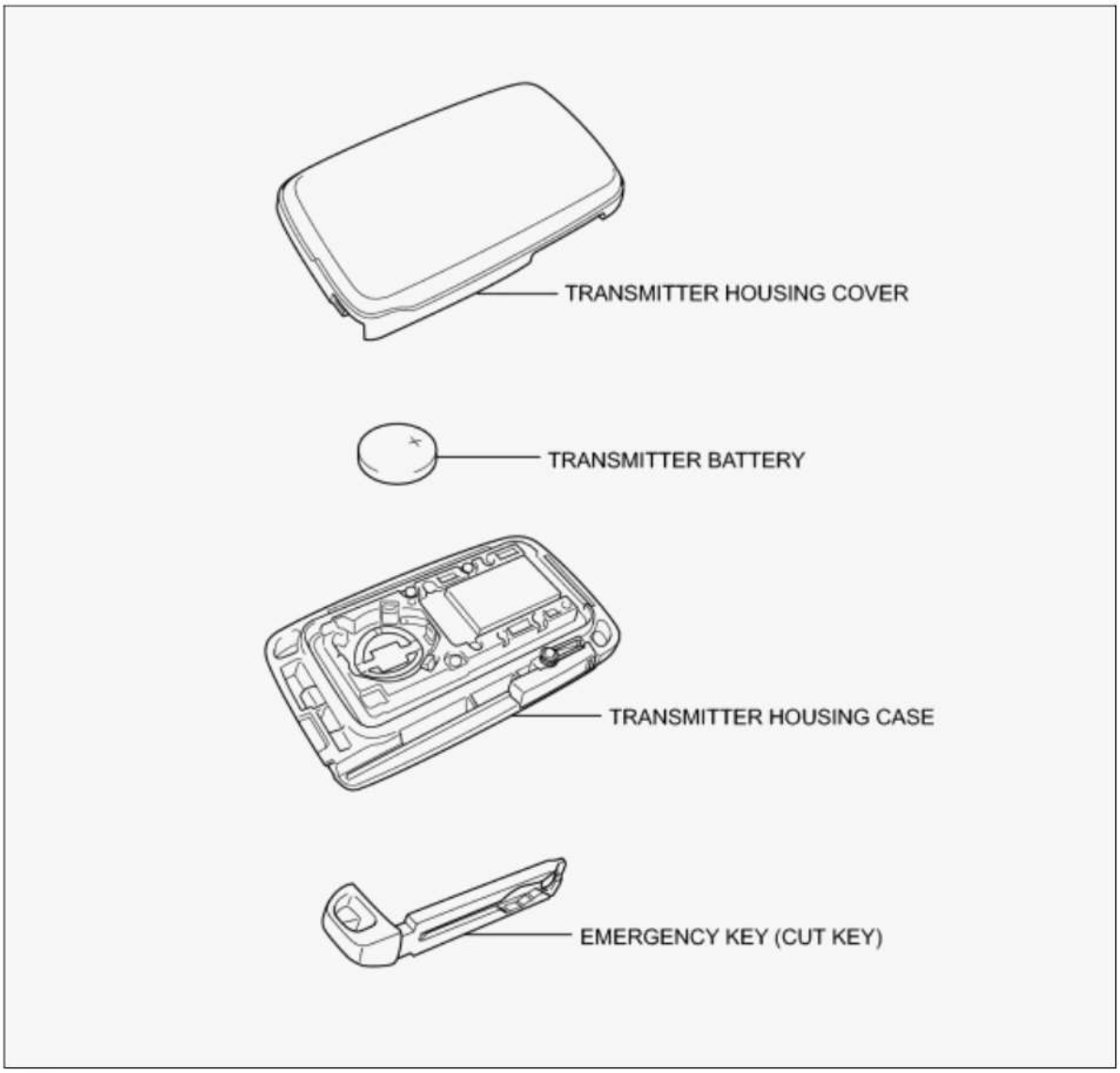
Last Modified: 9-7-2011	6.4 K	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000036BJ00SX
Title: DOOR LOCK: DOOR CONTROL TRANSMITTER (w/ Smart Key System): COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION



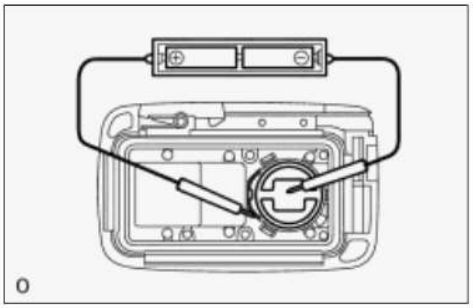
Last Modified: 9-7-2011	6.4 G	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM00000363X00VX
Title: DOOR LOCK: DOOR CONTROL TRANSMITTER (w/ Smart Key System): INSPECTION (2011 RAV4)		

INSPECTION

1. INSPECT TRANSMITTER BATTERY

(a) Inspect the operation of the transmitter.

(1) Remove the battery (lithium battery) from the transmitter INFO .



(2) Install a new or normal battery (lithium battery).

HINT:

If a new or normal battery is not available, first connect 2 new 1.5 V batteries in series. Then connect leads to the batteries and apply 3 V to the transmitter, as shown in the illustration.

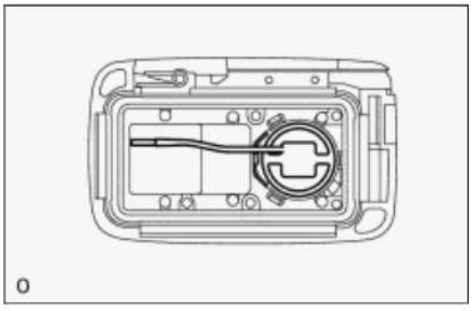
(3) From outside the vehicle, approximately 1 m (3.28 ft) away from the driver side outside door handle, test the transmitter by pointing its key plate at the vehicle and pressing a transmitter switch, or while carrying the transmitter touch the inside of the handle and pull it.

OK:
The door lock can be operated via the transmitter.
The LED comes on more than once.

HINT:

- The operational area differs depending on the user, the way the transmitter is held, and the location.
- The weak electric waves from the transmitter may be affected if the area has strong electric waves or noise. The transmitter operational range may be shortened or the transmitter may not function.

(b) Inspect the battery capacity.

