 AIC card



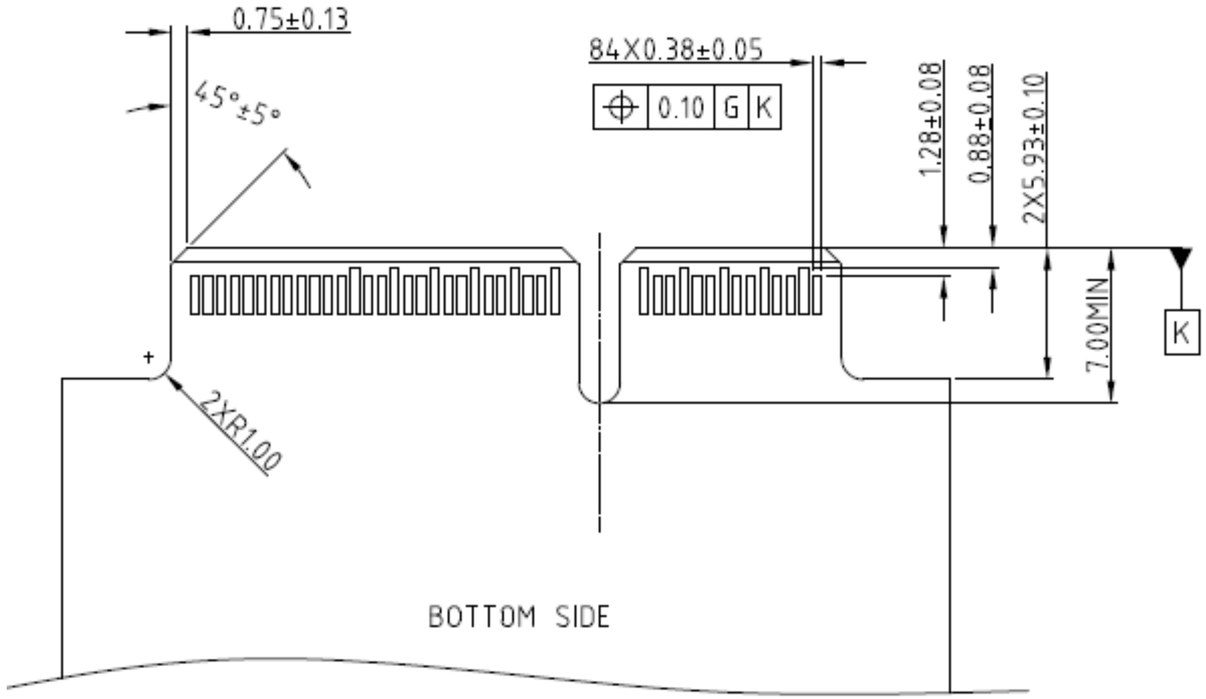
SMx & RA1-168 AIC card



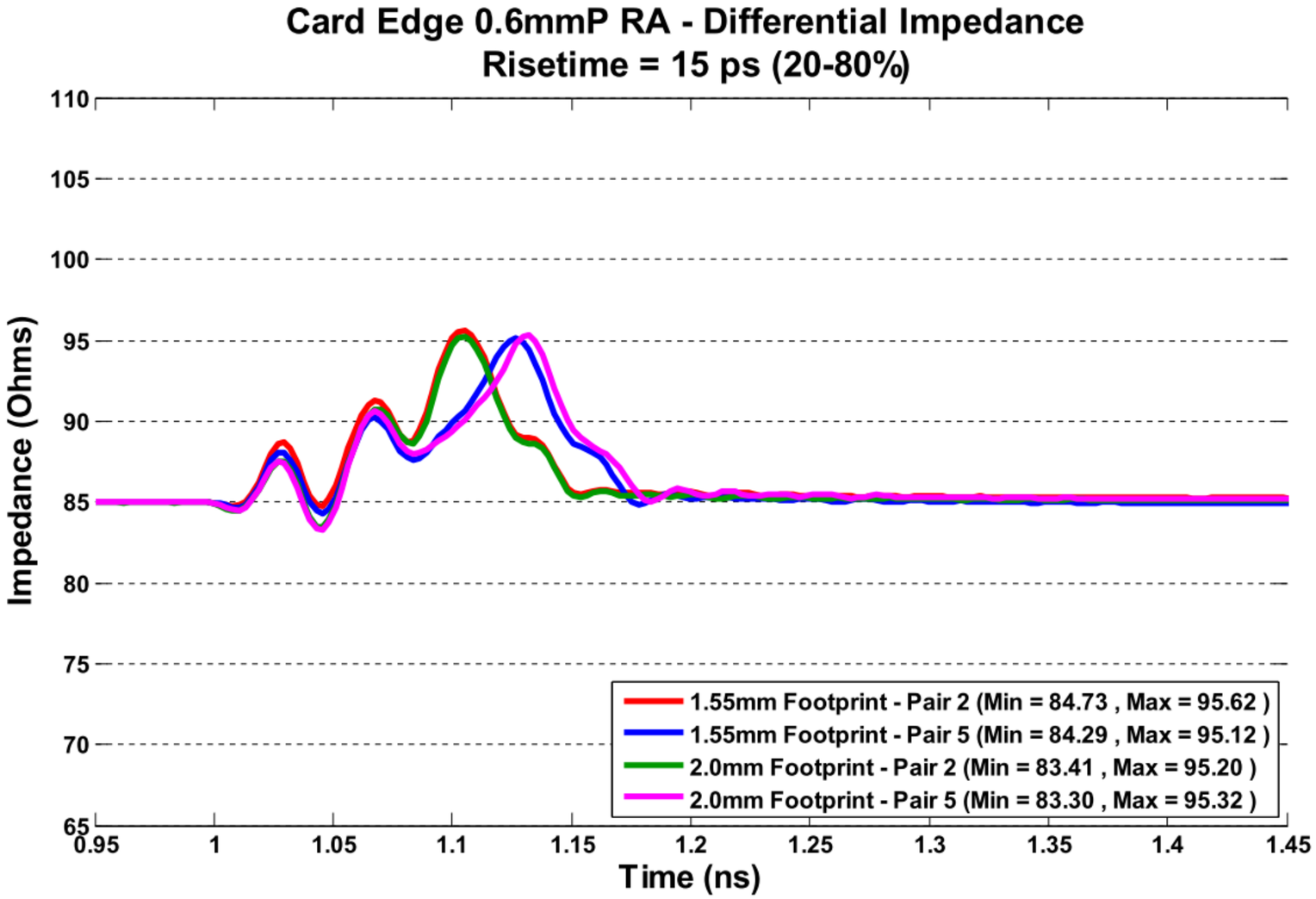
SMx & RA1-84 AIC card



