

# SKW Associates, Inc.

3370 Victor Court

Santa Clara, CA 95054

Phone (408) 919-0094

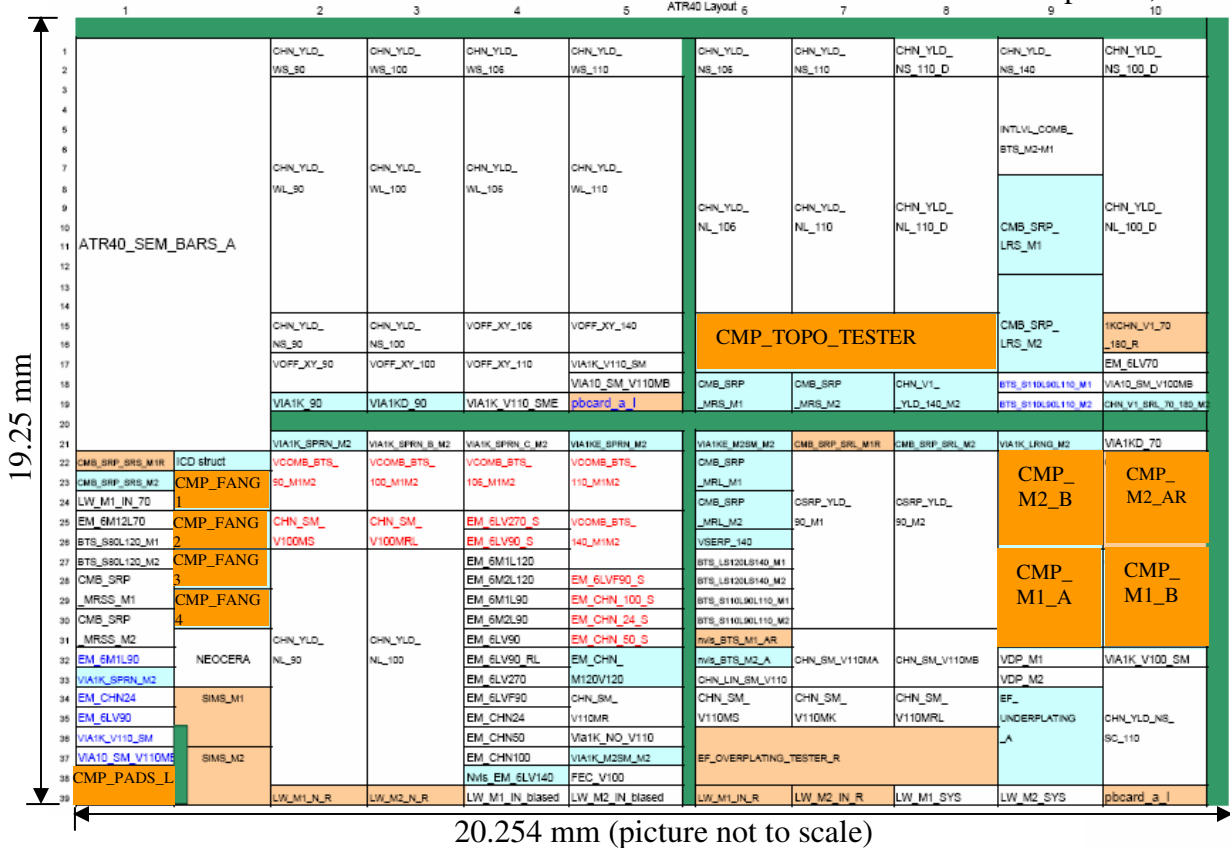
Fax (408) 919-0097

Email: [skw@testwafer.com](mailto:skw@testwafer.com)

