

## Project Information

For: Residence, Thornton, NH

## Cooling Equipment

### Design Conditions

Outdoor design DB:	94.1°F	Sensible gain:	12718 Btuh	Entering coil DB:	75.8°F
Outdoor design WB:	75.1°F	Latent gain:	1625 Btuh	Entering coil WB:	62.9°F
Indoor design DB:	75.0°F	Total gain:	14344 Btuh		
Indoor RH:	50%	Estimated airflow:	800 cfm		

### Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	LG Electronics	Model:	LUU240HHV+LVN241HV4		
Actual airflow:	800 cfm				
Sensible capacity:	16800 Btuh	132% of load			
Latent capacity:	7200 Btuh	443% of load			
Total capacity:	24000 Btuh	167% of load	SHR:	70%	

## Heating Equipment

### Design Conditions

Outdoor design DB:	-8.5°F	Heat loss:	23763 Btuh	Entering coil DB:	67.8°F
Indoor design DB:	70.0°F				

### Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	LG Electronics	Model:	LUU240HHV+LVN241HV4		
Actual airflow:	800 cfm				
Output capacity:	27000 Btuh	114% of load		Capacity balance:	5.2 °F
Supplemental heat required:	0 Btuh			Economic balance:	-99 °F

Backup equipment type:	Elec strip				
Manufacturer:		Model:			
Actual airflow:	800 cfm				
Output capacity:	6.4 kW	91% of load	Temp. rise:	50 °F	

Meets all requirements of ACCA Manual S.

## Project Information

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## Cooling Equipment

### Design Conditions

Outdoor design DB:	94.1°F	Sensible gain:	34207 Btuh	Entering coil DB:	75.8°F
Outdoor design WB:	75.1°F	Latent gain:	2722 Btuh	Entering coil WB:	62.9°F
Indoor design DB:	75.0°F	Total gain:	36929 Btuh		
Indoor RH:	50%	Estimated airflow:	1533 cfm		

### Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	LG Electronics	Model:	LUU480HHV+LVN480HV		
Actual airflow:	1533 cfm				
Sensible capacity:	32200 Btuh	94% of load			
Latent capacity:	13800 Btuh	507% of load			
Total capacity:	46000 Btuh	125% of load	SHR:	70%	

## Heating Equipment

### Design Conditions

Outdoor design DB:	-8.5°F	Heat loss:	46194 Btuh	Entering coil DB:	67.8°F
Indoor design DB:	70.0°F				

### Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	LG Electronics	Model:	LUU480HHV+LVN480HV		
Actual airflow:	1533 cfm				
Output capacity:	50000 Btuh	108% of load		Capacity balance:	10 °F
Supplemental heat required:	0 Btuh			Economic balance:	-99 °F

Backup equipment type:	Elec strip				
Manufacturer:		Model:			
Actual airflow:	1533 cfm				
Output capacity:	14.2 kW	105% of load	Temp. rise:	48 °F	

Meets all requirements of ACCA Manual S.

### Project Information

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### Design Information

	Htg	Clg	Infiltration	
Outside db (°F)	-9	94	Method	Simplified
Inside db (°F)	70	75	Construction quality	Tight
Design TD (°F)	79	19	Fireplaces	1 (Tight)
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	31	38		

#### HEATING EQUIPMENT

Make	n/a
Trade	n/a
Model	n/a
AHRI ref	n/a
Efficiency	n/a
Heating input	
Heating output	0 Btuh
Temperature rise	0 °F
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	n/a

#### COOLING EQUIPMENT

Make	n/a
Trade	n/a
Cond	n/a
Coil	n/a
AHRI ref	n/a
Efficiency	n/a
Sensible cooling	0 Btuh
Latent cooling	0 Btuh
Total cooling	0 Btuh
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Left Side	765	23763	12718	800	800
Right Side	1060	46194	34207	1533	1533
Entire House	1825	69957	46329	2333	2333
Other equip loads		0	0		
Equip. @ 0.99 RSM			45912		
Latent cooling			4347		
<b>TOTALS</b>	<b>1825</b>	<b>69957</b>	<b>50259</b>	<b>2333</b>	<b>2333</b>

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

## Project Information

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## Design Information

	Htg	Clg	Infiltration	
Outside db (°F)	-9	94	Method	Simplified
Inside db (°F)	70	75	Construction quality	Tight
Design TD (°F)	79	19	Fireplaces	1 (Tight)
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	31	38		

### HEATING EQUIPMENT

Make	LG Electronics
Trade	LG
Model	LUU240HHV
AHRI ref	205788775
Efficiency	11 HSPF
Heating input	
Heating output	27000 Btuh @ 47°F
Temperature rise	31 °F
Actual air flow	800 cfm
Air flow factor	0.034 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	
Capacity balance point = 5 °F	