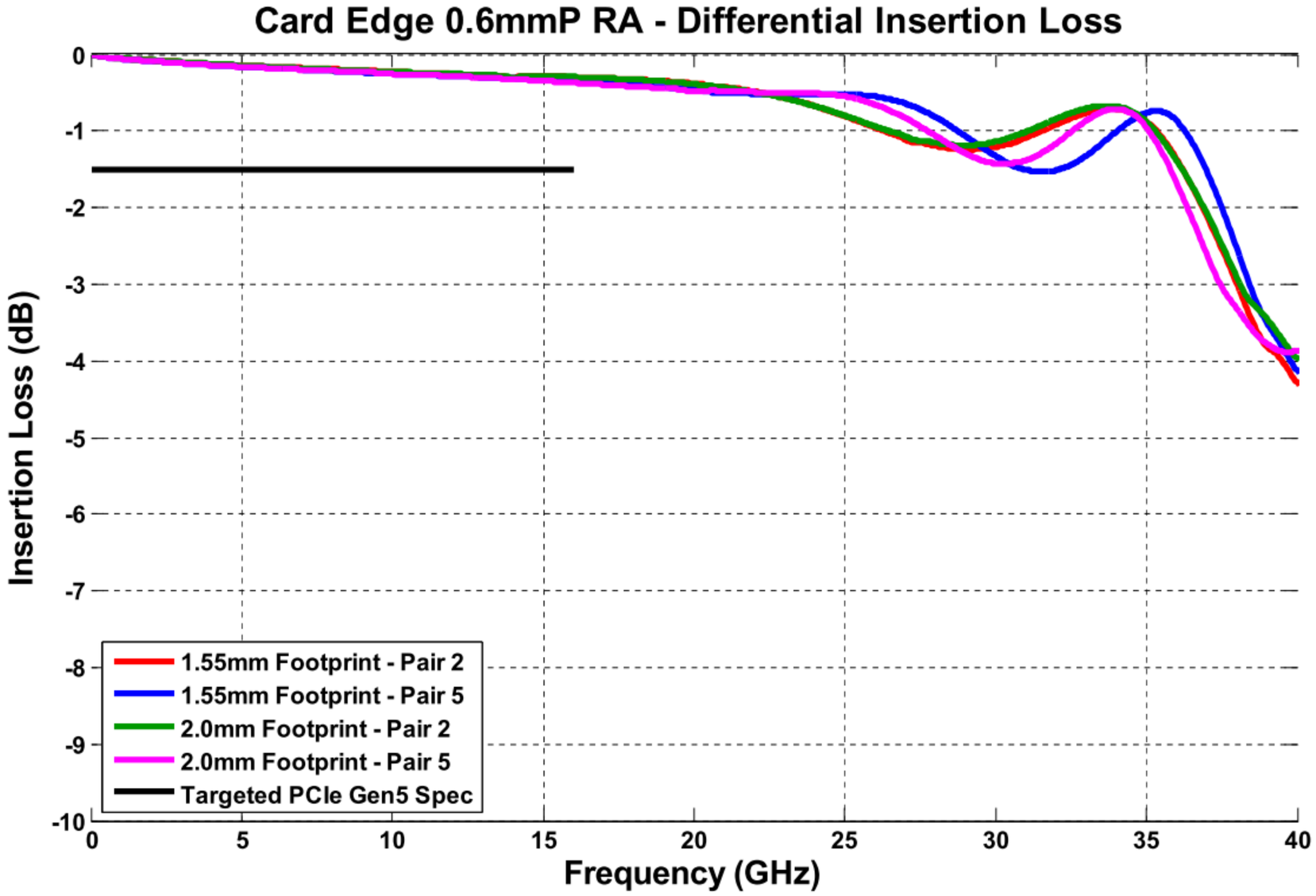
SMx & RA1-84 AIC card



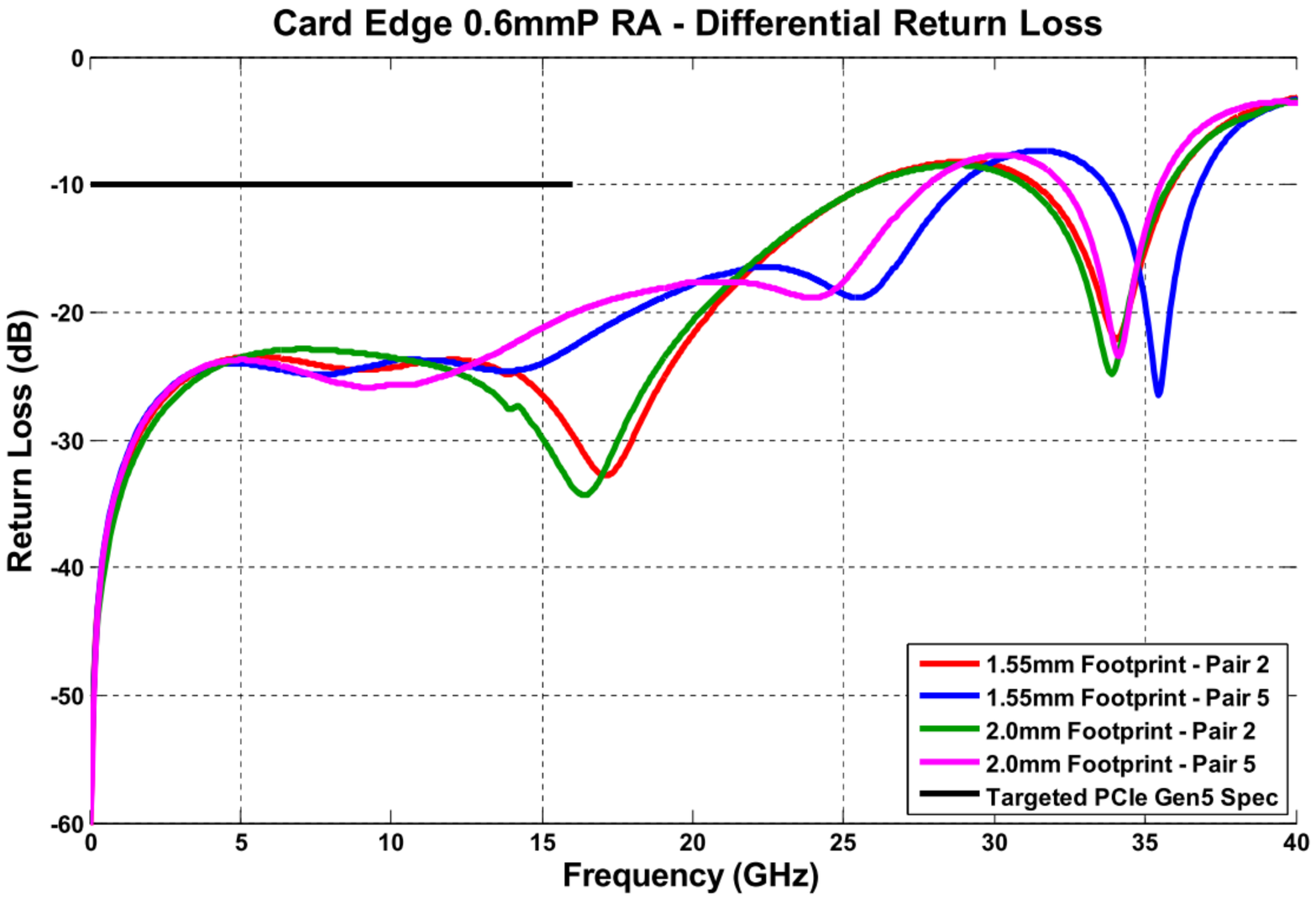
RA1 SI performance: TDR



