JMP Output for Process Development Study
Alternative Estimates of Error Variability

Response Conversion% - Full Factorial in XA, XB, and XD (Pseudo Replication)

Summary of Fit

RSquare	0.987861
RSquare Adj	0.97724
Root Mean Square Error	2.061553
Mean of Response	72.25
Observations (or Sum Wgts)	16

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	7	2767.0000	395.286	93.0084
Error	8	34.0000	4.250	Prob > F
C. Total	15	2801.0000		<.0001

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|
Intercept	72.25	0.515388	140.19	<.0001
XA	-4	0.515388	-7.76	<.0001
XB	12	0.515388	23.28	<.0001
XA*XB	0.5	0.515388	0.97	0.3604
XD	-2.75	0.515388	-5.34	0.0007
XA*XD	0	0.515388	0.00	1.0000
XB*XD	2.25	0.515388	4.37	0.0024
XA*XB*XD	0.25	0.515388	0.49	0.6406

Response Conversion% - Reduced Model
(3- and 4-way interaction terms used to estimate Error)

Summary of Fit

RSquare	0.997858
RSquare Adj	0.993574
Root Mean Square Error	1.095445
Mean of Response	72.25
Observations (or Sum Wgts)	16

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	10	2795.0000	279.500	232.9167
Error	5	6.0000	1.200	Prob > F
C. Total	15	2801.0000		<.0001

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|
Intercept	72.25	0.273861	263.82	<.0001
XA	-4	0.273861	-14.61	<.0001
XB	12	0.273861	43.82	<.0001
XA*XB	0.5	0.273861	1.83	0.1275
XC	-1.125	0.273861	-4.11	0.0093
XA*XC	0.375	0.273861	1.37	0.2292
XB*XC	-0.625	0.273861	-2.28	0.0713
XD	-2.75	0.273861	-10.04	0.0002
XA*XD	0	0.273861	0.00	1.0000
XB*XD	2.25	0.273861	8.22	0.0004
XC*XD	-0.125	0.273861	-0.46	0.6672