

0516074

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 1 of 8)

CF-4R

1328 Las Lornitas Cir Project Address	ONE HOUR / Switzerland Air / 588096 Contractor Name / License No.
	05-16074 Permit Number
Contractor Contact John Gustason	Telephone 916-768-9459 18900 Permit Number
HERS Rater <i>[Signature]</i>	Telephone Sample Group Number
March 13, 2006 Date	CC14-1798359485 Certificate Number
Firm: Energy Analysis and Comfort Solutions, INC.	HERS Provider: CalCERTS
Street Address: P.O. Box 2233	City/State/Zip: Orangevale / CA / 95662

Copies to: Homeowner, HERS Provider and Building Department

This CF-4R has been registered with the CalCERTS® registry in accordance with the Title 24 & Title 20 of the CCR. CalCERTS® is an approved HERS provider by the California Energy Commission.

HERS RATER COMPLIANCE STATEMENT

The house was Tested Approved as part of sample testing, but was not tested. As the HERS rater providing diagnostic testing and field verification, I certify that the house identified on this form complies with the diagnostic tested compliance requirements as checked on this form. The HERS rater must check and verify that the new distribution system is fully ducted and correct tape is used before a CF-4R may be released on every tested building. The HERS rater must not release the CF-4R until a properly completed and signed CF-6R has been received for the sample and tested buildings.

The installer has provided a copy of the CF-6R (Installation Certificate).

New Distribution system is fully ducted (i.e., does not use building cavities as plenums or platform returns in lieu of ducts).

New systems where cloth backed, rubber adhesive duct tape is installed, mastic and drawbands are used in combination with cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

MINIMUM REQUIREMENTS FOR DUCT LEAKAGE REDUCTION COMPLIANCE CREDIT:

NEW CONSTRUCTION			
		Measured Values	
1	Duct Pressurization Test Results (CFM @ 25 Pa) Enter Tested Leakage Flow in CFM:	N/A	
2	Fan Flow: Calculated (Nominal <input checked="" type="radio"/> Cooling <input checked="" type="radio"/> Heating) or <input checked="" type="radio"/> Measured Enter Total Fan Flow in CFM:	Not Tested	
3	Pass if Leakage Percentage $\leq 0\%$ [$100 \times (\text{Line 1} / \text{Line 2})$]:	N/A	N/A
ALTERATIONS: Duct System and/or HVAC Equipment Change-Out			
4	Enter Tested Leakage Flow in CFM from CF-6R: Pre-Test of Existing Duct System Prior to Duct System Alteration and/or Equipment Change-Out.	Not Tested	
5	Enter Tested Leakage Flow in CFM: Final Test of New Duct System or Altered Duct System for Duct System Alteration and/or Equipment Change-Out.	Not Tested	
6	Enter Reduction in Leakage for Altered Duct System [Line 4 - Line 5] - (Only if Applicable)	Not Tested	
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)	Not Tested	
8	Entire New Duct System - Pass if Leakage Percentage $\leq 6\%$ [$100 \times (\text{Line 5} / \text{Line 2})$]:	Not Tested	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
TEST OR VERIFICATION STANDARDS: For Altered Duct System and/or HVAC Equipment Change-Out, use one of the following four Test or Verification Standards for compliance:			
9	Pass if Leakage Percentage $\leq 15\%$ [$100 \times (\text{Line 5} / \text{Line 2})$]:	Not Tested	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
10	Pass if Leakage to Outside Percentage $\leq 10\%$ [$100 \times (\text{Line 7} / \text{Line 2})$]:	Not Tested	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
11	Pass if Leakage Reduction Percentage $\geq 60\%$ [$100 \times (\text{Line 6} / \text{Line 4})$] and Verification by Smoke Test and Visual Inspection	Not Tested	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
12	Pass if Sealing of all Accessible Leaks and Verification by Smoke Test and Visual Inspection		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Pass if One of Lines #9 through #12 pass		<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 3 of 8)

