

# Residential System Sizing Calculation

## Summary

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title:  
201399 Nickodam

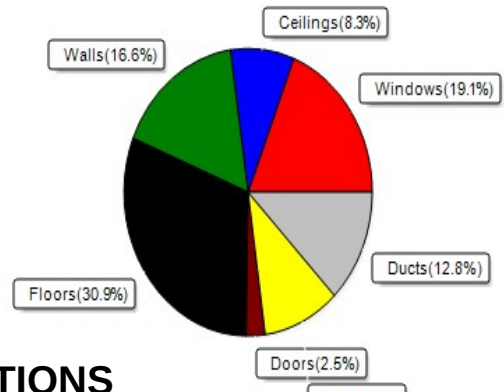
2021-01-07

|                                                                                                       |                   |                                       |                    |
|-------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|--------------------|
| Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M) |                   |                                       |                    |
| Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)                    |                   |                                       |                    |
| Winter design temperature(TMY3 99%)                                                                   | 30 F              | Summer design temperature(TMY3 99%)   | 94 F               |
| Winter setpoint                                                                                       | 70 F              | Summer setpoint                       | 75 F               |
| Winter temperature difference                                                                         | 40 F              | Summer temperature difference         | 19 F               |
| <b>Total heating load calculation</b>                                                                 | <b>33280 Btuh</b> | <b>Total cooling load calculation</b> | <b>29340 Btuh</b>  |
| Submitted heating capacity                                                                            | % of calc Btuh    | Submitted cooling capacity            | % of calc Btuh     |
| Total (Electric Heat Pump)                                                                            | 108.2 36000       | Sensible (SHR = 0.75)                 | 109.6 27000        |
| Heat Pump + Auxiliary(0.0kW)                                                                          | 108.2 36000       | Latent                                | 191.4 9000         |
|                                                                                                       |                   | <b>Total (Electric Heat Pump)</b>     | <b>122.7 36000</b> |

## WINTER CALCULATIONS

Winter Heating Load (for 2033 sqft)

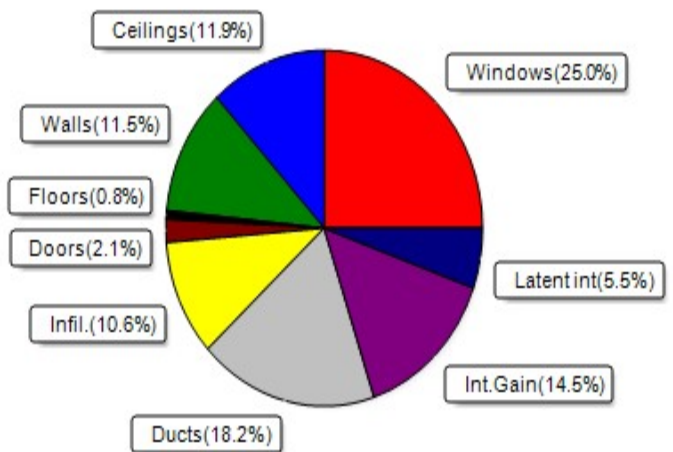
| Load component                | Load              |
|-------------------------------|-------------------|
| Window total 495 sqft         | 6340 Btuh         |
| Wall total 1573 sqft          | 5536 Btuh         |
| Door total 51 sqft            | 818 Btuh          |
| Ceiling total 2715 sqft       | 2761 Btuh         |
| Floor total See detail report | 10297 Btuh        |
| Infiltration 75 cfm           | 3275 Btuh         |
| Duct loss                     | 4254 Btuh         |
| <b>Subtotal</b>               | <b>33280 Btuh</b> |
| Ventilation 0 cfm             | 0 Btuh            |
| <b>TOTAL HEAT LOSS</b>        | <b>33280 Btuh</b> |



