CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test – Completely New or Replacement Duct System		(Page 1 of 2)
Site Address:	**Enforcement Agency:**	**Permit Number:**

Enter the Duct System Name or Identification/Tag:	694
Enter the Duct System Location or Area Served:	690
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.	

This certificate is required for compliance for completely new duct systems installed in new dwelling construction, and also for completely new or replacement duct systems in existing dwellings. For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed.

Duct Leakage Diagnostic Test – completely new or replacement duct system

Enter a value for the Allowed Leakage (CFM) for the duct system leakage verification. The value entered must be the Verified Low Leakage Ducts in Conditioned Space criteria or one of the three calculated leakage rates described below.	
Verified Low Leakage Ducts in Conditioned Space (VLLDCS) Compliance Credit. If compliance credit for verified low leakage ducts in conditioned space is shown in the special features section of the CF-1R, the leakage to outside test method must be used to verify duct leakage (refer to RA3.1.4.3.4), and 25 CFM must be entered for Allowed Leakage.	Allowed Leakage (CFM)
Allowed leakage calculation – (select one calculation method from this section) – Use 6% (*leakage factor* = 0.06) for calculations. When utilizing Low Leakage Air Handler (LLAH) credit, the allowed duct leakage may be specified by the CF-1R to be less than 6%, in which case the user-specified leakage rate must be used in the calculations below. For example, if the user-specified leakage (specified as a percentage of fan airflow) is reported on the CF-1R as 3%, then use a *leakage factor* of 0.03 in the calculations below. ☐ Cooling system method: Nominal capacity of condenser in Tons 693 x 400 x *leakage factor* = 693 (CFM) ☐ Heating system method: 21.7 x 694 Output Capacity in Thousands of Btu/hr x *leakage factor* = 695 (CFM) ☐ Measured airflow method (RA3.3): Enter measured fan flow in CFM here 696 x *leakage factor* = 697 (CFM)	
Enter value for **Actual** leakage (CFM) in the right column, from measurement using applicable duct leakage pressurization test procedure from Reference Residential Appendix RA3.1(CFM @ 25 Pa).	Actual Leakage (CFM)
List **Actual** Leakage from duct leakage test (CFM)	698
Pass if Actual Leakage is less than Allowed Leakage 699	☐ **Pass** ☐ **Fail**
For complete replacement of duct systems only, if the 6 percent leakage rate criteria cannot be met, a smoke test should be performed to verify that the excess leakage is coming only from a pre-existing furnace cabinet (air handler cabinet), and not from other *accessible* portions of the duct system. A HERS rater must verify the installation (No sampling allowed). List **Actual** Leakage from smoke test(CFM)	700
Pass if all accessible leaks (except for existing air handler) are sealed using smoke 701	☐ **Pass** ☐ **Fail**

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-20
Duct Leakage Test – Completely New or Replacement Duct System		(Page 2 of 2)
Site Address:	**Enforcement Agency:**	**Permit Number:**

706 ☐ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

707 ☐ All supply and return register boots must be sealed to the drywall

708 ☐ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

709 ☐ Mastic and draw bands must be used in combination with Cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:	CSLB License:	
HERS Provider Data Registry Information		
Sample Group # (if applicable):	☐ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information		
HERS Rater Company Name:		
Responsible Rater's Name	Responsible Rater's Signature	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed:	

585

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		(Page 1 of 2)
Site Address:	**Enforcement Agency:**	**Permit Number:**

Enter the Duct System Name or Identification/Tag:	710
Enter the Duct System Location or Area Served:	711
Note: Submit one Installation Certificate for each duct system that must demonstrate compliance in the dwelling.	

This installation certificate is required for compliance for alterations and additions in existing dwellings to space conditioning systems and duct systems.

Note: For existing dwellings, a completely new or replacement duct system can also include existing parts of the original duct system (e.g., register boots, air handler, coil, plenums, etc.) if those parts are accessible and they can be sealed. For a completely new or replacement duct system installed in an existing dwelling, use the Installation Certificate titled "Duct Leakage Test – Completely New or Replacement Duct System."