CF-4R

1328 Las Lomitas Cir Project Address		ONE HOUR / Switzerland Air / 588096 Contractor Name / License No.	
		05-16074	
Contractor Contact John Gustason		Telephone 916-768-9459	Permit Number 18900
HERS Rater <i>[Signature]</i>		Telephone March 13, 2006	Sample Group Number CC14-1798359485
Certifying Signature		Date	Certificate Number
Firm:	Energy Analysis and Comfort Solutions, Inc.	HERS Provider: CalCERTS	
Street Address:	P.O. Box 2233	City/State/Zip: Orangevale / CA / 95662	

Copies to: Homeowner, HERS Provider and Building Department

This CF-4R has been registered with the CalCERTS® registry in accordance with the Title 24 & Title 20 of the CCR. CalCERTS® is an approved HERS provider by the California Energy Commission.

HERS RATER COMPLIANCE STATEMENT

The house was Tested Approved as part of sample testing, but was not tested.
 As the HERS rater providing diagnostic testing and field verification, I certify that the house identified on this form complies with the diagnostic tested compliance requirements as checked on this form.
 The installer has provided a copy of the CF-6R (Installation Certificate).

THERMOSTATIC EXPANSION VALVE (TXV):

Access is provided for inspection. The procedure shall consist of visual verification that the TXV is installed on the system and installation of the specific equipment shall be verified.

HVAC System TXV Pass Fail

117636

Contractor Information			
Contractor Name	Address	City	Zip
ONE HOUR HEAT AND AIR	3845 ATHERTON RD #4	ROCKLIN	95765
Company Contact	Est Start	Est Complete	Job Number
MIKE ALLEN	4-Oct-05	4-Oct-05	
			Permit Number
			License #
			Company ID #
			40003
Residential Project Information			
Owner's Name/ Project Title	Address	City	Zip
MARTIN RODRIGUEZ	1328 LAS LOMITAS CIR	SACRAMENTO	95831
County	Bid Dept - Permit From	Utility	Sample
SACRAMENTO	SAC CITY	SMUD	4
			Plan #
			Group #
			House #
			40003
			510A
			1067
Building Information			
Multi Family	# of Dwellings	Front Orientation (N,S,E,W)	E
Single Family	Slab Floor	Number of Stories	1
Addition-new rm	Raised Floor	Conditioned Floor Area	1700
Alteration-change	Climate Zone	Maximum Ceiling Height	8
			Ft
Package Unit	Gas / Electric	Heat Load	62K
Split System	Heat Pump	Cool Load	30K
Heat System Mfg	GOODMAN	Duct Location	ATTIC
Model #	GMS80703AXA	Garage	Duct -R value
Serial #	507750182		R4
		Heat: BTU Input	70K
		Cooling: BTUs	36K
		Coil System Mfg	ADP
		Model #	JE36436C145
		Serial #	9020002

Title 24 requirements - contractor and HERS verification check list

CF6R forms on job site	Permit #	_____
Furnace Mfg and model # documented	Duct System - New or Exist	_____
Furnace serial # documented	CFM Leakage	_____
Coil Mfg and model # documented	Leakage pressure	_____
Coil serial # documented	Equipment air flow in CFM	_____
Condenser Mfg and model # documented	System % leakage	_____
Condenser serial # documented	Test Date	_____
TXV verified on split system	ARI #	_____
High EER verified on options	Notes:	_____
Air distribution system fully ducted		_____
Existing duct tape has draw bands and mastic		_____
All Supply registers sealed for test		_____
All Return grilles sealed for test		_____
Duct blaster w/ rings installed correctly		_____
Smoke required to pass test		_____
All register & grille seals removed	Signature	_____
Thermostat turned on after test		_____

MARTIN RODRIGUEZ

Project Title

21 FEB 06

Date

1328 LAS LOMITAS CIR

SACRAMENTO CA 95831

Project Address

Building Permit #

MIKE ALLEN

916 442 5542

Documentation Author

Telephone

Plan Check / Date

Prescriptive

12

Compliance Method (Prescriptive)