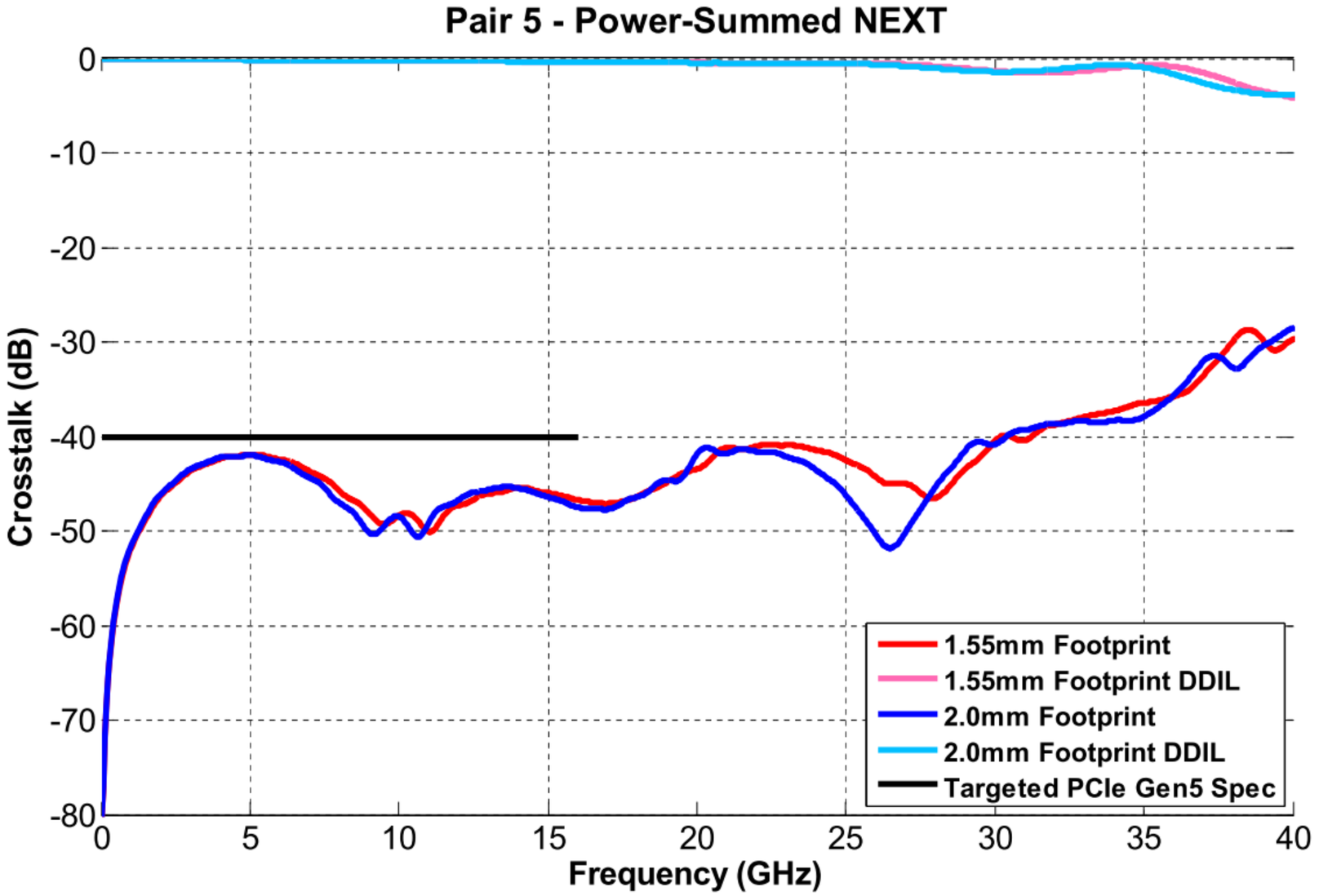
RA1 Insertion Loss



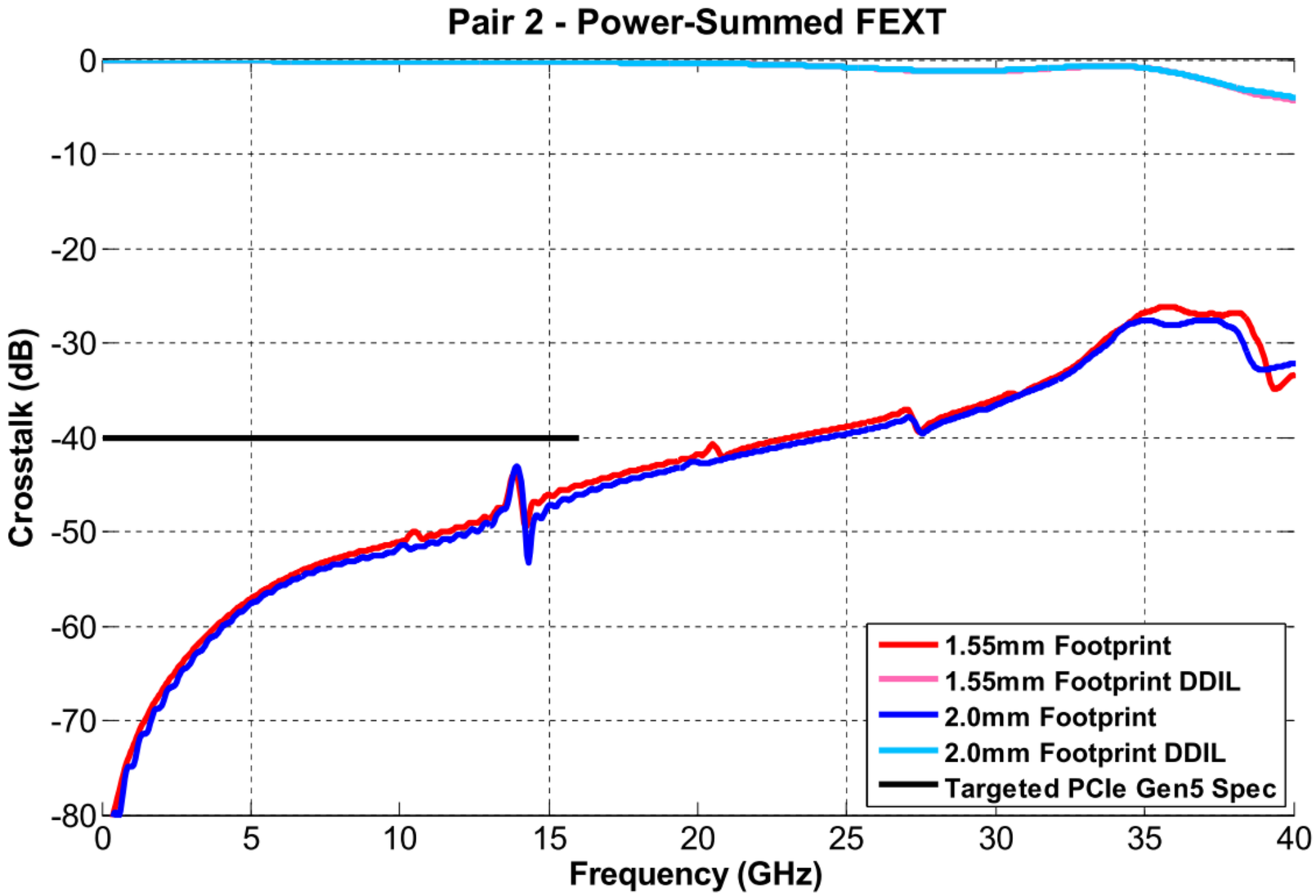
RA1 Return Loss