Duct Leakage Diagnostic Test – existing duct system

712

Select one compliance method from the following four choices.

☐ Option 1. Measured leakage less than 15% of Fan Airflow.

☐ Option 2. Measured leakage to outside less than 10% of Fan Airflow.

☐ Option 3. Reduce leakage by 60% or more, and conduct smoke test to seal all accessible leaks.

☐ Option 4. Fix all accessible leaks using smoke test, and HERS rater must verify.

Note: (Option 1 must be attempted before utilizing Option 4)

713

Determine nominal **Fan Airflow** using one of the following three calculation methods.

☐ Cooling system method: Size of condenser in Tons 714 x 400 = 715 CFM

☐ Heating system method: 21.7 x _____ Heating Output Capacity (kBtuh) = 717 CFM

☐ Measured system airflow using RA 3.3 airflow test procedures: 718 CFM

1	**Option 1** used then: Allowed leakage = Fan Airflow _____ x 0.15 = 720 CFM Actual leakage = 721 CFM **Pass if Actual leakage is less than Allowed leakage**	722 ☐ Pass ☐ Fail
2	**Option 2** used then: Allowed leakage = Fan Airflow 723 x 0.10 = 724 CFM Actual leakage to outside = 726 CFM **Pass if Actual leakage to outside is less than Allowed leakage**	727 ☐ Pass ☐ Fail
3	**Option 3** used then: Initial leakage prior to start of work= 728 CFM Final leakage after sealing all accessible leaks using smoke test = 729 CFM Initial leakage 730 – Final leakage 731 = Leakage reduction 732 CFM (Leakage reduction 733 / Initial leakage 730) x 100% = % Reduction 734 **Pass if % Reduction ≥ 60%**	735 ☐ Pass ☐ Fail
4	**Option 4** used then: All accessible leaks repaired using smoke test. HERS rater must verify (No sampling). **Pass if all accessible leaks have been sealed using Smoke Test**	737 ☐ Pass ☐ Fail

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-21
Duct Leakage Test – Existing Duct System		(Page 2 of 2)
Site Address:	**Enforcement Agency:**	**Permit Number:**

738 ☐ Outside air (OA) ducts for Central Fan Integrated (CFI) ventilation systems, shall not be sealed/taped off during duct leakage testing. CFI OA ducts that utilize controlled motorized dampers, that open only when OA ventilation is required to meet ASHRAE Standard 62.2, and close when OA ventilation is not required, may be configured to the closed position during duct leakage testing.

739 ☐ All supply and return register boots must be sealed to the drywall if smoke test is utilized for compliance – applies to duct leakage compliance option 3 (leakage reduction by 60%) and option 4 (fix all accessible leaks) described above.

740 ☐ New duct installations cannot utilize building cavities as plenums or platform returns in lieu of ducts.

741 ☐ Mastic and draw bands must be used in combination with cloth backed rubber adhesive duct tape to seal leaks at all new duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:	CSLB License:	
HERS Provider Data Registry Information		
Sample Group # (if applicable):	☐ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information		
HERS Rater Company Name:		
Responsible Rater's Name	Responsible Rater's Signature	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed:	

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation; Cooling Coil Airflow & Fan Watt Draw Test		(Page 1 of 2)
Site Address:	**Enforcement Agency:**	**Permit Number:**

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Hole for the placement of a Static Pressure Probe (HSPP), and Permanently installed Static Pressure Probe (PSPP) in the supply plenum

When the Certificate of Compliance (CF1R) indicates Cooling Coil Airflow or Fan Watt Draw verification are required, HSPP or PSPP are required to be installed in each air handler in the dwelling. Procedures for installing HSPP and PSPP are described in Reference Residential Appendix RA3.3. This measure requires verification by a HERS rater.

Select one method from the two choices below for compliance with the HSPP/PSPP requirement for this dwelling.		
☐	HSPP	1/4 inch (6 mm) hole labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.
☐	PSPP	1/4 inch (6 mm) hole equipped with a permanently installed pressure probe, labeled and located downstream of the evaporator coil in the supply plenum as shown in the figure in Section RA3.3.1.1.

System Name or Identification/Tag	743			
System Location or Area Served	744			
Confirm that a HSPP or PSPP has been installed on the air handler per the requirements of RA3.3.1.1. **Enter Pass or Fail**	745			

Cooling Coil Airflow Verification

When the Certificate of Compliance indicates Cooling Coil Airflow verification is required, the procedures for measuring the cooling coil airflow must be performed as specified in Reference Residential Appendix RA3.3. Results of the cooling coil airflow diagnostic test must be entered in the table below. This measure requires verification by a HERS rater.

Select one method from the three choices below for compliance with the Cooling Coil Airflow test requirement for this dwelling.	
☐	Diagnostic Fan Flow Using Plenum Pressure Matching according to the procedures in RA3.3.3.1.1
☐	Diagnostic Fan Flow Using Flow Grid Measurement according to the procedures in RA3.3.3.1.2
☐	Diagnostic Fan Flow Using Flow Capture Hood according to the procedures in RA3.3.3.1.3

System Name or Identification/Tag	747			
System Location or Area Served	748			
Nominal Cooling Capacity (ton) of the outdoor unit.	749			
Enter the minimum airflow requirement from the CF-1R (CFM/ton).	750			
Calculate the target minimum airflow for the test by multiplying the CFM/ton criteria specified on the CF-1R by the nominal cooling capacity of the outdoor unit (ton). **Target (CFM)**	751			
Enter the diagnostically tested airflow (CFM). **Tested (CFM)**	752			
The system complies if Tested (CFM) is equal or greater than Target (CFM). **Enter Pass or Fail**	753			

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-22
HSPP/PSPP Installation; Cooling Coil Airflow & Fan Watt Draw Test		(Page 2 of 2)
Site Address:	**Enforcement Agency:**	**Permit Number:**

Fan Watt Draw Verification

When the Certificate of Compliance indicates Fan Watt Draw verification is required, the procedures for measuring the Fan Watt Draw must be performed as specified in Reference Residential Appendix RA3.3. Results of the Fan Watt Draw diagnostic test must be entered in the table below. This measure requires verification by a HERS rater. Note: Fan watt draw must be measured simultaneously with cooling coil airflow. The fan watt draw measurement and cooling coil airflow measurement must simultaneously meet or exceed their target criteria specified by the CF-1R for the dwelling.

Select one method from the two choices below for compliance with the Fan Watt Draw test requirement for this dwelling.				
☐ Portable Watt Meter Measurement according to the procedures in RA3.3.3.3.1				
☐ Utility Revenue Meter Measurement according to the procedures in RA3.3.3.3.2				
System Name or Identification/Tag	755			
System Location or Area Served	756			
Enter the air handler Target (CFM) from the cooling coil airflow test table above.	757			
Enter the fan watt draw requirement from the CF-1R (Watt/CFM).	758			
Calculate the target maximum Watt draw for the test by multiplying the Watt/CFM criteria specified on the CF-1R by the air handler Target (CFM). **Target (Watt)**	759			
Enter the diagnostically tested Watt draw (Watt). **Tested (Watt)**	760			
The system complies if Tested (Watt) is less than or equal to Target (Watt) **Enter pass or Fail**	761			

DECLARATION STATEMENT:

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- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:	CSLB License:	
HERS Provider Data Registry Information		
Sample Group # (if applicable):	☐ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information		
HERS Rater Company Name:		
Responsible Rater's Name	Responsible Rater's Signature	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed:	

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-23
Verification of High EER Equipment		(Page 1 of 1)
Site Address:	Enforcement Agency:	Permit Number:

Verification of High EER Equipment

Procedures for verification of High EER Equipment are described in Reference Residential Appendix RA3.4. For dwelling units with multiple systems, the procedures must be applied to each system separately. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

1	System Name or Identification/Tag	762			
2	System Location or Area Served	763			
3	Certified EER Rating of the installed equipment (Btu/Watt-hr)	764			
4	Make and Model Number of the installed Outdoor Unit	765 / 766			
5	Make and Model Number of the installed Inside Coil	767 / 768			
6	Make and Model Number of the installed Furnace or Air Handler.	769 / 770			
7	Minimum Equipment EER required for compliance as reported on the CF-1R	771			

772

☐ When a high EER system specification includes a time delay relay, the installation of the time delay relay must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Time Delay Relay Verification Procedure.

773

☐ When installation of specific matched equipment is necessary to achieve a high EER, installation of the specific equipment must be verified for compliance credit. Refer to Reference Residential Appendix RA3.4.3 for the Matched Equipment Verification Procedure.

8	If the Certified EER Rating in row 3 is equal or greater than the required minimum EER in row 7, the unit complies. **If the unit complies enter Pass**				

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:	CSLB License:	
HERS Provider Data Registry Information		
Sample Group # (if applicable):	☐ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information		
HERS Rater Company Name:		
Responsible Rater's Name	Responsible Rater's Signature	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed:	

Registration Number: _____ *Registration Date/Time:* _____ *HERS Provider:* _____

348

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-24
Charge Indicator Display (CID)		(Page 1 of 1)
Site Address:	**Enforcement Agency:**	**Permit Number:**

CHARGE INDICATOR DISPLAY (CID)

Charge Indicator Display (CID) specifications are available in Reference Joint Appendix JA6; HERS verification procedure for the CID is in Reference Residential Appendix RA3.4.2. If refrigerant charge verification is required for compliance, and a CID has been installed on the system, a pass for this CID verification for an installed system is sufficient for demonstrating compliance with the refrigerant charge verification requirement for that system, thus submittal of a standard refrigerant charge verification compliance form (MECH 25) is not required for a system that has a passing CID verification shown in the table below.

CID - Verification of the Presence and Proper Function of a Charge Indicator Display

System Name or Identification/Tag			841			
System Location or Area Served			842			
1	☐Yes	☐No	The display is mounted adjacent to the system thermostat			
2	☐Yes	☐No	The system has operated for at least 15 minutes, inside air temperature is greater than 65 F and outdoor temperature is greater than 55 F, and, the display indicates the system is operating properly (does not indicate a system fault).			
3	☐Yes	☐No	The CID was installed by the manufacturer			
4	☐Yes	☐No	or if 3 is No, the CID was installed according to the manufacturer's specifications			
Yes to 1 and 2 and yes to either 3 or 4 is a pass			enter Pass or Fail	✓ ☐ Pass	✓ ☐ Fail	

843 844 845 846 847

DECLARATION STATEMENT

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- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:	CSLB License:	
HERS Provider Data Registry Information		
Sample Group # (if applicable):	☐ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information		
HERS Rater Company Name:		
Responsible Rater's Name	Responsible Rater's Signature	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed:	

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		(Page 1 of 5)
Site Address:	**Enforcement Agency:**	**Permit Number:**

Note: If installation of a Charge Indicator Display (CID) is utilized as an alternative to refrigerant charge verification for compliance, a MECH-24 Certificate (instead of this MECH-25 Certificate) should be used to demonstrate compliance with the refrigerant charge verification requirement. TMAH and STMS are not required for compliance, when a CID is utilized for compliance.

As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

Temperature Measurement Access Holes (TMAH) and Saturation Temperature Measurement Sensors (STMS)
Procedures for installing TMAH are specified in Reference Residential Appendix RA3.2. If refrigerant charge verification is required for compliance, TMAH are also required for compliance. STMS are only required for completely new or replacement space-conditioning systems that utilize prescriptive compliance method.

TMAH - Access Holes in Supply and Return Plenums of Air Handler

System Name or Identification/Tag			827			
System Location or Area Served			828			
1	☐Yes 829	☐No	5/16 inch (8 mm) access hole upstream of evaporative coil in the return plenum and labeled according to Figure in Section RA3.2.2.2.2.			
2	☐Yes 830	☐No	5/16 inch (8 mm) access hole downstream of evaporative coil in the supply plenum and labeled according to Figure in Section RA3.2.2.2.2.			
Yes to 1 and 2 is a pass.			Enter Pass or Fail		✓ ☐ Pass	✓ ☐ Fail

920

STMS - Sensor on the Evaporator Coil

System Name or Identification/Tag			831			
3	☐Yes 832	☐No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
4	☐Yes 833	☐No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
5	☐Yes 834	☐No	The sensor measures the saturation temperature of the coil within 1.3 degrees F			
Yes to 3, 4, and 5 is a pass. N/A if STMS are not applicable. Otherwise enter Pass or Fail			Enter	✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

922

STMS - Sensor on the Condenser Coil

System Name or Identification/Tag			835			
6	☐Yes 836	☐No	The sensor is factory installed, or field installed according to manufacturer's specifications, or is installed by methods/specifications approved by the Executive Director.			
7	☐Yes 837	☐No	The sensor wire is terminated with a standard mini plug suitable for connection to a digital thermometer. The sensor mini plug is accessible to the installing technician and the HERS rater without changing the airflow through the condenser coil			
8	☐Yes 838	☐No	The sensor measures the saturation temperature of the coil within 1.3 degrees F			
Yes to 6, 7, and 8 is a pass. N/A if STMS are not applicable. Otherwise enter Pass or Fail			Enter	✓ ☐ N/A	✓ ☐ Pass	✓ ☐ Fail

937

CERTIFICATE OF FIELD VERIFICATION AND DIAGNOSTIC TESTING		CF-4R-MECH-25
Refrigerant Charge Verification - Standard Measurement Procedure		(Page 2 of 5)
Site Address:	**Enforcement Agency:**	**Permit Number:**

Standard Charge Measurement Procedure (for use if outdoor air dry-bulb is above 55 °F)

Procedures for determining Refrigerant Charge using the Standard Charge Measurement Procedure are available in Reference Residential Appendix RA3.2. As many as 4 systems in the dwelling can be documented for compliance using this form. Attach an additional form(s) for any additional systems in the dwelling as applicable.

- *The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.*
- *The system must meet minimum airflow requirements as prerequisite for a valid refrigerant charge test.*
- *If outdoor air dry-bulb is 55 °F or below, the installer must use the Alternate Charge Measurement Procedure.*

Space Conditioning Systems

System Name or Identification/Tag	776			
System Location or Area Served	777			
Outdoor Unit Serial #	778			
Outdoor Unit Make	779			
Outdoor Unit Model	780			
Nominal Cooling Capacity Btu/hr	781			
Date of Verification	782			

Calibration of Diagnostic Instruments

Date of Refrigerant Gauge Calibration	783	(must be re-calibrated monthly)
Date of Thermocouple Calibration		(must be re-calibrated monthly)

Measured Temperatures (°F)

System Name or Identification/Tag	785			
Supply (evaporator leaving) air dry-bulb temperature ($T_{supply,\ db}$)	786			
Return (evaporator entering) air dry-bulb temperature ($T_{return,\ db}$)	787			
Return (evaporator entering) air wet-bulb temperature ($T_{return,\ wb}$)	788			
Evaporator saturation temperature ($T_{evaporator,\ sat}$)	789			
Condensor saturation temperature ($T_{condensor,\ sat}$)	790			
Suction line temperature ($T_{suction}$)	791			
Liquid Line Temperature (T_{liquid})	792			
Condenser (entering) air dry-bulb temperature ($T_{condenser,\ db}$)	793			

If [793] < 55 Use FREON

If 55 ≤ [793] < 65 AND [787] < 70 Use ETOH

Site Address:	Enforcement Agency:	Permit Number:

Minimum Airflow Requirement

Temperature Split Method Calculations for determining Minimum Airflow Requirement for Refrigerant Charge Verification. The temperature split method is specified in Reference Residential Appendix RA3.2.