### COOLING EQUIPMENT

Make	LG Electronics
Trade	LG
Cond	LUU240HHV
Coil	LVN241HV4
AHRI ref	205788775
Efficiency	12.7 EER, 19.5 SEER
Sensible cooling	16800 Btuh
Latent cooling	7200 Btuh
Total cooling	24000 Btuh
Actual air flow	800 cfm
Air flow factor	0.063 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.89

Backup:  
Input = 6 kW, Output = 21677 Btuh, 100 AFUE

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Mudroom	189	5095	1598	172	100
Bath 1	100	1546	330	52	21
Hall/Closet	71	56	18	2	1
Primary Bed	189	12374	9580	417	603
Loft	216	4693	1193	158	75
Left Side	765	23763	12718	800	800
Other equip loads		0	0		
Equip. @ 0.99 RSM			12604		
Latent cooling			1625		
<b>TOTALS</b>	<b>765</b>	<b>23763</b>	<b>14229</b>	<b>800</b>	<b>800</b>

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## Project Information

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## Design Information

	Htg	Clg	Infiltration	
Outside db (°F)	-9	94	Method	Simplified
Inside db (°F)	70	75	Construction quality	Tight
Design TD (°F)	79	19	Fireplaces	1 (Tight)
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	31	38		

### HEATING EQUIPMENT

Make	LG Electronics
Trade	LG
Model	LUU480HHV
AHRI ref	205788777
Efficiency	10.5 HSPF
Heating input	
Heating output	50000 Btuh @ 47°F
Temperature rise	30 °F
Actual air flow	1533 cfm
Air flow factor	0.033 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	
Capacity balance point = 10 °F	

### COOLING EQUIPMENT

Make	LG Electronics
Trade	LG
Cond	LUU480HHV
Coil	LVN480HV
AHRI ref	205788777
Efficiency	12.5 EER, 19 SEER
Sensible cooling	32200 Btuh
Latent cooling	13800 Btuh
Total cooling	46000 Btuh
Actual air flow	1533 cfm
Air flow factor	0.045 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.93

Backup:  
Input = 14 kW, Output = 48340 Btuh, 100 AFUE

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Liv/Din/Kit	610	32177	25846	1068	1158
Hall	120	1974	932	66	42
Bath 2	80	1429	450	47	20
Bedroom 2	150	6829	4628	227	207
Bunk Room	100	3784	2350	126	105
Right Side	1060	46194	34207	1533	1533
Other equip loads		0	0		
Equip. @ 0.99 RSM			33900		
Latent cooling			2722		
<b>TOTALS</b>	<b>1060</b>	<b>46194</b>	<b>36621</b>	<b>1533</b>	<b>1533</b>

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## Project Information

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Notes: DISTRIBUTOR IS NOT RESPONSIBLE FOR THE ACCURACY OF THE LOAD CALCULATION IF INACCURATE/INCOMPLETE CONSTRUCTION INFORMATION IS PROVIDED BY THE DEALER. IT IS THE SOLE RESPONSIBILITY OF THE DEALER TO ENSURE THAT THE DUCT SYSTEM IS ADEQUATELY SIZED FOR THE AIRFLOW CAPACITY OF THE SPECIFIED EQUIPMENT.

## Design Information

Weather: Lebanon Municipal, NH, US

### Winter Design Conditions

Outside db	-9 °F
Inside db	70 °F
Design TD	79 °F

### Summer Design Conditions

Outside db	94 °F
Inside db	75 °F
Design TD	19 °F
Daily range	M
Relative humidity	50 %
Moisture difference	38 gr/lb

### Heating Summary

Structure	54732 Btuh
Ducts	15224 Btuh
Central vent (0 cfm)	0 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	69957 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	39665 Btuh
Ducts	6664 Btuh
Central vent (0 cfm)	0 Btuh
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.99
Equipment sensible load	45912 Btuh

### Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	1 (Tight)

### Latent Cooling Equipment Load Sizing

Structure	1816 Btuh
Ducts	2531 Btuh
Central vent (0 cfm)	0 Btuh
Equipment latent load	4347 Btuh
<b>Equipment Total Load (Sen+Lat)</b>	<b>50259 Btuh</b>
Req. total capacity at 0.70 SHR	5.5 ton

	Heating	Cooling
Area (ft <sup>2</sup> )	1825	1825
Volume (ft <sup>3</sup> )	21760	21760
Air changes/hour	0.18	0.09
Equiv. AVF (cfm)	65	33

### Heating Equipment Summary

Make	n/a
Trade	n/a
Model	n/a
AHRI ref	n/a
Efficiency	n/a
Heating input	
Heating output	0 Btuh
Temperature rise	0 °F
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	n/a