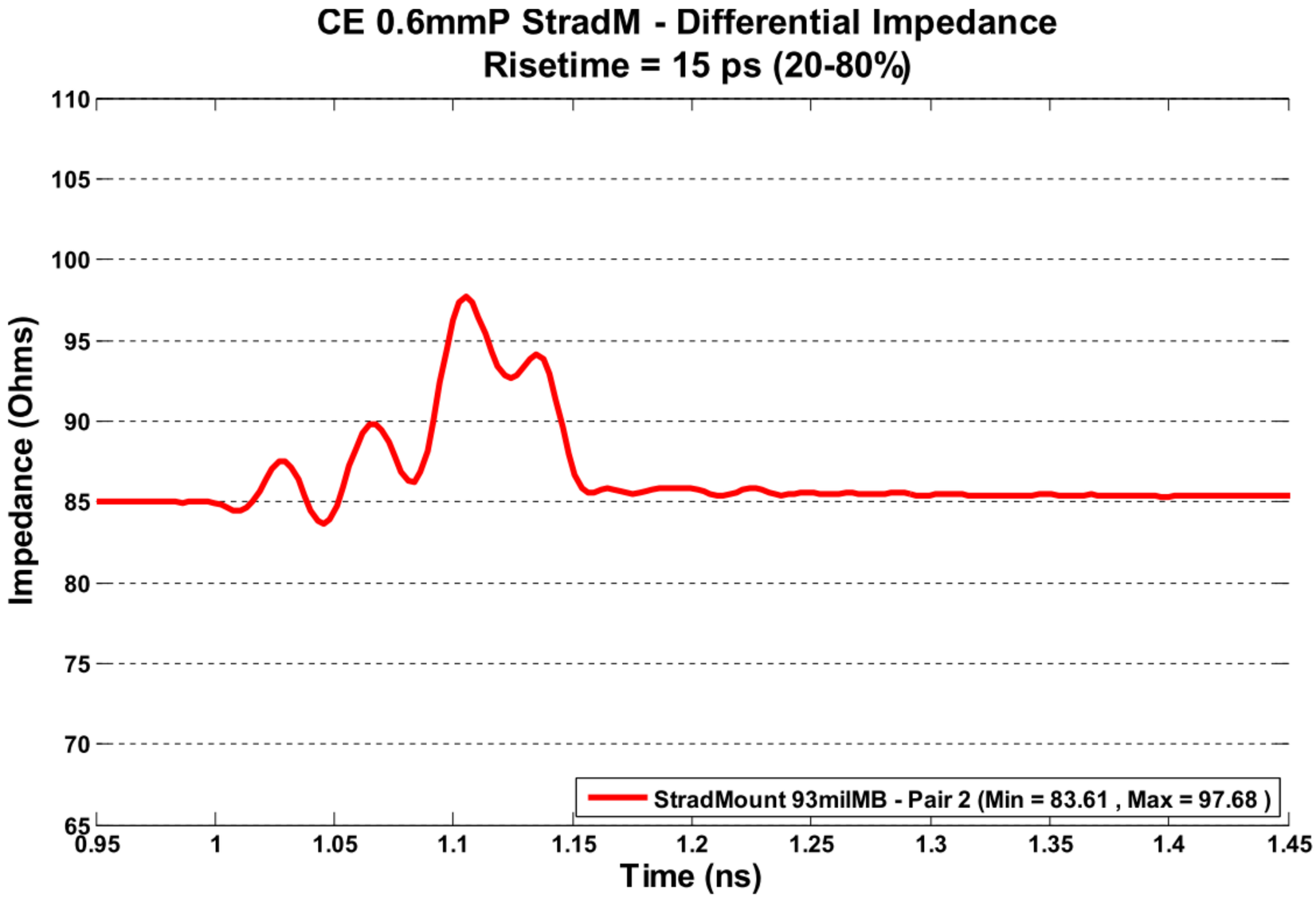
RA1: PSNEXT


Pair 5 - Power-Summed NEXT
Crosstalk (dB)
Frequency (GHz)
0
-10
-20
-30
-40
-50
-60
-70
-80
0
5
10
15
20
25
30
35
40
1.55mm Footprint
1.55mm Footprint DDIL
2.0mm Footprint
2.0mm Footprint DDIL
Targeted PCIe Gen5 Spec