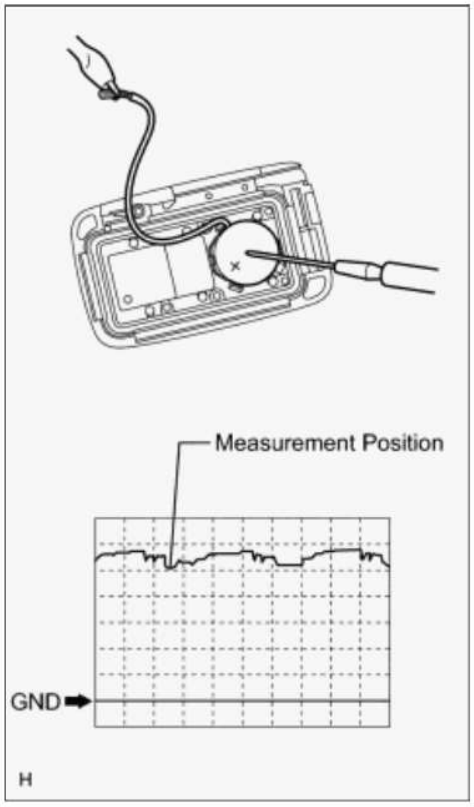


(1) Remove the battery from the electrical key transmitter that does not operate INFO . Attach a lead wire (0.6 mm (0.0236 in.) in diameter or less including wire sheath) with tape or equivalent to the negative (-) terminal.

NOTICE:

Do not wrap the lead wire around a terminal, wedge it between terminals, or solder it. The terminal may be deformed or damaged, and the battery will not be able to be installed correctly.

(2) Carefully extend the lead wire from the position shown in the illustration and install the previously removed transmitter battery.



(3) Using an oscilloscope, check the transmitter battery voltage waveform.

HINT:

When measuring the battery voltage, bring the electrical key transmitter within the smart key system operating range and operate the lock switch of a door handle to perform the measurement. For the smart key system operating range, refer to System Description INFO **.**

Standard Voltage:

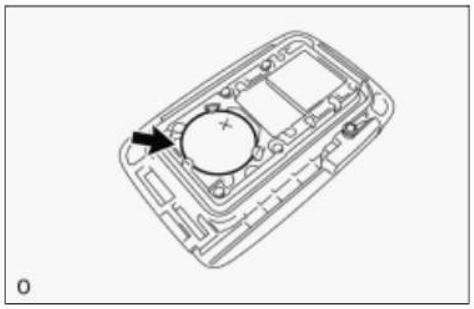
TESTER CONNECTION	TOOL SETTING	CONDITION	SPECIFIED CONDITION
Battery positive (+) - Battery negative (-)	0.5 V/DIV, 100 ms/DIV.	Engine switch off, all doors closed and lock switch pushed	2.5 to 3.2 V (Refer to waveform)

If the result is not as specified, replace the transmitter battery.

Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM00000363W017X
Title: DOOR LOCK: DOOR CONTROL TRANSMITTER (w/ Smart Key System): INSTALLATION (2011 RAV4)		

INSTALLATION

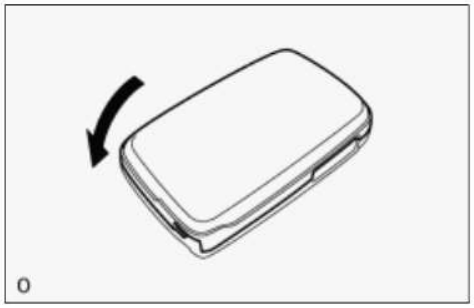
1. INSTALL TRANSMITTER BATTERY



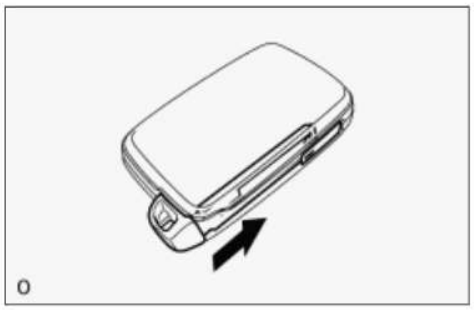
(a) Install the battery (lithium battery: CR1632) with the positive (+) side facing upward, as shown in the illustration.

NOTICE:

- Do not bend the transmitter battery electrode during insertion.
- Keep the transmitter cover interior free of dust and oil.



(b) Install the transmitter housing cover by pressing down on it as shown in the illustration.



(c) Insert the emergency key into the transmitter.

(d) Press one of the transmitter switches and check that the LED illuminates.

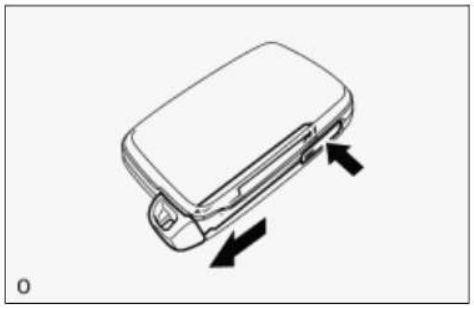
Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM00000363Z016X
Title: DOOR LOCK: DOOR CONTROL TRANSMITTER (w/ Smart Key System): REMOVAL (2011 RAV4)		

REMOVAL

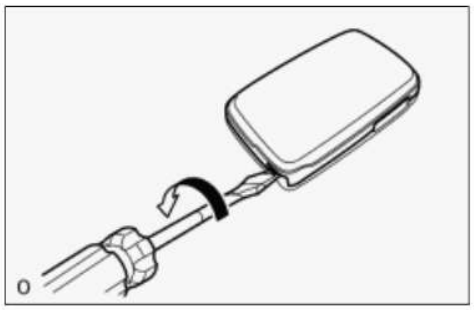
1. REMOVE TRANSMITTER BATTERY

NOTICE:

Take extra care when handling these precision electronic components.



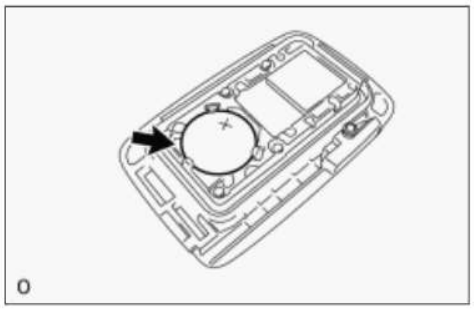
(a) Push the release hook knob and extract the emergency key.



