APPENDIX B: DETAILED REVERSE ENGINEERING COST ESTIMATES AND EQUIPMENT DATA

The following tables present the detailed cost estimates from the reverse engineering analysis for each product class aggregated by efficiency level. Values in **Bold** typeface have been substituted from other product classes in accordance with the rules presented in Section 4.2.7. Values in normal typeface result directly from the reverse engineering methodology detailed in Appendix C.

The charts and graphs following the tables provide information on the distribution of the design options included in the reverse engineering samples at each efficiency level. It is important to keep in mind that the reverse engineering sample represents only a small portion of product currently on the market. Since manufacturers identified the samples as being the closest available representation of their baseline product under new efficiency levels, they do not necessarily represent the most prevalent equipment sold and used today. Furthermore, products under new standards would likely evolve to be more uniform in design than those illustrated.

Table B.1

Split Air Conditioners (cased coil) - 3 Ton						
Efficiency Standard (SEER)		**10**	**11**	**12**	**13**	**14**
Relative Cost		**1.00**	**1.12**	**1.27**	**1.44**	**1.60**
Outside Unit	Coil Materials	$ 36.18	$ 39.20	$ 59.31	$ 69.63	$ 94.85
	Coil Labor	$ 4.15	$ 4.20	$ 4.76	$ 4.92	$ 5.40
	Electrical Materials	$ 28.44	$ 31.79	$ 31.99	$ 35.22	$ 35.17
	Electrical Labor	$ 1.05	$ 1.21	$ 1.07	$ 1.07	$ 1.07
	Miscellaneous Materials	$ 4.53	$ 4.49	$ 5.66	$ 5.98	$ 6.30
	Miscellaneous Labor	$ 1.64	$ 1.64	$ 1.73	$ 1.76	$ 1.78
	Fan Materials	$ 3.26	$ 3.76	$ 4.47	$ 5.11	$ 4.86
	Fan Labor	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25
	Cabinet Materials	$ 13.54	$ 13.37	$ 18.83	$ 20.55	$ 21.88
	Cabinet Labor	$ 2.24	$ 2.23	$ 2.45	$ 2.51	$ 2.55
	Plumbing Materials	$ 11.30	$ 11.61	$ 11.32	$ 13.55	$ 14.46
	Plumbing Labor	$ 3.59	$ 3.99	$ 3.72	$ 3.99	$ 4.21
	Compressor Materials	$ 122.21	$ 151.77	$ 152.87	$ 167.25	$ 167.78
	Compressor Labor	$ 0.65	$ 0.65	$ 0.65	$ 0.65	$ 0.65
Indoor Unit	Coil Materials	$ 24.61	$ 30.28	$ 30.32	$ 41.25	$ 47.37
	Coil Labor	$ 1.98	$ 2.18	$ 2.22	$ 2.58	$ 2.79
	Electrical Materials	$ -	$ -	$ -	$ -	$ -
	Electrical Labor	$ -	$ -	$ -	$ -	$ -
	Miscellaneous Materials	$ 6.43	$ 6.80	$ 8.66	$ 11.55	$ 14.13
	Miscellaneous Labor	$ 1.51	$ 1.52	$ 1.52	$ 1.53	$ 1.56
	Fan Materials	$ -	$ -	$ -	$ -	$ -
	Fan Labor	$ -	$ -	$ -	$ -	$ -
	Cabinet Materials	$ 14.83	$ 15.45	$ 15.92	$ 17.98	$ 21.65
	Cabinet Labor	$ 1.35	$ 1.39	$ 1.37	$ 1.28	$ 1.36
	Plumbing Materials	$ 9.22	$ 7.65	$ 10.91	$ 12.03	$ 16.36
	Plumbing Labor	$ 6.35	$ 6.45	$ 6.62	$ 6.62	$ 6.84
Other	Refrigerant Matl	$ 4.18	$ 4.70	$ 5.60	$ 6.11	$ 8.08
	Refrigerant Labor	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36
	Indirect Labor	$ 10.89	$ 11.24	$ 11.38	$ 11.66	$ 12.07
	Indirect Material	$ 6.85	$ 6.92	$ 6.95	$ 6.95	$ 7.01
	Equipment Depreciation	$ 4.59	$ 4.78	$ 5.99	$ 6.59	$ 7.47
	Building Depreciation	$ 7.50	$ 7.58	$ 11.70	$ 13.59	$ 15.47
	Maintenance	$ 2.81	$ 2.90	$ 3.07	$ 3.20	$ 3.41
	Utilities	$ 2.61	$ 2.67	$ 3.82	$ 4.36	$ 4.95
	Taxes	$ 3.31	$ 3.71	$ 4.21	$ 4.76	$ 5.29
	Insurance	$ 2.94	$ 3.30	$ 3.74	$ 4.23	$ 4.70
	Freight-Out	$ 22.03	$ 22.26	$ 34.33	$ 39.89	$ 45.41
	Total	**$ 367.36**	**$ 412.29**	**$ 467.77**	**$ 528.96**	**$ 587.52**
Direct Material		$ 278.71	$ 320.86	$ 355.86	$ 406.21	$ 452.90
Direct Labor (incl. benefits)		$ 25.12	$ 26.06	$ 26.72	$ 27.52	$ 28.83
Overhead (incl. benefits)		$ 41.49	$ 43.10	$ 50.86	$ 55.34	$ 60.37
Full Cost (no freight-out)		**$ 345.33**	**$ 390.03**	**$ 433.44**	**$ 489.08**	**$ 542.10**

Table B.2

Split Air Conditioners (fancoil) - 3 Ton

	Efficiency Standard (SEER)	**10**	**11**	**12**	**13**	**14**	**15**
	Relative Cost	**1.00**	**1.16**	**1.25**	**1.42**	**1.82**	**1.99**
	Cost Component	**Original**	**Original**	**Original**	**Original**	**Original**	**Original**
Outside Unit	Coil Materials	$ 36.18	$ 39.20	$ 59.31	$ 69.63	$ 94.85	$ 88.64
	Coil Labor	$ 4.15	$ 4.20	$ 4.76	$ 4.92	$ 5.40	$ 5.34
	Electrical Materials	$ 28.44	$ 31.79	$ 31.99	$ 35.22	$ 35.17	$ 70.90
	Electrical Labor	$ 1.05	$ 1.21	$ 1.07	$ 1.07	$ 1.07	$ 1.48
	Miscellaneous Materials	$ 4.53	$ 4.49	$ 5.66	$ 5.98	$ 6.30	$ 6.46
	Miscellaneous Labor	$ 1.64	$ 1.64	$ 1.73	$ 1.76	$ 1.78	$ 1.79
	Fan Materials	$ 3.26	$ 3.76	$ 4.47	$ 5.11	$ 4.86	$ 5.16
	Fan Labor	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25
	Cabinet Materials	$ 13.54	$ 13.37	$ 18.83	$ 20.55	$ 21.88	$ 21.47
	Cabinet Labor	$ 2.24	$ 2.23	$ 2.45	$ 2.51	$ 2.55	$ 2.49
	Plumbing Materials	$ 11.30	$ 11.61	$ 11.32	$ 13.55	$ 14.46	$ 18.79
	Plumbing Labor	$ 3.59	$ 3.99	$ 3.72	$ 3.99	$ 4.21	$ 4.96
	Compressor Materials	$ 122.21	$ 151.77	$ 152.87	$ 167.25	$ 167.78	$ 221.33
	Compressor Labor	$ 0.65	$ 0.65	$ 0.65	$ 0.65	$ 0.65	$ 0.65
Indoor Unit	Coil Materials	$ 24.61	$ 30.28	$ 30.32	$ 41.25	$ 47.37	$ 32.90
	Coil Labor	$ 1.98	$ 2.18	$ 2.22	$ 2.58	$ 2.79	$ 2.25
	Electrical Materials	$ 52.73	$ 53.07	$ 53.07	$ 53.07	$ 176.91	$ 169.03
	Electrical Labor	$ 1.83	$ 1.83	$ 1.83	$ 1.83	$ 2.52	$ 2.52
	Miscellaneous Materials	$ 14.67	$ 26.20	$ 26.20	$ 29.83	$ 31.93	$ 31.30
	Miscellaneous Labor	$ 1.51	$ 1.52	$ 1.52	$ 1.53	$ 1.56	$ 1.97
	Fan Materials	$ 5.13	$ 5.13	$ 5.13	$ 5.17	$ 5.31	$ 5.15
	Fan Labor	$ 0.67	$ 0.61	$ 0.61	$ 0.73	$ 0.77	$ 0.74
	Cabinet Materials	$ 14.83	$ 15.45	$ 15.92	$ 17.98	$ 21.65	$ 27.84
	Cabinet Labor	$ 1.35	$ 1.39	$ 1.37	$ 1.28	$ 1.36	$ 2.05
	Plumbing Materials	$ 9.22	$ 7.65	$ 10.91	$ 12.03	$ 16.36	$ 14.31
	Plumbing Labor	$ 6.35	$ 6.45	$ 6.62	$ 6.62	$ 6.84	$ 6.62
Other	Refrigerant Matl	$ 4.18	$ 4.70	$ 5.60	$ 6.11	$ 8.08	$ 8.40
	Refrigerant Labor	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36
	Indirect Labor	$ 12.82	$ 12.74	$ 12.74	$ 12.85	$ 15.63	$ 15.67
	Indirect Material	$ 11.03	$ 11.28	$ 11.28	$ 10.52	$ 11.60	$ 11.37
	Equipment Depreciation	$ 4.59	$ 4.78	$ 5.99	$ 6.59	$ 7.47	$ 8.48
	Building Depreciation	$ 7.50	$ 7.58	$ 11.70	$ 13.59	$ 15.47	$ 19.70
	Maintenance	$ 2.81	$ 2.90	$ 3.07	$ 3.20	$ 3.41	$ 3.28
	Utilities	$ 2.61	$ 2.67	$ 3.82	$ 4.36	$ 4.95	$ 6.09
	Taxes	$ 3.31	$ 3.71	$ 4.21	$ 4.76	$ 5.29	$ 8.03
	Insurance	$ 2.94	$ 3.30	$ 3.74	$ 4.23	$ 4.70	$ 7.14
	Freight-Out	**$ 29.01**	**$ 43.38**	**$ 45.21**	**$ 63.91**	**$ 62.31**	**$ 57.81**
	Total	**$ 449.05**	**$ 519.31**	**$ 562.53**	**$ 636.83**	**$ 815.86**	**$ 892.71**
	Direct Material	$ 344.81	$ 398.47	$ 431.61	$ 482.74	$ 652.92	$ 721.66
	Direct Labor (incl. benefits)	$ 27.62	$ 28.50	$ 29.16	$ 30.08	$ 32.11	$ 33.47
	Overhead (incl. benefits)	$ 47.61	$ 48.96	$ 56.55	$ 60.10	$ 68.52	$ 79.77
	Full Cost (no freight-out)	**$ 420.04**	**$ 475.94**	**$ 517.32**	**$ 572.92**	**$ 753.56**	**$ 834.90**

Table B.3

Split Heat Pumps - 3 Ton							
Efficiency Standard (SEER)		**10**	**11**	**12**	**13**	**14**	**15**
Relative Cost		**1.00**	**1.05**	**1.13**	**1.30**	**1.79**	**1.94**
Cost Component		**Original**	**Original**	**Original**	**Original**	**Original**	**Original**
Outside Unit	Coil Materials	$36.18	$39.20	$59.31	$69.63	$94.85	$88.64
	Coil Labor	$4.15	$4.20	$4.76	$4.92	$5.40	$5.34
	Electrical Materials	**$80.26**	**$80.26**	**$80.01**	**$102.25**	**$154.59**	**$199.70**
	Electrical Labor	**$4.19**	**$4.19**	**$4.20**	**$4.34**	**$4.90**	**$5.53**
	Miscellaneous Materials	$4.53	$4.49	$5.66	$5.98	$6.30	$6.46
	Miscellaneous Labor	$1.64	$1.64	$1.73	$1.76	$1.78	$1.79
	Fan Materials	$3.26	$3.76	$4.47	$5.11	$4.86	$5.16
	Fan Labor	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25
	Cabinet Materials	$13.54	$13.37	$18.83	$20.55	$21.88	$21.47
	Cabinet Labor	$2.24	$2.23	$2.45	$2.51	$2.55	$2.49
	Plumbing Materials	**$33.34**	**$33.34**	**$37.75**	**$38.14**	**$28.44**	**$27.75**
	Plumbing Labor	**$10.69**	**$10.69**	**$11.16**	**$11.26**	**$12.71**	**$15.78**
	Compressor Materials	**$124.23**	**$153.23**	**$153.23**	**$169.20**	**$225.00**	**$279.07**
	Compressor Labor	$0.65	$0.65	$0.65	$0.65	$0.65	$0.65
Indoor Unit	Coil Materials	$24.61	$30.28	$30.32	$41.25	$47.37	$32.90
	Coil Labor	$1.98	$2.18	$2.22	$2.58	$2.79	$2.25
	Electrical Materials	$52.73	$53.07	$53.07	$53.07	$176.91	$169.03
	Electrical Labor	$1.83	$1.83	$1.83	$1.83	$2.52	$2.52
	Miscellaneous Materials	$14.67	$26.20	$26.20	$29.83	$31.93	$31.30
	Miscellaneous Labor	$1.51	$1.52	$1.52	$1.53	$1.56	$1.97
	Fan Materials	$5.13	$5.13	$5.13	$5.17	$5.31	$5.15
	Fan Labor	$0.67	$0.61	$0.61	$0.73	$0.77	$0.74
	Cabinet Materials	$14.83	$15.45	$15.92	$17.98	$21.65	$27.84
	Cabinet Labor	$1.35	$1.39	$1.37	$1.28	$1.36	$2.05
	Plumbing Materials	$9.22	$7.65	$10.91	$12.03	$16.36	$14.31
	Plumbing Labor	$6.35	$6.45	$6.62	$6.62	$6.84	$6.62
Other	Refrigerant Matl	$5.75	$5.88	$6.01	$8.55	$11.86	$12.78
	Refrigerant Labor	$0.42	$0.36	$0.36	$0.36	$0.36	$0.36
	Indirect Labor	$20.67	$12.74	$12.74	$12.85	$15.63	$15.67
	Indirect Material	$11.76	$11.28	$11.28	$10.52	$11.60	$11.37
	Equipment Depreciation	$8.60	$4.78	$5.99	$6.59	$7.47	$8.48
	Building Depreciation	$14.63	$7.58	$11.70	$13.59	$15.47	$19.70
	Maintenance	$11.42	$2.90	$3.07	$3.20	$3.41	$3.28
	Utilities	$5.06	$2.67	$3.82	$4.36	$4.95	$6.09
	Taxes	$5.60	$3.71	$4.21	$4.76	$5.29	$8.03
	Insurance	$4.97	$3.30	$3.74	$4.23	$4.70	$7.14
	Freight-Out	$29.01	$43.38	$45.21	$63.91	$62.31	$57.81
	Total	**$571.92**	**$601.84**	**$648.33**	**$743.36**	**$1,022.57**	**$1,107.46**
Direct Material		$422.27	$471.32	$506.83	$578.74	$847.31	$921.55
Direct Labor (incl. benefits)		$37.92	$38.18	$39.73	$40.62	$44.44	$48.34
Overhead (incl. benefits)		$82.71	$48.96	$56.55	$60.10	$68.52	$79.77
Full Cost (no freight-out)		**$542.91**	**$558.46**	**$603.11**	**$679.45**	**$960.27**	**$1,049.65**