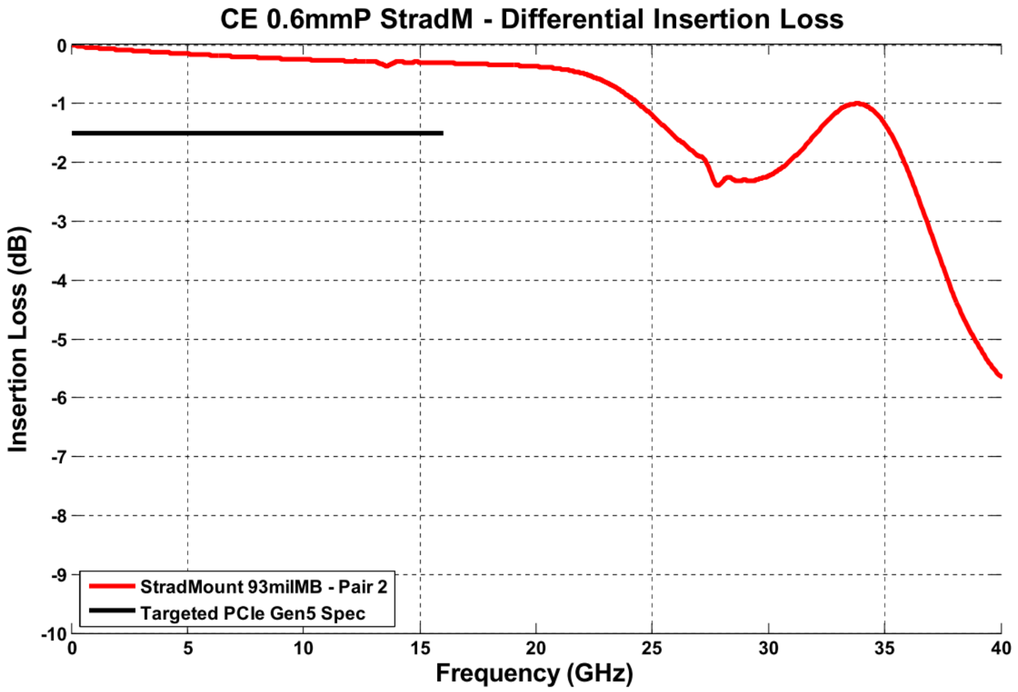
RA1: PSFEXT

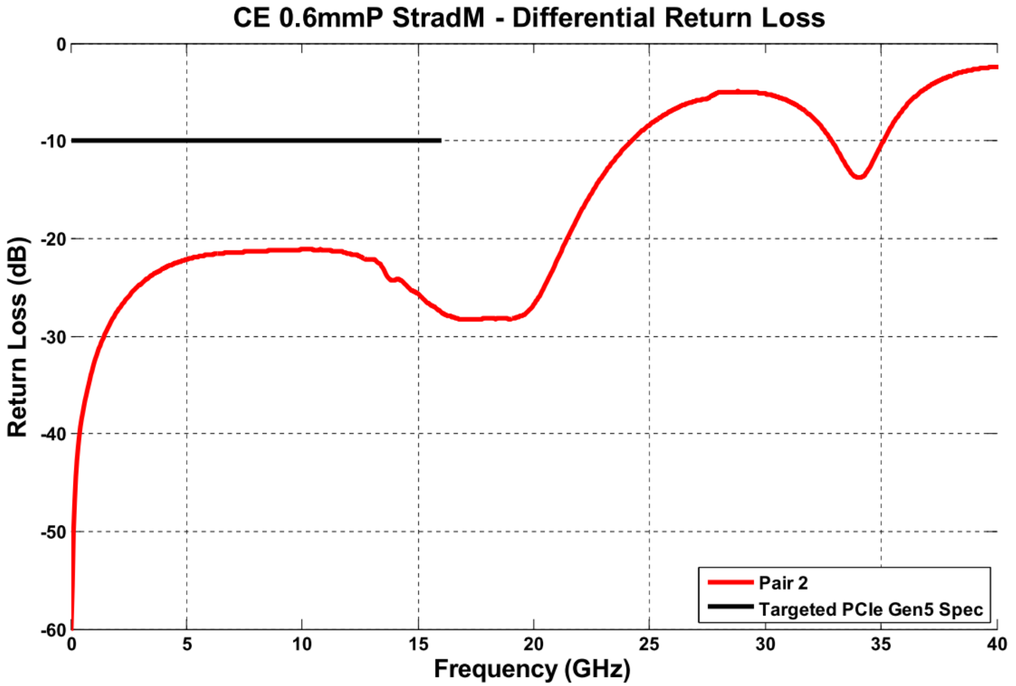

Pair 2 - Power-Summed FEXT
Crosstalk (dB)
0
-10
-20
-30
-40
-50
-60
-70
-80
0
5
10
15
20
25
30
35
40
Frequency (GHz)
1.55mm Footprint
1.55mm Footprint DDIL
2.0mm Footprint
2.0mm Footprint DDIL
Targeted PCIe Gen5 Spec