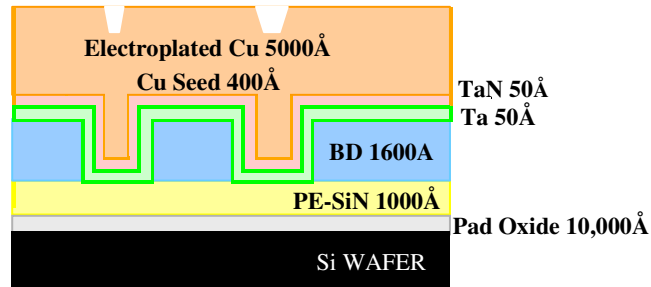
<http://www.testwafer.com>

# ATR-40 M1 Cu/BD (65 nm Tech Node) Wafer Specifications

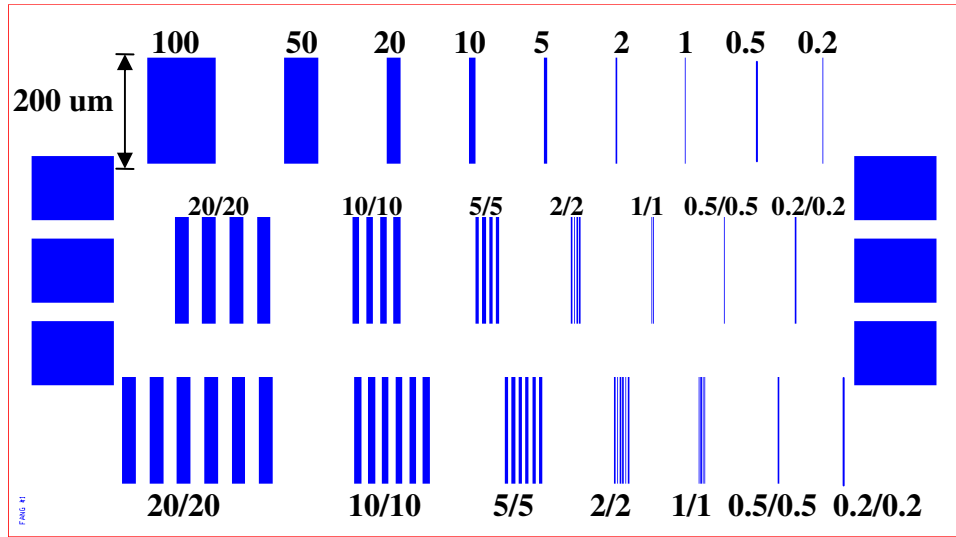
DATE: April 27, 2007



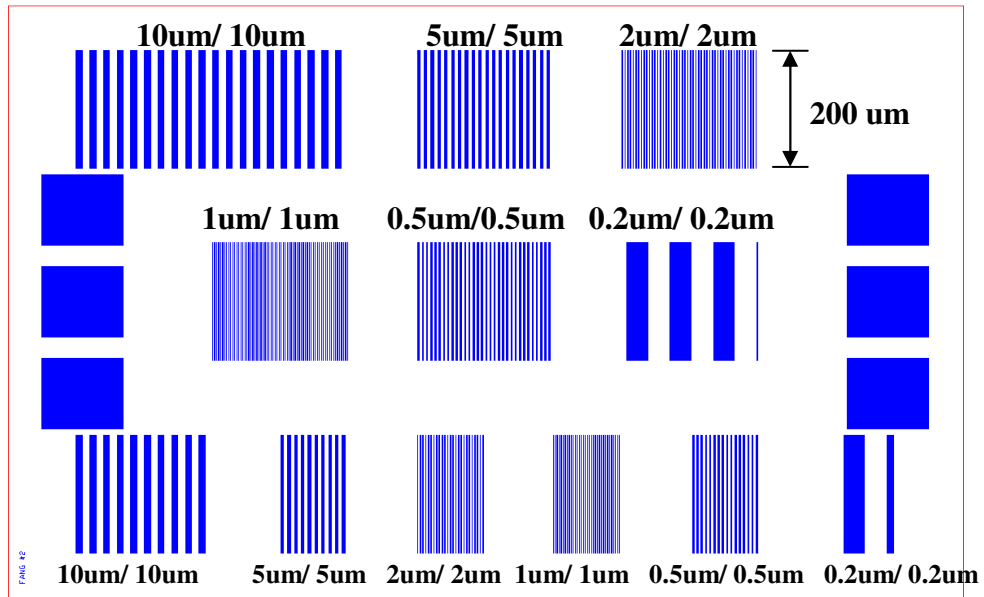
ATR-40 Cu/BD Mask Floor Plan  
(CMP test structures highlighted in orange)