### Cooling Equipment Summary

Make	n/a
Trade	n/a
Cond	n/a
Coil	n/a
AHRI ref	n/a
Efficiency	n/a
Sensible cooling	0 Btuh
Latent cooling	0 Btuh
Total cooling	0 Btuh
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0

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## Design Information

Weather: Lebanon Municipal, NH, US

### Winter Design Conditions

Outside db	-9 °F
Inside db	70 °F
Design TD	79 °F

### Summer Design Conditions

Outside db	94 °F
Inside db	75 °F
Design TD	19 °F
Daily range	M
Relative humidity	50 %
Moisture difference	38 gr/lb

### Heating Summary

Structure	18473 Btuh
Ducts	5290 Btuh
Central vent (0 cfm) (none)	0 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	23763 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	10372 Btuh
Ducts	2347 Btuh
Central vent (0 cfm) (none)	0 Btuh
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.99
Equipment sensible load	12604 Btuh

### Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	1 (Tight)

### Latent Cooling Equipment Load Sizing

Structure	750 Btuh
Ducts	875 Btuh
Central vent (0 cfm) (none)	0 Btuh
Equipment latent load	1625 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	765	765
Volume (ft <sup>3</sup> )	7493	7493
Air changes/hour	0.22	0.11
Equip. AVF (cfm)	28	14

<b>Equipment Total Load (Sen+Lat)</b>	14229 Btuh
Req. total capacity at 0.70 SHR	1.5 ton

### Heating Equipment Summary

Make	LG Electronics
Trade	LG
Model	LUU240HHV
AHRI ref	205788775
Efficiency	11 HSPF
Heating input	
Heating output	27000 Btuh @ 47°F
Temperature rise	31 °F
Actual air flow	800 cfm
Air flow factor	0.034 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	
Capacity balance point = 5 °F	

### Cooling Equipment Summary

Make	LG Electronics
Trade	LG
Cond	LUU240HHV
Coil	LVN241HV4
AHRI ref	205788775
Efficiency	12.7 EER, 19.5 SEER
Sensible cooling	16800 Btuh
Latent cooling	7200 Btuh
Total cooling	24000 Btuh
Actual air flow	800 cfm
Air flow factor	0.063 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.89

Backup:  
Input = 6 kW, Output = 21677 Btuh, 100 AFUE

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### Design Information

Weather: Lebanon Municipal, NH, US

#### Winter Design Conditions

Outside db -9 °F  
Inside db 70 °F  
Design TD 79 °F

#### Summer Design Conditions

Outside db 94 °F  
Inside db 75 °F  
Design TD 19 °F  
Daily range M  
Relative humidity 50 %  
Moisture difference 38 gr/lb

#### Heating Summary

Structure 36259 Btuh  
Ducts 9934 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Humidification 0 Btuh  
Piping 0 Btuh  
Equipment load 46194 Btuh

#### Sensible Cooling Equipment Load Sizing

Structure 29805 Btuh  
Ducts 4403 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Blower 0 Btuh  
Use manufacturer's data n  
Rate/swing multiplier 0.99  
Equipment sensible load 33900 Btuh

#### Infiltration

Method Simplified  
Construction quality Tight  
Fireplaces 1 (Tight)

#### Latent Cooling Equipment Load Sizing

Structure 1065 Btuh  
Ducts 1656 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Equipment latent load 2722 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	1060	1060
Volume (ft <sup>3</sup> )	14268	14268
Air changes/hour	0.16	0.08
Equip. AVF (cfm)	37	19

**Equipment Total Load (Sen+Lat)** 36621 Btuh  
Req. total capacity at 0.70 SHR 4.0 ton

#### Heating Equipment Summary

Make LG Electronics  
Trade LG  
Model LUU480HHV  
AHRI ref 205788777

Efficiency 10.5 HSPF  
Heating input  
Heating output 50000 Btuh @ 47°F  
Temperature rise 30 °F  
Actual air flow 1533 cfm  
Air flow factor 0.033 cfm/Btuh  
Static pressure 0 in H2O  
Space thermostat  
Capacity balance point = 10 °F

#### Cooling Equipment Summary

Make LG Electronics  
Trade LG  
Cond LUU480HHV  
Coil LVN480HV  
AHRI ref 205788777

Efficiency 12.5 EER, 19 SEER  
Sensible cooling 32200 Btuh  
Latent cooling 13800 Btuh  
Total cooling 46000 Btuh  
Actual air flow 1533 cfm  
Air flow factor 0.045 cfm/Btuh  
Static pressure 0 in H2O  
Load sensible heat ratio 0.93

Backup:  
Input = 14 kW, Output = 48340 Btuh, 100 AFUE

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