SM3: TDR

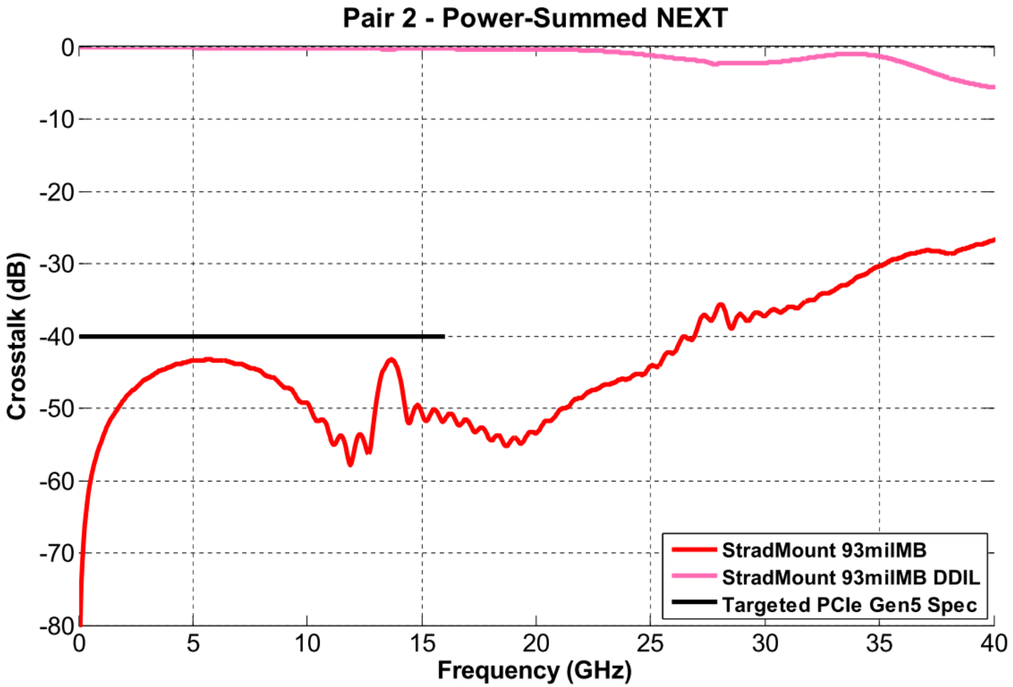

CE 0.6mmP StradM - Differential Impedance
Risetime = 15 ps (20-80%)
Impedance (Ohms)
110
105
100
95
90
85
80
75
70
65
0.95
1
1.05
1.1
1.15
1.2
1.25
1.3
1.35
1.4
1.45
Time (ns)
StradMount 93milMB - Pair 2 (Min = 83.61 , Max = 97.68)