## SUMMER CALCULATIONS

Summer Cooling Load (for 2033 sqft)

| Load component                        | Load              |
|---------------------------------------|-------------------|
| Window total 495 sqft                 | 7334 Btuh         |
| Wall total 1573 sqft                  | 3379 Btuh         |
| Door total 51 sqft                    | 613 Btuh          |
| Ceiling total 2715 sqft               | 3487 Btuh         |
| Floor total                           | 234 Btuh          |
| Infiltration 56 cfm                   | 1167 Btuh         |
| Internal gain                         | 4240 Btuh         |
| Duct gain                             | 4182 Btuh         |
| Sens. Ventilation 0 cfm               | 0 Btuh            |
| Blower Load                           | 0 Btuh            |
| <b>Total sensible gain</b>            | <b>24637 Btuh</b> |
| Latent gain(ducts)                    | 1166 Btuh         |
| Latent gain(infiltration)             | 1936 Btuh         |
| Latent gain(ventilation)              | 0 Btuh            |
| Latent gain(internal/occupants/other) | 1600 Btuh         |
| <b>Total latent gain</b>              | <b>4702 Btuh</b>  |
| <b>TOTAL HEAT GAIN</b>                | <b>29340 Btuh</b> |



8th Edition

EnergyGauge® System Sizing  
PREPARED BY: **Evan Beamsley**  
DATE: **2021-01-07**

# System Sizing Calculations - Winter

## Residential Load - Room by Room Component Details

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title:  
201399 Nickodam  
Building Type: User

2021-01-07

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

### Component Loads for Room #1: Main

| Window       | Panes/Type   | Frame | U    | Orientation | Area(sqft)  | X | HTM= | Load      |
|--------------|--------------|-------|------|-------------|-------------|---|------|-----------|
| 1            | 2, NFRC 0.22 | Metal | 0.32 | N           | 39.0        |   | 12.8 | 499 Btuh  |
| 2            | 2, NFRC 0.22 | Metal | 0.32 | N           | 20.0        |   | 12.8 | 256 Btuh  |
| 3            | 2, NFRC 0.22 | Metal | 0.32 | W           | 11.1        |   | 12.8 | 142 Btuh  |
| 4            | 2, NFRC 0.22 | Metal | 0.32 | W           | 13.6        |   | 12.8 | 174 Btuh  |
| 5            | 2, NFRC 0.22 | Metal | 0.32 | N           | 27.2        |   | 12.8 | 348 Btuh  |
| 6            | 2, NFRC 0.22 | Metal | 0.32 | N           | 23.3        |   | 12.8 | 299 Btuh  |
| 7            | 2, NFRC 0.22 | Metal | 0.32 | N           | 24.1        |   | 12.8 | 309 Btuh  |
| 8            | 2, NFRC 0.22 | Metal | 0.32 | E           | 12.1        |   | 12.8 | 154 Btuh  |
| 9            | 2, NFRC 0.22 | Metal | 0.32 | E           | 10.5        |   | 12.8 | 134 Btuh  |
| 10           | 2, NFRC 0.22 | Metal | 0.32 | E           | 62.2        |   | 12.8 | 796 Btuh  |
| 11           | 2, NFRC 0.22 | Metal | 0.32 | S           | 13.3        |   | 12.8 | 171 Btuh  |
| 12           | 2, NFRC 0.22 | Metal | 0.32 | S           | 8.9         |   | 12.8 | 114 Btuh  |
| 13           | 2, NFRC 0.22 | Metal | 0.32 | S           | 32.9        |   | 12.8 | 421 Btuh  |
| 14           | 2, NFRC 0.22 | Metal | 0.32 | W           | 23.3        |   | 12.8 | 299 Btuh  |
| 15           | 2, NFRC 0.22 | Metal | 0.32 | W           | 19.4        |   | 12.8 | 249 Btuh  |
| 16           | 2, NFRC 0.22 | Metal | 0.32 | S           | 28.8        |   | 12.8 | 368 Btuh  |
| 17           | 2, NFRC 0.22 | Metal | 0.32 | SW          | 12.3        |   | 12.8 | 158 Btuh  |
| 18           | 2, NFRC 0.22 | Metal | 0.32 | W           | 28.8        |   | 12.8 | 368 Btuh  |
| 19           | 2, NFRC 0.22 | Metal | 0.32 | NW          | 12.3        |   | 12.8 | 158 Btuh  |
| 20           | 2, NFRC 0.22 | Metal | 0.32 | N           | 11.1        |   | 12.8 | 142 Btuh  |
| 21           | 2, NFRC 0.22 | Metal | 0.32 | N           | 12.2        |   | 12.8 | 156 Btuh  |
| 22           | 2, NFRC 0.22 | Metal | 0.32 | N           | 5.0         |   | 12.8 | 64 Btuh   |
| 23           | 2, NFRC 0.22 | Metal | 0.32 | S           | 6.7         |   | 12.8 | 85 Btuh   |
| 24           | 2, NFRC 0.22 | Metal | 0.32 | W           | 17.0        |   | 12.8 | 218 Btuh  |
| 25           | 2, NFRC 0.22 | Metal | 0.32 | N           | 11.7        |   | 12.8 | 150 Btuh  |
| Window Total |              |       |      |             | 487.0(sqft) |   |      | 6233 Btuh |