Table B.4

Packaged Air Conditioners - 3 Ton

	Efficiency Standard (SEER)	10	11	12	13	14	15
	Relative Cost	**1.00**	**1.09**	**1.16**	**1.43**	**1.74**	**1.87**
	Cost Component	**Original**	**Original**	**Original**	**Original**	**Original**	**Original**
Outside Unit	Coil Materials	$36.18	$39.20	$59.31	$69.63	$94.85	$88.64
	Coil Labor	$4.15	$4.20	$4.76	$4.92	$5.40	$5.34
	Electrical Materials	$28.44	$31.79	$31.99	$35.22	$35.17	$70.90
	Electrical Labor	$1.05	$1.21	$1.07	$1.07	$1.07	$1.48
	Miscellaneous Materials	$4.53	$4.49	$5.66	$5.98	$6.30	$6.46
	Miscellaneous Labor	$1.64	$1.64	$1.73	$1.76	$1.78	$1.79
	Fan Materials	$3.26	$3.76	$4.47	$5.11	$4.86	$5.16
	Fan Labor	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25
	Cabinet Materials	**$52.90**	**$52.90**	**$56.41**	**$79.03**	**$79.03**	**$79.03**
	Cabinet Labor	**$12.53**	**$12.53**	**$13.05**	**$16.55**	**$16.55**	**$16.55**
	Plumbing Materials	$11.30	$11.61	$11.32	$13.55	$14.46	$18.79
	Plumbing Labor	$3.59	$3.99	$3.72	$3.99	$4.21	$4.96
	Compressor Materials	$122.21	$151.77	$152.87	$167.25	$167.78	$221.33
	Compressor Labor	$0.65	$0.65	$0.65	$0.65	$0.65	$0.65
Indoor Unit	Coil Materials	$24.61	$30.28	$30.32	$41.25	$47.37	$32.90
	Coil Labor	$1.98	$2.18	$2.22	$2.58	$2.79	$2.25
	Electrical Materials	$52.73	$53.07	$53.07	$53.07	$176.91	$169.03
	Electrical Labor	$1.83	$1.83	$1.83	$1.83	$2.52	$2.52
	Miscellaneous Materials	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
	Miscellaneous Labor	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
	Fan Materials	$5.13	$5.13	$5.13	$5.17	$5.31	$5.15
	Fan Labor	$0.67	$0.61	$0.61	$0.73	$0.77	$0.74
	Cabinet Materials	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
	Cabinet Labor	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
	Plumbing Materials	**$6.68**	**$6.68**	**$8.38**	**$10.37**	**$10.37**	**$10.37**
	Plumbing Labor	**$1.53**	**$1.53**	**$1.53**	**$1.53**	**$1.53**	**$1.53**
Other	**Refrigerant Matl**	**$3.42**	**$3.42**	**$5.10**	**$4.38**	**$4.38**	**$4.38**
	Refrigerant Labor	**$0.36**	**$0.36**	**$0.36**	**$0.36**	**$0.36**	**$0.36**
	Indirect Labor	**$18.01**	**$18.01**	**$18.32**	**$19.82**	**$19.82**	**$19.82**
	Indirect Material	**$19.42**	**$19.42**	**$19.75**	**$19.52**	**$19.52**	**$19.52**
	Equipment Depreciation	**$9.70**	**$9.70**	**$9.70**	**$11.84**	**$11.84**	**$11.84**
	Building Depreciation	**$6.13**	**$6.13**	**$7.02**	**$13.33**	**$13.33**	**$13.33**
	Maintenance	**$14.80**	**$14.80**	**$14.76**	**$14.66**	**$14.66**	**$14.66**
	Utilities	**$3.39**	**$3.39**	**$3.58**	**$5.39**	**$5.39**	**$5.39**
	Taxes	**$4.96**	**$4.96**	**$5.64**	**$7.28**	**$7.28**	**$7.28**
	Insurance	**$4.41**	**$4.41**	**$5.01**	**$6.47**	**$6.47**	**$6.47**
	Freight-Out	**$48.71**	**$48.71**	**$55.83**	**$105.96**	**$105.96**	**$105.96**
	Total	**$511.12**	**$554.59**	**$595.42**	**$730.49**	**$888.93**	**$954.80**
Direct Material		$351.37		$424.04	$490.01	$646.79	$712.13
Direct Labor (incl. benefits)		$30.22		$31.77	$36.21	$37.87	$38.41
Overhead (incl. benefits)		$80.82		$83.78	$98.31	$98.31	$98.31
Full Cost (no freight-out)		**$462.41**		**$539.60**	**$624.53**	**$782.97**	**$848.85**

Table B.5

Packaged Heat Pumps - 3 Ton

	Efficiency Standard (SEER)	10	11	12	13	14	15
	Relative Cost	1.00	1.07	1.13	1.38	1.74	1.85
	Cost Component	**Original**	**Original**	**Original**			
Outside Unit	Coil Materials	$ 36.18	$ 39.20	$ 59.31	$ 69.63	$ 94.85	$ 88.64
Outside Unit	Coil Labor	$ 4.15	$ 4.20	$ 4.76	$ 4.92	$ 5.40	$ 5.34
Outside Unit	**Electrical Materials**	**$ 80.26**	**$ 80.26**	**$ 80.01**	**$ 102.25**	**$ 154.59**	**$ 199.70**
Outside Unit	**Electrical Labor**	**$ 4.19**	**$ 4.19**	**$ 4.20**	**$ 4.34**	**$ 4.90**	**$ 5.53**
Outside Unit	**Miscellaneous Materials**	**$ 17.28**	**$ 17.28**	**$ 16.85**	**$ 16.85**	**$ 16.85**	**$ 16.85**
Outside Unit	**Miscellaneous Labor**	**$ 2.87**	**$ 2.87**	**$ 2.87**	**$ 2.87**	**$ 2.87**	**$ 2.87**
Outside Unit	Fan Materials	$ 3.26	$ 3.76	$ 4.47	$ 5.11	$ 4.86	$ 5.16
Outside Unit	Fan Labor	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25
Outside Unit	Cabinet Materials	$ 52.90	**$ 52.90**	$ 56.41	$ 79.03	$ 79.03	$ 79.03
Outside Unit	Cabinet Labor	$ 12.53	**$ 12.53**	$ 13.05	$ 16.55	$ 16.55	$ 16.55
Outside Unit	**Plumbing Materials**	**$ 22.23**	**$ 22.23**	**$ 18.74**	**$ 18.74**	**$ 18.74**	**$ 18.74**
Outside Unit	**Plumbing Labor**	**$ 5.46**	**$ 5.46**	**$ 5.59**	**$ 5.59**	**$ 5.59**	**$ 5.59**
Outside Unit	Compressor Materials	$ 122.21	$ 151.77	$ 152.87	$ 167.25	$ 167.78	$ 221.33
Outside Unit	Compressor Labor	$ 0.65	$ 0.65	$ 0.65	$ 0.65	$ 0.65	$ 0.65
Indoor Unit	Coil Materials	$ 24.61	$ 30.28	$ 30.32	$ 41.25	$ 47.37	$ 32.90
Indoor Unit	Coil Labor	$ 1.98	$ 2.18	$ 2.22	$ 2.58	$ 2.79	$ 2.25
Indoor Unit	Electrical Materials	$ 52.73	$ 53.07	$ 53.07	$ 53.07	$ 176.91	$ 169.03
Indoor Unit	Electrical Labor	$ 1.83	$ 1.83	$ 1.83	$ 1.83	$ 2.52	$ 2.52
Indoor Unit	Miscellaneous Materials	$ -	$ -	$ -	$ -	$ -	$ -
Indoor Unit	Miscellaneous Labor	$ -	$ -	$ -	$ -	$ -	$ -
Indoor Unit	Fan Materials	$ 5.13	$ 5.13	$ 5.13	$ 5.17	$ 5.31	$ 5.15
Indoor Unit	Fan Labor	$ 0.67	$ 0.61	$ 0.61	$ 0.73	$ 0.77	$ 0.74
Indoor Unit	Cabinet Materials	$ -	$ -	$ -	$ -	$ -	$ -
Indoor Unit	Cabinet Labor	$ -	$ -	$ -	$ -	$ -	$ -
Indoor Unit	Plumbing Materials	$ 6.68	$ 6.68	$ 8.38	$ 10.37	$ 10.37	$ 10.37
Indoor Unit	Plumbing Labor	$ 1.53	$ 1.53	$ 1.53	$ 1.53	$ 1.53	$ 1.53
Other	Refrigerant Matl	$ 3.42	$ 3.42	$ 5.10	$ 4.38	$ 4.38	$ 4.38
Other	Refrigerant Labor	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36
Other	Indirect Labor	$ 18.01	$ 18.01	$ 18.32	$ 19.82	$ 19.82	$ 19.82
Other	Indirect Material	$ 19.42	$ 19.42	$ 19.75	$ 19.52	$ 19.52	$ 19.52
Other	Equipment Depreciation	$ 9.70	$ 9.70	$ 9.70	$ 11.84	$ 11.84	$ 11.84
Other	Building Depreciation	$ 6.13	$ 6.13	$ 7.02	$ 13.33	$ 13.33	$ 13.33
Other	Maintenance	$ 14.80	$ 14.80	$ 14.76	$ 14.66	$ 14.66	$ 14.66
Other	Utilities	$ 3.39	$ 3.39	$ 3.58	$ 5.39	$ 5.39	$ 5.39
Other	Taxes	$ 4.96	$ 4.96	$ 5.64	$ 7.28	$ 7.28	$ 7.28
Other	Insurance	$ 4.41	$ 4.41	$ 5.01	$ 6.47	$ 6.47	$ 6.47
	Freight-Out	$ 48.71	$ 48.71	$ 55.83	$ 105.96	$ 105.96	$ 105.96
	Total	**$592.87**	**$632.15**	**$668.20**	**$819.56**	**$1,029.47**	**$1,099.71**
Direct Material		$426.88	$465.98	$490.68	$573.11	$781.04	$851.28
Direct Labor (incl. benefits)		$36.45	$36.64	$37.91	$42.18	$44.16	$44.16
Overhead (incl. benefits)		$80.82	$80.82	$83.78	$98.31	$98.31	$98.31
Full Cost (no freight-out)		**$544.15**	**$583.44**	**$612.37**	**$713.60**	**$923.51**	**$993.75**