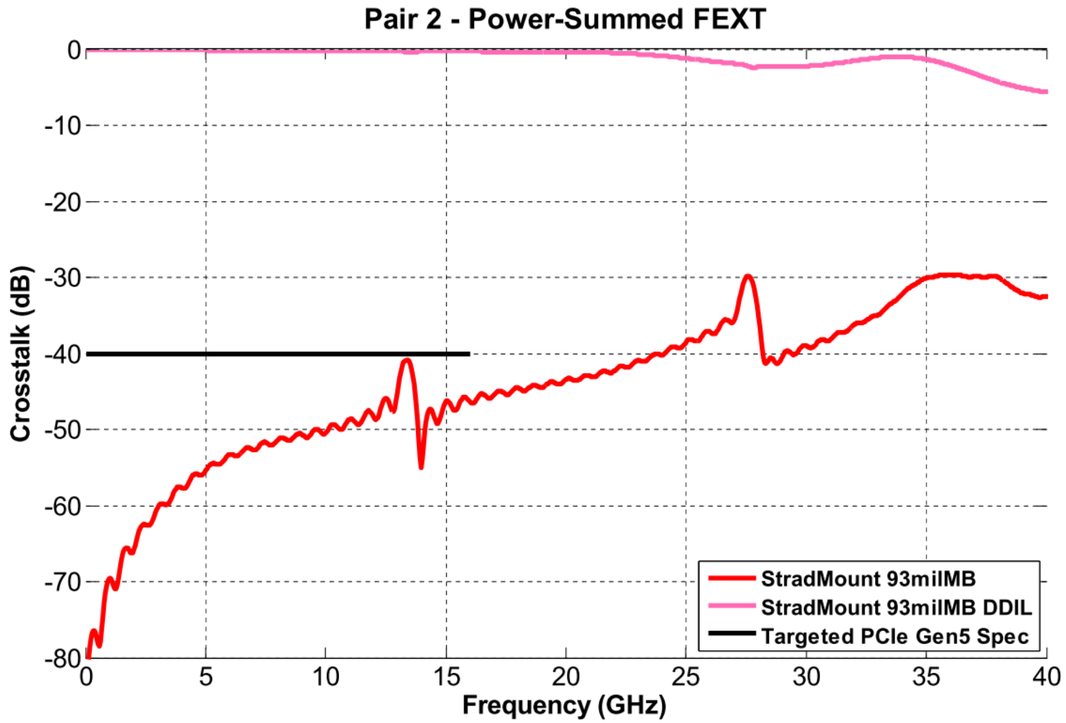
SM3: Insertion & Return loss





SM3: PSNEXT & PSFEXT

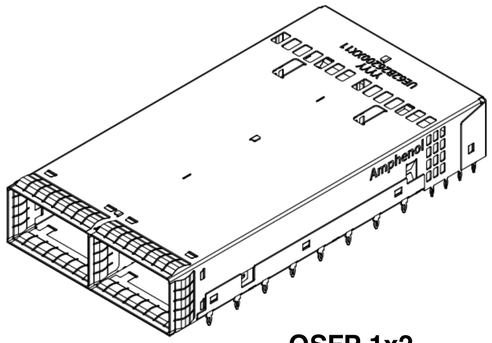




Next steps

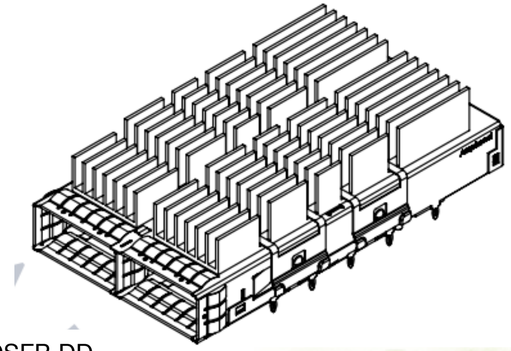
- Finalize spec
- Production tooled parts in 10 weeks from final spec

Amphenol supports OCP!
Thank you!

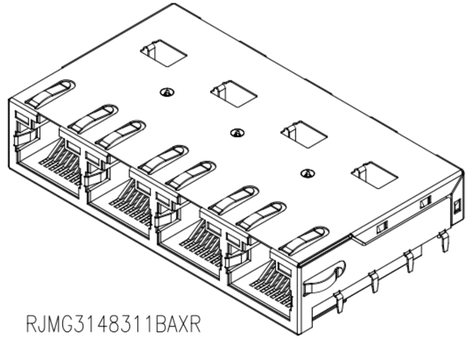


OSFP 1x2

OPEN
Compute Project



QSFP-DD



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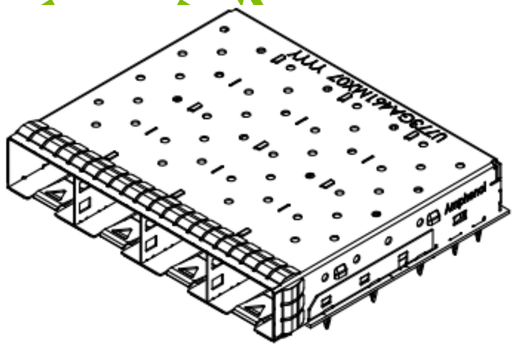
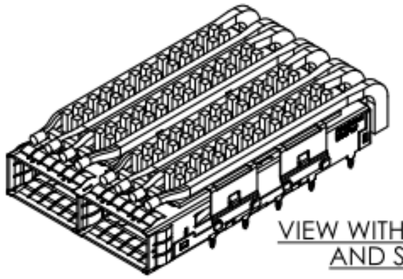
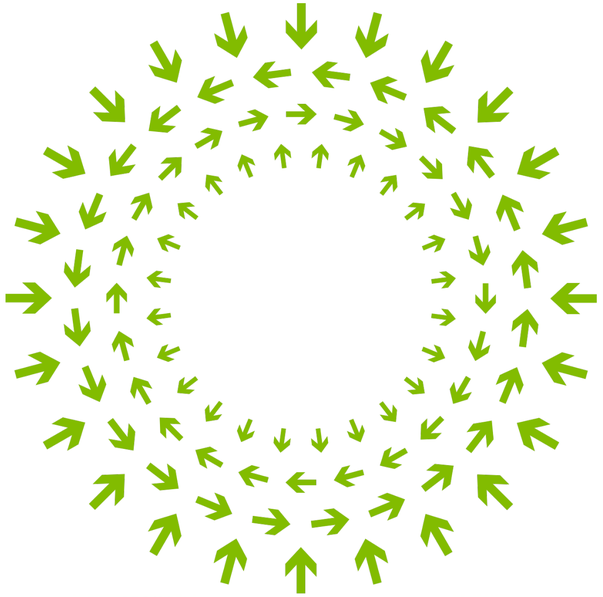


P/N: U77-3GA461M-X071



VIEW WITH QUAD BARREL LIGHT PIPE
AND SQUARE PIN HEAT SINK
U95-L2A1-104A

Albert.Chen@amphenol-tcs.com



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