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title:  
201399 Nickodam  
Building Type: User

2021-01-07

| Walls        | Type                                                   | Ornt.      | Ueff.   | R-Value<br>(Cav/Sh) | Area X           | HTM=           | Load       |
|--------------|--------------------------------------------------------|------------|---------|---------------------|------------------|----------------|------------|
| 1            | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 85               | 3.55           | 302 Btuh   |
| 2            | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 108              | 3.55           | 383 Btuh   |
| 3            | Frame - Wood                                           | - Ext      | (0.077) | 19.0/0.0            | 108              | 3.09           | 335 Btuh   |
| 4            | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 43               | 3.55           | 151 Btuh   |
| 5            | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 315              | 3.55           | 1118 Btuh  |
| 6            | Frame - Wood                                           | - Adj      | (0.089) | 13.0/0.0            | 141              | 3.55           | 501 Btuh   |
| 7            | Frame - Wood                                           | - Adj      | (0.089) | 13.0/0.0            | 59               | 3.55           | 208 Btuh   |
| 8            | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 13               | 3.55           | 46 Btuh    |
| 9            | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 21               | 3.55           | 75 Btuh    |
| 10           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 76               | 3.55           | 270 Btuh   |
| 11           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 75               | 3.55           | 267 Btuh   |
| 12           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 41               | 3.55           | 145 Btuh   |
| 13           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 18               | 3.55           | 64 Btuh    |
| 14           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 26               | 3.55           | 91 Btuh    |
| 15           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 18               | 3.55           | 64 Btuh    |
| 16           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 35               | 3.55           | 123 Btuh   |
| 17           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 152              | 3.55           | 538 Btuh   |
| 18           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 26               | 3.55           | 92 Btuh    |
| 19           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 34               | 3.55           | 122 Btuh   |
| 20           | Frame - Wood                                           | - Ext      | (0.089) | 13.0/0.0            | 26               | 3.55           | 92 Btuh    |
|              | Wall Total                                             |            |         |                     |                  | 1419(sqft)     | 4988 Btuh  |
| Doors        | Type                                                   | Storm      | Ueff.   |                     | Area X           | HTM=           | Load       |
| 1            | Insulated - Exterior,                                  | n          | (0.400) |                     | 13               | 16.0           | 213 Btuh   |
| 2            | Insulated - Exterior,                                  | n          | (0.400) |                     | 7                | 16.0           | 107 Btuh   |
| 3            | Insulated - Garage,                                    | n          | (0.400) |                     | 18               | 16.0           | 284 Btuh   |
| 4            | Insulated - Exterior,                                  | n          | (0.400) |                     | 7                | 16.0           | 107 Btuh   |
| 5            | Insulated - Exterior,                                  | n          | (0.400) |                     | 7                | 16.0           | 107 Btuh   |
|              | Door Total                                             |            |         |                     |                  | 51(sqft)       | 818Btuh    |
| Ceilings     | Type/Color/Surface                                     |            | Ueff.   | R-Value             | Area X           | HTM=           | Load       |
| 1            | Vented Attic/D/Shing                                   |            | (0.025) | 38.0/0.0            | 1732             | 1.0            | 1758 Btuh  |
| 2            | Knee Wall/D/Shing                                      |            | (0.025) | 38.0/0.0            | 150              | 1.0            | 152 Btuh   |
|              | Ceiling Total                                          |            |         |                     |                  | 1882(sqft)     | 1911Btuh   |
| Floors       | Type                                                   |            | Ueff.   | R-Value             | Size X           | HTM=           | Load       |
| 1            | Slab On Grade                                          |            | (1.180) | 0.0                 | 204.0 ft(perim.) | 47.2           | 9629 Btuh  |
|              | Floor Total                                            |            |         |                     |                  | 1700 sqft      | 9629 Btuh  |
|              | Room Envelope Subtotal:                                |            |         |                     |                  |                | 23579 Btuh |
| Infiltration | Type                                                   | Wholehouse | ACH     | Room Volume         | Wall Ratio       | CFM=           |            |
|              | Natural                                                |            | 0.23    | 16490               | 0.90             | 67.5           | 2954 Btuh  |
| Duct load    | Average sealed, Supply(R8.0-Attic), Return(R8.0-Attic) |            |         |                     |                  | (DLM of 0.147) | 3888 Btuh  |