(b) Insert a precision screwdriver into the gap, and turn the screwdriver to detach the transmitter housing cover.

HINT:

Tape the screwdriver tip before use.



(c) Remove the battery (lithium battery: CR1632).

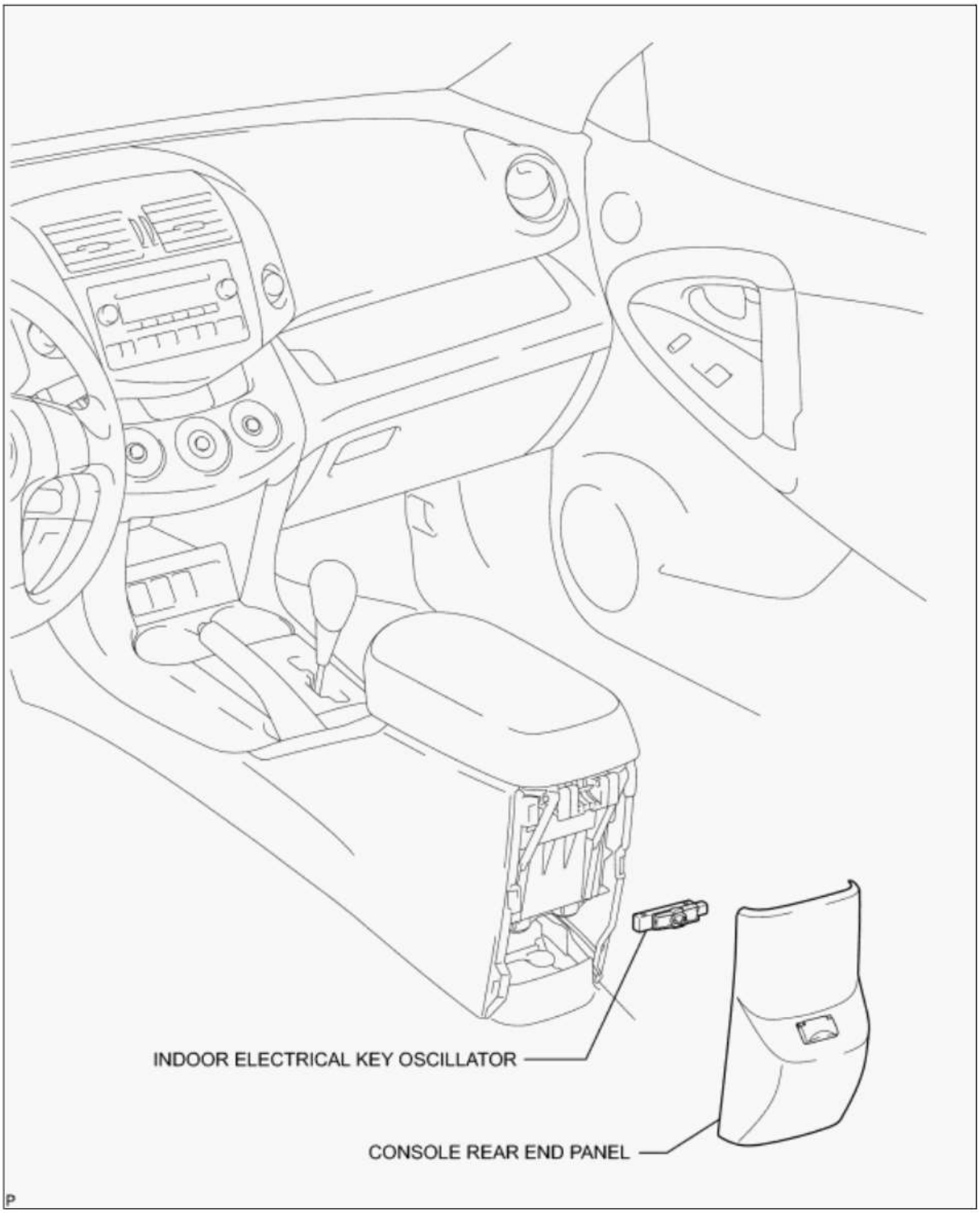
NOTICE:

- Do not push the terminals with your finger.
- Do not forcibly pry up the battery. The terminals may be damaged.
- Do not touch the battery with wet hands. Water may cause rust.
- Do not touch or move any components inside the transmitter. It may interfere with proper operation.

Last Modified: 9-7-2011	6.4 K	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000020Z800HX
Title: DOOR LOCK: ELECTRICAL KEY OSCILLATOR (for Front Floor): COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION



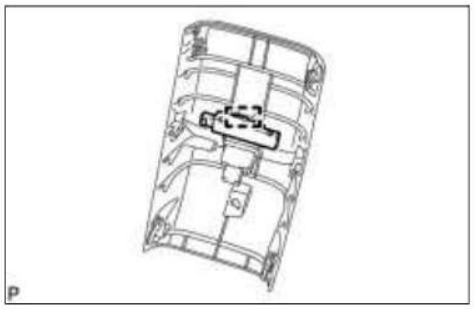



TOYOTA

Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000020Z700JX
Title: DOOR LOCK: ELECTRICAL KEY OSCILLATOR (for Front Floor): INSTALLATION (2011 RAV4)		

INSTALLATION

1. INSTALL INDOOR ELECTRICAL KEY OSCILLATOR



(a) Attach the clamp to install the electrical key oscillator.

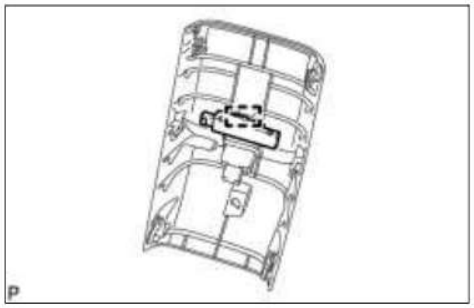
2. INSTALL CONSOLE REAR END PANEL INFO

Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000020Z900JX
Title: DOOR LOCK: ELECTRICAL KEY OSCILLATOR (for Front Floor): REMOVAL (2011 RAV4)		