Climate Zone

Field Check / Date

Enforcement Agency Use Only

Alternative Component Package Method: (check one) C D D (Alternative)

Package C and Package D choices require HERS rater field verification and/or diagnostic testing (see CF-1R page 3)

For Package D Alternative see Appendix B Table 151-C Footnotes 7-14

GENERAL INFORMATION

Total Conditioned Floor Area (CFA) 1700 ft² Average Ceiling Height: 8 ft

Maximum Allowed West Facing Fenestration Products Per Table 151-B or 151-C — (5% X CFA) NA ft²

Maximum Allowed Total Fenestration Products Per Table 151-B or 151-C — (20% X CFA) NA ft²

Building Type: (check one or more) Single Family Multifamily Addition Alteration

(If adding fenestration fill out WS-4R, Fenestration Maximum Allowed Area Worksheet and see Section 8.3.2 for Additions and 8.3.3 for Alterations.)

Number of Stories: 1 Number of Dwelling Units: 2

Floor Construction Type: raised Slab/Raised Floor (circle one or both)

Front Orientation: E North / South / East / West / All Orientations (input front orientation in degrees from True North and circle one).

RADIANT BARRIER (required in climate zones 2, 4, 8-16)

OPAQUE SURFACES INCLUDING OPAQUE DOORS

Component Type (Wall, Roof, Floor, Slab Edge, Doors)	Frame Type (Wood or Metal)	Cavity Insulation R-Value	Continuous Insulation R-Value	Assembly Ufactor (for wood, metal frame and mass assemblies) 1	Joint Appendix IV Reference	Roof Radiant Barrier Installed Yes or No	Location/Comments (attic, garage, typical, etc.)

1) See Joint Appendix IV in Section IV.2, IV.3 and IV.4, which is the basis for the U-factor criterion. U-factors can not exceed prescriptive value to show equivalence to R-values.

MARTIN RODRIGUEZ

21 FEB 06

Project Title

Date

FENESTRATION PRODUCTS – U-FACTOR AND SHGC

FENESTRATION MAXIMUM ALLOWED AREA WORKSHEET WS-4R –must be included for New Construction, Additions and Alterations.

Fenestration #/Type/Pos. (Front, Left, Rear, Right, Skylight)	Orientation, N, S, E, W/1	Area (ft ²)	U-factor ²	U-factor Source ³	SHGC ⁴	SHGC Source ⁵	Exterior Shading/Overhangs ^{6, 7} CK box if WS-3R is included	

- 1) Skylights are now included in West-facing fenestration area if the skylights are tilted to the west or tilted in any direction when the pitch is less than 1:12. See §1611.3C and in Section 3.2.3 of the Residential Manual
- 2) Enter values in this column are either NFRC Rated value or from Standards default Table 116A.
- 3) Indicate source either from NFRC or Table 116A.
- 4) Enter values in this column from NFRC or from Standards Default Table 116B or adjusted SHGC from WS-3R.
- 5) Indicate source either from NFRC or Table 116B.
- 6) Shading Devices are defined in Table 3-3 in the Residential Manual and see WS-3R to calculate Exterior Shading devices.
- 7) See Section 3.2.4 in the Residential Manual.

HVAC SYSTEMS

Heating Equipment Type and Capacity furnace, heat pump, boiler, etc.	Minimum Efficiency (AFUE or HSPF)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Configuration (split or package)
G/E	80.00 AFUE	ATTIC	R4	Programable	Split Sys
70K BTU	0 HSPF				

Cooling Equipment Type and Capacity (A/C, Heat Pump, Evap Cool)	Minimum Efficiency (SEER or EER)	Duct Location (attic, etc.)	Duct R-Value	Thermostat Type	Configuration (split or package)
G/E	14 SEER	ATTIC	R4	Programable	Split Sys
36K BTU	12 EER				

MARTIN RODRIGUEZ

21 FEB 06

Project Title

Date

SEALED DUCTS and TXVs (or Alternative Measures)

A signed CF-4R Form must be provided to the building department for each home for which the following are required.