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title:  
201399 Nickodam  
Building Type: User

2021-01-07

|                |                               |                   |
|----------------|-------------------------------|-------------------|
| <b>Room #1</b> | <b>Sensible Room Subtotal</b> | <b>30422 Btuh</b> |
|----------------|-------------------------------|-------------------|

### Component Loads for Room #2: bonus Room

| Window         | Panes/Type                                                            | Frame      | U       | Orientation      | Area(sqft) | X    | HTM= | Load             |
|----------------|-----------------------------------------------------------------------|------------|---------|------------------|------------|------|------|------------------|
| 26             | 2, NFRC 0.22                                                          | Metal      | 0.32    | S                | 8.3        |      | 12.8 | 107 Btuh         |
|                | Window Total                                                          |            |         |                  | 8.3(sqft)  |      |      | 107 Btuh         |
| Walls          | Type                                                                  | Ornt.      | Ueff.   | R-Value (Cav/Sh) | Area       | X    | HTM= | Load             |
| 21             | Frame - Wood                                                          | - Ext      | (0.089) | 13.0/0.0         | 154        |      | 3.55 | 547 Btuh         |
|                | Wall Total                                                            |            |         |                  | 154(sqft)  |      |      | 547 Btuh         |
| Ceilings       | Type/Color/Surface                                                    |            | Ueff.   | R-Value          | Area       | X    | HTM= | Load             |
| 3              | Knee Wall/D/Shing                                                     |            | (0.025) | 38.0/0.0         | 500        |      | 1.0  | 508 Btuh         |
| 4              | Cathedral/D/Shing                                                     |            | (0.026) | 38.0/0.0         | 333        |      | 1.0  | 342 Btuh         |
|                | Ceiling Total                                                         |            |         |                  | 833(sqft)  |      |      | 850Btuh          |
| Floors         | Type                                                                  |            | Ueff.   | R-Value          | Size       | X    | HTM= | Load             |
| 2              | Raised Wood - Adj                                                     |            | (0.050) | 19.0             | 333.0 sqft |      | 2.0  | 668 Btuh         |
|                | Floor Total                                                           |            |         |                  | 333 sqft   |      |      | 668 Btuh         |
|                | Room Envelope Subtotal:                                               |            |         |                  |            |      |      | 2172 Btuh        |
| Infiltration   | Type                                                                  | Wholehouse | ACH     | Room Volume      | Wall Ratio | CFM= |      |                  |
|                | Natural                                                               |            | 0.23    | 2664             | 0.10       | 7.3  |      | 321 Btuh         |
| Duct load      | Average sealed, Supply(R8.0-Attic), Return(R8.0-Attic) (DLM of 0.147) |            |         |                  |            |      |      | 365 Btuh         |
| <b>Room #2</b> | <b>Sensible Room Subtotal</b>                                         |            |         |                  |            |      |      | <b>2858 Btuh</b> |

### WHOLE HOUSE TOTALS

|                           |                                                                                  |                                    |
|---------------------------|----------------------------------------------------------------------------------|------------------------------------|
| <b>Totals for Heating</b> | Subtotal Sensible Heat Loss<br>Ventilation Sensible Heat Loss<br>Total Heat Loss | 33280 Btuh<br>0 Btuh<br>33280 Btuh |
|---------------------------|----------------------------------------------------------------------------------|------------------------------------|

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title:  
201399 Nickodam  
Building Type: User