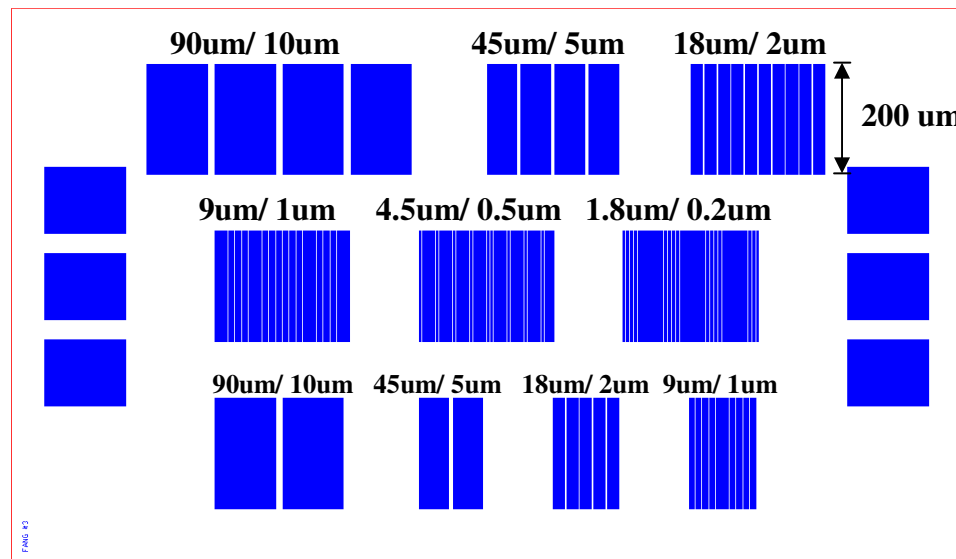
Cross Sectional View



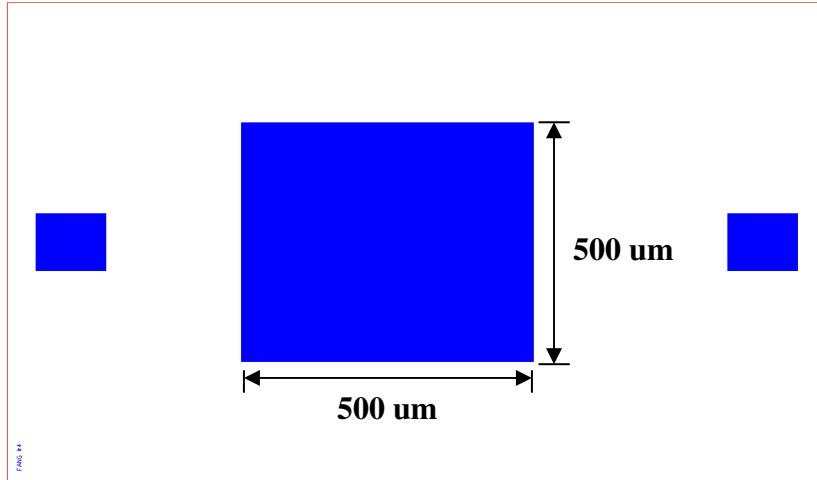
CMP\_FANG1 Test Structure



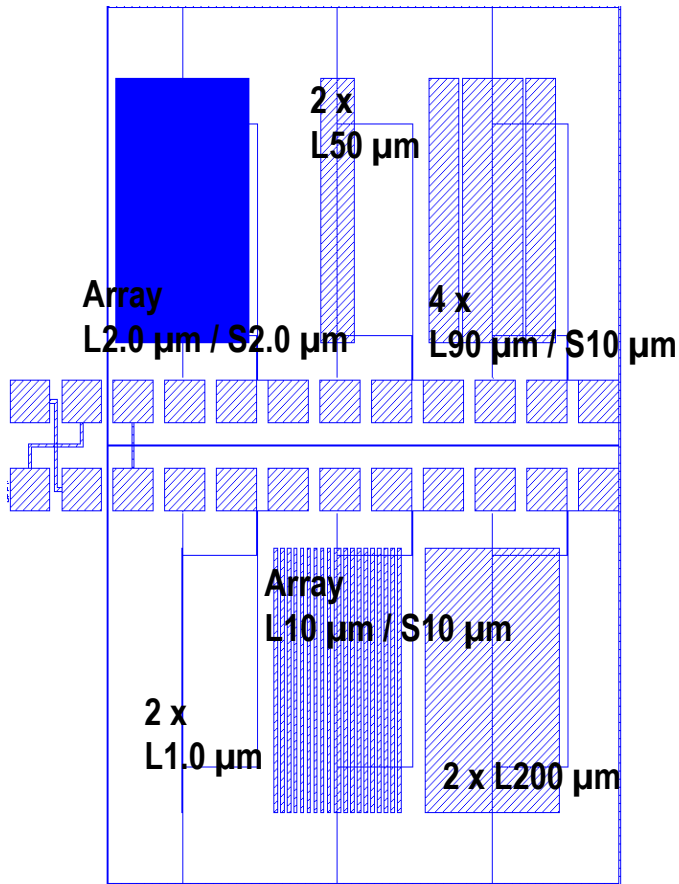
CMP\_FANG2 Test Structure



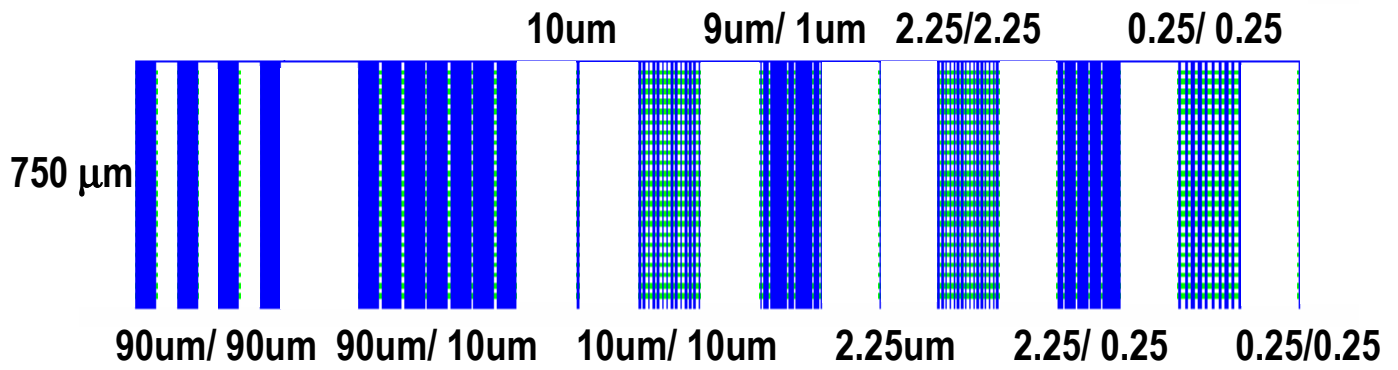
CMP\_FANG3 Test Structure



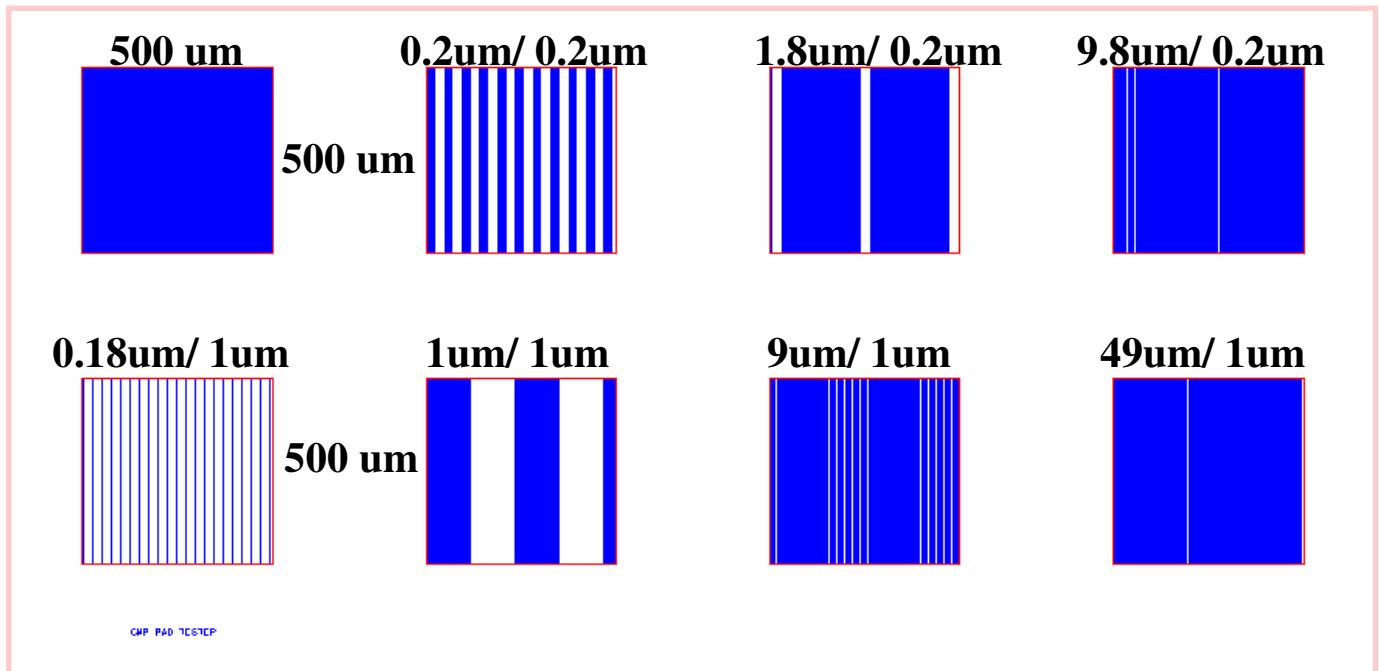
CMP\_FANG4 Test Structure



CMP\_M1\_A E-Test Structure



CMP\_TOPO\_TESTER Test Structure



CMP\_PAD Test Structure (M1 Level)

PARAMETER	NOMINAL	TOLERANCE
<b>Patterning</b>		
Center Die X Location	-1.150 mm	+/- 100 $\mu\text{m}$
Center Die Y Location	-1.000 mm	+/- 100 $\mu\text{m}$
Die Size: X	20.130 mm	+/- 10 $\mu\text{m}$