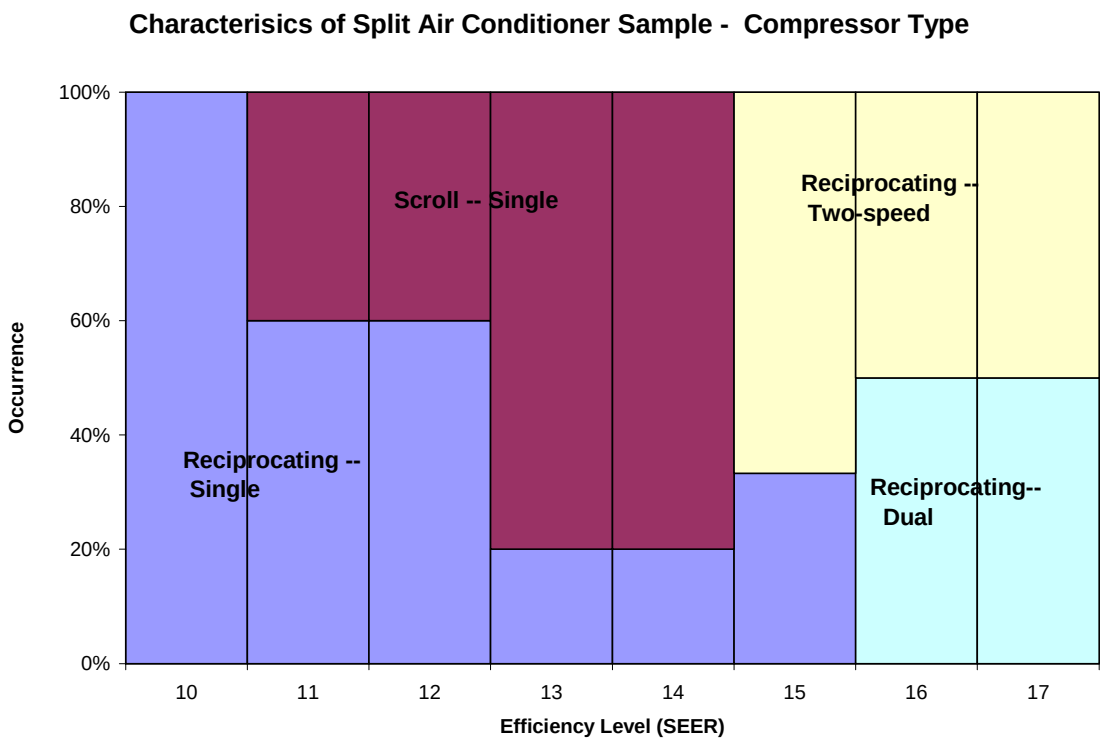


Figure B.1

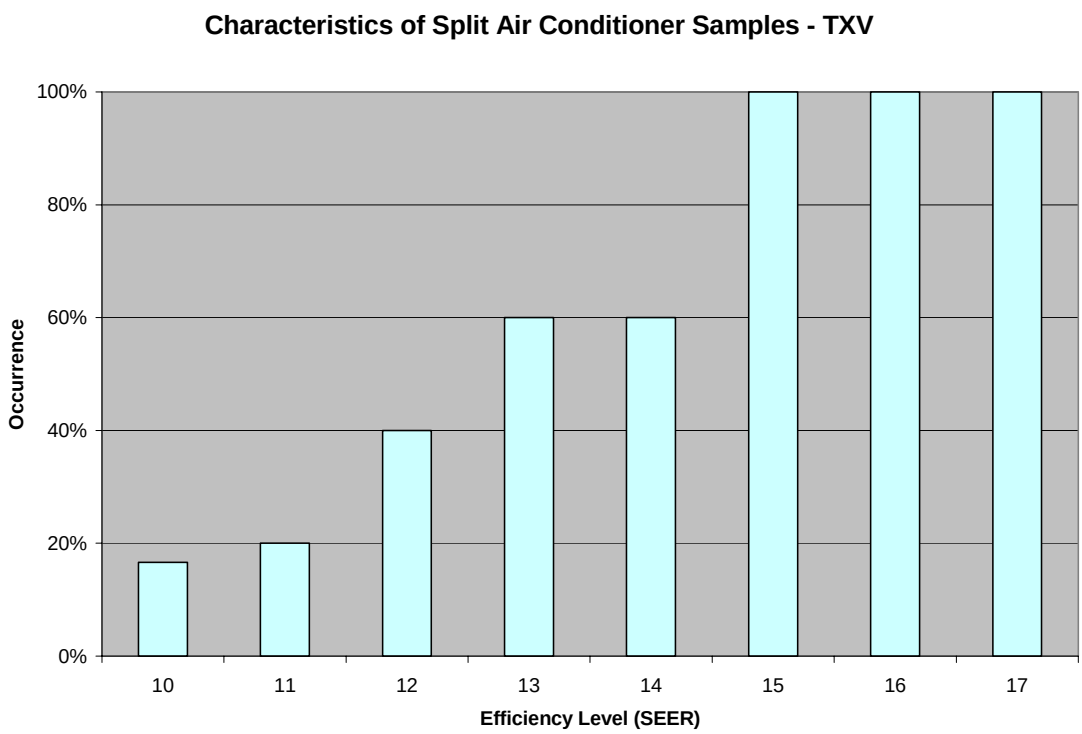


Figure B.2

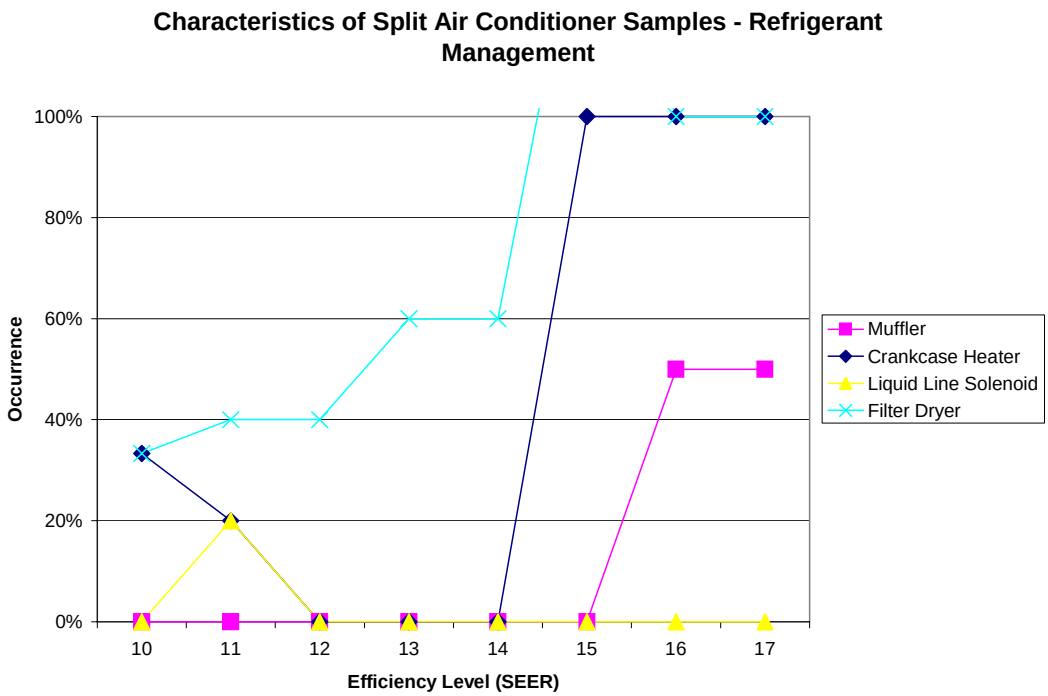


Figure B.3

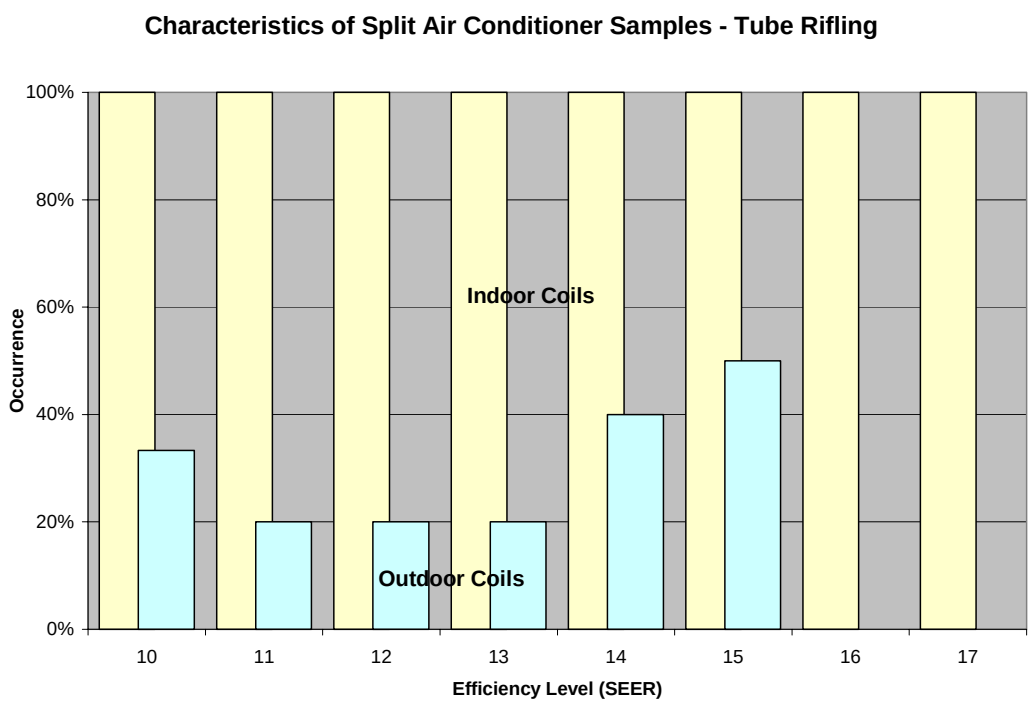


Figure B.4

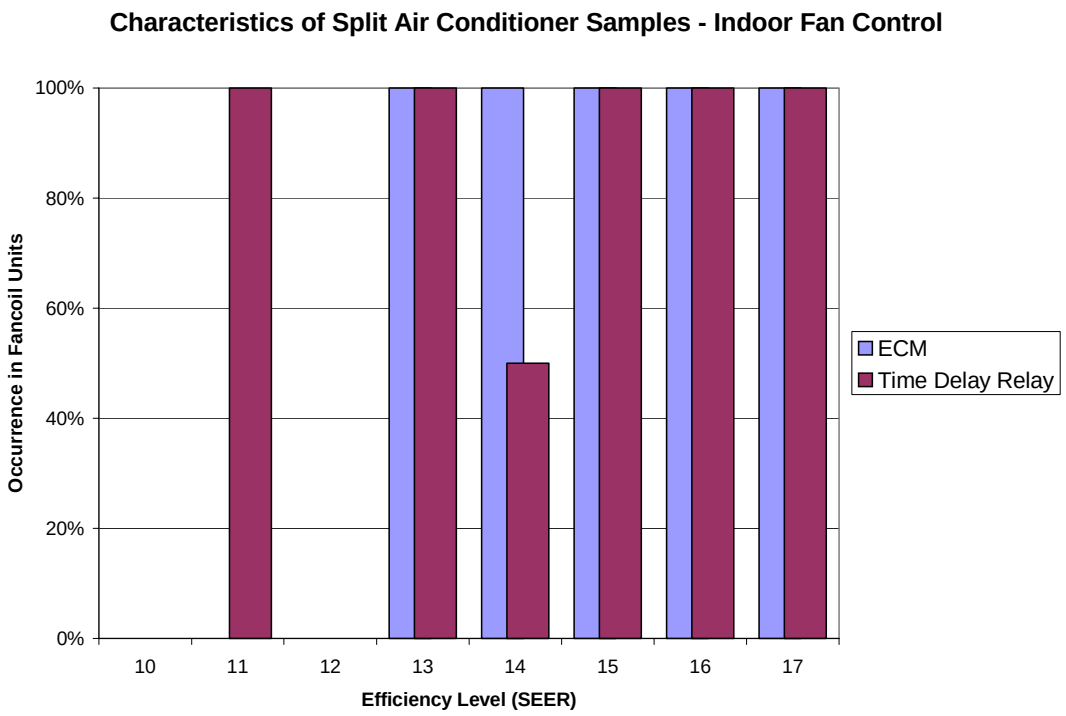


Figure B.5

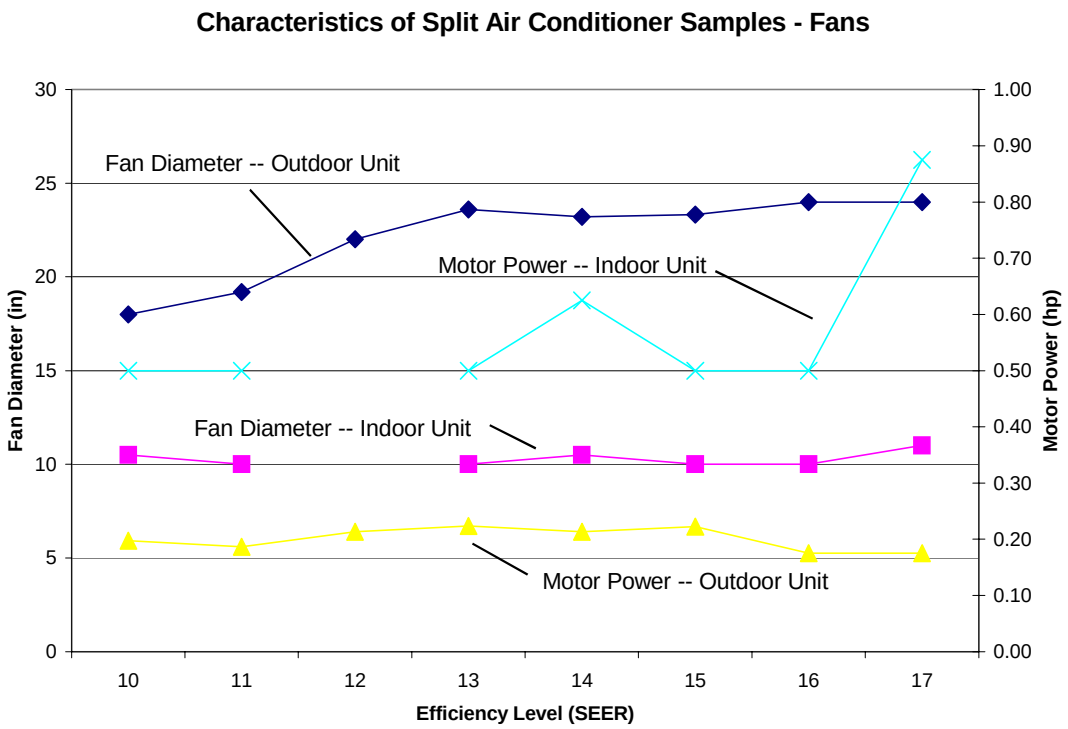
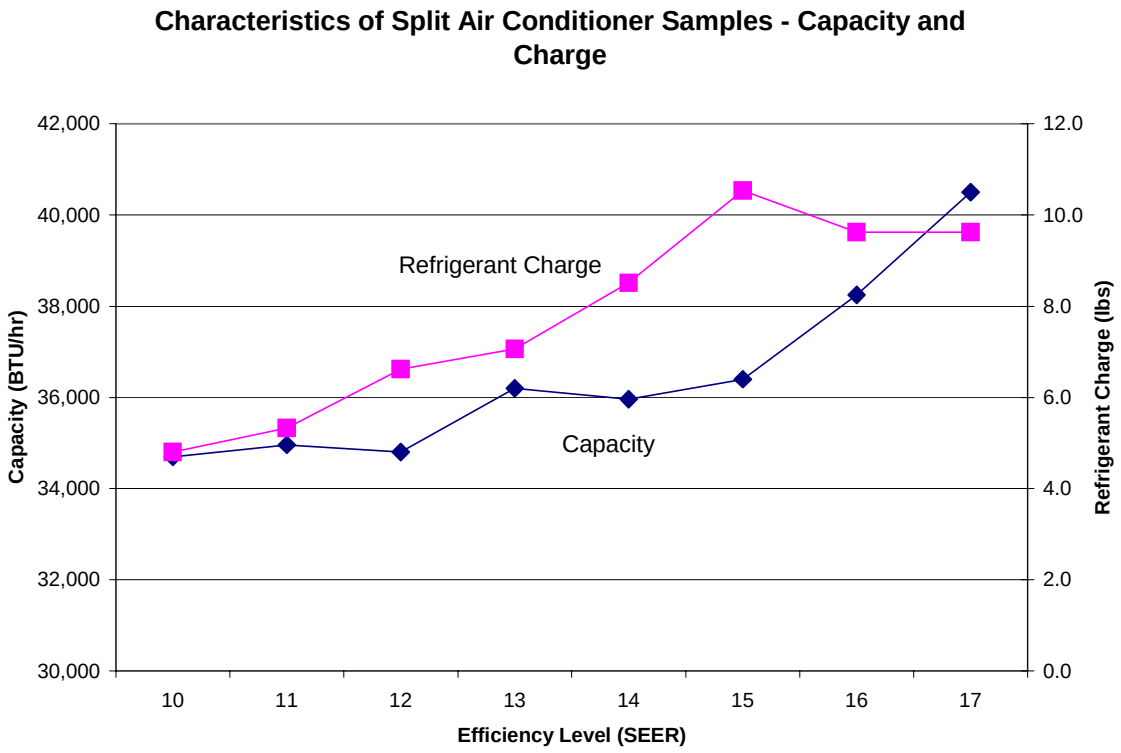


Figure B.6



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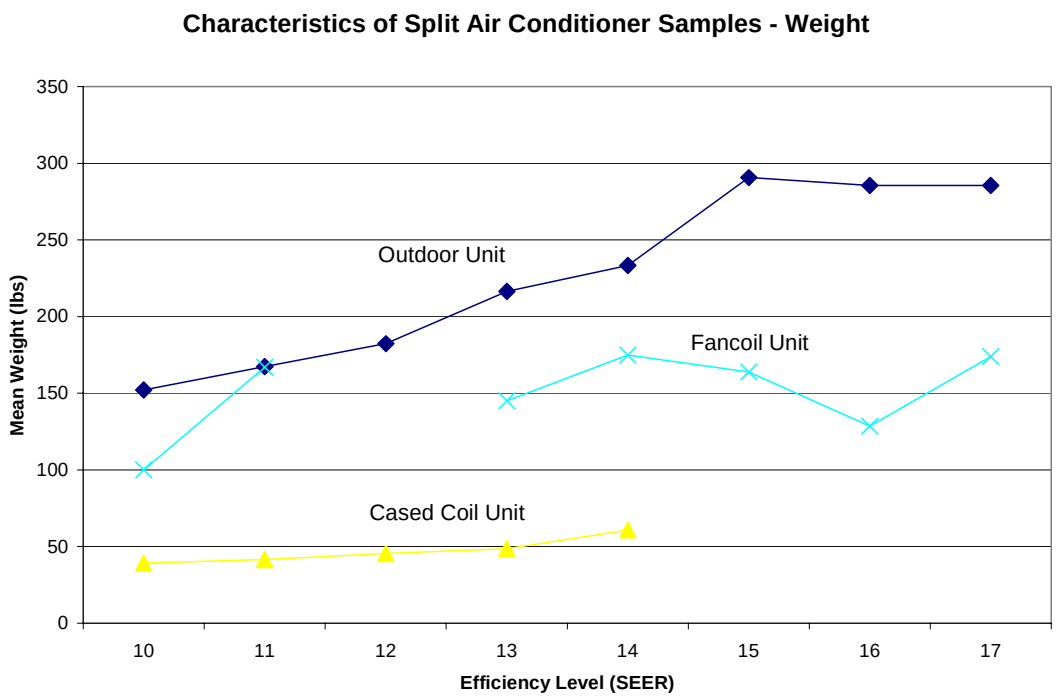

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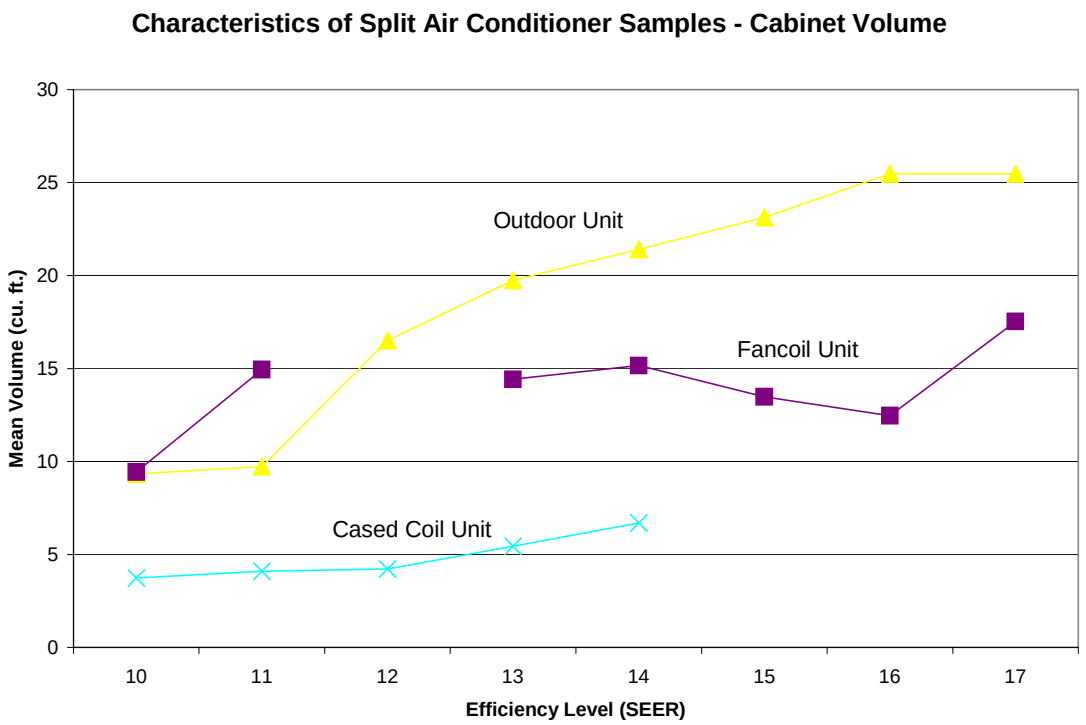