2021-01-07

### EQUIPMENT

|                       |   |            |
|-----------------------|---|------------|
| 1. Electric Heat Pump | # | 36000 Btuh |
|-----------------------|---|------------|

Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)  
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)  
U - (Window U-Factor)  
HTM - (ManualJ Heat Transfer Multiplier)



Version 8

# System Sizing Calculations - Summer

## Residential Load - Room by Room Component Details

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title:  
201399 Nickodam

2021-01-07

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

### Component Loads for Room #1: Main

| Window       | Type*  |            |    |      |    |      | Overhang |       | Window Area(sqft) |        |          | HTM    |          | Load      |      |
|--------------|--------|------------|----|------|----|------|----------|-------|-------------------|--------|----------|--------|----------|-----------|------|
|              | Panes  | SHGC       | U  | InSh | IS | Ornt | Len      | Hgt   | Gross             | Shaded | Unshaded | Shaded | Unshaded |           |      |
| 1            | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 8.5ft    | 1.0ft | 39.0              | 36.3   | 2.7      | 11     | 27       | 462       | Btuh |
| 2            | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 8.5ft    | 1.0ft | 20.0              | 18.2   | 1.8      | 11     | 27       | 245       | Btuh |
| 3            | 2 NFRC | 0.22, 0.32 | No | No   | W  |      | 1.5ft    | 1.5ft | 11.1              | 0.0    | 11.1     | 11     | 11       | 119       | Btuh |
| 4            | 2 NFRC | 0.22, 0.32 | No | No   | W  |      | 1.5ft    | 1.5ft | 13.6              | 0.0    | 13.6     | 11     | 11       | 146       | Btuh |
| 5            | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 1.5ft    | 8.5ft | 27.2              | 0.0    | 27.2     | 11     | 27       | 743       | Btuh |
| 6            | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 1.5ft    | 8.5ft | 23.3              | 0.0    | 23.3     | 11     | 27       | 637       | Btuh |
| 7            | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 1.5ft    | 5.5ft | 24.1              | 0.0    | 24.1     | 11     | 27       | 658       | Btuh |
| 8            | 2 NFRC | 0.22, 0.32 | No | No   | E  |      | 1.5ft    | 1.5ft | 12.1              | 12.1   | 0.0      | 11     | 12       | 129       | Btuh |
| 9            | 2 NFRC | 0.22, 0.32 | No | No   | E  |      | 1.5ft    | 1.5ft | 10.5              | 10.5   | 0.0      | 11     | 12       | 112       | Btuh |
| 10           | 2 NFRC | 0.22, 0.32 | No | No   | E  |      | 1.5ft    | 9.0ft | 62.2              | 0.0    | 62.2     | 11     | 12       | 773       | Btuh |
| 11           | 2 NFRC | 0.22, 0.32 | No | No   | S  |      | 11.8f    | 1.0ft | 13.3              | 13.3   | 0.0      | 11     | 27       | 143       | Btuh |
| 12           | 2 NFRC | 0.22, 0.32 | No | No   | S  |      | 11.8f    | 1.0ft | 8.9               | 8.9    | 0.0      | 11     | 27       | 95        | Btuh |
| 13           | 2 NFRC | 0.22, 0.32 | No | No   | S  |      | 9.5ft    | 1.0ft | 32.9              | 32.9   | 0.0      | 11     | 27       | 352       | Btuh |
| 14           | 2 NFRC | 0.22, 0.32 | No | No   | W  |      | 8.5ft    | 1.0ft | 23.3              | 0.0    | 23.3     | 11     | 11       | 250       | Btuh |
| 15           | 2 NFRC | 0.22, 0.32 | No | No   | W  |      | 9.5ft    | 1.0ft | 19.4              | 0.0    | 19.4     | 11     | 11       | 208       | Btuh |
| 16           | 2 NFRC | 0.22, 0.32 | No | No   | S  |      | 21.5f    | 1.0ft | 28.8              | 28.8   | 0.0      | 11     | 27       | 308       | Btuh |
| 17           | 2 NFRC | 0.22, 0.32 | No | No   | SW |      | 1.5ft    | 1.5ft | 12.3              | 0.0    | 12.3     | 11     | 21       | 257       | Btuh |
| 18           | 2 NFRC | 0.22, 0.32 | No | No   | W  |      | 1.5ft    | 1.5ft | 28.8              | 0.0    | 28.8     | 11     | 11       | 308       | Btuh |
| 19           | 2 NFRC | 0.22, 0.32 | No | No   | NW |      | 1.5ft    | 1.5ft | 12.3              | 0.0    | 12.3     | 11     | 21       | 257       | Btuh |
| 20           | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 22.8f    | 1.0ft | 11.1              | 11.1   | 0.0      | 11     | 27       | 119       | Btuh |
| 21           | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 22.8f    | 1.0ft | 12.2              | 12.2   | 0.0      | 11     | 27       | 131       | Btuh |
| 22           | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 22.8f    | 0.0ft | 5.0               | 5.0    | 0.0      | 11     | 27       | 54        | Btuh |
| 23           | 2 NFRC | 0.22, 0.32 | No | No   | S  |      | 11.8f    | 0.0ft | 6.7               | 6.7    | 0.0      | 11     | 27       | 71        | Btuh |
| 24           | 2 NFRC | 0.22, 0.32 | No | No   | W  |      | 8.5ft    | 1.0ft | 17.0              | 0.0    | 17.0     | 11     | 11       | 182       | Btuh |
| 25           | 2 NFRC | 0.22, 0.32 | No | No   | N  |      | 1.0ft    | 2.0ft | 11.7              | 0.0    | 11.7     | 11     | 27       | 319       | Btuh |
| Window Total |        |            |    |      |    |      |          |       | 487 (sqft)        |        |          |        |          | 7078 Btuh |      |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title: Climate:FL\_GAINESVILLE\_REGIONAL\_A  
201399 Nickodam