REMOVAL

1. REMOVE CONSOLE REAR END PANEL INFO

2. REMOVE INDOOR ELECTRICAL KEY OSCILLATOR

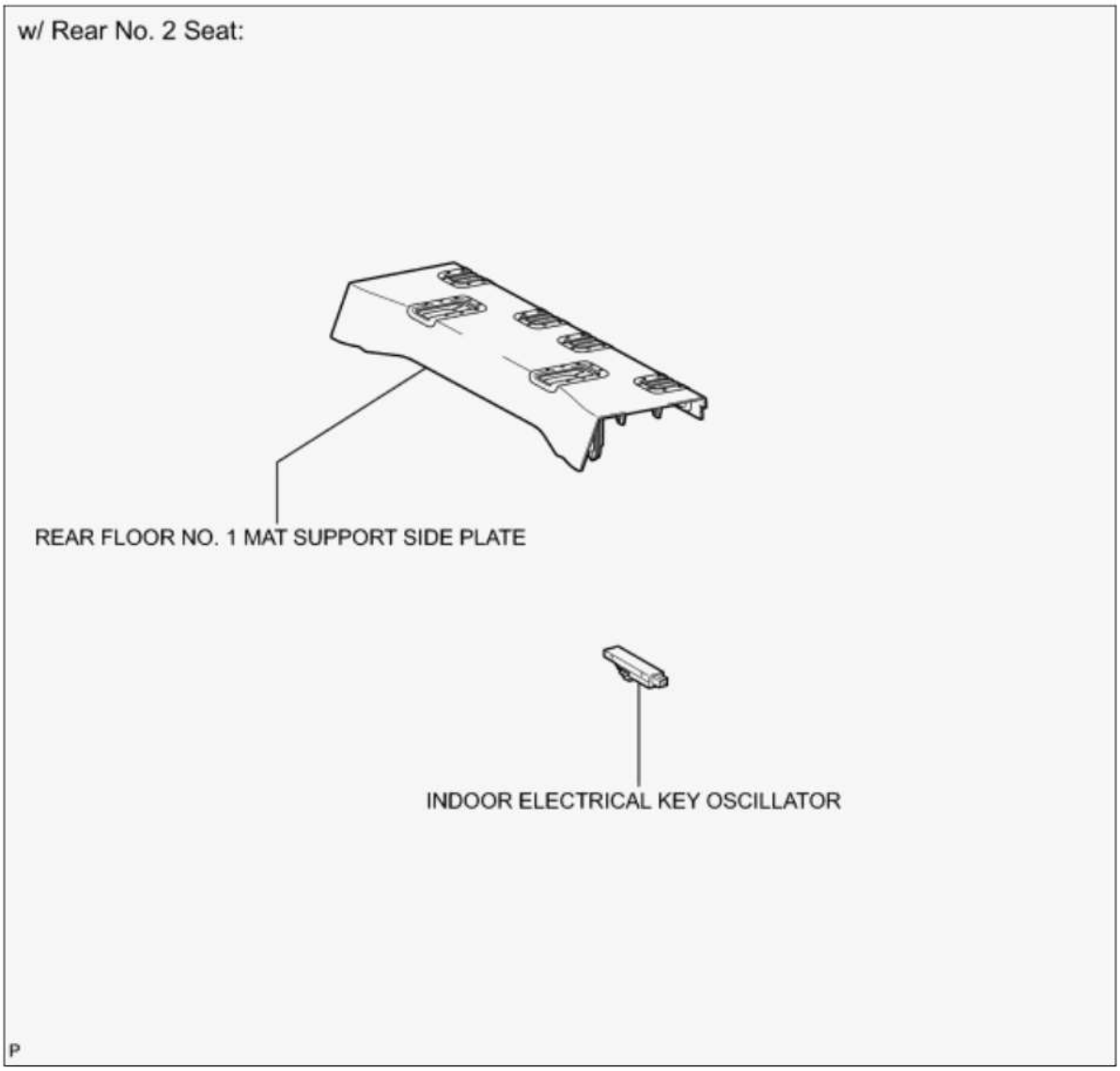


(a) Detach the clamp and remove the electrical key oscillator.

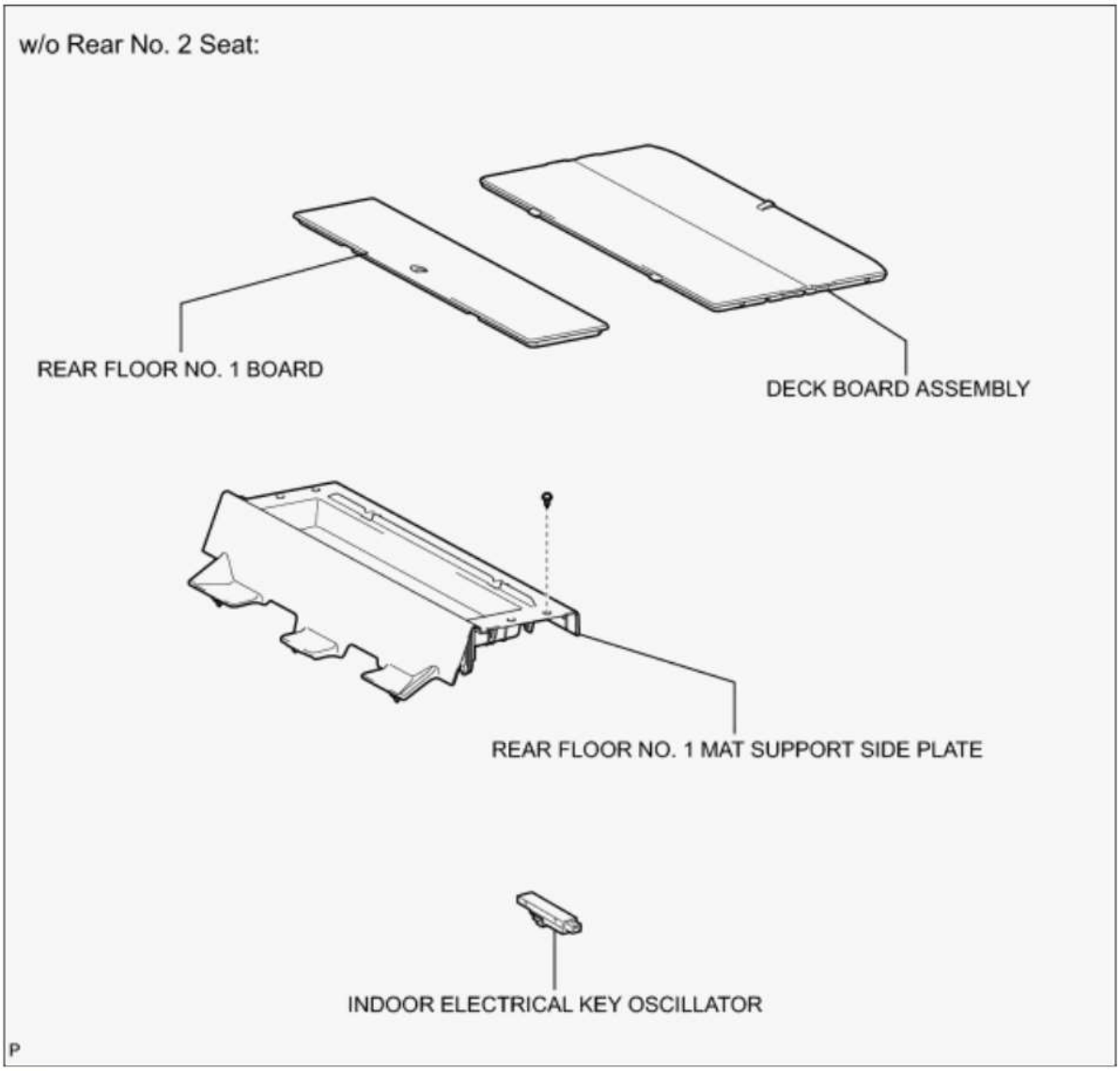
Last Modified: 9-7-2011	6.4 K	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000020ZB00MX
Title: DOOR LOCK: ELECTRICAL KEY OSCILLATOR (for Rear Floor): COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION



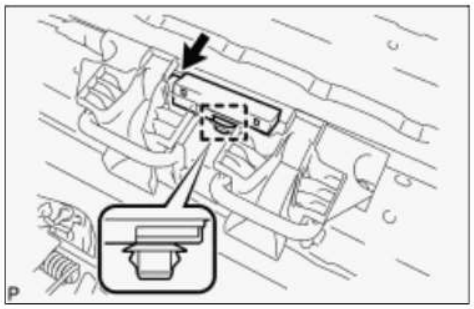
ILLUSTRATION


w/o Rear No. 2 Seat:
REAR FLOOR NO. 1 BOARD
DECK BOARD ASSEMBLY
REAR FLOOR NO. 1 MAT SUPPORT SIDE PLATE
INDOOR ELECTRICAL KEY OSCILLATOR
P

Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000020ZA00SX
Title: DOOR LOCK: ELECTRICAL KEY OSCILLATOR (for Rear Floor): INSTALLATION (2011 RAV4)		

INSTALLATION

1. INSTALL INDOOR ELECTRICAL KEY OSCILLATOR



(a) Attach the clamp to install the electrical key oscillator.

(b) Connect the connector.

2. INSTALL REAR FLOOR NO. 1 MAT SUPPORT SIDE PLATE (w/ Rear No. 2 Seat) INFO

3. INSTALL REAR FLOOR NO. 1 BOARD (w/o Rear No. 2 Seat)

4. INSTALL DECK BOARD ASSEMBLY (w/o Rear No. 2 Seat)

Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000020ZC00SX
Title: DOOR LOCK: ELECTRICAL KEY OSCILLATOR (for Rear Floor): REMOVAL (2011 RAV4)		

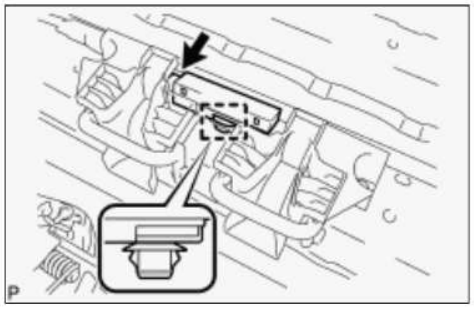
REMOVAL

1. REMOVE DECK BOARD ASSEMBLY (w/o Rear No. 2 Seat)

2. REMOVE REAR FLOOR NO. 1 BOARD (w/o Rear No. 2 Seat)

3. REMOVE REAR FLOOR NO. 1 MAT SUPPORT SIDE PLATE INFO

4. REMOVE INDOOR ELECTRICAL KEY OSCILLATOR



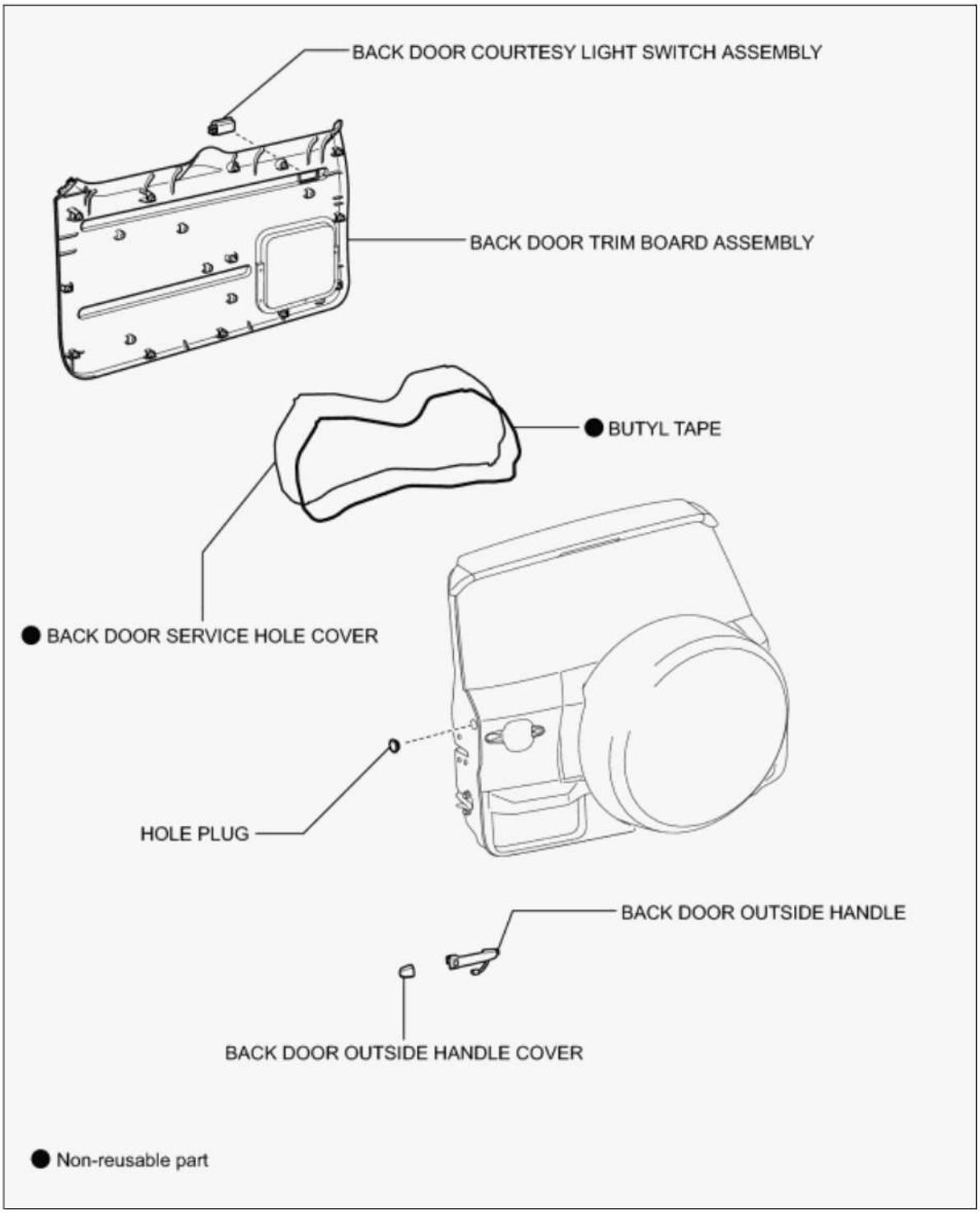
(a) Disconnect the connector.