Figure B.9

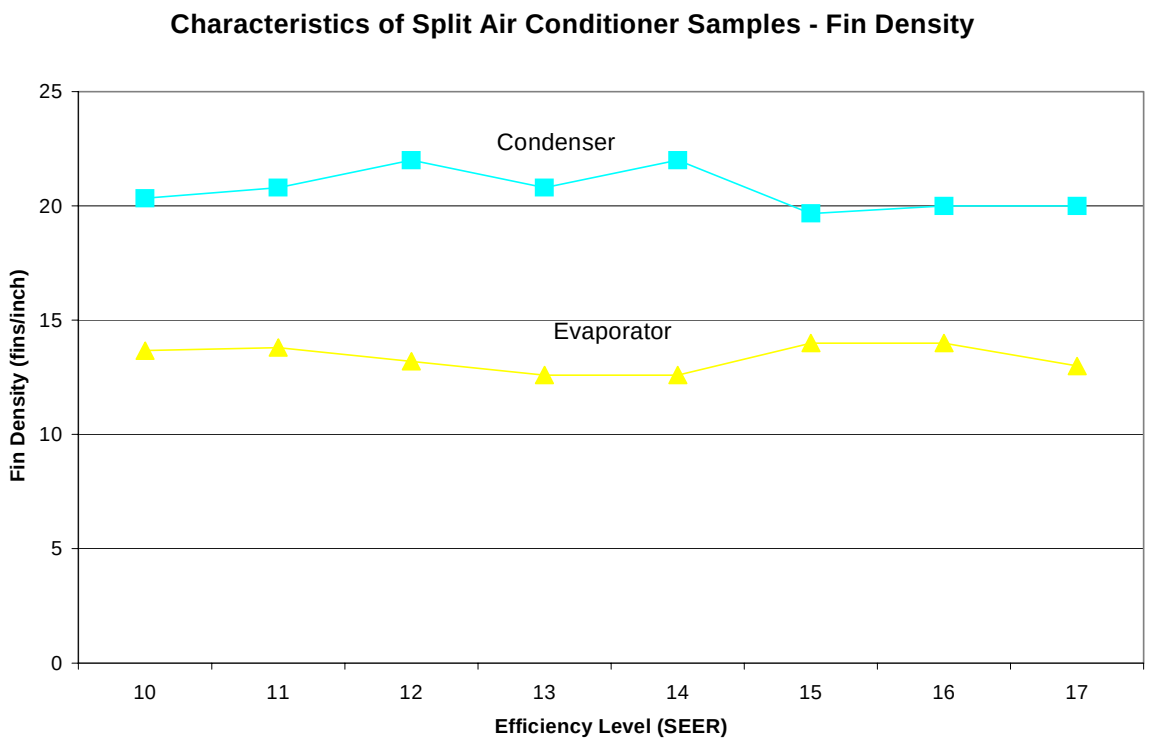


Figure B.10

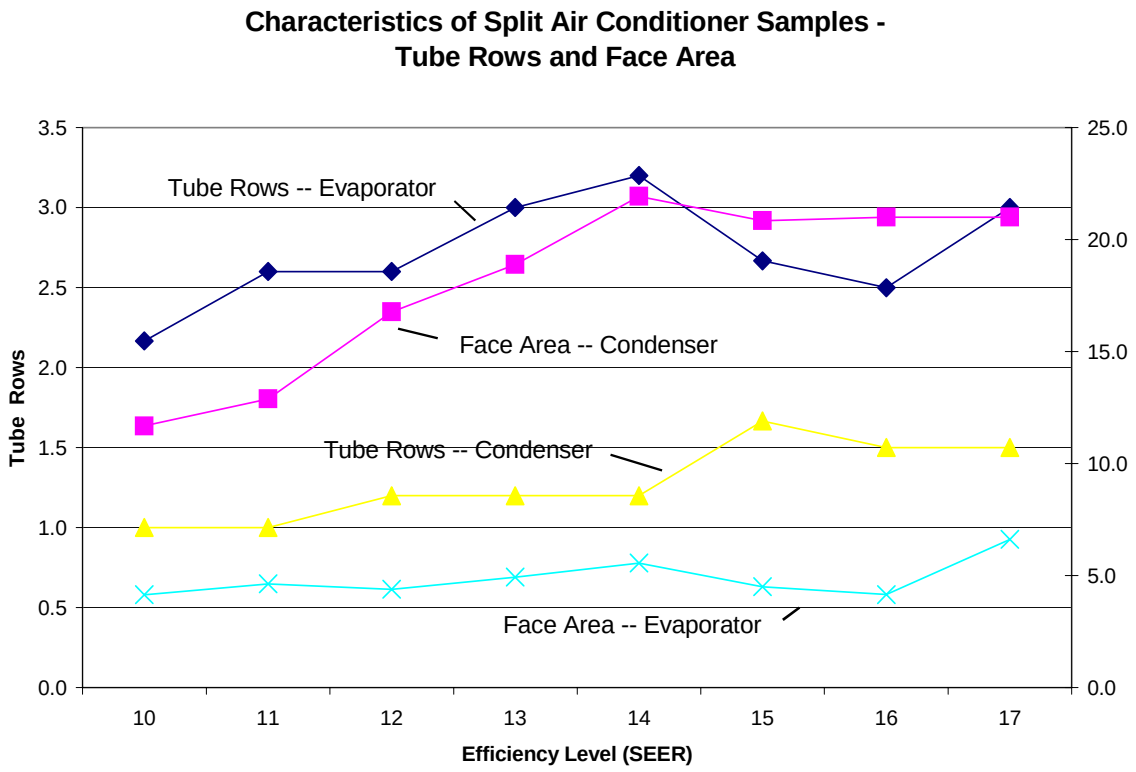


Figure B.11

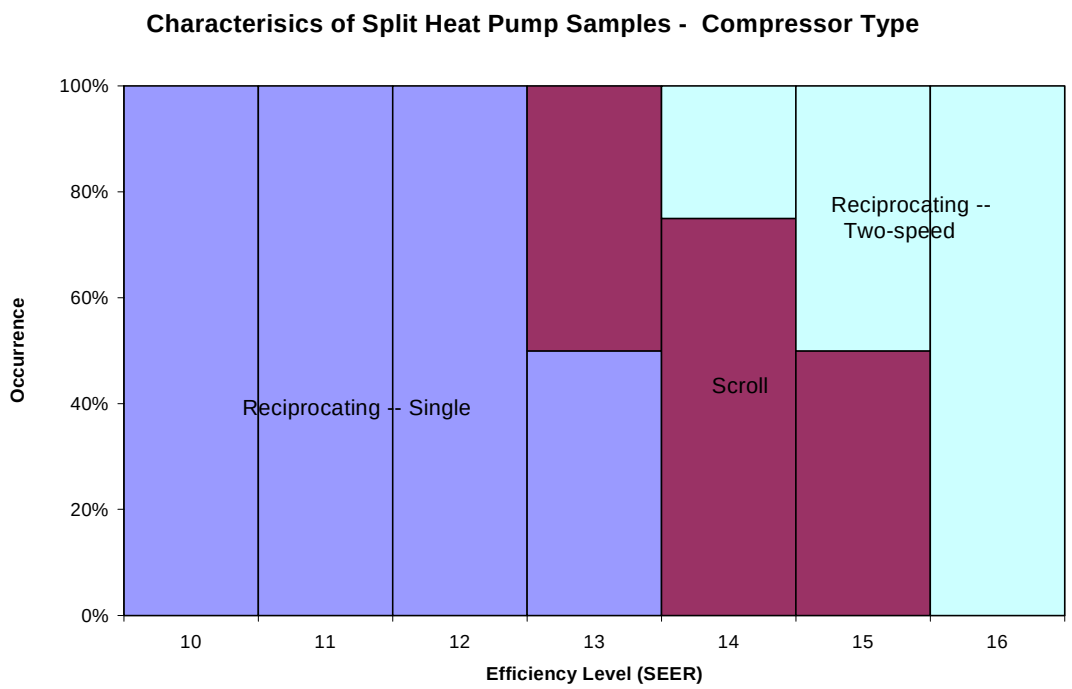


Figure B.12

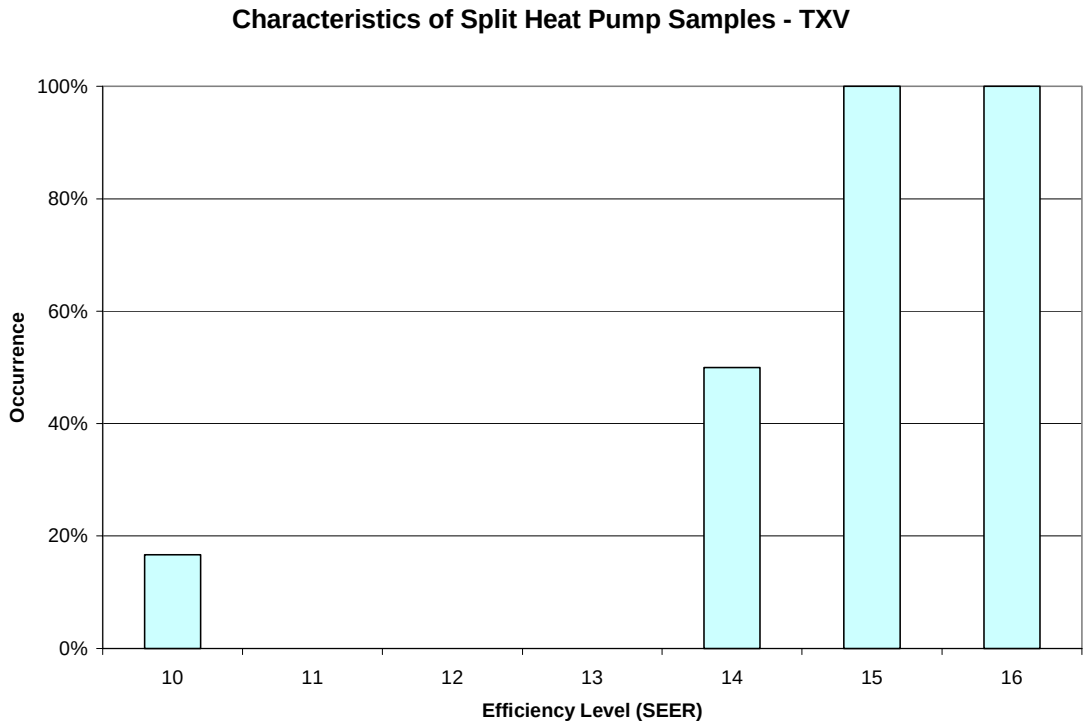
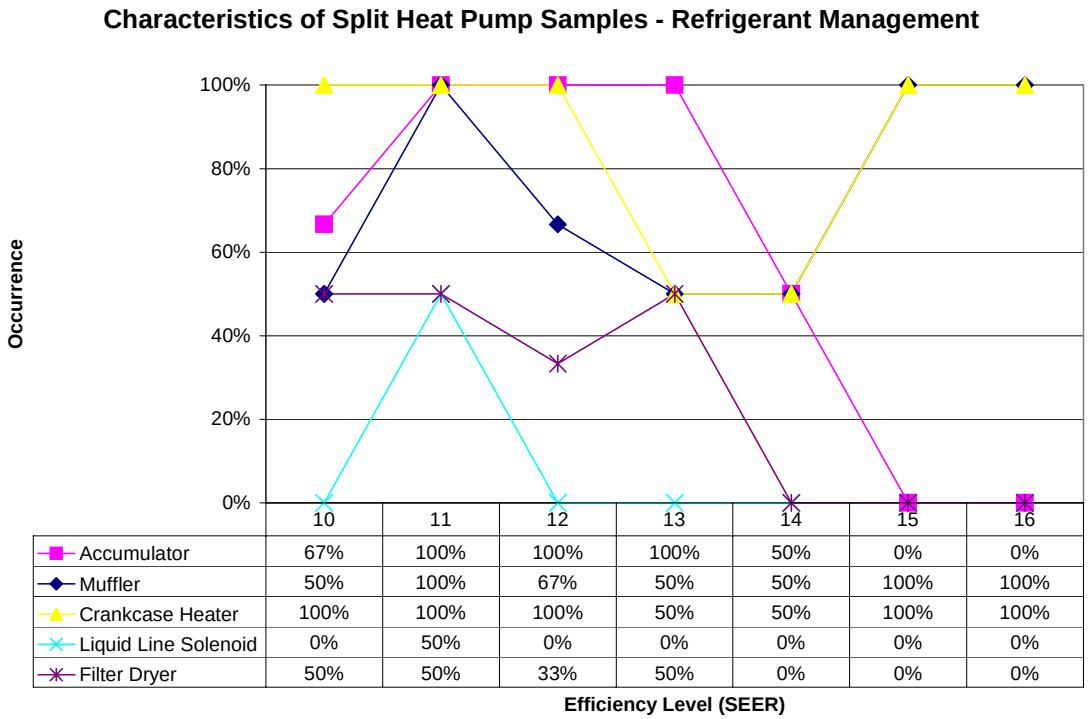


Figure B.13



	10	11	12	13	14	15	16
Accumulator	67%	100%	100%	100%	50%	0%	0%
Muffler	50%	100%	67%	50%	50%	100%	100%
Crankcase Heater	100%	100%	100%	50%	50%	100%	100%
Liquid Line Solenoid	0%	50%	0%	0%	0%	0%	0%
Filter Dryer	50%	50%	33%	50%	0%	0%	0%