<input checked="" type="checkbox"/>	Sealed Ducts (all climate zones) (installer testing and certification and HERS rater field verification required.)
<input checked="" type="checkbox"/>	TXVs, readily accessible (climate zones 2 and 8-15 only) (installer testing and certification and HERS Rater field verification required.)
<input type="checkbox"/>	Refrigerant Charge (climate zones 2 and 8-15 only) (installer testing and certification and HERS Rater field verification required.)

OR

<input type="checkbox"/>	Alternative to Sealed Ducts and Refrigerant Charge /TXVs (See Package D Alternative Package Features for Project Climate Zone in the RM Appendix B Table 151-C, Footnotes 7-14.
--------------------------	---

OR

<input type="checkbox"/>	For additions and alterations, duct systems that are not documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Residential ACM Manual and duct systems with more than 40 linear feet in unconditioned spaces shall meet the requirements of Section 150(m) and duct insulation requirements of Package D.
--------------------------	---

WATER HEATING SYSTEMS

<input type="checkbox"/>	Check box if system meets criteria of a "Standard" system. Standard system is one gas-fired water heater per dwelling unit. If the water heater is a storage type, 50 gallons is the maximum capacity and recirculation system is not allowed.
<input type="checkbox"/>	Check box when using Preapproved Alternative Water Heating table, Table 5-4 in Chapter 5 in the Residential Manual. No water heating calculations are required, and the system complies automatically.
<input type="checkbox"/>	Check box if system does not meet criteria of "Standard" system, and does not comply with the Preapproved Alternative Water Heating table. In this case, the Performance Method must be used and must be included in the submittal.
<input type="checkbox"/>	Check box to verify that a time control is required for a recirculating system pump for a system serving multiple units

Systems serving single dwelling units

Water Heater Type/Fuel Type	Distribution Type	Number In System	Rated Input ¹ (kW or Btu/hr)	Tank Capacity (gallons)	Energy Factor ¹ or Thermal Efficiency	Standby ¹ Loss (%)	Tank External Insulation R-Value

System serving multiple dwelling units

Water Heater Type/Fuel Type	Distribution Type	Number In System	Rated Input ¹ (kW or Btu/hr)	Tank Capacity (gallons)	Energy Factor ¹ or Thermal Efficiency	Standby ¹ Loss (%)	Tank External Insulation R-Value

¹ For small gas storage water heaters (rated inputs of less than or equal to 75,000 Btu/hr), electric resistance, and heat pump water heaters, list Energy Factor. For large gas storage water heaters (rated input of greater than 75,000 Btu/hr), list Rated Input, Recovery Efficiency, Thermal Efficiency and Standby Loss. For instantaneous gas water heaters, list Rated Input and Thermal Efficiencies.

Pipe Insulation (kitchen lines > 3/4 inches) All hot water pipes from the heating source to the kitchen fixtures that are 1/2 inches or greater in diameter shall be thermally insulated as specified by Section 150 (j) 2 A or 150 (j) 2 B.

MARTIN RODRIGUEZ

21 FEB 06

Project Title

Date

SPECIAL FEATURES NOT REQUIRING HERS VERIFICATION (add extra sheets if necessary)

Indicate which special features are part of this project. The list below represents special features relevant to the Prescriptive and Performance Method.