2021-01-07

| Walls         | Type                                                   | U-Value        | R-Value       | Area(sqft)          | HTM            | Load       |
|---------------|--------------------------------------------------------|----------------|---------------|---------------------|----------------|------------|
|               |                                                        |                | Cav/Sheath    |                     |                |            |
| 1             | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 85.1                | 2.3            | 193 Btuh   |
| 2             | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 107.9               | 2.3            | 244 Btuh   |
| 3             | Frame - Wood - Ext                                     | 0.08           | 19.0/0.0      | 108.3               | 1.7            | 179 Btuh   |
| 4             | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 42.5                | 2.3            | 96 Btuh    |
| 5             | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 314.9               | 2.3            | 713 Btuh   |
| 6             | Frame - Wood - Adj                                     | 0.09           | 13.0/0.0      | 141.1               | 1.7            | 238 Btuh   |
| 7             | Frame - Wood - Adj                                     | 0.09           | 13.0/0.0      | 58.7                | 1.7            | 99 Btuh    |
| 8             | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 12.9                | 2.3            | 29 Btuh    |
| 9             | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 21.2                | 2.3            | 48 Btuh    |
| 10            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 76.1                | 2.3            | 172 Btuh   |
| 11            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 75.3                | 2.3            | 170 Btuh   |
| 12            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 40.9                | 2.3            | 92 Btuh    |
| 13            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 17.9                | 2.3            | 41 Btuh    |
| 14            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 25.7                | 2.3            | 58 Btuh    |
| 15            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 17.9                | 2.3            | 41 Btuh    |
| 16            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 34.6                | 2.3            | 78 Btuh    |
| 17            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 151.7               | 2.3            | 343 Btuh   |
| 18            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 26.0                | 2.3            | 59 Btuh    |
| 19            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 34.3                | 2.3            | 78 Btuh    |
| 20            | Frame - Wood - Ext                                     | 0.09           | 13.0/0.0      | 26.0                | 2.3            | 59 Btuh    |
|               | Wall Total                                             |                |               | 1419 (sqft)         |                | 3031 Btuh  |
| Doors         | Type                                                   |                |               | Area (sqft)         | HTM            | Load       |
| 1             | Insulated - Exterior                                   |                |               | 13.3                | 12.0           | 160 Btuh   |
| 2             | Insulated - Exterior                                   |                |               | 6.7                 | 12.0           | 80 Btuh    |
| 3             | Insulated - Garage                                     |                |               | 17.8                | 12.0           | 213 Btuh   |
| 4             | Insulated - Exterior                                   |                |               | 6.7                 | 12.0           | 80 Btuh    |
| 5             | Insulated - Exterior                                   |                |               | 6.7                 | 12.0           | 80 Btuh    |
|               | Door Total                                             |                |               | 51 (sqft)           |                | 613 Btuh   |
| Ceilings      | Type/Color/Surface                                     | U-Value        | R-Value       | Area(sqft)          | HTM            | Load       |
| 1             | Vented Attic/DarkShingle                               | 0.025          | 38.0/0.0      | 1732.0              | 1.37           | 2374 Btuh  |
| 2             | Knee Wall/DarkShingle                                  | 0.025          | 38.0/0.0      | 150.0               | 1.37           | 206 Btuh   |
|               | Ceiling Total                                          |                |               | 1882 (sqft)         |                | 2579 Btuh  |
| Floors        | Type                                                   |                | R-Value       | Size                | HTM            | Load       |
| 1             | Slab On Grade                                          |                | 0.0           | 1700 (ft-perimeter) | 0.0            | 0 Btuh     |
|               | Floor Total                                            |                |               | 1700.0 (sqft)       |                | 0 Btuh     |
|               | Zone Envelope Subtotal:                                |                |               |                     |                | 13302 Btuh |
| Infiltration  | Type                                                   | Wholehouse ACH | Volume(cuft)  | Wall Ratio          | CFM=           | Load       |
|               | Natural                                                | 0.18           | 16490         | 0.90                | 50.6           | 1053 Btuh  |
| Internal gain |                                                        | Occupants      | Btuh/occupant | Appliance           |                | Load       |
|               |                                                        | 6              | X 230         | +                   | 2400           | 3780 Btuh  |
|               | Sensible Envelope Load:                                |                |               |                     |                | 18134 Btuh |
| Duct load     | Average sealed, Supply(R8.0-Attic), Return(R8.0-Attic) |                |               |                     | (DGM of 0.204) | 3708 Btuh  |
|               | Sensible Zone Load                                     |                |               |                     |                | 21842 Btuh |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title: Climate:FL\_GAINESVILLE\_REGIONAL\_A  
201399 Nickodam