(b) Detach the clamp and remove the electrical key oscillator.

Last Modified: 9-7-2011	6.4 K	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000020SG00FX
Title: DOOR LOCK: ENTRY LOCK AND UNLOCK SWITCH (for Back Door): COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION



Last Modified: 9-7-2011	6.4 G	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000000DFO011X
Title: DOOR LOCK: ENTRY LOCK AND UNLOCK SWITCH (for Back Door): INSPECTION (2011 RAV4)		

INSPECTION

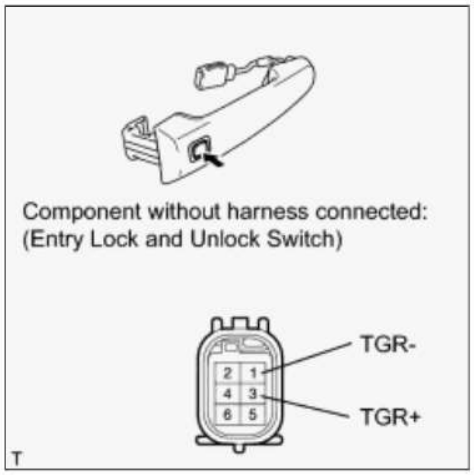
1. INSPECT BACK DOOR OUTSIDE HANDLE

(a) Disconnect the connector.

(b) Remove the outside handle.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:



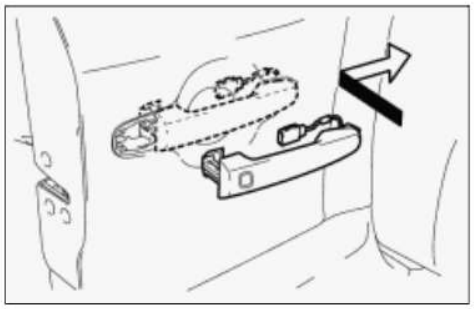
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (TRG-) - 3 (TRG+)	Lock switch not pushed (off)	10 kΩ or higher
1 (TRG-) - 3 (TRG+)	Lock switch pushed (on)	Below 1 Ω

If the result is not as specified, replace the back door outside handle.

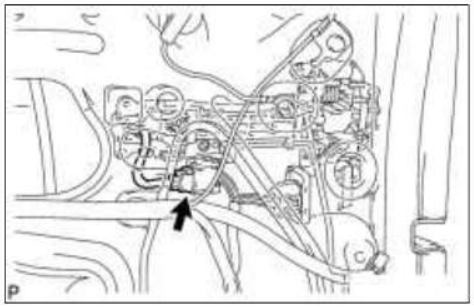
Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001J9600RX
Title: DOOR LOCK: ENTRY LOCK AND UNLOCK SWITCH (for Back Door): INSTALLATION (2011 RAV4)		

INSTALLATION

1. INSTALL BACK DOOR OUTSIDE HANDLE



(a) Install the handle by pushing and sliding it in the direction indicated by the arrows in the illustration.



(b) Connect the connector.

2. INSTALL BACK DOOR OUTSIDE HANDLE COVER INFO

3. INSTALL BACK DOOR SERVICE HOLE COVER INFO

4. INSTALL BACK DOOR TRIM BOARD ASSEMBLY INFO

5. INSTALL BACK DOOR COURTESY LIGHT SWITCH ASSEMBLY INFO

Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001J9500RX
Title: DOOR LOCK: ENTRY LOCK AND UNLOCK SWITCH (for Back Door): REMOVAL (2011 RAV4)		

REMOVAL

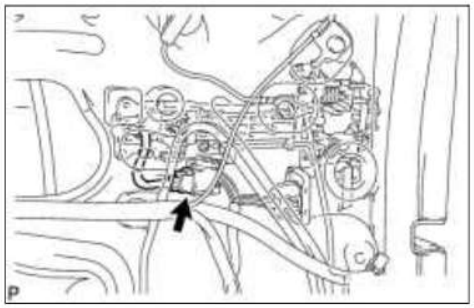
1. REMOVE BACK DOOR COURTESY LIGHT SWITCH ASSEMBLY INFO

2. REMOVE BACK DOOR TRIM BOARD ASSEMBLY INFO

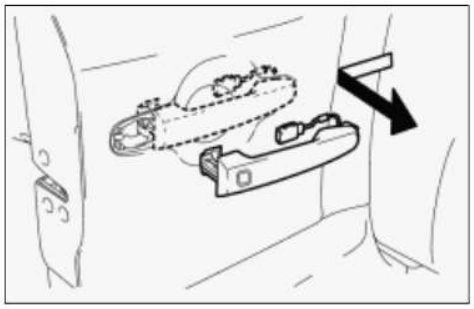
3. REMOVE BACK DOOR SERVICE HOLE COVER INFO

4. REMOVE BACK DOOR OUTSIDE HANDLE COVER INFO

5. REMOVE BACK DOOR OUTSIDE HANDLE



(a) Disconnect the connector.