	Feature	Required Forms (if applicable)	Description
<input type="checkbox"/>	Metal Framed Walls	CF-1R	
<input type="checkbox"/>	Radiant Barriers	CF-1R	
<input type="checkbox"/>	Exterior Shades	WS-4R N/A; Performance Calculation	
<input type="checkbox"/>	Cool Roof	Required. Attach CRRC Label to Forms.	
<input type="checkbox"/>	Dedicated Hydronic Heating System	Performance Calculation Required; Attach Run to Forms.	
<input type="checkbox"/>	Combined Hydronic System	Performance Calculation Required; Attach Run to Forms.	
<input type="checkbox"/>	Gas Cooling	N/A; Performance Calculation Required.	
<input type="checkbox"/>	Buried Ducts	N/A; Indicate on building plans.	
<input type="checkbox"/>	Kitchen Pipe Insulation	See Section 5.8.2 Distribution Systems in Residential Manual.	
<input type="checkbox"/>	Multiple Water Heaters Per Dwelling Unit	See Table 5-13 or use Performance Calculation and attach Run to Forms.	
<input type="checkbox"/>	Central Water Heating System Serving Multiple Dwellings	Performance Calculation and attach Run to Forms.	
<input type="checkbox"/>	Non-NAECA Large Water Heater	CF-1R	
<input type="checkbox"/>	Indirect Water Heater	See Table 5-13 or use Performance Calculation and attach Run to Forms	
<input type="checkbox"/>	Instantaneous Gas Water Heater	See Table 5-13 or use Performance Calculation and attach Run to Forms	
<input type="checkbox"/>	Solar Water Heating System	See Table 5-13 or use Performance Calculation and attach Run to Forms	
<input type="checkbox"/>	Wood Stove Boiler	Performance Calculation and attach Run to Forms	

SPECIAL FEATURES REQUIRING HERS RATER VERIFICATION

(add extra sheets if necessary) Indicate to the HERS Rater which credits are part of this project and need verification.

	Feature	Required Forms (if applicable)	Description
<input type="checkbox"/>	Duct Sealing	CF-6R part 4 of 12	
<input type="checkbox"/>	Refrigerant Charge	CF-6R part 5 of 12	
<input type="checkbox"/>	Thermostatic Expansion Valve	CF-6R part 6 of 12	

MARTIN RODRIGUEZ

21 FEB 06

Project Title

Date

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business and Professions Code)

Documentation Author

Name: MIKE ALLEN	Name: MIKE ALLEN
Title/Firm: ONE HOUR HEAT AND AIR	Title/Firm: ONE HOUR HEAT AND AIR
Address: 3845 ATHERTON RD #4 ROCKLIN CA 95765	Address: 3845 ATHERTON RD #4 ROCKLIN CA 95765
Telephone: 916 442 5542	Telephone: 916 442 5542
License #: 588096	
(signature) (date)	(signature) (date)

Enforcement Agency

Name:	Comments:
Title	
Agency:	
Telephone:	
(signature / stamp) (date)	

INSTALLER COMPLIANCE STATEMENT FOR DUCT LEAKAGE

Copies to: Builder, HERS Rater, Building Owner at Occupancy and Building Department

INSTALLER COMPLIANCE STATEMENT

The building was: Tested at Final Tested at Rough-in

INSTALLER VISUAL INSPECTION AT FINAL CONSTRUCTION STAGE:

- Remove at least one supply and one return register, and verify that the spaces between the register boot and the interior finishing wall are properly sealed.
- If the house rough-in duct leakage test was conducted without an air handler installed, inspect the connection points between the air handler and the supply and return plenums to verify that the connection points are properly sealed.
- Inspect all joints to ensure that no cloth backed rubber adhesive duct tape is used

DUCT LEAKAGE REDUCTION

Procedures for field verification and diagnostic testing of air distribution systems are available in RACM, Appendix RC4.3