Figure B.14

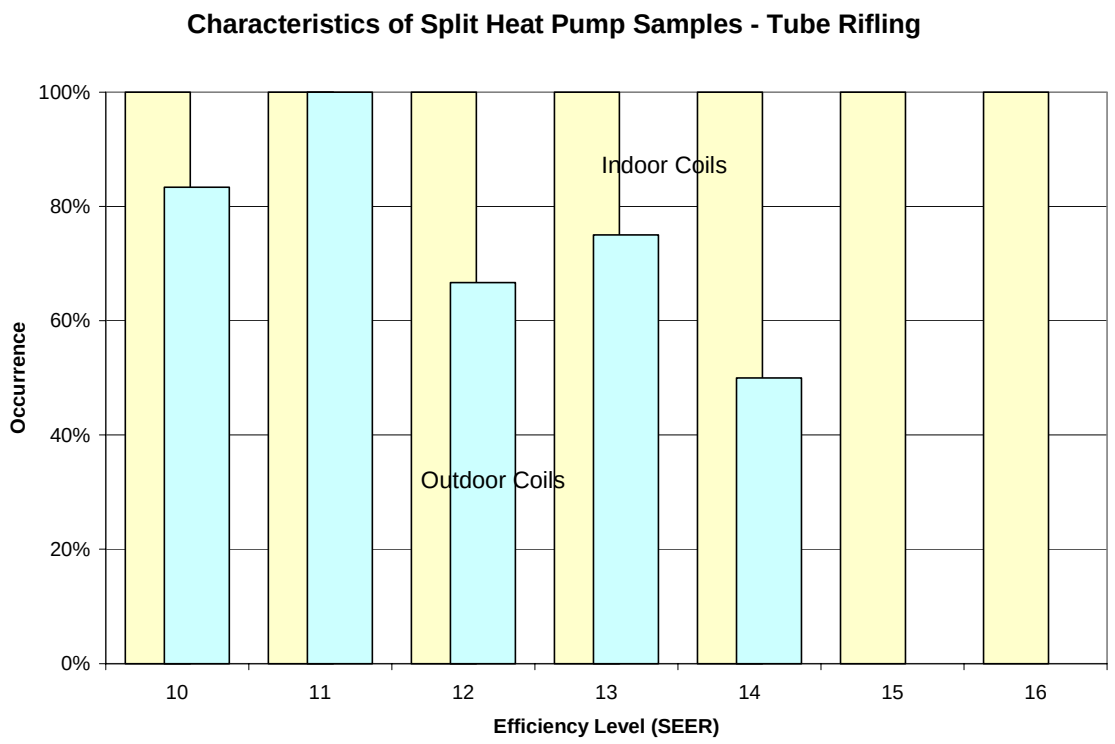


Figure B.15

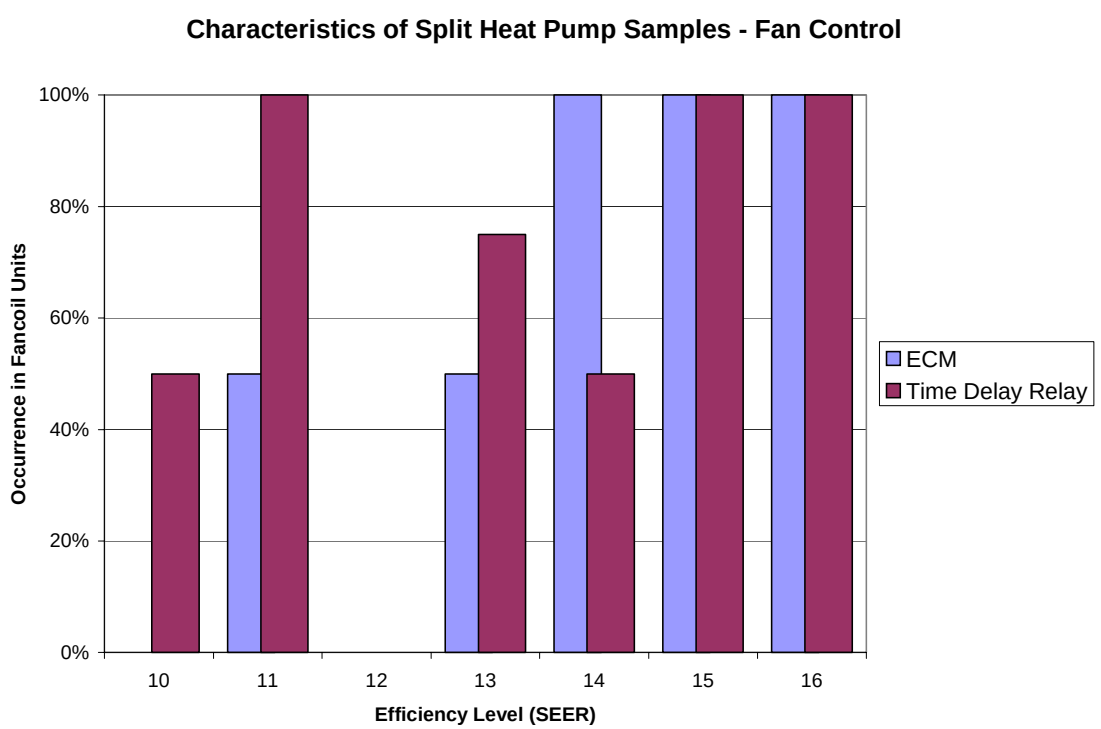


Figure B.16

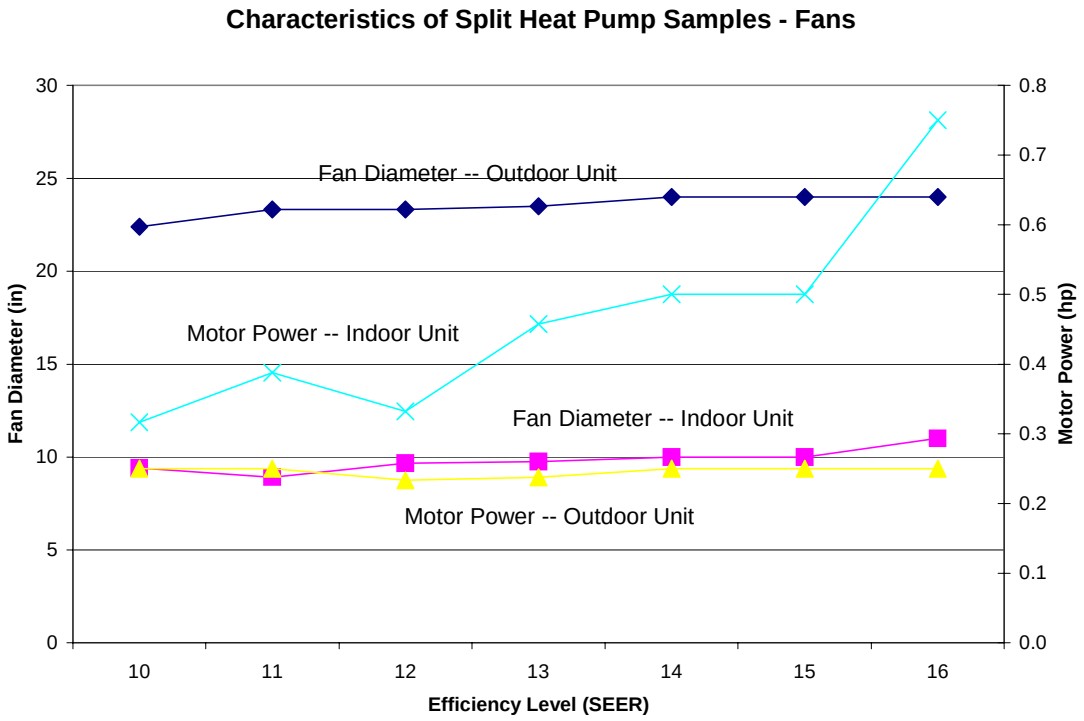


Figure B.17

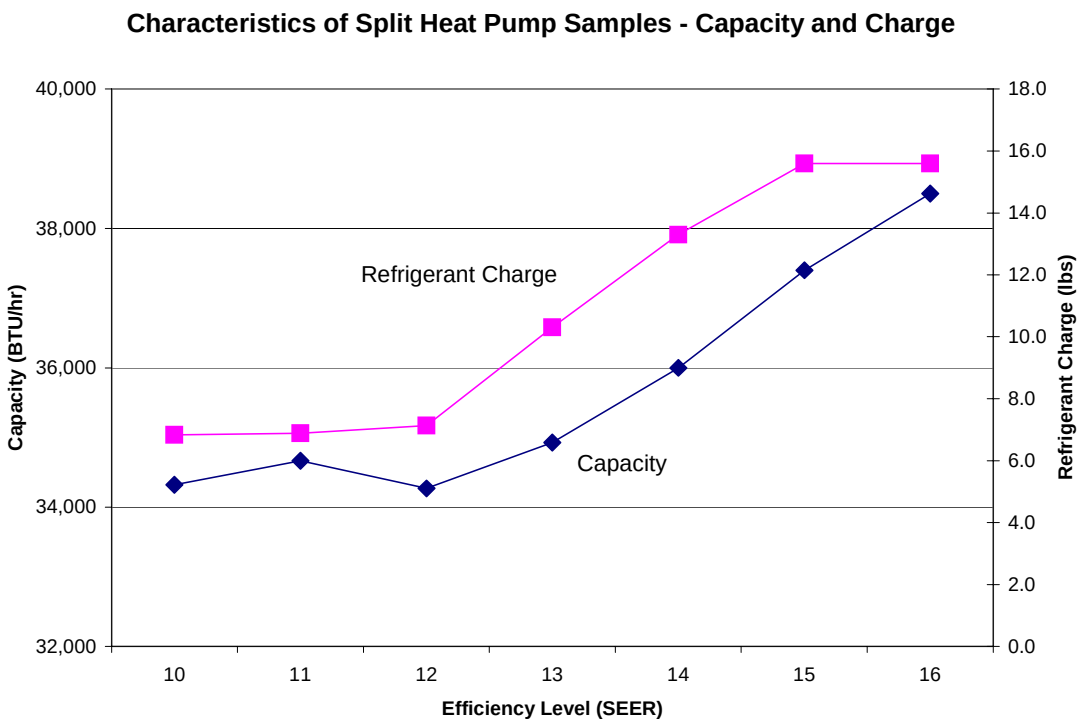


Figure B.18

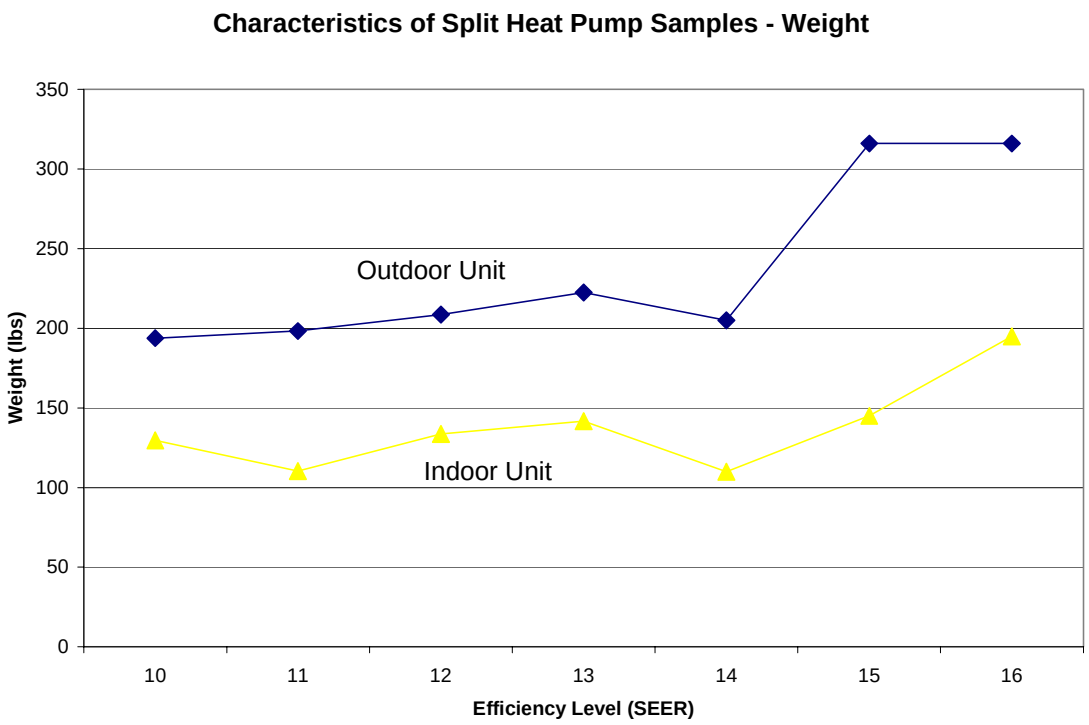


Figure B.19

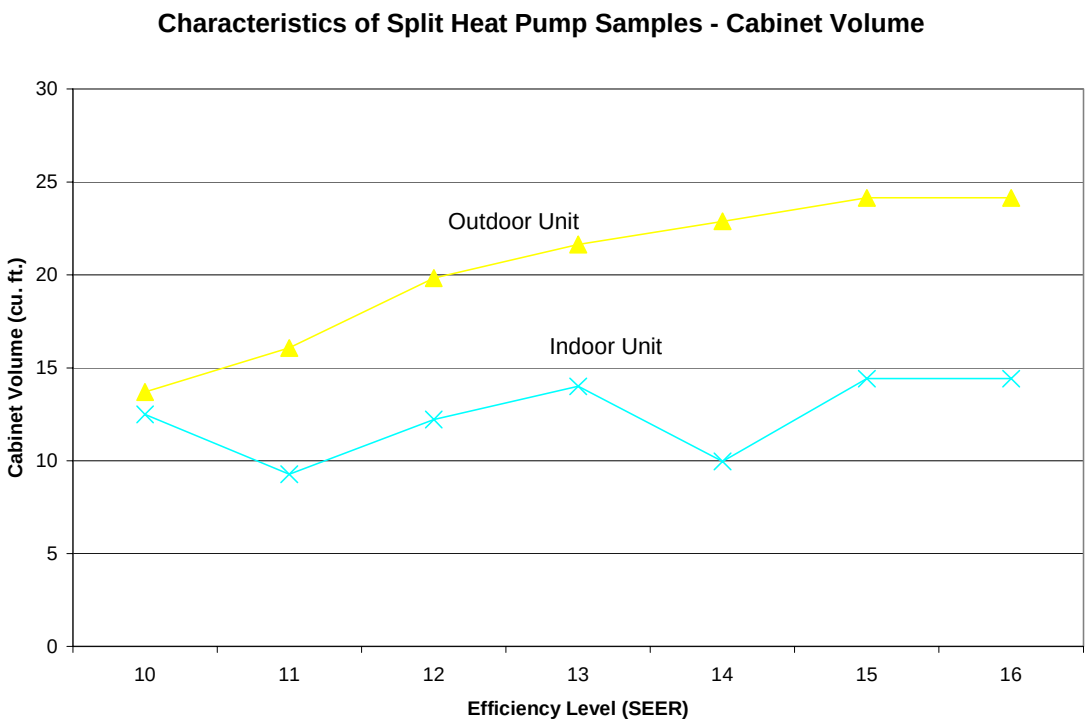


Figure B.20

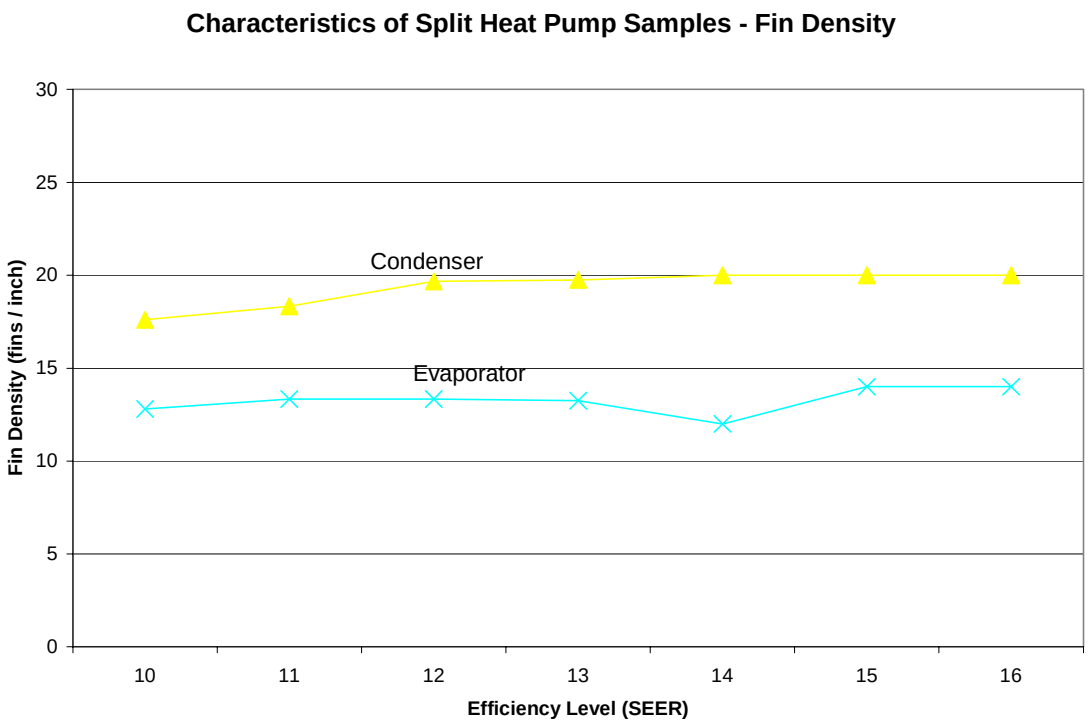
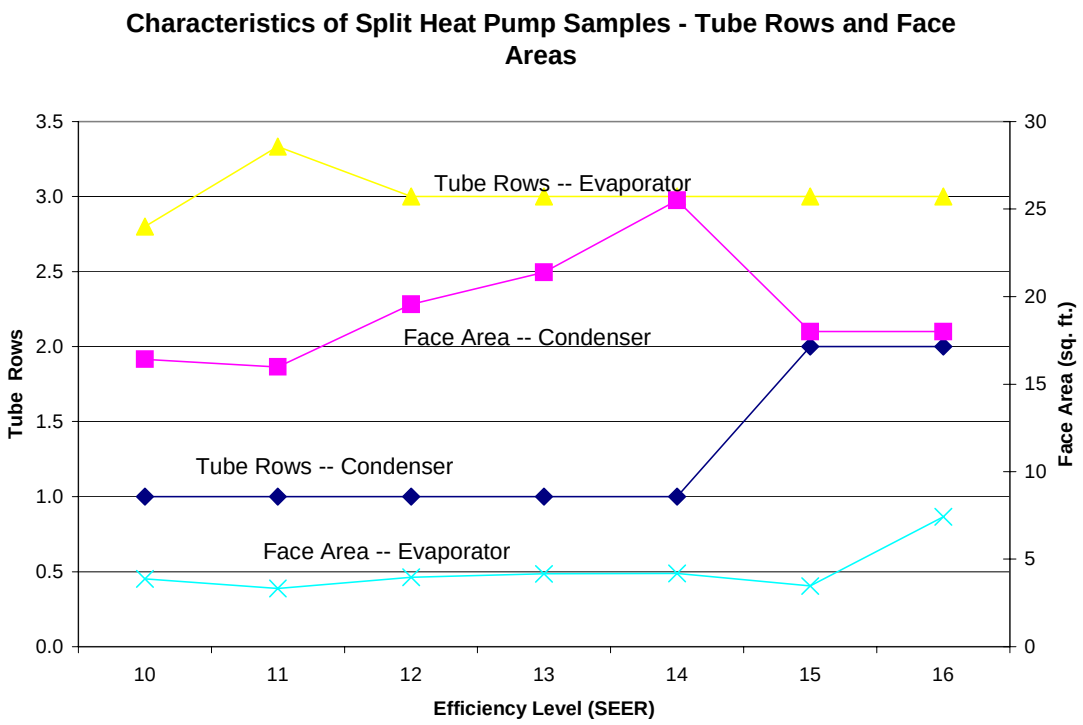


Figure B.21



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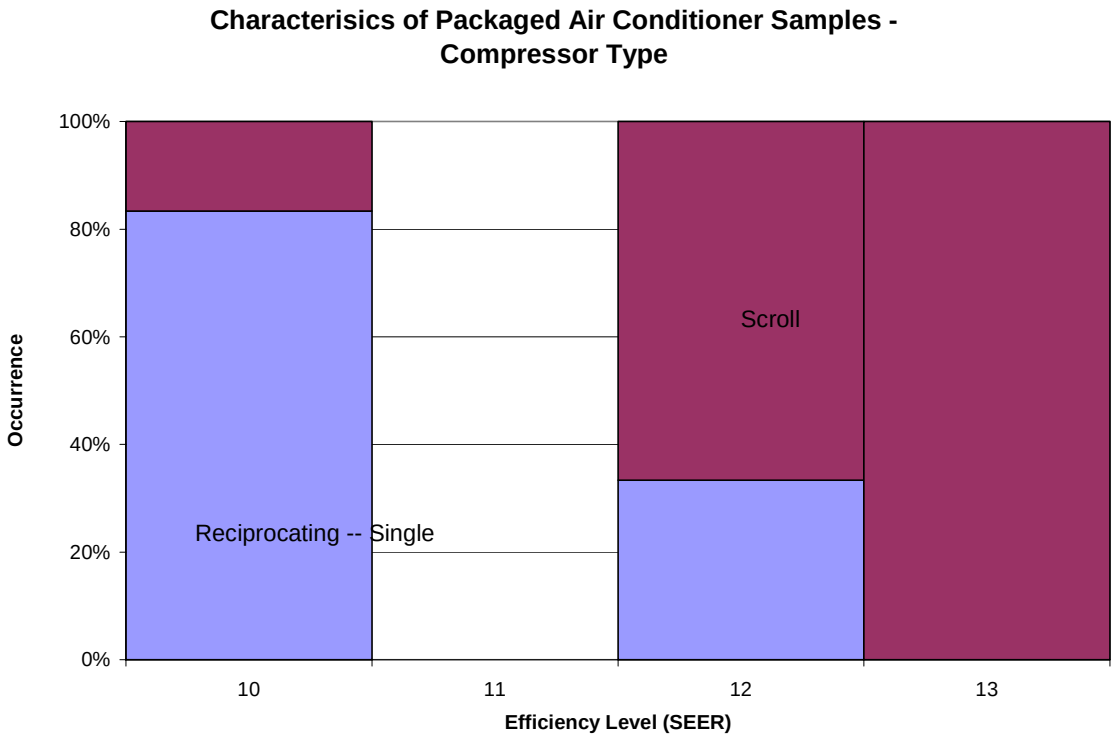

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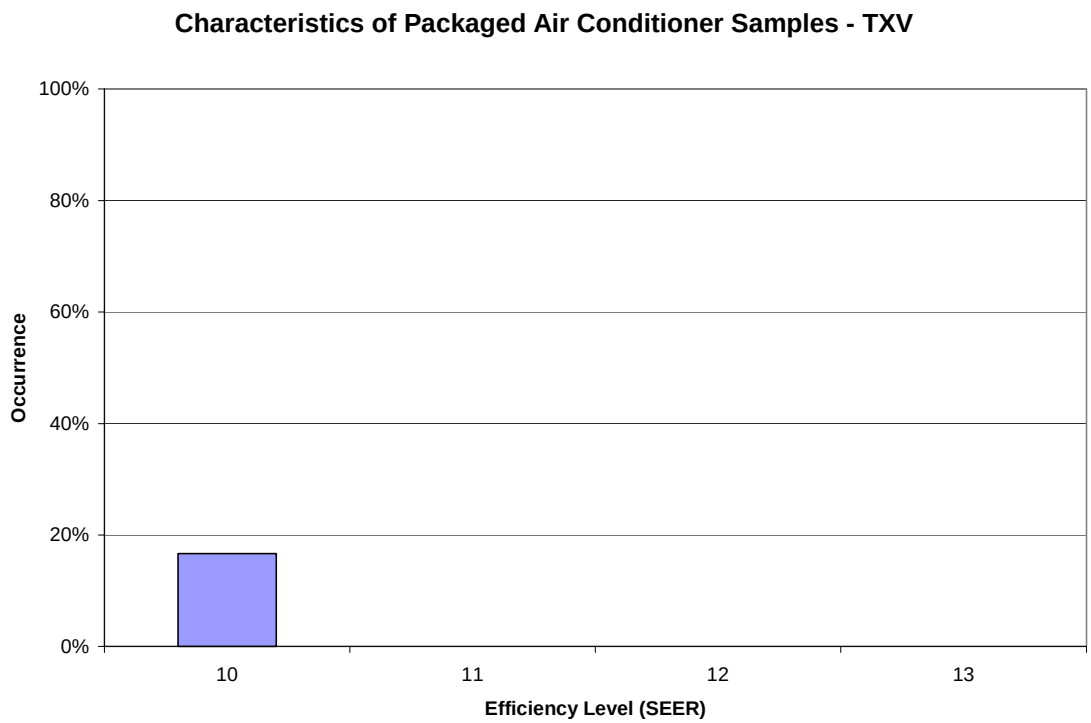
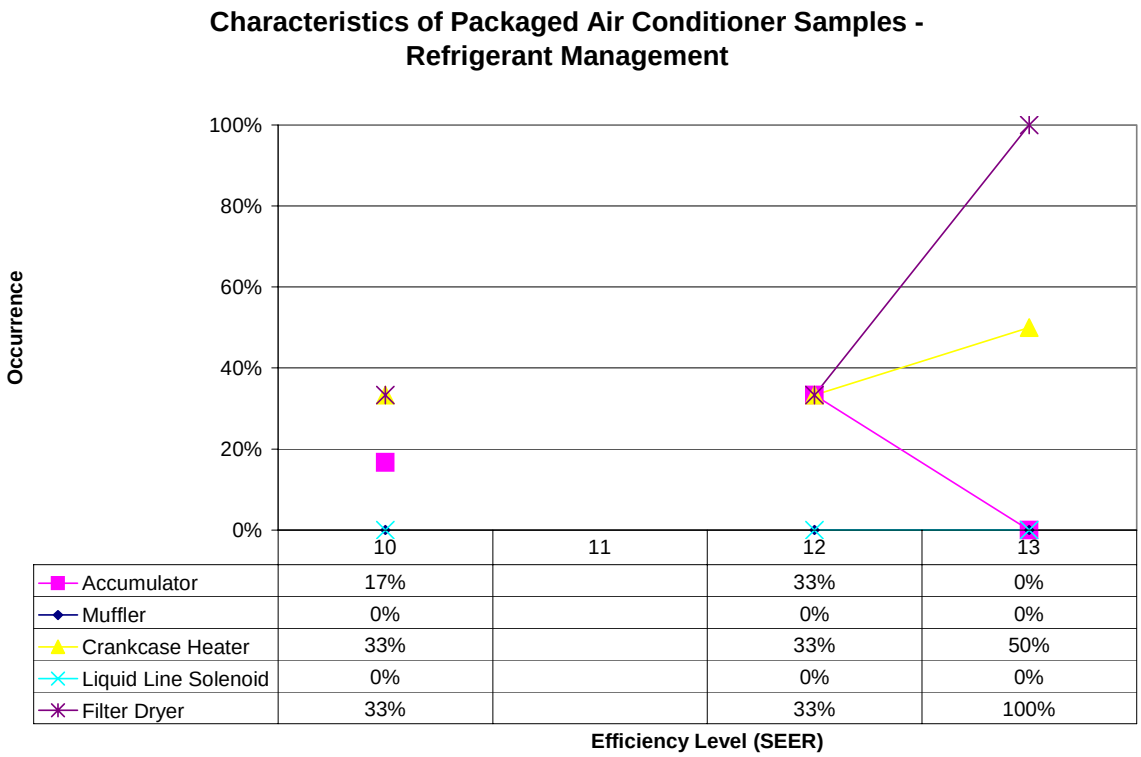