2021-01-07

### Component Loads for Room #2: bonus Room

| Window        | Type*                                                  |            |    |      |    |      | Overhang       |       | Window Area(sqft)      |        |              | HTM            |          | Load      |          |  |
|---------------|--------------------------------------------------------|------------|----|------|----|------|----------------|-------|------------------------|--------|--------------|----------------|----------|-----------|----------|--|
|               | Panes                                                  | SHGC       | U  | InSh | IS | Ornt | Len            | Hgt   | Gross                  | Shaded | Unshaded     | Shaded         | Unshaded |           |          |  |
| 26            | 2 NFRC                                                 | 0.22, 0.32 | No | No   | S  |      | 1.5ft          | 2.0ft | 8.3                    | 0.0    | 8.3          | 11             | 27       | 227 Btuh  |          |  |
|               | Window Total                                           |            |    |      |    |      |                |       | 8 (sqft)               |        |              |                |          | 227 Btuh  |          |  |
| Walls         | Type                                                   |            |    |      |    |      | U-Value        |       | R-Value                |        | Area(sqft)   |                | HTM      |           | Load     |  |
| 21            | Frame - Wood - Ext                                     |            |    |      |    |      | 0.09           |       | Cav/Sheath<br>13.0/0.0 |        | 154.2        |                | 2.3      |           | 349 Btuh |  |
|               | Wall Total                                             |            |    |      |    |      |                |       |                        |        | 154 (sqft)   |                |          |           | 349 Btuh |  |
| Ceilings      | Type/Color/Surface                                     |            |    |      |    |      | U-Value        |       | R-Value                |        | Area(sqft)   |                | HTM      |           | Load     |  |
| 3             | Knee Wall/DarkShingle                                  |            |    |      |    |      | 0.025          |       | 38.0/0.0               |        | 500.0        |                | 1.37     |           | 685 Btuh |  |
| 4             | Cath/Sngl Assem/DarkShingle                            |            |    |      |    |      | 0.026          |       | 38.0/0.0               |        | 333.0        |                | 0.67     |           | 223 Btuh |  |
|               | Ceiling Total                                          |            |    |      |    |      |                |       |                        |        | 833 (sqft)   |                |          |           | 908 Btuh |  |
| Floors        | Type                                                   |            |    |      |    |      |                |       | R-Value                |        | Size         |                | HTM      |           | Load     |  |
| 2             | Raised Wood - Adj                                      |            |    |      |    |      |                |       | 19.0                   |        | 333 (sqft)   |                | 0.7      |           | 234 Btuh |  |
|               | Floor Total                                            |            |    |      |    |      |                |       |                        |        | 333.0 (sqft) |                |          |           | 234 Btuh |  |
|               | Zone Envelope Subtotal:                                |            |    |      |    |      |                |       |                        |        |              |                |          | 1718 Btuh |          |  |
| Infiltration  | Type                                                   |            |    |      |    |      | Wholehouse ACH |       | Volume(cuft)           |        | Wall Ratio   |                | CFM=     |           | Load     |  |
|               | Natural                                                |            |    |      |    |      | 0.18           |       | 2664                   |        | 0.10         |                | 5.5      |           | 114 Btuh |  |
| Internal gain |                                                        |            |    |      |    |      | Occupants      |       | Btuh/occupant          |        | Appliance    |                | Load     |           |          |  |
|               |                                                        |            |    |      |    |      | 2              |       | X 230                  |        | +            |                | 0        |           | 460 Btuh |  |
|               | Sensible Envelope Load:                                |            |    |      |    |      |                |       |                        |        |              |                |          | 2292 Btuh |          |  |
| Duct load     | Average sealed, Supply(R8.0-Attic), Return(R8.0-Attic) |            |    |      |    |      |                |       |                        |        |              | (DGM of 0.204) |          | 469 Btuh  |          |  |
|               | Sensible Zone Load                                     |            |    |      |    |      |                |       |                        |        |              |                |          | 2761 Btuh |          |  |