NEW CONSTRUCTION:		Measured Values	
Duct Pressurization Test Results (CFM @ 25 Pa)			
1 Enter Tested Leakage Flow in CFM:			
2 Fan Flow: Calculated (Nominal: <input checked="" type="checkbox"/> Cooling <input type="checkbox"/> Heating) or <input type="checkbox"/> Measured If Fan Flow is Calculated as 400 cfm/ton x number of tons or as 21.7 cfm/(kBtu/hr) x Heating Capacity in Thousands of Btu/hr, enter total calculated or measured fan flow in CFM here:		12000	
3 Pass if Leakage Percentage < 6% for Final or < 4% at Rough-in: [100 x [(Line # 1) / (Line # 2)]]			<input type="checkbox"/> Pass <input type="checkbox"/> Fail
ALTERATIONS: Duct System and/or HVAC Equipment Change-Out			
4 Enter Tested Leakage Flow in CFM from Pre-Test of Existing Duct System Prior to Duct System Alteration and/or Equipment Change-Out.			
5 Enter Tested Leakage Flow in CFM from Final Test of New Duct System or Altered Duct System for Duct System Alteration and/or Equipment Change-Out.		100	
6 Enter Reduction in Leakage for Altered Duct System [(Line # 4) Minus (Line # 5)] - (Only if Applicable)			
7 Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)			
8 Entire New Duct System - Pass if Leakage Percentage < 6% for Final or < 4% at Rough-in [100 x [(Line # 8) / Line # 2]]			<input type="checkbox"/> Pass <input type="checkbox"/> Fail
TEST OR VERIFICATION STANDARDS: For Altered Duct System and/or HVAC Equipment Change-Out			
Use one of the following four Test or Verification Standards for compliance:			
9 Pass if Leakage Percentage < 15% [100 x [104 (Line # 6) / 12000 (Line # 2)]]		8%	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
10 Pass if Leakage to Outside Percentage < 10% [100 x [(Line # 7) / (Line # 2)]]			<input type="checkbox"/> Pass <input type="checkbox"/> Fail
11 Pass if Leakage Reduction Percentage > 80% [100 x [(Line # 6) / (Line # 4)]]			<input type="checkbox"/> Pass <input type="checkbox"/> Fail
12 Pass if Sealing of all Accessible Leaks and Verification by Smoke Test and Visual Inspection			<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Pass if One of Lines # 9 through # 12 pass			<input type="checkbox"/> Pass <input type="checkbox"/> Fail

I, the undersigned, verify that the above diagnostic test results were performed in conformance with the requirements for compliance credit. I, the undersigned, also certify that the newly installed or retrofitted Air-Distribution System Ducts, Plenums and Fans comply with Mandatory requirements specified in Section 460 (m) of the 2005 Building Energy Efficiency Standards.

Signature: [Signature] Date: 01 FEB 06 ONE HOUR HEAT AND AIR
Installing Subcontractor (Co. Name) OR General Contractor (Co. Name)

THERMOSTATIC EXPANSION VALVE (TXV)

Procedures for field verification of thermostatic expansion valves are available in RACM, Appendix R1.

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Access is provided for inspection. The procedure shall consist of visual verification that the TXV is installed on the system and installation of the specific equipment shall be verified.			
Yes is a pass			<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> Fail

REFRIGERANT CHARGE MEASUREMENT

Verification for Required Refrigerant Charge and Adequate Airflow for Split System Space Cooling Systems without Thermostatic Expansion Valves

Outdoor Unit Serial #	
Location	
Outdoor Unit Make	
Outdoor Unit Model	
Cooling Capacity	Btu/hr
Date of Verification	
Date of Refrigerant Gauge Calibration	(must be checked monthly)
Date of Thermocouple Calibration	(must be checked monthly)

Standard Charge Measurement Procedure (outdoor air dry-bulb 55°F and above):

Procedures for Determining Refrigerant Charge using the Standard Method are available in RACM, Appendix RD2.

Note: The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.