Figure B.24



	10	11	12	13
Accumulator	17%		33%	0%
Muffler	0%		0%	0%
Crankcase Heater	33%		33%	50%
Liquid Line Solenoid	0%		0%	0%
Filter Dryer	33%		33%	100%

Figure B.25

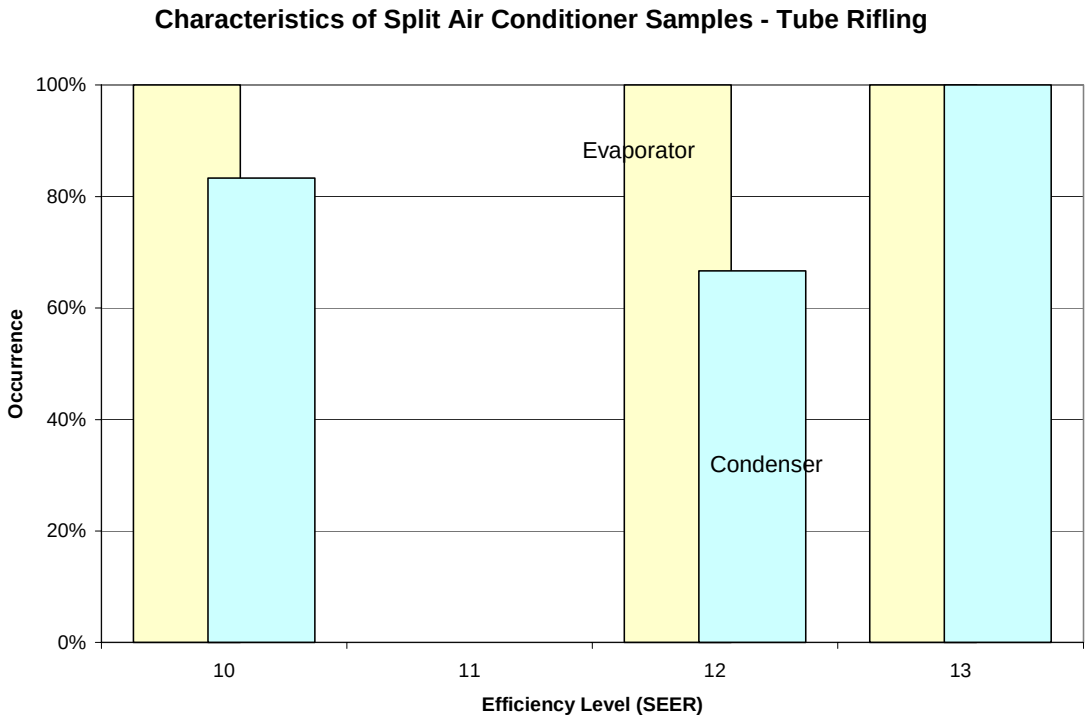


Figure B.26

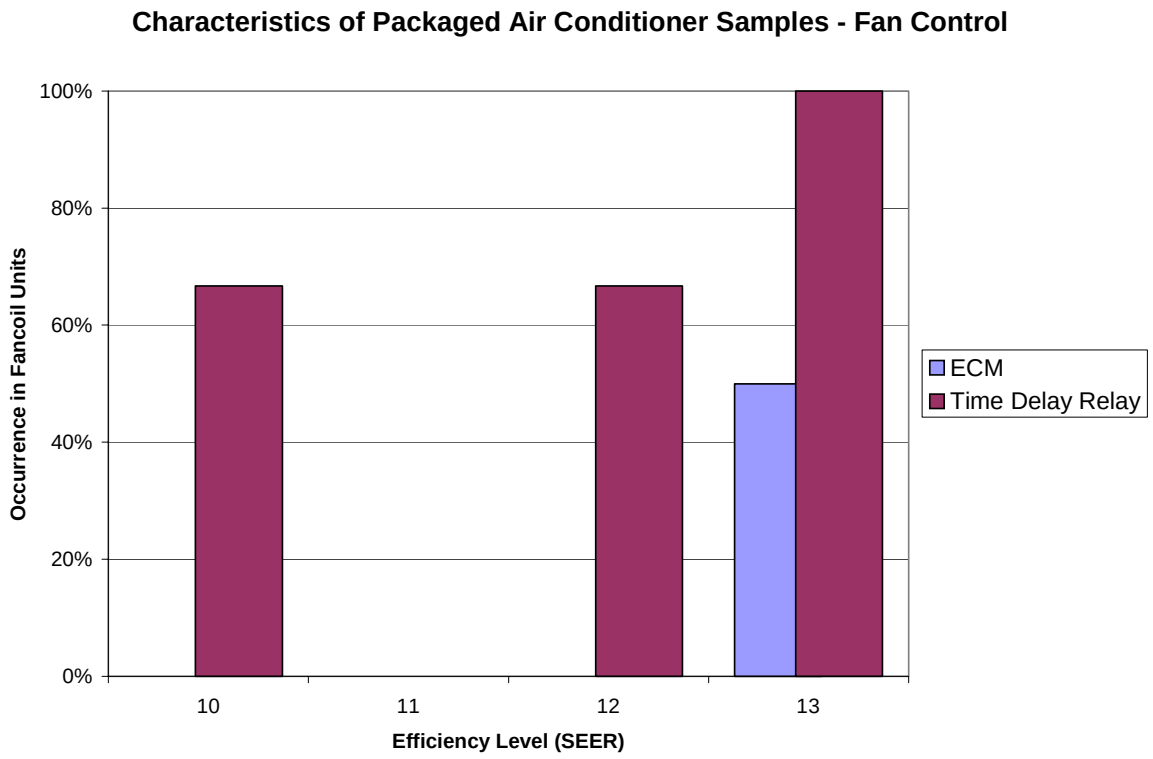


Figure B.27

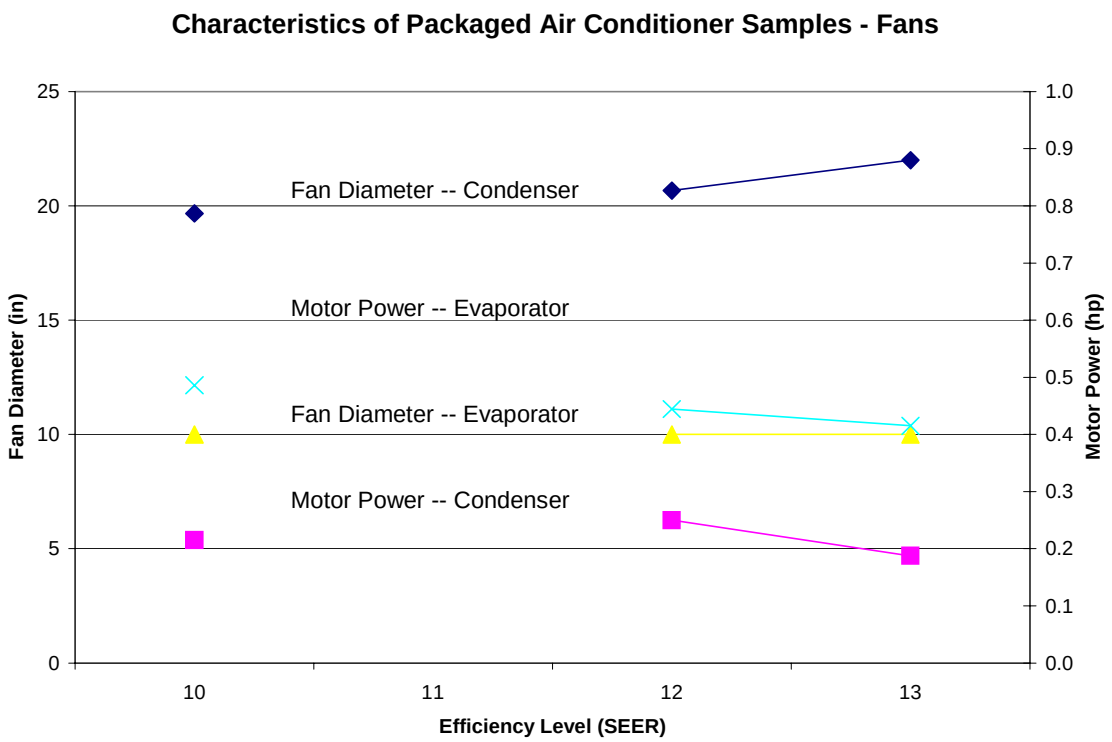


Figure B.28

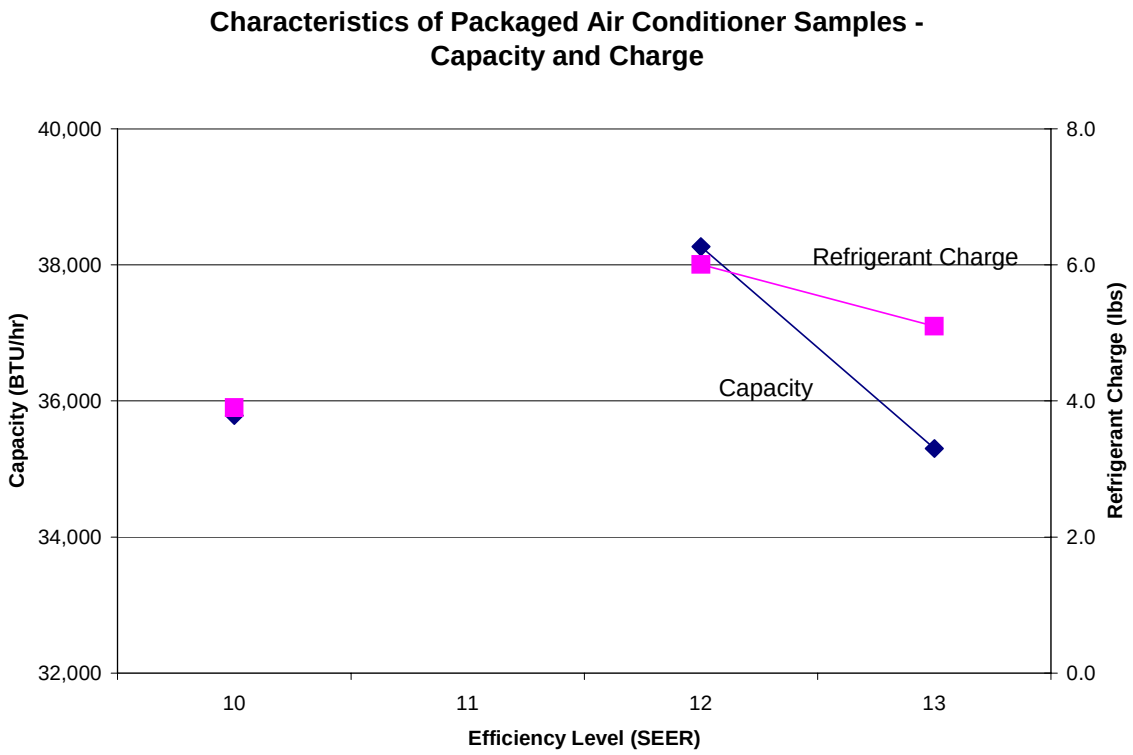


Figure B.29