Die Size: Y	19.113 mm	+/- 10 $\mu\text{m}$
Die Stepping (X /Y)	136 / 122 $\mu\text{m}$	+/- 10%
Wafers must be patterned all the way to the edges of the wafer, i.e. no area anywhere on the wafer unpatterned. (Under certain stepper operating conditions, 2 mm edge edge exclusion is allowed.)		
<b>Line CD Variation</b> (measured on 2 $\mu\text{m}$ structure)		
Lot-to-Lot	2 $\mu\text{m}$	+/- 10 nm
Within-Lot (Wafer-to-Wafer)		+/- 10 nm
Within-Wafer		+/- 10 nm
Within-Die (measured on 9 trenches)		+/- 10 nm
<b>Pad Oxide thickness</b>		
Lot-to-Lot	10,000 $\text{\AA}$	+/- 5 %
Within-Lot (Wafer-to-Wafer)		+/- 5 %
Within-Wafer		+/- 3 %
Within-Die		+/- 3 %
<b>SiN film thickness</b>		
Lot-to-Lot	1000 $\text{\AA}$	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %
<b>Black Diamond film thickness</b>		
Lot-to-Lot	1600 $\text{\AA}$	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %

<b>PARAMETER</b>	<b>NOMINAL</b>	<b>TOLERANCE</b>
<b>PVD Ta film thickness</b>		
Lot-to-Lot	50 Å	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %
<b>PVD TaN film thickness</b>		
Lot-to-Lot	50 Å	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %
<b>PVD Cu film thickness</b>		
Lot-to-Lot	400 Å	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %
<b>ECD Cu film thickness</b>		
Lot-to-Lot	5000 Å	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %