Miscellaneous Report

System 1 AC1-1 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	4	3.2	80%	n/a	70	n/a
Summer:	84	70	51%	50%	75	24.63

System 2 AC1-2 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	4	3.2	80%	n/a	70	n/a
Summer:	84	70	51%	50%	75	24.63

System 3 AC1-3 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	4	3.2	80%	n/a	70	n/a
Summer:	84	70	51%	50%	75	24.63

System 4 AC1-4 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	4	3.2	80%	n/a	70	n/a
Summer:	84	70	51%	50%	75	24.63

System 5 AC2-1 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	4	3.2	80%	n/a	70	n/a
Summer:	84	70	51%	50%	75	24.63

System 6 AC2-2 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	4	3.2	80%	n/a	70	n/a
Summer:	84	70	51%	50%	75	24.63

System 7 AC2-3 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	4	3.2	80%	n/a	70	n/a
Summer:	84	70	51%	50%	75	24.63

System 8 AC2-4 Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	4	3.2	80%	n/a	70	n/a
Summer:	84	70	51%	50%	75	24.63

Duct Sizing Inputs

	Main Trunk		Runouts	
Calculate:	Yes		Yes	
Use Schedule:	Yes		Yes	
Roughness Factor:	0.00300		0.01000	
Pressure Drop:	0.1000	in.wg./100 ft.	0.1000	in.wg./100 ft.
Minimum Velocity:	650	ft./min	450	ft./min
Maximum Velocity:	900	ft./min	750	ft./min
Minimum Height:	0	in.	0	in.
Maximum Height:	0	in.	0	in.

Outside Air Data

	Winter		Summer	
Infiltration Specified:	0.610	AC/hr	0.320	AC/hr
	245	CFM	129	CFM
Infiltration Actual:	0.401	AC/hr	0.144	AC/hr
Above Grade Volume:	X 24,130	Cu.ft.	X 24,130	Cu.ft.
	9,678	Cu.ft./hr	3,466	Cu.ft./hr
	X 0.0167		X 0.0167	
Total Building Infiltration:	161	CFM	58	CFM
Total Building Ventilation:	120	CFM	120	CFM

---System 1---

Infiltration & Ventilation Sensible Gain Multiplier: 9.55 = (1.10 X 0.965 X 9.00 Summer Temp. Difference)

Infiltration & Ventilation Latent Gain Multiplier: 16.16 = (0.68 X 0.965 X 24.63 Grains Difference)

Miscellaneous Report (cont'd)

Outside Air Data

Infiltration & Ventilation Sensible Loss Multiplier: 70.05 = (1.10 X 0.965 X 66.00 Winter Temp. Difference)
Winter Infiltration Specified: 0.610 AC/hr (55 CFM), Construction: Average
Summer Infiltration Specified: 0.320 AC/hr (29 CFM), Construction: Average

---System 2---
Infiltration & Ventilation Sensible Gain Multiplier: 9.55 = (1.10 X 0.965 X 9.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier: 16.16 = (0.68 X 0.965 X 24.63 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier: 70.05 = (1.10 X 0.965 X 66.00 Winter Temp. Difference)
Winter Infiltration Specified: 0.610 AC/hr (16 CFM), Construction: Average
Summer Infiltration Specified: 0.320 AC/hr (9 CFM), Construction: Average

---System 3---
Infiltration & Ventilation Sensible Gain Multiplier: 9.55 = (1.10 X 0.965 X 9.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier: 16.16 = (0.68 X 0.965 X 24.63 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier: 70.05 = (1.10 X 0.965 X 66.00 Winter Temp. Difference)
Winter Infiltration Specified: 0.610 AC/hr (24 CFM), Construction: Average
Summer Infiltration Specified: 0.320 AC/hr (13 CFM), Construction: Average

---System 4---
Infiltration & Ventilation Sensible Gain Multiplier: 9.55 = (1.10 X 0.965 X 9.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier: 16.16 = (0.68 X 0.965 X 24.63 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier: 70.05 = (1.10 X 0.965 X 66.00 Winter Temp. Difference)
Winter Infiltration Specified: 0.610 AC/hr (27 CFM), Construction: Average
Summer Infiltration Specified: 0.320 AC/hr (14 CFM), Construction: Average

---System 5---
Infiltration & Ventilation Sensible Gain Multiplier: 9.55 = (1.10 X 0.965 X 9.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier: 16.16 = (0.68 X 0.965 X 24.63 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier: 70.05 = (1.10 X 0.965 X 66.00 Winter Temp. Difference)
Winter Infiltration Specified: 0.610 AC/hr (55 CFM), Construction: Average
Summer Infiltration Specified: 0.320 AC/hr (29 CFM), Construction: Average

---System 6---
Infiltration & Ventilation Sensible Gain Multiplier: 9.55 = (1.10 X 0.965 X 9.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier: 16.16 = (0.68 X 0.965 X 24.63 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier: 70.05 = (1.10 X 0.965 X 66.00 Winter Temp. Difference)
Winter Infiltration Specified: 0.610 AC/hr (16 CFM), Construction: Average
Summer Infiltration Specified: 0.320 AC/hr (9 CFM), Construction: Average

---System 7---
Infiltration & Ventilation Sensible Gain Multiplier: 9.55 = (1.10 X 0.965 X 9.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier: 16.16 = (0.68 X 0.965 X 24.63 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier: 70.05 = (1.10 X 0.965 X 66.00 Winter Temp. Difference)
Winter Infiltration Specified: 0.610 AC/hr (24 CFM), Construction: Average
Summer Infiltration Specified: 0.320 AC/hr (13 CFM), Construction: Average

---System 8---
Infiltration & Ventilation Sensible Gain Multiplier: 9.55 = (1.10 X 0.965 X 9.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier: 16.16 = (0.68 X 0.965 X 24.63 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier: 70.05 = (1.10 X 0.965 X 66.00 Winter Temp. Difference)
Winter Infiltration Specified: 0.610 AC/hr (27 CFM), Construction: Average
Summer Infiltration Specified: 0.320 AC/hr (14 CFM), Construction: Average

Duct Load Factor Scenarios for System 1

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Closed Crawl A	-	0.12	6	195	No

Duct Load Factor Scenarios for System 2

Miscellaneous Report (cont'd)

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Closed Crawl A	-	0.12	6	195	No

Duct Load Factor Scenarios for System 3

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Closed Crawl A	-	0.12	6	195	No

Duct Load Factor Scenarios for System 4

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Closed Crawl A	-	0.12	6	195	No

Duct Load Factor Scenarios for System 5

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Closed Crawl A	-	0.12	6	195	No

Duct Load Factor Scenarios for System 6

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Closed Crawl A	-	0.12	6	195	No

Duct Load Factor Scenarios for System 7

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Closed Crawl A	-	0.12	6	195	No

Duct Load Factor Scenarios for System 8

No.	Type	Description	Location	Attic Ceiling	Duct Leakage	Duct Insulation	Surface Area	From MDD
1	Supply	Main	Closed Crawl A	-	0.12	6	195	No

Load Preview Report

Scope	Net Ton	ft.³ /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Sys Htg CFM	Sys Clg CFM	Sys Act CFM	Duct Size
Building	3.44	739	2,540	33,859	7,399	41,258	64,329	753	1,541	1,541	
System 1	0.71	806	570	7,755	732	8,486	12,255	165	365	365	8x10
Duct Latent					265	265					
Zone 1			570	7,755	467	8,222	12,255	165	365	365	8x10
1-1st Floor-Living,Dining,Kitchen			570	7,755	467	8,222	12,255	165	365	365	3--7
System 2	0.21	801	170	1,705	842	2,547	4,708	49	74	74	4x4
Ventilation				143	242	386	1,051				
Duct Latent					400	400					
Zone 1			170	1,562	200	1,762	3,657	49	74	74	4x4
2-1st Floor-Bedroom 1			170	1,562	200	1,762	3,657	49	74	74	1--5
System 3	0.29	851	250	2,682	842	3,524	7,022	80	120	120	5x5
Ventilation				143	242	386	1,051				
Duct Latent					400	400					
Zone 1			250	2,538	200	2,738	5,971	80	120	120	5x5
3-1st Floor-Bedroom 2			250	2,538	200	2,738	5,971	80	120	120	1--6
System 4	0.43	650	280	3,889	1,284	5,172	7,892	78	170	170	6x6
Ventilation				287	485	771	2,102				
Duct Latent					399	399					
Zone 1			280	3,602	400	4,002	5,790	78	170	170	6x6
4-1st Floor-Bedroom 3			280	3,602	400	4,002	5,790	78	170	170	1--8
System 5	0.77	736	570	8,559	732	9,291	12,513	168	403	403	8x11
Duct Latent					265	265					
Zone 1			570	8,559	467	9,026	12,513	168	403	403	8x11
5-2nd Floor-Living,Dining,Kitchen			570	8,559	467	9,026	12,513	168	403	403	3--7
System 6	0.23	731	170	1,948	842	2,790	4,785	50	85	85	4x4
Ventilation				143	242	386	1,051				
Duct Latent					400	400					
Zone 1			170	1,805	200	2,005	3,735	50	85	85	4x4
6-2nd Floor-Bedroom 1			170	1,805	200	2,005	3,735	50	85	85	1--5
System 7	0.32	774	250	3,036	842	3,878	7,142	82	136	136	5x5
Ventilation				143	242	386	1,051				
Duct Latent					399	399					
Zone 1			250	2,893	200	3,093	6,091	82	136	136	5x5
7-2nd Floor-Bedroom 2			250	2,893	200	3,093	6,091	82	136	136	1--7
System 8	0.46	603	280	4,285	1,284	5,569	8,013	80	188	188	6x6
Ventilation				287	485	771	2,102				
Duct Latent					400	400					
Zone 1			280	3,998	400	4,398	5,912	80	188	188	6x6
8-2nd Floor-Bedroom 3			280	3,998	400	4,398	5,912	80	188	188	2--6

Duct Size Preview

Room or Duct Name	Minimum Velocity	Maximum Velocity	Rough. Factor	Design L/100	SP Loss	Duct Velocity	Duct Length	Htg Flow	Clg Flow	Act. Flow	Duct Size
System 1											
Supply Runouts											
Zone 1											
1-1st Floor-Living,Dining,Kitchen	450	750	0	0.1		455.6		165	365	365	3--7
Other Ducts in System 1											
Supply Main Trunk	650	900	0	0.1		657.6		165	365	365	8x10
System 2											
Supply Runouts											
Zone 1											
2-1st Floor-Bedroom 1	450	750	0	0.1		539.6		49	74	74	1--5
Other Ducts in System 2											
Supply Main Trunk	650	900	0	0.1		662.2		49	74	74	4x4
System 3											
Supply Runouts											
Zone 1											
3-1st Floor-Bedroom 2	450	750	0	0.1		609		80	120	120	1--6
Other Ducts in System 3											
Supply Main Trunk	650	900	0	0.1		688.8		80	120	120	5x5
System 4											
Supply Runouts											
Zone 1											
4-1st Floor-Bedroom 3	450	750	0	0.1		486.1		78	170	170	1--8
Other Ducts in System 4											
Supply Main Trunk	650	900	0	0.1		678.8		78	170	170	6x6
System 5											
Supply Runouts											
Zone 1											
5-2nd Floor-Living,Dining,Kitchen	450	750	0	0.1		502.9		168	403	403	3--7
Other Ducts in System 5											
Supply Main Trunk	650	900	0	0.1		659.8		168	403	403	8x11
System 6											
Supply Runouts											
Zone 1											
6-2nd Floor-Bedroom 1	450	750	0	0.1		623.6		50	85	85	1--5
Other Ducts in System 6											
Supply Main Trunk	650	900	0	0.1		765.3		50	85	85	4x4
System 7											
Supply Runouts											
Zone 1											
7-2nd Floor-Bedroom 2	450	750	0	0.1		510		82	136	136	1--7
Other Ducts in System 7											
Supply Main Trunk	650	900	0	0.1		785		82	136	136	5x5
System 8											
Supply Runouts											
Zone 1											
8-2nd Floor-Bedroom 3	450	750	0	0.1		479.6		80	188	188	2--6
Other Ducts in System 8											
Supply Main Trunk	650	900	0	0.1		753.4		80	188	188	6x6

Summary

System 1

Heating Flow: 165

Cooling Flow: 365

System 2

Duct Size Preview (cont'd)

Summary	
Heating Flow:	49
Cooling Flow:	74
System 3	
Heating Flow:	80
Cooling Flow:	120
System 4	
Heating Flow:	78
Cooling Flow:	170
System 5	
Heating Flow:	168
Cooling Flow:	403
System 6	
Heating Flow:	50
Cooling Flow:	85
System 7	
Heating Flow:	82
Cooling Flow:	136
System 8	
Heating Flow:	80
Cooling Flow:	188

Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
4A-4f-o: Glazing-Double pane low-e (e = 0.20 or less), operable window, e=0.10 on surface 3, insulated fiberglass frame, u-value 0.41, SHGC 0.45	542	14,672	0	14,930	14,930
12F-3sw: Wall-Frame, R-21 insulation in 2 x 6 stud cavity, R-3 board insulation, siding finish, wood studs	2923.6	10,806	0	1,098	1,098
16B-30: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Vented Attic, No Radiant Barrier, Dark Asphalt Shingles or Dark Metal, Tar and Gravel or Membrane, R-30 insulation	1270	2,682	0	1,788	1,788
21A-24: Floor-Basement, Concrete slab, any thickness, 2 or more feet below grade, no insulation below floor, any floor cover, shortest side of floor slab is 24' wide	1270	2,097	0	0	0
Subtotals for structure:		30,257	0	17,816	17,816
People:	8		1,600	1,840	3,440
Equipment:			0	7,200	7,200
Lighting:	0			0	0
Ductwork:		14,368	2,926	3,475	6,401
Infiltration: Winter CFM: 161, Summer CFM: 58		11,298	934	552	1,486
Ventilation: Winter CFM: 120, Summer CFM: 120		8,406	1,939	1,146	3,085
AED Excursion:		0	0	1,829	1,829
Total Building Load Totals:		64,329	7,399	33,859	41,258

Check Figures

Total Building Supply CFM:	1,541	CFM Per Square ft.:	0.607
Square ft. of Room Area:	2,540	Square ft. Per Ton:	739
Volume (ft³) of Cond. Space:	24,130		

Building Loads

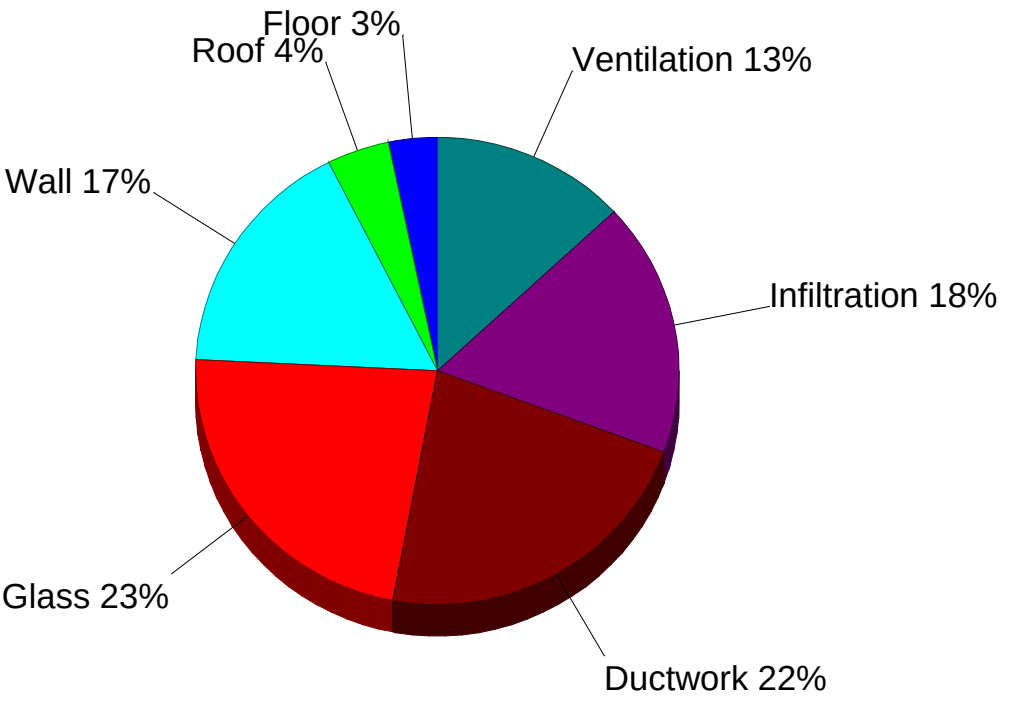
Total Heating Required Including Ventilation Air:	64,329	Btuh	64.329	MBH
Total Sensible Gain:	33,859	Btuh	82	%
Total Latent Gain:	7,399	Btuh	18	%
Total Cooling Required Including Ventilation Air:	41,258	Btuh	3.44	Tons (Based On Sensible + Latent)

Notes

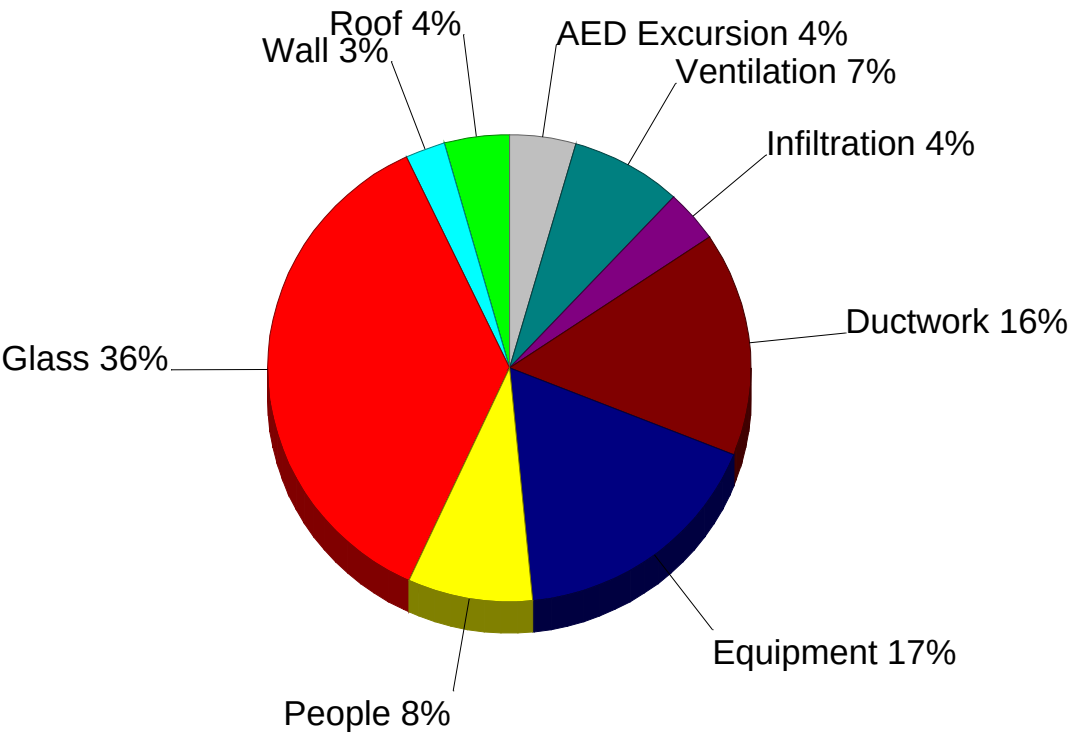
Rhvac is an ACCA approved Manual J and Manual D computer program.
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.
All computed results are estimates as building use and weather may vary.
Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

Building Pie Chart

Building
Loss
64,329
Btuh



Building
Gain
41,258
Btuh



Equipment Data - System 1 - AC1-1

Cooling

System Type:	Air Source Heat Pump
Outdoor Model:	LMU300HHV
Indoor Model:	LD127HV4
Outdoor Manufacturer:	LG
Description:	Air Source Heat Pump
AHRI Reference No.:	8931559
Nominal Capacity:	11600
Efficiency:	19.6 SEER

Heating

System Type:	Air Source Heat Pump
Model:	LD127HV4
Manufacturer:	LG
Description:	Air Source Heat Pump
Capacity:	16000
Efficiency:	10.5 HSPF

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 7,755 Btuh, Lat. gain: 732 Btuh, Sen. loss: 12,255 Btuh, Entering clg. coil DB: 75°F, Entering clg. coil WB: 62.4°F, Entering htg. coil DB: 70°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 365 CFM, Req. htg. airflow: 165 CFM

Equipment Data - System 2 - AC1-2

Cooling

System Type:	Air Source Heat Pump
Outdoor Model:	LMU300HHV
Indoor Model:	LMN079HVT
Outdoor Manufacturer:	LG
Description:	Air Source Heat Pump
AHRI Reference No.:	7484109
Nominal Capacity:	7000
Efficiency:	21.5 SEER

Heating

System Type:	Air Source Heat Pump
Model:	LMN079HVT
Manufacturer:	LG
Description:	Air Source Heat Pump
Capacity:	7000
Efficiency:	10.8 HSPF

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 1,705 Btuh, Lat. gain: 842 Btuh, Sen. loss: 4,708 Btuh, Entering clg. coil DB: 76.4°F, Entering clg. coil WB: 63.6°F, Entering htg. coil DB: 49.9°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 74 CFM, Req. htg. airflow: 49 CFM

Equipment Data - System 3 - AC1-3

Cooling

System Type:	Air Source Heat Pump
Outdoor Model:	LMU300HHV
Indoor Model:	LMN079HVT
Outdoor Manufacturer:	LG
Description:	Air Source Heat Pump
AHRI Reference No.:	7484109
Nominal Capacity:	7000
Efficiency:	21.5 SEER

Heating

System Type:	Air Source Heat Pump
Model:	LMN079HVT
Manufacturer:	LG
Description:	Air Source Heat Pump
Capacity:	7000
Efficiency:	10.8 HSPF

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 2,682 Btuh, Lat. gain: 842 Btuh, Sen. loss: 7,022 Btuh, Entering clg. coil DB: 76°F, Entering clg. coil WB: 63.2°F, Entering htg. coil DB: 57.7°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 120 CFM, Req. htg. airflow: 80 CFM

Equipment Data - System 4 - AC1-4

Cooling

System Type:	Air Source Heat Pump
Outdoor Model:	LMU300HHV
Indoor Model:	LMN079HVT
Outdoor Manufacturer:	LG
Description:	Air Source Heat Pump
AHRI Reference No.:	7484109
Nominal Capacity:	7000
Efficiency:	21.5 SEER

Heating

System Type:	Air Source Heat Pump
Model:	LMN079HVT
Manufacturer:	LG
Description:	Air Source Heat Pump
Capacity:	7000
Efficiency:	10.8 HSPF

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 3,889 Btuh, Lat. gain: 1,284 Btuh, Sen. loss: 7,892 Btuh, Entering clg. coil DB: 76.4°F, Entering clg. coil WB: 63.7°F, Entering htg. coil DB: 44.6°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 170 CFM, Req. htg. airflow: 78 CFM

Equipment Data - System 5 - AC2-1

Cooling

System Type:	Air Source Heat Pump
Outdoor Model:	LMU300HHV
Indoor Model:	LD127HV4
Outdoor Manufacturer:	LG
Description:	Air Source Heat Pump
AHRI Reference No.:	8931559
Nominal Capacity:	11600
Efficiency:	19.6 SEER

Heating

System Type:	Air Source Heat Pump
Model:	LD127HV4
Manufacturer:	LG
Description:	Air Source Heat Pump
Capacity:	16000
Efficiency:	10.5 HSPF

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 8,559 Btuh, Lat. gain: 732 Btuh, Sen. loss: 12,513 Btuh, Entering clg. coil DB: 75°F, Entering clg. coil WB: 62.4°F, Entering htg. coil DB: 70°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 403 CFM, Req. htg. airflow: 168 CFM

Equipment Data - System 6 - AC2-2

Cooling

System Type:	Air Source Heat Pump
Outdoor Model:	LMU300HHV
Indoor Model:	LMN079HVT
Outdoor Manufacturer:	LG
Description:	Air Source Heat Pump
AHRI Reference No.:	7484109
Nominal Capacity:	7000
Efficiency:	21.5 SEER

Heating

System Type:	Air Source Heat Pump
Model:	LMN079HVT
Manufacturer:	LG
Description:	Air Source Heat Pump
Capacity:	7000
Efficiency:	10.8 HSPF

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 1,948 Btuh, Lat. gain: 842 Btuh, Sen. loss: 4,785 Btuh, Entering clg. coil DB: 76.3°F, Entering clg. coil WB: 63.5°F, Entering htg. coil DB: 50.3°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 85 CFM, Req. htg. airflow: 50 CFM

Equipment Data - System 7 - AC2-3

Cooling

System Type:	Air Source Heat Pump
Outdoor Model:	LMU300HHV
Indoor Model:	LMN079HVT
Outdoor Manufacturer:	LG
Description:	Air Source Heat Pump
AHRI Reference No.:	7484109
Nominal Capacity:	7000
Efficiency:	21.5 SEER

Heating

System Type:	Air Source Heat Pump
Model:	LMN079HVT
Manufacturer:	LG
Description:	Air Source Heat Pump
Capacity:	7000
Efficiency:	10.8 HSPF

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 3,036 Btuh, Lat. gain: 842 Btuh, Sen. loss: 7,142 Btuh, Entering clg. coil DB: 75.9°F, Entering clg. coil WB: 63.1°F, Entering htg. coil DB: 57.9°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 136 CFM, Req. htg. airflow: 82 CFM

Equipment Data - System 8 - AC2-4

Cooling

System Type:	Air Source Heat Pump
Outdoor Model:	LMU300HHV
Indoor Model:	LMN079HVT
Outdoor Manufacturer:	LG
Description:	Air Source Heat Pump
AHRI Reference No.:	7484109
Nominal Capacity:	7000
Efficiency:	21.5 SEER

Heating

System Type:	Air Source Heat Pump
Model:	LMN079HVT
Manufacturer:	LG
Description:	Air Source Heat Pump
Capacity:	7000
Efficiency:	10.8 HSPF

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 4,285 Btuh, Lat. gain: 1,284 Btuh, Sen. loss: 8,013 Btuh, Entering clg. coil DB: 76.3°F, Entering clg. coil WB: 63.6°F, Entering htg. coil DB: 45.1°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 188 CFM, Req. htg. airflow: 80 CFM

Detailed Room Loads - Room 1 - 1st Floor-Living,Dining,Kitchen (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	570.0	ft.	System Number:	1	
Room Width:	1.0	ft.	Zone Number:	1	
Area:	570.0	sq.ft.	Supply Air:	365	CFM
Ceiling Height:	9.5	ft.	Supply Air Changes:	4.0	AC/hr
Volume:	5,415.0	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	3		Actual Winter Vent.:	0	CFM
Runout Air:	122	CFM	Percent of Supply.:	0	%
Runout Duct Size:	7	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	456	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	456	ft./min.	Actual Winter Infil.:	55	CFM
Actual Loss:	0.104	in.wg./100 ft.	Actual Summer Infil.:	29	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-3sw 29.3 X 9.5	239.4	0.056	3.7	885	0.4	0	90
W -Wall-12F-3sw 26.2 X 9.5	220.9	0.056	3.7	816	0.4	0	83
S -Wall-12F-3sw 29.3 X 9.5	228.4	0.056	3.7	844	0.4	0	86
N -Gls-4A-4f-o shgc-0.45 100%S	14	0.410	27.1	379	12.3	0	172
N -Gls-4A-4f-o shgc-0.45 100%S	25	0.410	27.1	677	12.3	0	307
W -Gls-4A-4f-o shgc-0.45 0%S (2)	28	0.410	27.1	758	45.9	0	1,286
S -Gls-4A-4f-o shgc-0.45 0%S	14	0.410	27.1	379	23.2	0	325
S -Gls-4A-4f-o shgc-0.45 0%S (2)	21	0.410	27.1	568	23.1	0	486
S -Gls-4A-4f-o shgc-0.45 0%S	15	0.410	27.1	406	23.2	0	348
Floor-21A-24 1 X 570	570	0.025	1.7	941	0.0	0	0
Subtotals for Structure:				6,653		0	3,183
Infil.: Win.: 55.1, Sum.: 28.9	806		4.786	3,856	0.343	467	276
Ductwork:				1,746			425
AED Excursion:							271
Equipment:						0	3,600
Room Totals:				12,255		467	7,755

Detailed Room Loads - Room 2 - 1st Floor-Bedroom 1 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	170.0	ft.	System Number:	2	
Room Width:	1.0	ft.	Zone Number:	1	
Area:	170.0	sq.ft.	Supply Air:	74	CFM
Ceiling Height:	9.5	ft.	Supply Air Changes:	2.7	AC/hr
Volume:	1,615.0	cu.ft.	Req. Vent. Clg:	15	CFM
Number of Registers:	1		Actual Winter Vent.:	15	CFM
Runout Air:	74	CFM	Percent of Supply.:	20	%
Runout Duct Size:	5	in.	Actual Summer Vent.:	15	CFM
Runout Air Velocity:	540	ft./min.	Percent of Supply:	20	%
Runout Air Velocity:	540	ft./min.	Actual Winter Infil.:	7	CFM
Actual Loss:	0.232	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-3sw 12 X 9.5	86	0.056	3.7	318	0.4	0	32
E -Wall-12F-3sw 2.8 X 9.5	26.6	0.056	3.7	98	0.4	0	10
S -Gls-4A-4f-o shgc-0.45 0%S (2)	28	0.410	27.1	758	23.2	0	650
Floor-21A-24 1 X 170	170	0.025	1.7	281	0.0	0	0
Subtotals for Structure:				1,455		0	692
Infil.: Win.: 6.7, Sum.: 0.0	141		3.329	468	0.000	0	0
Ductwork:				1,734			423
AED Excursion:							216
People: 200 lat/per, 230 sen/per:	1					200	230
Room Totals:				3,657		200	1,562

Detailed Room Loads - Room 3 - 1st Floor-Bedroom 2 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	250.0	ft.	System Number:	3	
Room Width:	1.0	ft.	Zone Number:	1	
Area:	250.0	sq.ft.	Supply Air:	120	CFM
Ceiling Height:	9.5	ft.	Supply Air Changes:	3.0	AC/hr
Volume:	2,375.0	cu.ft.	Req. Vent. Clg:	15	CFM
Number of Registers:	1		Actual Winter Vent.:	15	CFM
Runout Air:	120	CFM	Percent of Supply.:	13	%
Runout Duct Size:	6	in.	Actual Summer Vent.:	15	CFM
Runout Air Velocity:	609	ft./min.	Percent of Supply:	13	%
Runout Air Velocity:	609	ft./min.	Actual Winter Infil.:	19	CFM
Actual Loss:	0.229	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-3sw 20.9 X 9.5	156.6	0.056	3.7	579	0.4	0	59
E -Wall-12F-3sw 12.7 X 9.5	106.7	0.056	3.7	394	0.4	0	40
S -Gls-4A-4f-o shgc-0.45 0%S (3)	42	0.410	27.1	1,137	23.2	0	975
E -Gls-4A-4f-o shgc-0.45 0%S	14	0.410	27.1	379	45.9	0	643
Floor-21A-24 1 X 250	250	0.025	1.7	413	0.0	0	0
Subtotals for Structure:				2,902		0	1,717
Infil.: Win.: 18.9, Sum.: 0.0	319		4.151	1,325	0.000	0	0
Ductwork:				1,744			437
AED Excursion:							155
People: 200 lat/per, 230 sen/per:	1					200	230
Room Totals:				5,971		200	2,538

Detailed Room Loads - Room 4 - 1st Floor-Bedroom 3 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	280.0	ft.	System Number:	4	
Room Width:	1.0	ft.	Zone Number:	1	
Area:	280.0	sq.ft.	Supply Air:	170	CFM
Ceiling Height:	9.5	ft.	Supply Air Changes:	3.8	AC/hr
Volume:	2,660.0	cu.ft.	Req. Vent. Clg:	30	CFM
Number of Registers:	1		Actual Winter Vent.:	30	CFM
Runout Air:	170	CFM	Percent of Supply.:	18	%
Runout Duct Size:	8	in.	Actual Summer Vent.:	30	CFM
Runout Air Velocity:	486	ft./min.	Percent of Supply:	18	%
Runout Air Velocity:	486	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.099	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-3sw 23.7 X 9.5	197.2	0.056	3.7	729	0.4	0	74
W -Wall-12F-3sw 14 X 9.5	105	0.056	3.7	388	0.4	0	39
E -Wall-12F-3sw 11.5 X 9.5	95.2	0.056	3.7	352	0.4	0	36
N -Gls-4A-4f-o shgc-0.45 100%S (2)	28	0.410	27.1	758	12.3	0	344
W -Gls-4A-4f-o shgc-0.45 0%S (2)	28	0.410	27.1	758	45.9	0	1,286
E -Gls-4A-4f-o shgc-0.45 0%S	14	0.410	27.1	379	45.9	0	643
Floor-21A-24 1 X 280	280	0.025	1.7	462	0.0	0	0
Subtotals for Structure:				3,826		0	2,422
Infil.: Win.: 0.0, Sum.: 0.0	467		0.000	0	0.000	0	0
Ductwork:				1,964			447
AED Excursion:							273
People: 200 lat/per, 230 sen/per:	2					400	460
Room Totals:				5,790		400	3,602

Detailed Room Loads - Room 5 - 2nd Floor-Living,Dining,Kitchen (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	570.0	ft.	System Number:	5	
Room Width:	1.0	ft.	Zone Number:	1	
Area:	570.0	sq.ft.	Supply Air:	403	CFM
Ceiling Height:	9.5	ft.	Supply Air Changes:	4.5	AC/hr
Volume:	5,415.0	cu.ft.	Req. Vent. Clg:	0	CFM
Number of Registers:	3		Actual Winter Vent.:	0	CFM
Runout Air:	134	CFM	Percent of Supply.:	0	%
Runout Duct Size:	7	in.	Actual Summer Vent.:	0	CFM
Runout Air Velocity:	503	ft./min.	Percent of Supply:	0	%
Runout Air Velocity:	503	ft./min.	Actual Winter Infil.:	55	CFM
Actual Loss:	0.127	in.wg./100 ft.	Actual Summer Infil.:	29	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-3sw 29.3 X 9.5	239.4	0.056	3.7	885	0.4	0	90
W -Wall-12F-3sw 26.2 X 9.5	220.9	0.056	3.7	816	0.4	0	83
S -Wall-12F-3sw 29.3 X 9.5	228.4	0.056	3.7	844	0.4	0	86
N -Gls-4A-4f-o shgc-0.45 100%S	14	0.410	27.1	379	12.3	0	172
N -Gls-4A-4f-o shgc-0.45 100%S	25	0.410	27.1	677	12.3	0	307
W -Gls-4A-4f-o shgc-0.45 0%S (2)	28	0.410	27.1	758	45.9	0	1,286
S -Gls-4A-4f-o shgc-0.45 0%S	14	0.410	27.1	379	23.2	0	325
S -Gls-4A-4f-o shgc-0.45 0%S (2)	21	0.410	27.1	568	23.1	0	486
S -Gls-4A-4f-o shgc-0.45 0%S	15	0.410	27.1	406	23.2	0	348
UP-Ceil-16B-30 570 X 1	570	0.032	2.1	1,204	1.4	0	803
Subtotals for Structure:				6,916		0	3,986
Infil.: Win.: 55.1, Sum.: 28.9	806		4.786	3,856	0.343	467	276
Ductwork:				1,741			427
AED Excursion:							271
Equipment:						0	3,600
Room Totals:				12,513		467	8,559

Detailed Room Loads - Room 6 - 2nd Floor-Bedroom 1 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	170.0	ft.	System Number:	6	
Room Width:	1.0	ft.	Zone Number:	1	
Area:	170.0	sq.ft.	Supply Air:	85	CFM
Ceiling Height:	9.5	ft.	Supply Air Changes:	3.2	AC/hr
Volume:	1,615.0	cu.ft.	Req. Vent. Clg:	15	CFM
Number of Registers:	1		Actual Winter Vent.:	15	CFM
Runout Air:	85	CFM	Percent of Supply.:	18	%
Runout Duct Size:	5	in.	Actual Summer Vent.:	15	CFM
Runout Air Velocity:	624	ft./min.	Percent of Supply:	18	%
Runout Air Velocity:	624	ft./min.	Actual Winter Infil.:	7	CFM
Actual Loss:	0.309	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-3sw 12 X 9.5	86	0.056	3.7	318	0.4	0	32
E -Wall-12F-3sw 2.8 X 9.5	26.6	0.056	3.7	98	0.4	0	10
S -Gls-4A-4f-o shgc-0.45 0%S (2)	28	0.410	27.1	758	23.2	0	650
UP-Ceil-16B-30 170 X 1	170	0.032	2.1	359	1.4	0	239
Subtotals for Structure:				1,533		0	931
Infil.: Win.: 6.7, Sum.: 0.0	141		3.329	468	0.000	0	0
Ductwork:				1,734			428
AED Excursion:							216
People: 200 lat/per, 230 sen/per:	1					200	230
Room Totals:				3,735		200	1,805

Detailed Room Loads - Room 7 - 2nd Floor-Bedroom 2 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	250.0	ft.	System Number:	7	
Room Width:	1.0	ft.	Zone Number:	1	
Area:	250.0	sq.ft.	Supply Air:	136	CFM
Ceiling Height:	9.5	ft.	Supply Air Changes:	3.4	AC/hr
Volume:	2,375.0	cu.ft.	Req. Vent. Clg:	15	CFM
Number of Registers:	1		Actual Winter Vent.:	15	CFM
Runout Air:	136	CFM	Percent of Supply.:	11	%
Runout Duct Size:	7	in.	Actual Summer Vent.:	15	CFM
Runout Air Velocity:	510	ft./min.	Percent of Supply:	11	%
Runout Air Velocity:	510	ft./min.	Actual Winter Infil.:	19	CFM
Actual Loss:	0.130	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
S -Wall-12F-3sw 20.9 X 9.5	156.6	0.056	3.7	579	0.4	0	59
E -Wall-12F-3sw 12.7 X 9.5	106.7	0.056	3.7	394	0.4	0	40
S -Gls-4A-4f-o shgc-0.45 0%S (3)	42	0.410	27.1	1,137	23.2	0	975
E -Gls-4A-4f-o shgc-0.45 0%S	14	0.410	27.1	379	45.9	0	643
UP-Ceil-16B-30 250 X 1	250	0.032	2.1	528	1.4	0	352
Subtotals for Structure:				3,017		0	2,069
Infil.: Win.: 18.9, Sum.: 0.0	319		4.151	1,325	0.000	0	0
Ductwork:				1,749			439
AED Excursion:							155
People: 200 lat/per, 230 sen/per:	1					200	230
Room Totals:				6,091		200	2,893

Detailed Room Loads - Room 8 - 2nd Floor-Bedroom 3 (Average Load Procedure)

General

Calculation Mode:	Htg. & clg.		Occurrences:	1	
Room Length:	280.0	ft.	System Number:	8	
Room Width:	1.0	ft.	Zone Number:	1	
Area:	280.0	sq.ft.	Supply Air:	188	CFM
Ceiling Height:	9.5	ft.	Supply Air Changes:	4.2	AC/hr
Volume:	2,660.0	cu.ft.	Req. Vent. Clg:	30	CFM
Number of Registers:	2		Actual Winter Vent.:	30	CFM
Runout Air:	94	CFM	Percent of Supply.:	16	%
Runout Duct Size:	6	in.	Actual Summer Vent.:	30	CFM
Runout Air Velocity:	480	ft./min.	Percent of Supply:	16	%
Runout Air Velocity:	480	ft./min.	Actual Winter Infil.:	0	CFM
Actual Loss:	0.143	in.wg./100 ft.	Actual Summer Infil.:	0	CFM

Item Description	Area Quantity	-U- Value	Htg HTM	Sen Loss	Clg HTM	Lat Gain	Sen Gain
N -Wall-12F-3sw 23.7 X 9.5	197.2	0.056	3.7	729	0.4	0	74
W -Wall-12F-3sw 14 X 9.5	105	0.056	3.7	388	0.4	0	39
E -Wall-12F-3sw 11.5 X 9.5	95.2	0.056	3.7	352	0.4	0	36
N -Gls-4A-4f-o shgc-0.45 100%S (2)	28	0.410	27.1	758	12.3	0	344
W -Gls-4A-4f-o shgc-0.45 0%S (2)	28	0.410	27.1	758	45.9	0	1,286
E -Gls-4A-4f-o shgc-0.45 0%S	14	0.410	27.1	379	45.9	0	643
UP-Ceil-16B-30 280 X 1	280	0.032	2.1	591	1.4	0	394
Subtotals for Structure:				3,955		0	2,816
Infil.: Win.: 0.0, Sum.: 0.0	467		0.000	0	0.000	0	0
Ductwork:				1,957			449
AED Excursion:							273
People: 200 lat/per, 230 sen/per:	2					400	460
Room Totals:				5,912		400	3,998

System 1 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
1	1st Floor-Living,Dining,Kitchen	570	12,255	165	3-7	456	7,755	467	365	365
	Duct Latent							265		
	System 1 total	570	12,255	165			7,755	732	365	365

System 1 Main Trunk Size:	8x10	in.
Velocity:	658	ft./min
Loss per 100 ft.:	0.110	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.71	91% / 9%	7,755	732	8,486
Actual:	0.97	75% / 25%	8,700	2,900	11,600

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	LD127HV4	LMU300HHV
Indoor Model:		LD127HV4
Brand:		
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	10.5 HSPF	19.6 SEER
Sound:		
Capacity:	16000	11600
Sensible Capacity:	n/a	8,700 Btuh
Latent Capacity:	n/a	2,900 Btuh
AHRI Reference No.:	n/a	8931559

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 7,755 Btuh, Lat. gain: 732 Btuh, Sen. loss: 12,255 Btuh, Entering clg. coil DB: 75°F, Entering clg. coil WB: 62.4°F, Entering htg. coil DB: 70°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 365 CFM, Req. htg. airflow: 165 CFM

System 2 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
2	1st Floor-Bedroom 1	170	3,657	49	1-5	540	1,562	200	74	74
	Ventilation		1,051				143	242		
	Duct Latent							400		
	System 2 total	170	4,708	49			1,705	842	74	74

System 2 Main Trunk Size:	4x4	in.
Velocity:	662	ft./min
Loss per 100 ft.:	0.319	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.21	67% / 33%	1,705	842	2,547
Actual:	0.58	78% / 22%	5,460	1,540	7,000

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	LMN079HVT	LMU300HHV
Indoor Model:		LMN079HVT
Brand:		
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	10.8 HSPF	21.5 SEER
Sound:		
Capacity:	7000	7000
Sensible Capacity:	n/a	5,460 Btuh
Latent Capacity:	n/a	1,540 Btuh
AHRI Reference No.:	n/a	7484109

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 1,705 Btuh, Lat. gain: 842 Btuh, Sen. loss: 4,708 Btuh, Entering clg. coil DB: 76.4°F, Entering clg. coil WB: 63.6°F, Entering htg. coil DB: 49.9°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 74 CFM, Req. htg. airflow: 49 CFM

System 3 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
3	1st Floor-Bedroom 2	250	5,971	80	1-6	609	2,538	200	120	120
	Ventilation		1,051				143	242		
	Duct Latent							400		
	System 3 total	250	7,022	80			2,682	842	120	120

System 3 Main Trunk Size:	5x5	in.
Velocity:	689	ft./min
Loss per 100 ft.:	0.256	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.29	76% / 24%	2,682	842	3,524
Actual:	0.58	78% / 22%	5,460	1,540	7,000

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	LMN079HVT	LMU300HHV
Indoor Model:		LMN079HVT
Brand:		
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	10.8 HSPF	21.5 SEER
Sound:		
Capacity:	7000	7000
Sensible Capacity:	n/a	5,460 Btuh
Latent Capacity:	n/a	1,540 Btuh
AHRI Reference No.:	n/a	7484109

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 2,682 Btuh, Lat. gain: 842 Btuh, Sen. loss: 7,022 Btuh, Entering clg. coil DB: 76°F, Entering clg. coil WB: 63.2°F, Entering htg. coil DB: 57.7°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 120 CFM, Req. htg. airflow: 80 CFM

System 4 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
4	1st Floor-Bedroom 3	280	5,790	78	1-8	486	3,602	400	170	170
	Ventilation		2,102				287	485		
	Duct Latent							399		
	System 4 total	280	7,892	78			3,889	1,284	170	170

System 4 Main Trunk Size:	6x6	in.
Velocity:	679	ft./min
Loss per 100 ft.:	0.196	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.43	75% / 25%	3,889	1,284	5,172
Actual:	0.58	78% / 22%	5,460	1,540	7,000

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	LMN079HVT	LMU300HHV
Indoor Model:		LMN079HVT
Brand:		
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	10.8 HSPF	21.5 SEER
Sound:		
Capacity:	7000	7000
Sensible Capacity:	n/a	5,460 Btuh
Latent Capacity:	n/a	1,540 Btuh
AHRI Reference No.:	n/a	7484109

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 3,889 Btuh, Lat. gain: 1,284 Btuh, Sen. loss: 7,892 Btuh, Entering clg. coil DB: 76.4°F, Entering clg. coil WB: 63.7°F, Entering htg. coil DB: 44.6°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 170 CFM, Req. htg. airflow: 78 CFM

System 5 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
5	2nd Floor-Living,Dining,Kitchen	570	12,513	168	3-7	503	8,559	467	403	403
	Duct Latent							265		
	System 5 total	570	12,513	168			8,559	732	403	403

System 5 Main Trunk Size:	8x11	in.
Velocity:	660	ft./min
Loss per 100 ft.:	0.105	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.77	92% / 8%	8,559	732	9,291
Actual:	0.97	75% / 25%	8,700	2,900	11,600

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	LD127HV4	LMU300HHV
Indoor Model:		LD127HV4
Brand:		
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	10.5 HSPF	19.6 SEER
Sound:		
Capacity:	16000	11600
Sensible Capacity:	n/a	8,700 Btuh
Latent Capacity:	n/a	2,900 Btuh
AHRI Reference No.:	n/a	8931559

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 8,559 Btuh, Lat. gain: 732 Btuh, Sen. loss: 12,513 Btuh, Entering clg. coil DB: 75°F, Entering clg. coil WB: 62.4°F, Entering htg. coil DB: 70°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 403 CFM, Req. htg. airflow: 168 CFM

System 6 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
6	2nd Floor-Bedroom 1	170	3,735	50	1-5	624	1,805	200	85	85
	Ventilation		1,051				143	242		
	Duct Latent							400		
	System 6 total	170	4,785	50			1,948	842	85	85

System 6 Main Trunk Size:	4x4	in.
Velocity:	765	ft./min
Loss per 100 ft.:	0.423	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.23	70% / 30%	1,948	842	2,790
Actual:	0.58	78% / 22%	5,460	1,540	7,000

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	LMN079HVT	LMU300HHV
Indoor Model:		LMN079HVT
Brand:		
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	10.8 HSPF	21.5 SEER
Sound:		
Capacity:	7000	7000
Sensible Capacity:	n/a	5,460 Btuh
Latent Capacity:	n/a	1,540 Btuh
AHRI Reference No.:	n/a	7484109

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 1,948 Btuh, Lat. gain: 842 Btuh, Sen. loss: 4,785 Btuh, Entering clg. coil DB: 76.3°F, Entering clg. coil WB: 63.5°F, Entering htg. coil DB: 50.3°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 85 CFM, Req. htg. airflow: 50 CFM

System 7 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
7	2nd Floor-Bedroom 2	250	6,091	82	1-7	510	2,893	200	136	136
	Ventilation		1,051				143	242		
	Duct Latent							399		
	System 7 total	250	7,142	82			3,036	842	136	136

System 7 Main Trunk Size:	5x5	in.
Velocity:	785	ft./min
Loss per 100 ft.:	0.330	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.32	78% / 22%	3,036	842	3,878
Actual:	0.58	78% / 22%	5,460	1,540	7,000

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	LMN079HVT	LMU300HHV
Indoor Model:		LMN079HVT
Brand:		
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	10.8 HSPF	21.5 SEER
Sound:		
Capacity:	7000	7000
Sensible Capacity:	n/a	5,460 Btuh
Latent Capacity:	n/a	1,540 Btuh
AHRI Reference No.:	n/a	7484109

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 3,036 Btuh, Lat. gain: 842 Btuh, Sen. loss: 7,142 Btuh, Entering clg. coil DB: 75.9°F, Entering clg. coil WB: 63.1°F, Entering htg. coil DB: 57.9°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 136 CFM, Req. htg. airflow: 82 CFM

System 8 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
8	2nd Floor-Bedroom 3	280	5,912	80	2-6	480	3,998	400	188	188
	Ventilation		2,102				287	485		
	Duct Latent							400		
	System 8 total	280	8,013	80			4,285	1,284	188	188

System 8 Main Trunk Size:	6x6	in.
Velocity:	753	ft./min
Loss per 100 ft.:	0.240	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	0.46	77% / 23%	4,285	1,284	5,569
Actual:	0.58	78% / 22%	5,460	1,540	7,000

Equipment Data

	Heating System	Cooling System
Type:	Air Source Heat Pump	Air Source Heat Pump
Model:	LMN079HVT	LMU300HHV
Indoor Model:		LMN079HVT
Brand:		
Description:	Air Source Heat Pump	Air Source Heat Pump
Efficiency:	10.8 HSPF	21.5 SEER
Sound:		
Capacity:	7000	7000
Sensible Capacity:	n/a	5,460 Btuh
Latent Capacity:	n/a	1,540 Btuh
AHRI Reference No.:	n/a	7484109

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 84°F, SOWB: 70°F, WODB: 4°F, SIDB: 75°F, SIRH: 50%, WIDB: 70°F, Sen. gain: 4,285 Btuh, Lat. gain: 1,284 Btuh, Sen. loss: 8,013 Btuh, Entering clg. coil DB: 76.3°F, Entering clg. coil WB: 63.6°F, Entering htg. coil DB: 45.1°F, Clg. coil TD: 20°F, Htg. coil TD: 70°F, Req. clg. airflow: 188 CFM, Req. htg. airflow: 80 CFM