System Name or Identification/Tag	794			
Calculate: Actual Temperature Split = $T_{return,\ db} - T_{supply,\ db}$	795			
Target Temperature Split from Table RA3.2-3 using $T_{return,\ wb}$ and $T_{return,\ db}$	796			
Calculate difference: Actual Temperature Split – Target Temperature Split =	797			
Passes if difference is between -4°F and +4°F or upon remeasurement, if between -4°F and -100°F **Enter Pass or Fail**	798			

Note: Temperature Split Method Calculation is not necessary if actual Cooling Coil Airflow is verified using one of the airflow measurement procedures specified in Reference Residential Appendix RA3.3. If actual cooling coil airflow is measured, the value must be equal to or greater than the Calculated Minimum Airflow Requirement in the table below.

Calculated Minimum Airflow Requirement (CFM) = Nominal Cooling Capacity (ton) X 300 (cfm/ton)

System Name or Identification/Tag	799			
Calculated Minimum Airflow Requirement (CFM)	800			
Measured Airflow using RA3.3 procedures (CFM)	801			
Passes if measured airflow is greater than or equal to the calculated minimum airflow requirement. **Enter Pass or Fail**	802			

Superheat Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for fixed orifice metering device systems

System Name or Identification/Tag	803			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator,\ sat}$	804			
Target Superheat from Table RA3.2-2 using $T_{return,\ wb}$ and $T_{condenser,\ db}$	805			
Calculate difference: Actual Superheat – Target Superheat =	806			
System passes if difference is between -6°F and +6°F **Enter Pass or Fail**	807			

Subcooling Charge Method Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	808			
Calculate: Actual Subcooling = $T_{condenser, sat} - T_{liquid}$	809			
Target Subcooling specified by manufacturer	810			
Calculate difference: Actual Subcooling – Target Subcooling =	811			
System passes if difference is between -4°F and +4°F **Enter Pass or Fail**	812			

Metering Device Calculations for Refrigerant Charge Verification. This procedure is required to be used for thermostatic expansion valve (TXV) and electronic expansion valve (EXV) systems.				
System Name or Identification/Tag	813			
Calculate: Actual Superheat = $T_{suction} - T_{evaporator, sat}$	814			
Enter allowable superheat range from manufacturer's specifications (or use range between 3°F and 26°F if manufacturer's specification is not available)	815			
System passes if actual superheat is within the allowable superheat range **Enter Pass or Fail**	816			

Standard Charge Measurement Summary: System shall pass both refrigerant charge criteria, metering device criteria (if applicable), and minimum cooling coil airflow criteria based on measurements taken concurrently during system operation. If corrective actions were taken, all applicable verification criteria must be re-measured and/or recalculated.				
System Name or Identification/Tag	S17			
System meets all refrigerant charge and airflow requirements. **Enter Pass or Fail**	S18			

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Residential Appendices RA2 and RA3 and the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) (CF-6R), signed and submitted by the person(s) responsible for the installation conforms to the requirements specified on the Certificate(s) of Compliance (CF-1R) approved by the enforcement agency.

Builder or Installer information as shown on the Installation Certificate (CF-6R)		
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:	CSLB License:	
HERS Provider Data Registry Information		
Sample Group # (if applicable):	☐ tested/verified dwelling	☐ not-tested/verified dwelling in a HERS sample group
HERS Rater Information		
HERS Rater Company Name:		
Responsible Rater's Name	Responsible Rater's Signature	
Responsible Rater's Certification Number w/ this HERS Provider:	Date Signed:	