Measured Temperatures

Supply (evaporator leaving) air dry-bulb temperature (Tsupply, db)		F
Return (evaporator entering) air dry-bulb temperature (Treturn, db)		F
Return (evaporator entering) air wet-bulb temperature (Treturn, wb)		F
Evaporator saturation temperature (Tevaporator, sat)		F
Suction line temperature (Tsuction, db)		F
Condenser (entering) air dry-bulb temperature (Tcondenser, db)		F

Superheat Charge Method Calculations for Refrigerant Charge

Actual Superheat = Tsuction, db - Tevaporator, sat		F
Target Superheat (from Table RD-2)		F
Actual Superheat - Target Superheat (System passes if between -6 and +6°F)		F

Temperature Split Method Calculations for Adequate Airflow

Split Method Calculation is not necessary if Adequate Airflow credit is taken

Actual Temperature Split = Treturn, db - Tsupply, db		F
Target Temperature Split (from Table RD3)		F
Actual Temperature Split - Target Temperature Split (System passes if between -3°F and +3°F or, upon remeasurement, if between -3°F and -10°F)		F

Site Address

Permit Number

Standard Charge Measurement Summary:

System shall pass both refrigerant charge and adequate airflow calculation criteria from the same measurements. If corrective actions were taken, both criteria must be remeasured and recalculated.

<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	System Passes
--------------------------	-----	--------------------------	----	---------------

Alternate Charge Measurement Procedure (outdoor air dry-bulb below 55 oF)

Note: The system should be installed and charged in accordance with the manufacturer's specifications and installer verification shall be documented on CF-6R before starting this procedure. If outdoor air dry-bulb is 55 oF or above, installer shall use the Standard Charge Measure Procedure:

Procedures for Determining Refrigerant Charge using the Alternate Method are available in RACM, Appendix RD3.

Weigh-In Charging Method for Refrigerant Charge

Actual liquid line length:		ft
Manufacturer's Standard liquid line length:		ft
Difference (Actual - Standard):		ft
Manufacturer's correction (ounces per foot) _____ x difference in length = _____ ounces (+ = add) (- = remove)		

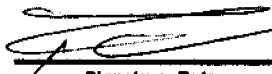
Measured Airflow Method for Adequate Airflow Verification available in RACM, Appendix RD2.6

Calculated Airflow: Cooling Capacity (Btu/hr)	X 0.033 (cfm/Btu-hr) =	CFM
Measured Airflow is	CFM (Measured airflow must be greater than the calculated airflow).	

Alternate Charge Measurement Summary:

System shall pass both refrigerant charge and adequate airflow calculation criteria from the same measurements. If corrective actions were taken, both criteria must be remeasured and recalculated.

<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	System Passes
--------------------------	-----	--------------------------	----	---------------

 21 FEB 06
Signature, Date

ONE HOUR HEAT AND AIR
Installing Subcontractor (Co. Name) OR
General Contractor (Co. Name) OR Owner

COPY TO: Building Department
HERS Rater (if applicable)
Building Owner at Occupancy

Site Address

Permit Number

FAN WATT DRAW

Procedures for measuring the air handler watt draw are available in RACM, Appendix RE3.2.

Method For Fan Watt Draw Measurement			
<input type="checkbox"/>	<input type="checkbox"/>	RE3.2.1	Portable Watt Meter Measurement
<input type="checkbox"/>	<input type="checkbox"/>	RE3.2.2	Utility Revenue Meter Measurement
		Measured Fan watt Draw:	Enter results of Watts/cfm:
		Measured Fan Flow (Enter total cfm from airflow verification)	
			Enter results of Watts/cfm:
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Calculated fan watt/cfm is equal to or lower than the fan watt/cfm draw documented in CF-1R	
		Yes is a pass	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

ADEQUATE AIRFLOW VERIFICATION

Procedures for field verification and diagnostic testing of adequate airflow are available in RACM, Appendix RE4.1.

Method For Airflow Measurement			
<input type="checkbox"/>	<input type="checkbox"/>	Yes	No
Duct design exists on plans			
<input type="checkbox"/>	<input type="checkbox"/>	RE4.1.1	Diagnostic Fan Flow Using Flow Capture Hood
<input type="checkbox"/>	<input type="checkbox"/>	RE4.1.2	Diagnostic Fan Flow Using Plenum Pressure Matching
<input type="checkbox"/>	<input type="checkbox"/>	RE4.1.3	Diagnostic Fan Flow Using Flow Grid Measurement
		Measured Airflow:	_____ cfm/ton
<input type="checkbox"/>	<input type="checkbox"/>	Yes	No
Measured airflow is greater than the criteria in Table RE-2			
		Yes is a pass	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

MAXIMUM COOLING CAPACITY

Procedures for determining maximum cooling load capacity are available in RACM, Appendix RF3.