The following window Excursion will be assigned to the system loads.

|           |                             |         |
|-----------|-----------------------------|---------|
| Windows   | July excursion for System 1 | 28 Btuh |
|           | Excursion Subtotal:         | 28 Btuh |
| Duct load |                             | 6 Btuh  |
|           | Sensible Excursion Load     | 34 Btuh |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Nickodam Res  
525 SW hunter Rd  
Lake City, FL

Project Title:  
201399 Nickodam

Climate:FL\_GAINESVILLE\_REGIONAL\_A

2021-01-07

### WHOLE HOUSE TOTALS

|                                           |                                                           |                   |
|-------------------------------------------|-----------------------------------------------------------|-------------------|
| <b>Whole House<br/>Totals for Cooling</b> | <b>Sensible Envelope Load All Zones</b>                   | <b>20455 Btuh</b> |
|                                           | Sensible Duct Load                                        | 4182 Btuh         |
|                                           | <b>Total Sensible Zone Loads</b>                          | <b>24637 Btuh</b> |
|                                           | Sensible ventilation                                      | 0 Btuh            |
|                                           | Blower                                                    | 0 Btuh            |
|                                           | <b>Total sensible gain</b>                                | <b>24637 Btuh</b> |
|                                           | Latent infiltration gain (for 51 gr. humidity difference) | 1936 Btuh         |
|                                           | Latent ventilation gain                                   | 0 Btuh            |
|                                           | Latent duct gain                                          | 1166 Btuh         |
|                                           | Latent occupant gain (8.0 people @ 200 Btuh per person)   | 1600 Btuh         |
|                                           | Latent other gain                                         | 0 Btuh            |
|                                           | <b>Latent total gain</b>                                  | <b>4702 Btuh</b>  |
|                                           | <b>TOTAL GAIN</b>                                         | <b>29340 Btuh</b> |

### EQUIPMENT

|                 |   |            |
|-----------------|---|------------|
| 1. Central Unit | # | 36000 Btuh |
|-----------------|---|------------|

\*Key: Window types (Panels - Number and type of panes of glass)

(SHGC - Shading coefficient of glass as SHGC numerical value)

(U - Window U-Factor)

(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))

- For Blinds: Assume medium color, half closed

For Draperies: Assume medium weave, half closed

For Roller shades: Assume translucent, half closed

(IS - Insect screen: none(N), Full(F) or Half(½))

(Ornt - compass orientation)



Version 8