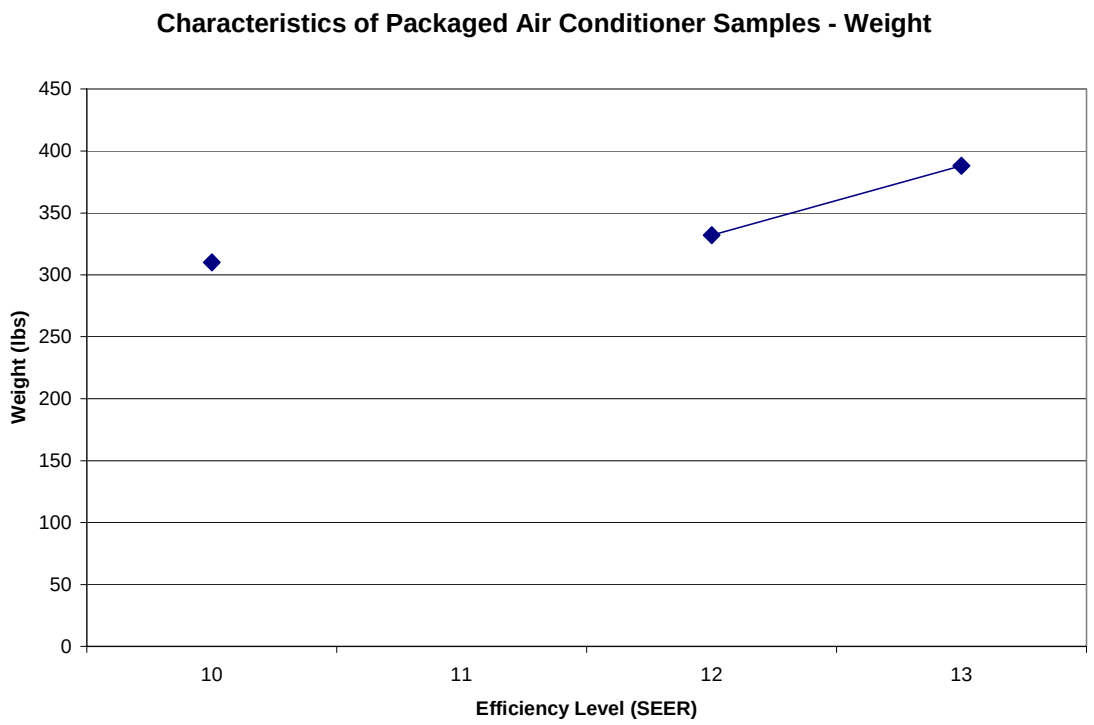


Figure B.30

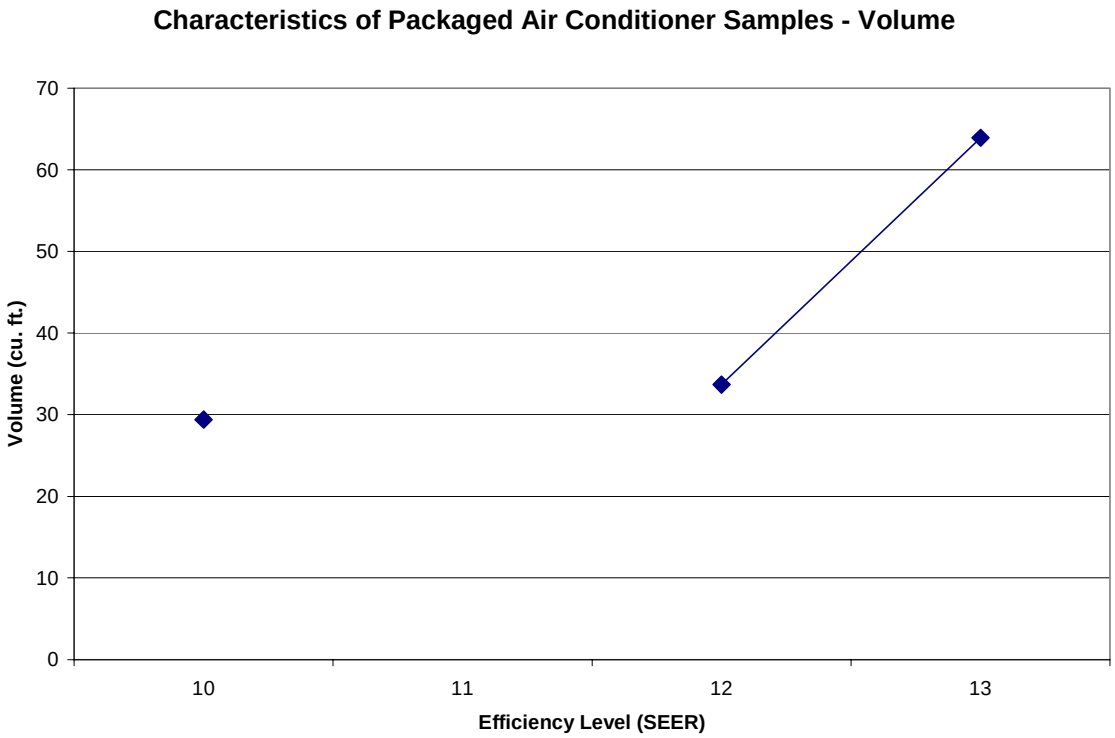


Figure B.31

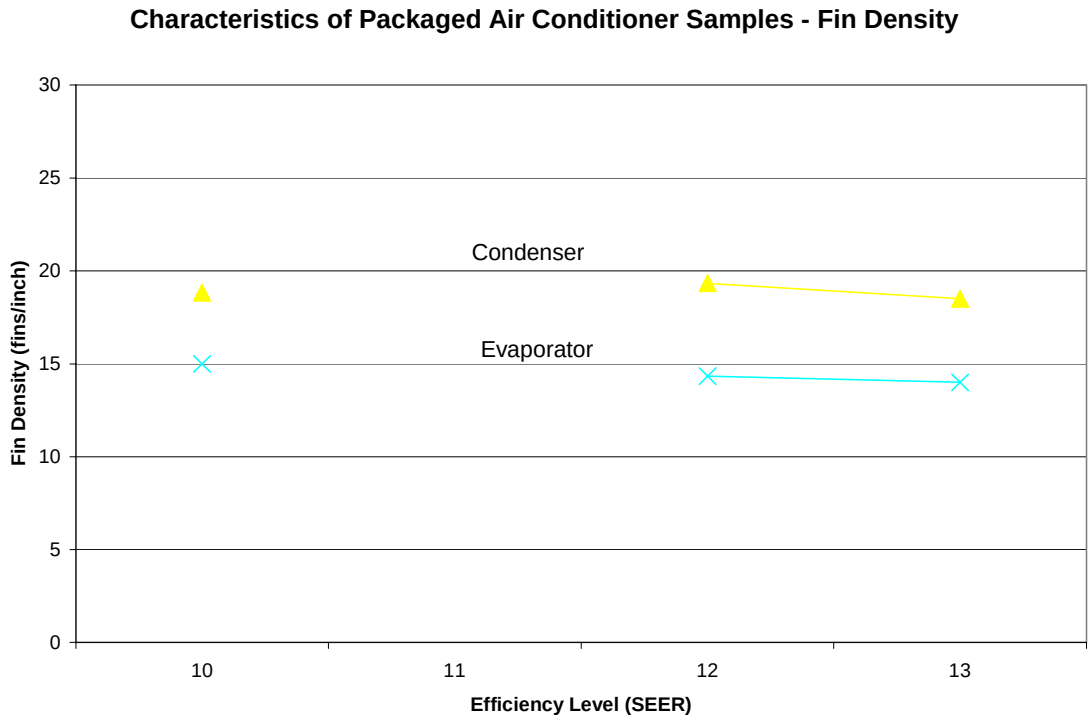


Figure B.32

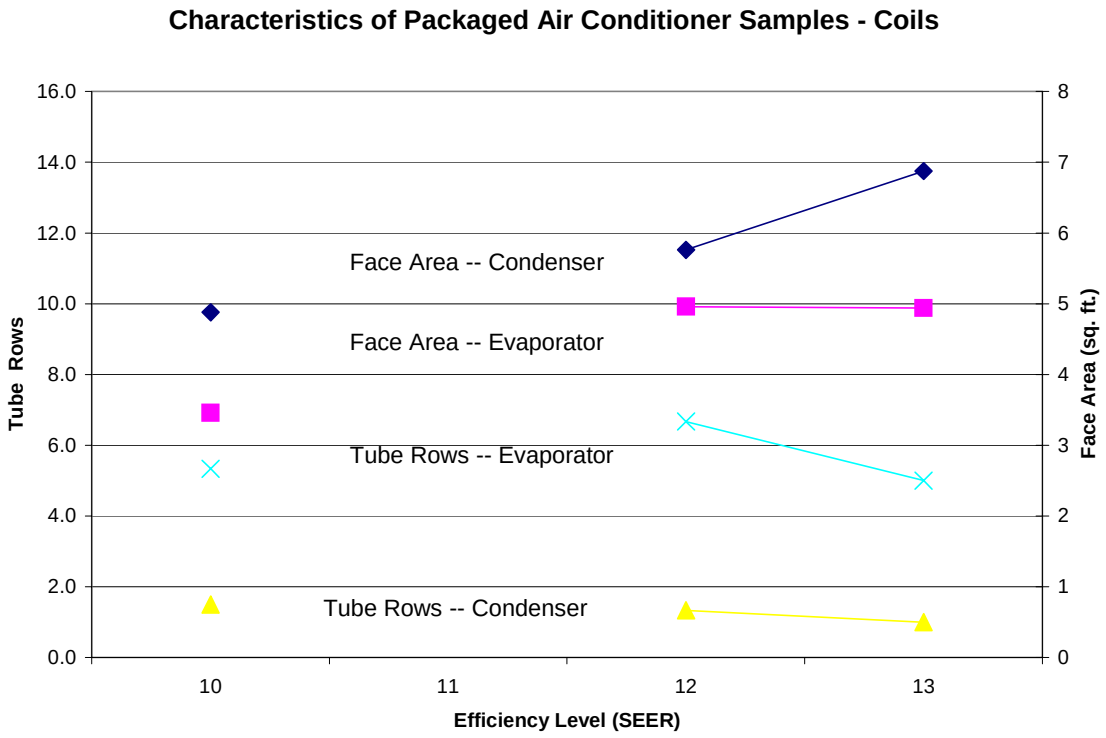


Figure B.33

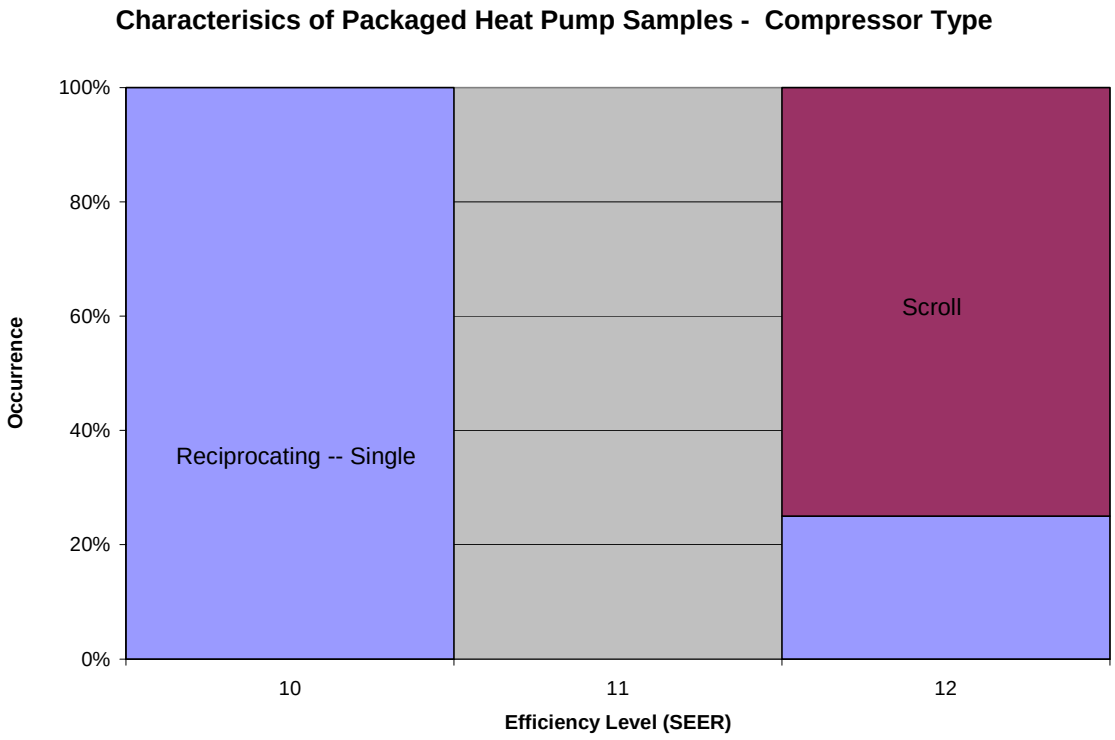
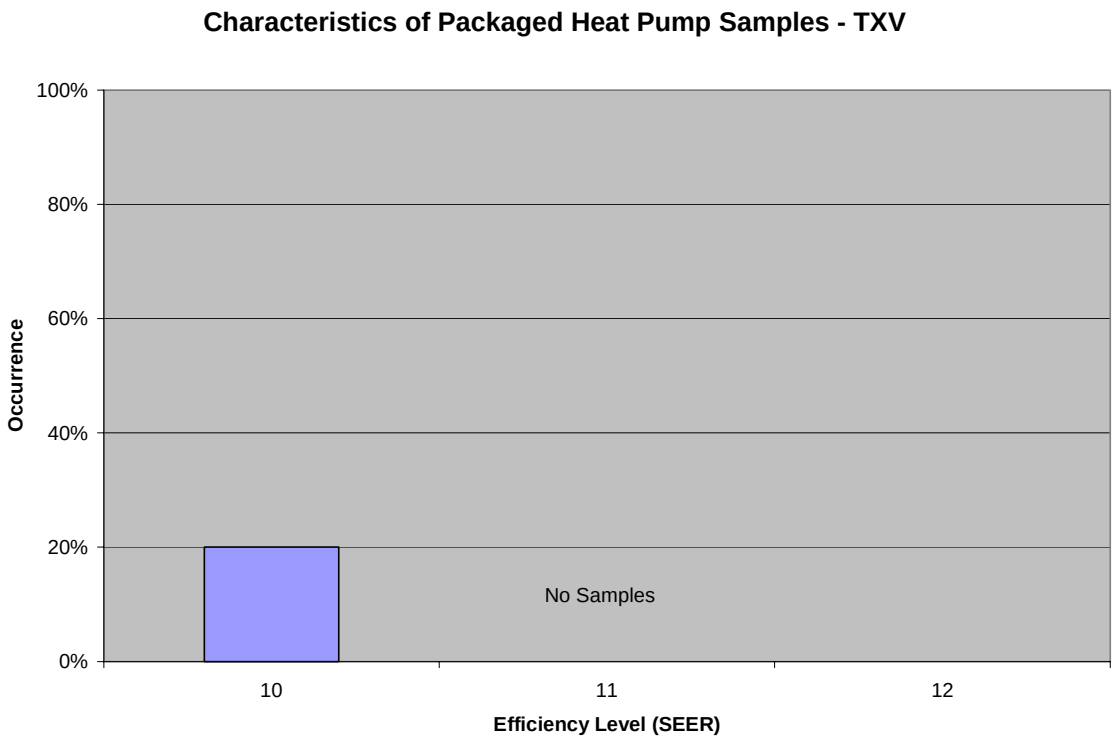


Figure B.34



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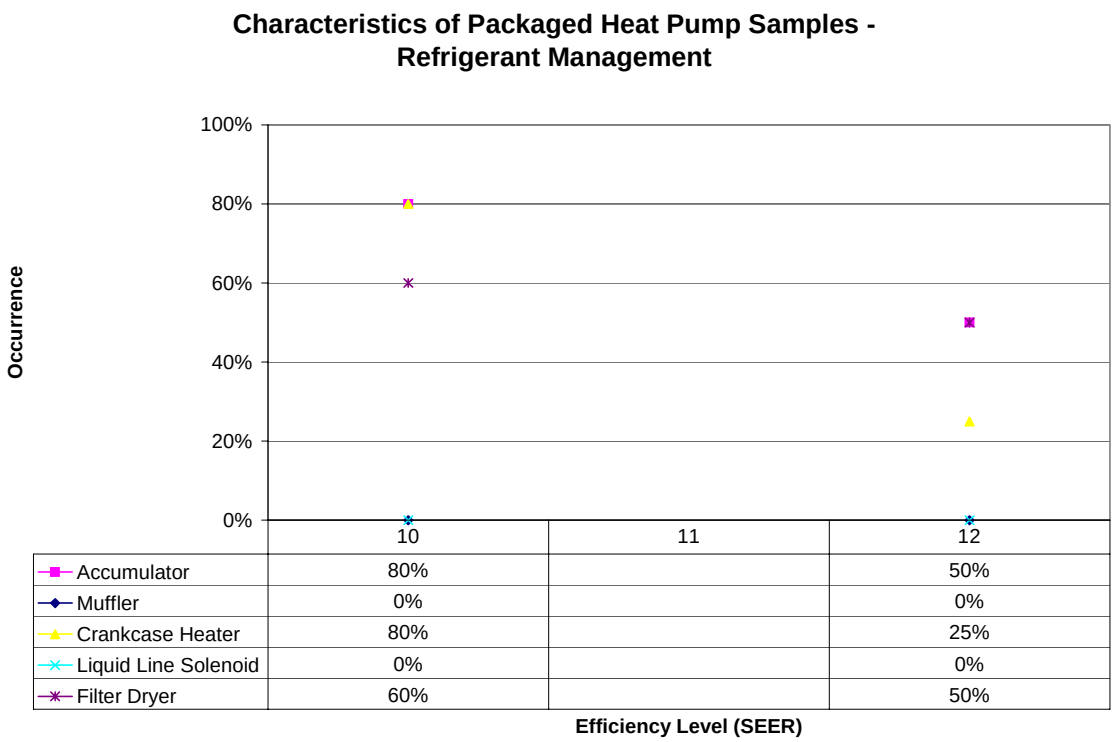