1	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	Adequate airflow verified (see adequate airflow credit)
2	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	Refrigerant charge or TXV
3	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	Duct leakage reduction credit verified
4	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	Cooling capacities of installed systems are ≤ to maximum cooling capacity indicated on the Performance's CF-1R and RF-3.
5	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	If the cooling capacities of installed systems are > than maximum cooling capacity in the CF-1R, then the electrical input for the installed systems must be ≤ to electrical input in the CF-1R.
Yes to 1, 2, and 3; and Yes to either 4 or 5 is a pass					
					<input type="checkbox"/> Pass <input type="checkbox"/> Fail

HIGH EER AIR CONDITIONER

Procedures for verification are available in RACM, Appendix RI.

1	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	EER values of installed systems match the CF-1R
2	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	For split system, indoor coil is matched to outdoor coil
3	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	Time Delay Relay Verified (if Required)
Yes to 1 and 2; and 3 (if Required) is a pass					
					<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Tests Performed

Signature, Date

Installing Subcontractor (Co. Name) OR
General Contractor (Co. Name)

[Signature]
01 FEB 06

ONE HOUR HEAT AND AIR

COPY TO: Building Department, HERS Rater, Building Owner at Occupancy

Date/Time: Feb.21. 2006 3:12PM

File Mode	Destination	Pg (s)	Result	Page Not Sent
5757 Memory TX	9882387	P. 5	OK	

Reason for error
 E.1) Hang up or line fail
 E.2) Busy
 E.3) No answer
 E.4) No facsimile connection

INSTALLATION CERTIFICATE (Page 3 of 12) CF-6R

1300 LEO LORBER CR SACRAMENTO CA 95821 Permit number

An installation certificate is required to be posted at the building site or made available for all appropriate inspection. (The information provided on this form is required after completion of final inspection, a copy must be provided to the building department upon request) and the building owner at occupancy, per Section 99-10004.

HEATING SYSTEMS: Heating Equipment

Equip. Type	CRS Qualified Mfr. Name, Model and Serial Number	# of Installed Systems	Efficiency (AFUE, etc.)	Unit Location	Duct or Piping Details	Heating Load (BTU/hr)	Heating Capacity (BTU/hr)
Boiler	BOILERMAN	1	88.0% AFUE	ATTIC	R4	200K	200K
Space Heat	CONDENSING	0	90%				
CH	HYDRONIC						

Cooling Equipment

Equip. Type	CRS Qualified Mfr. Name, Model and Serial Number	# of Installed Systems	Efficiency (SEER, etc.)	Unit Location	Duct or Piping Details	Cooling Load (BTU/hr)	Cooling Capacity (BTU/hr)
Boiler	BOILERMAN	1	14.0 SEER	ATTIC	R4	200K	200K
Space Heat	CLOSE	12	90%				
CH	CONDENSING						
CH	ADP						
CH	CONDENSING						

1. = rounded value greater than or equal to what is indicated on the CF-6R form.
 Includes both SEER and EER if compliance credit for high SEER or EER multiplier is claimed.
 1. The contractor, verify that equipment listed above is: 1) in the correct equipment location, 2) equivalent to or more efficient than that specified in the certificate of compliance (Form CR-42) provided by the contractor with the Energy Efficiency Manufacturer's technical package, and 3) equipment that meets or exceeds the appropriate requirements for construction details from the Applicable Efficiency Regulations or Part 61, where applicable.

[Signature]
 Installing Subcontractor (Ch. 18000)
 OR General Contractor (Ch. 18000) OR OWNER

COPY TO: Building Department
 HERS Rater (if applicable)
 Building Owner or Occupancy