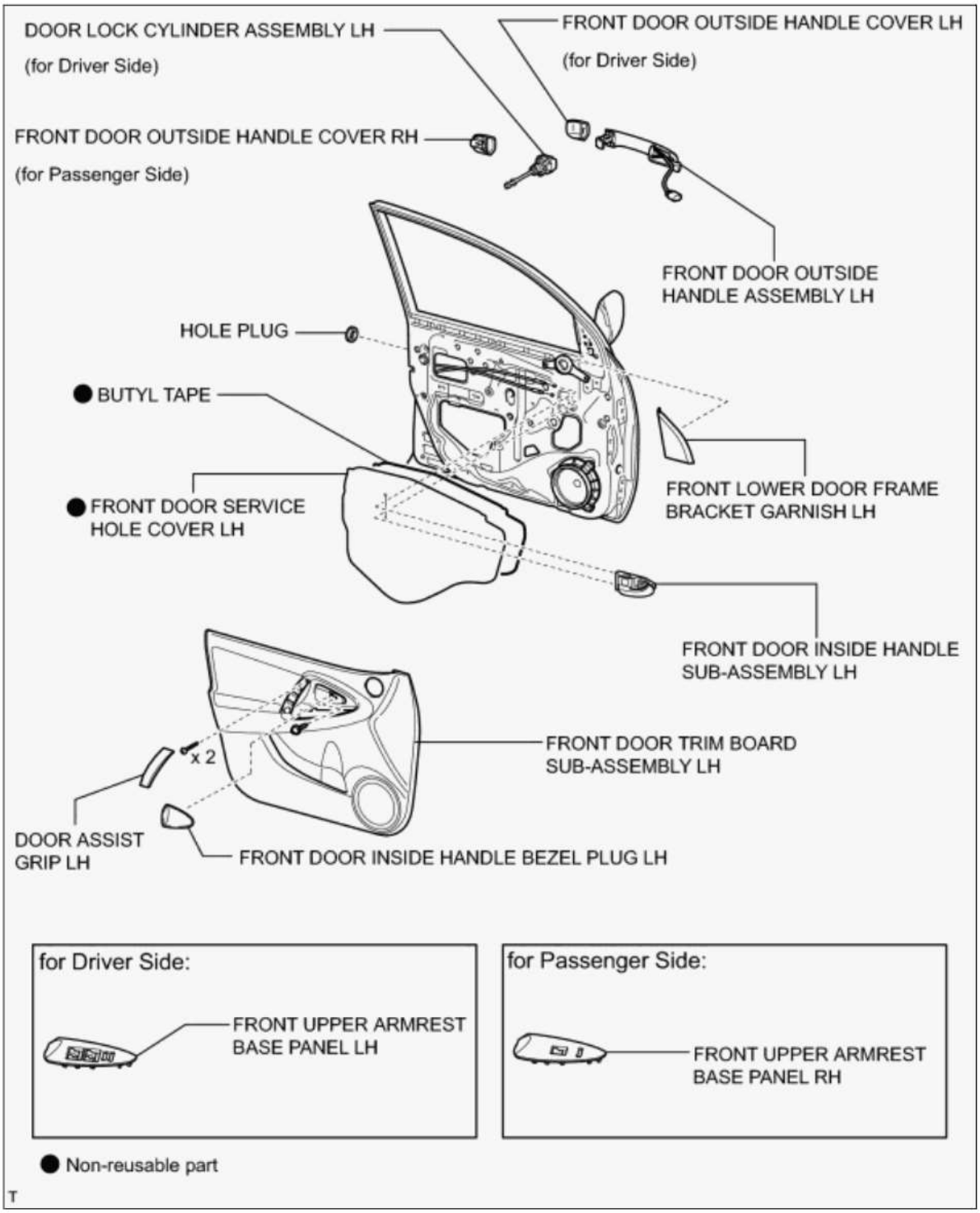


(b) Remove the handle by sliding and pulling it in the direction indicated by the arrow in the illustration.

Last Modified: 9-7-2011	6.4 K	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000020SE00EX
Title: DOOR LOCK: ENTRY LOCK AND UNLOCK SWITCH (for Front): COMPONENTS (2011 RAV4)		

COMPONENTS

ILLUSTRATION



Last Modified: 9-7-2011	6.4 G	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000002XD300LX
Title: DOOR LOCK: ENTRY LOCK AND UNLOCK SWITCH (for Front): INSPECTION (2011 RAV4)		

INSPECTION

HINT:

- Use the same procedure for the RH and LH sides.
- The procedures listed below are for the LH side.

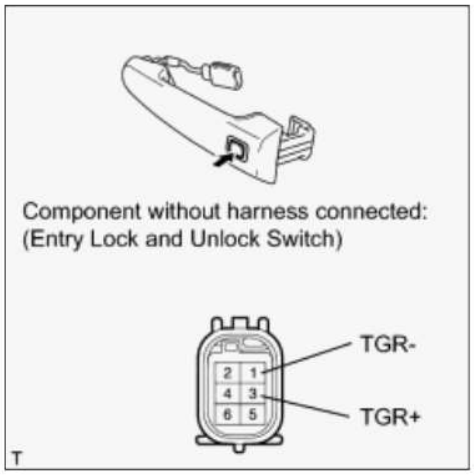
1. INSPECT ENTRY LOCK AND UNLOCK SWITCH

(a) Disconnect the connector.

(b) Remove the outside handle.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (TRG-) - 3 (TRG+)	Lock switch not pushed (off)	10 kΩ or higher
1 (TRG-) - 3 (TRG+)	Lock switch pushed (on)	Below 1 Ω

If the result is not as specified, replace the front door outside handle.