Figure B.36

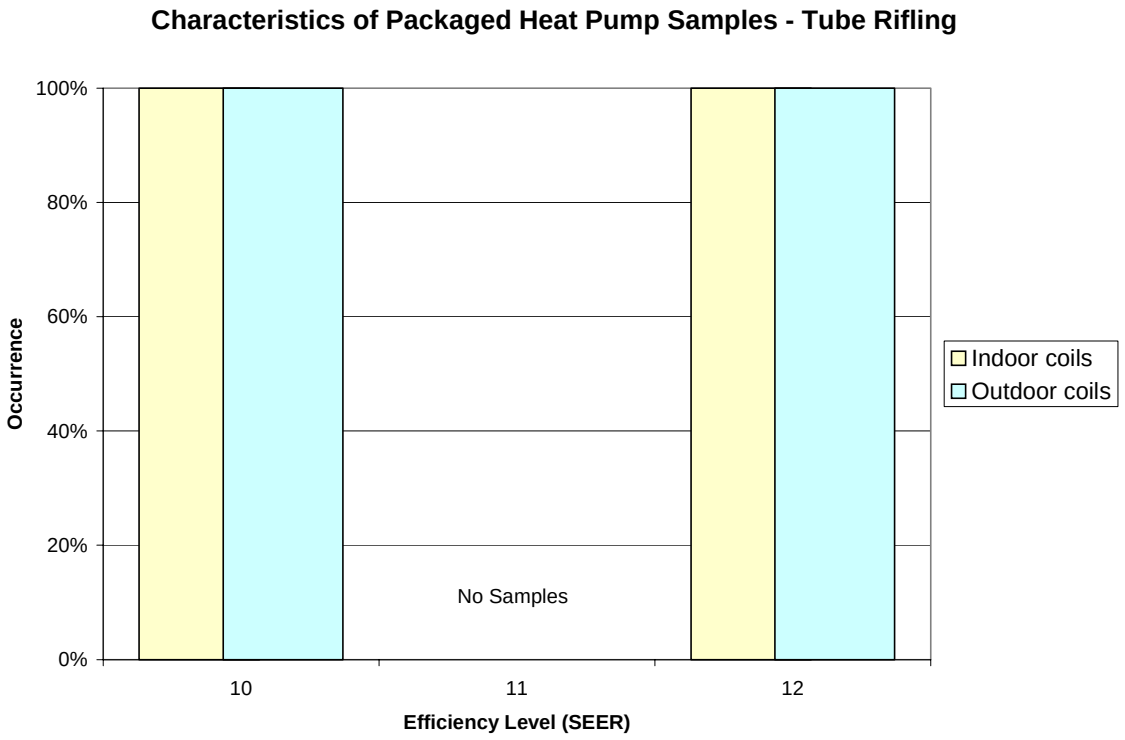


Figure B.37

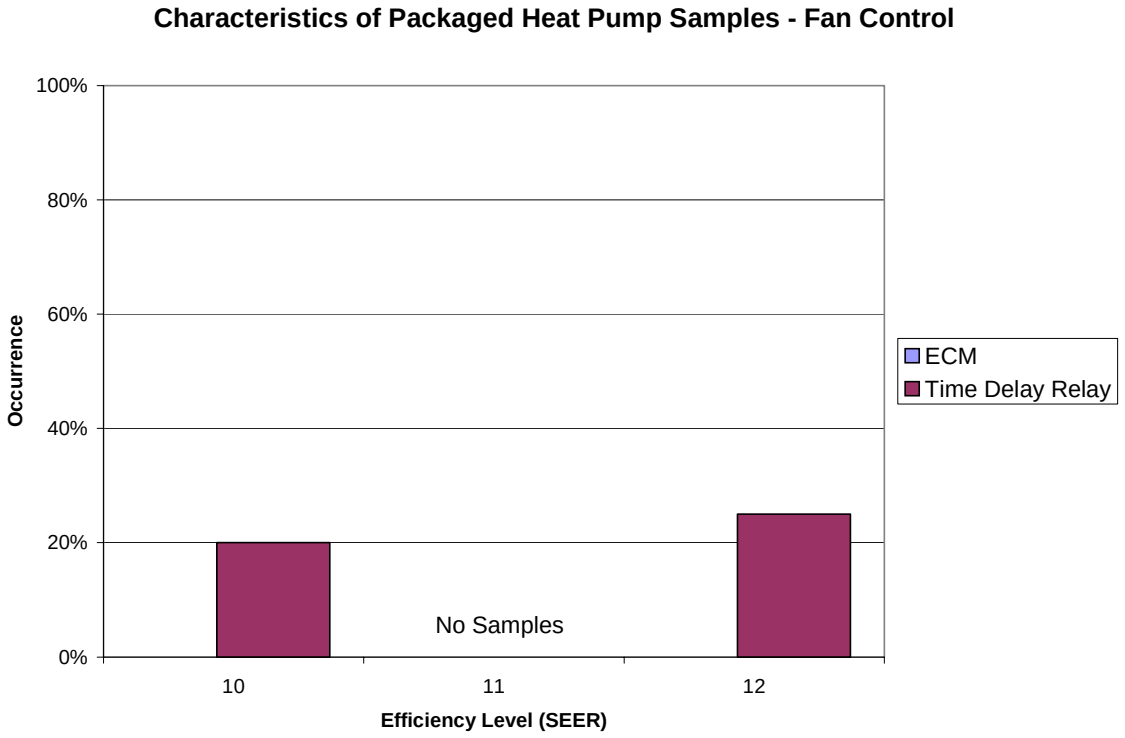
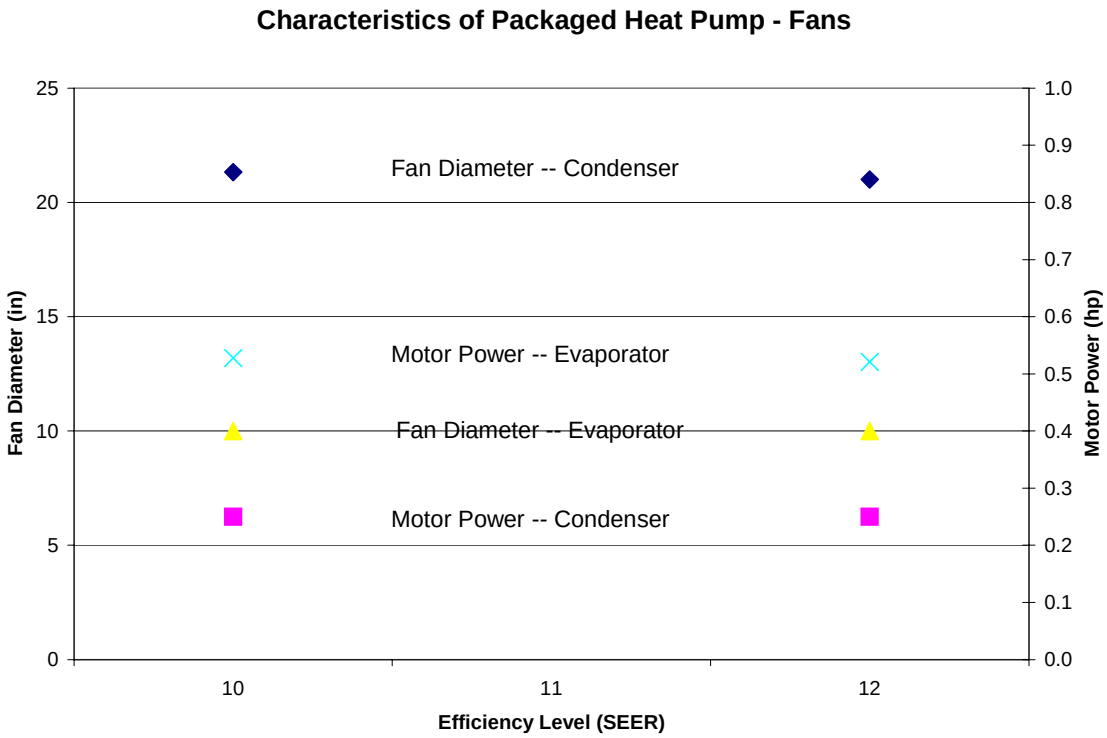


Figure B.38



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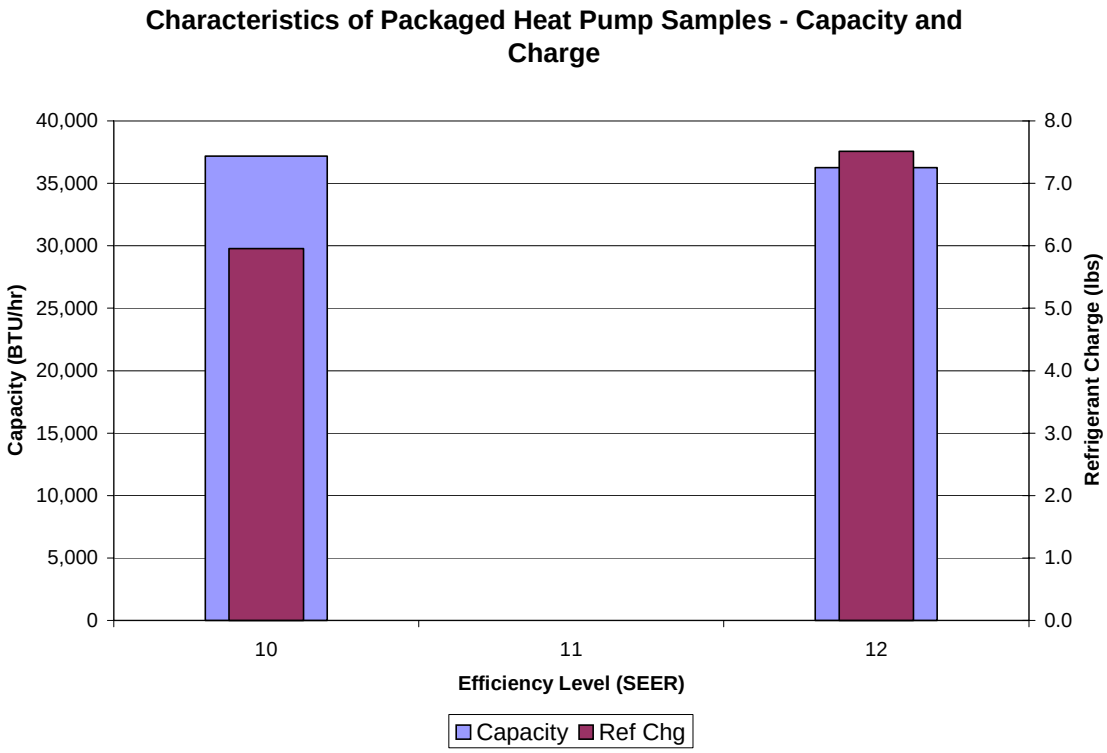


Figure B.40

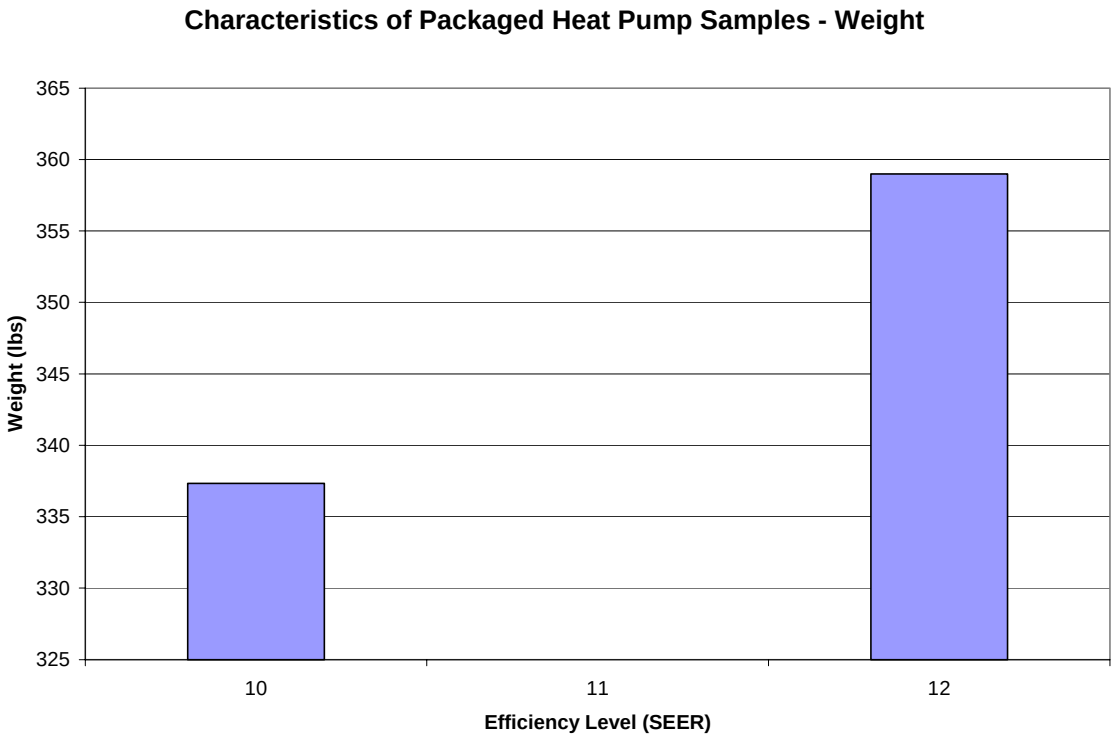


Figure B.41

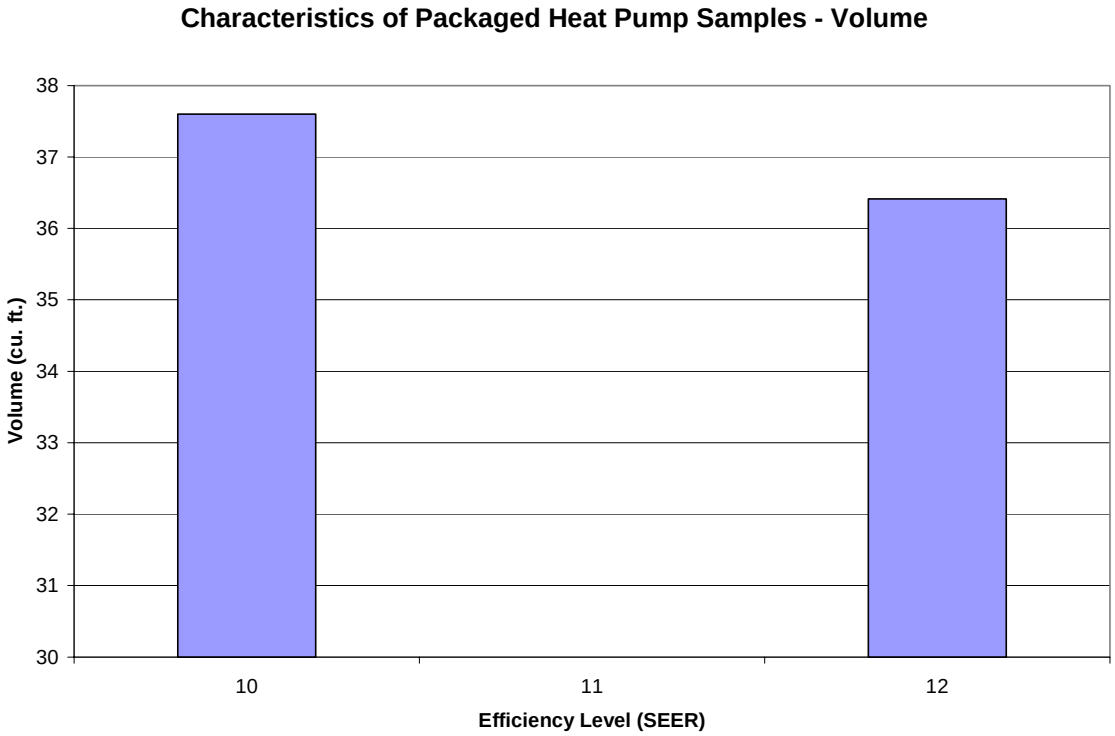
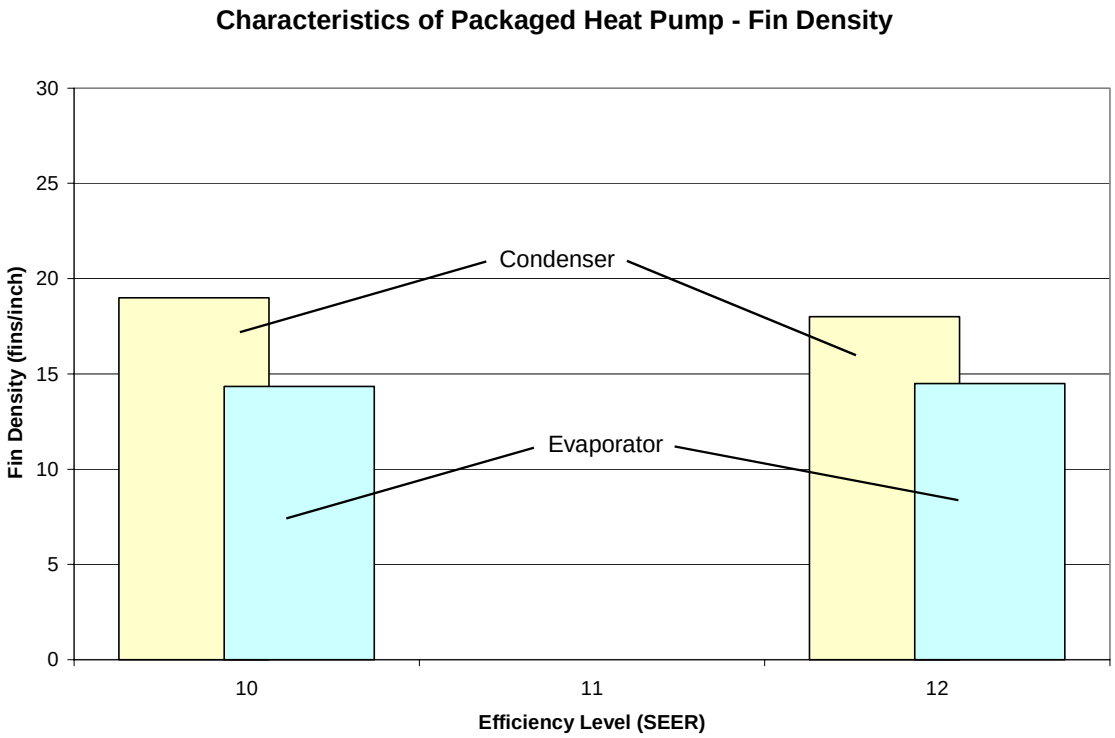


Figure B.42



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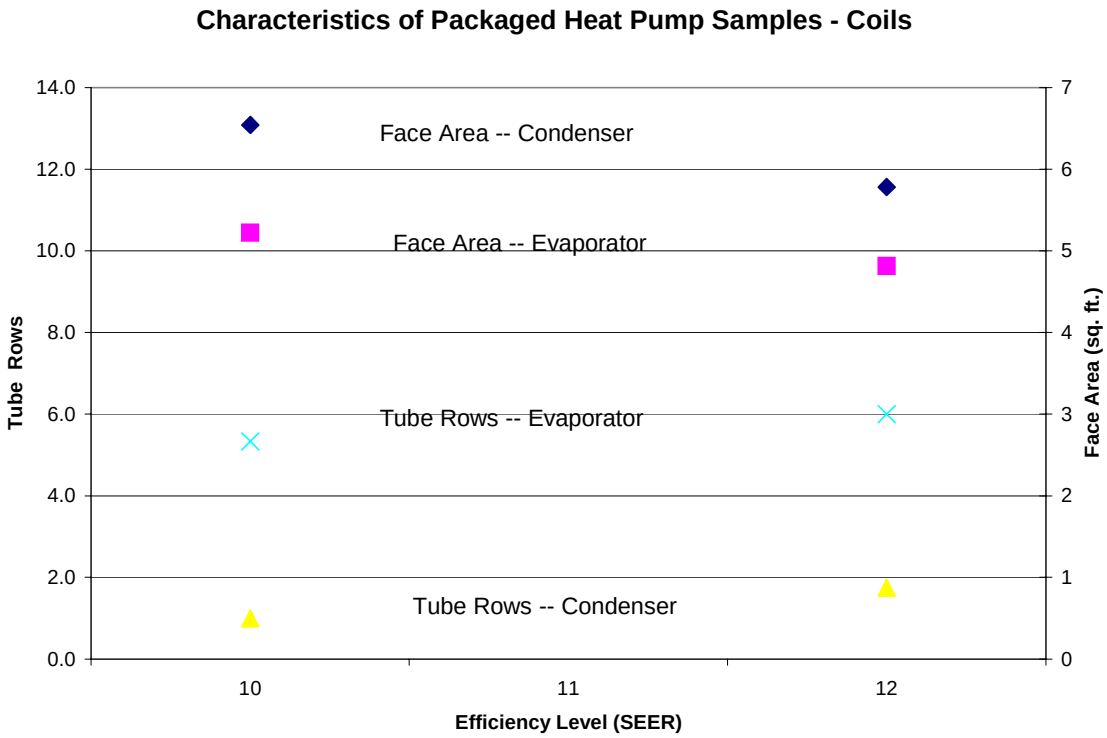

Figure B.44