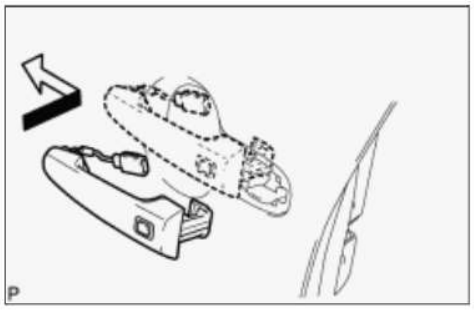
Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021EX00EX
Title: DOOR LOCK: ENTRY LOCK AND UNLOCK SWITCH (for Front): INSTALLATION (2011 RAV4)		

INSTALLATION

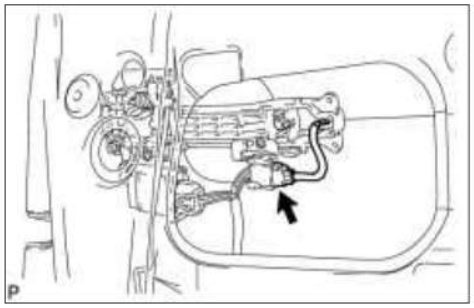
HINT:

- Use the same procedure for the RH and LH sides.
- The procedures listed below are for the LH side.
- A bolt without a torque specification is shown in the standard bolt chart INFO .

1. INSTALL FRONT DOOR OUTSIDE HANDLE ASSEMBLY LH



(a) Install the handle by pushing and sliding it in the direction indicated by the arrows in the illustration.



(b) Connect the connector.

2. INSTALL FRONT DOOR OUTSIDE HANDLE COVER LH (for Driver Side) INFO

3. INSTALL FRONT DOOR OUTSIDE HANDLE COVER RH (for Passenger Side) INFO

4. INSTALL FRONT DOOR SERVICE HOLE COVER LH INFO

5. INSTALL FRONT DOOR INSIDE HANDLE SUB-ASSEMBLY LH INFO

6. INSTALL FRONT DOOR TRIM BOARD SUB-ASSEMBLY LH INFO

7. INSTALL FRONT UPPER ARMREST BASE PANEL LH INFO

8. INSTALL FRONT LOWER DOOR FRAME BRACKET GARNISH LH INFO

Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021EW00EX
Title: DOOR LOCK: ENTRY LOCK AND UNLOCK SWITCH (for Front): REMOVAL (2011 RAV4)		

REMOVAL

HINT:

- Use the same procedure for the RH and LH sides.
- The procedures listed below are for the LH side.

1. REMOVE FRONT LOWER DOOR FRAME BRACKET GARNISH LH INFO

2. REMOVE FRONT UPPER ARMREST BASE PANEL LH INFO

3. REMOVE FRONT DOOR TRIM BOARD SUB-ASSEMBLY LH INFO

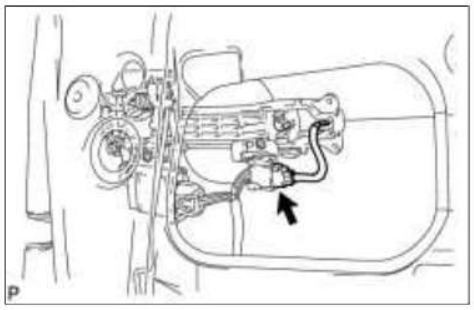
4. REMOVE FRONT DOOR INSIDE HANDLE SUB-ASSEMBLY LH INFO

5. REMOVE FRONT DOOR SERVICE HOLE COVER LH INFO

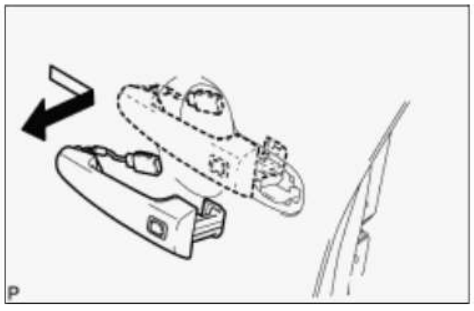
6. REMOVE FRONT DOOR OUTSIDE HANDLE COVER LH (for Driver Side) INFO

7. REMOVE FRONT DOOR OUTSIDE HANDLE COVER RH (for Passenger Side) INFO

8. REMOVE FRONT DOOR OUTSIDE HANDLE ASSEMBLY LH



(a) Disconnect the connector.



(b) Remove the handle by sliding and pulling it in the direction indicated by the arrow in the illustration.

Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGJ00CX
Title: DOOR LOCK: SMART KEY SYSTEM: All Door Entry Lock and Unlock Functions do not Operate (2011 RAV4)		

All Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

When the key cancel function is ON, all entry functions stop operating. If the key cancel function is operated but all entry functions stop operating, one of the following is malfunctioning: 1) key cancel function, 2) certification ECU or 3) wire harness.

INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:
No DTC output.

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A ▼

2.	CHECK MANUAL DOOR LOCK AND UNLOCK OPERATION

(a) Check that all the doors lock when the door control switch (for manual operation) is turned to LOCK and all doors unlock when turned to UNLOCK.

OK:

All doors can be locked and unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK ▼

3.	CHECK WIRELESS DOOR LOCK CONTROL OPERATION

(a) Check that the wireless door lock and unlock functions operate normally INFO .

OK:

Wireless door lock and unlock functions operate normally.

NG ▶ **Go to WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System)**

OK ▼

4.	CHECK DOOR CONTROL TRANSMITTER (OPERATION)

(a) Temporarily replace the door control transmitter with a new or normally functioning one.

(b) Check that the entry lock and unlock functions operate normally INFO .

OK:

Entry lock and unlock functions operate normally.

NG ▶ **READ VALUE USING TECHSTREAM (DOOR COURTESY LIGHT SWITCH)**

OK ▶ **END (DOOR CONTROL TRANSMITTER IS DEFECTIVE)**

5.	READ VALUE USING TECHSTREAM (DOOR COURTESY LIGHT SWITCH)

(a) Check the Data List to confirm the operations of each door courtesy light switch.

Main Body

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
D Door Courtesy SW	Driver side door courtesy light switch signal/ ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-
P Door Courtesy SW	Passenger side door courtesy light switch signal/ ON or OFF	ON: Passenger side door is open OFF: Passenger side door is closed	-
RL Door Courtesy SW	Rear door LH courtesy light switch signal/ ON or OFF	ON: Rear door LH is open OFF: Rear door LH is closed	-
RR Door Courtesy SW	Rear door RH courtesy light switch signal/ ON or OFF	ON: Rear door RH is open OFF: Rear door RH is closed	-

OK:
On Techstream screen, items change between ON and OFF according to above chart.

NG ▶ **Go to LIGHTING SYSTEM**

OK ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

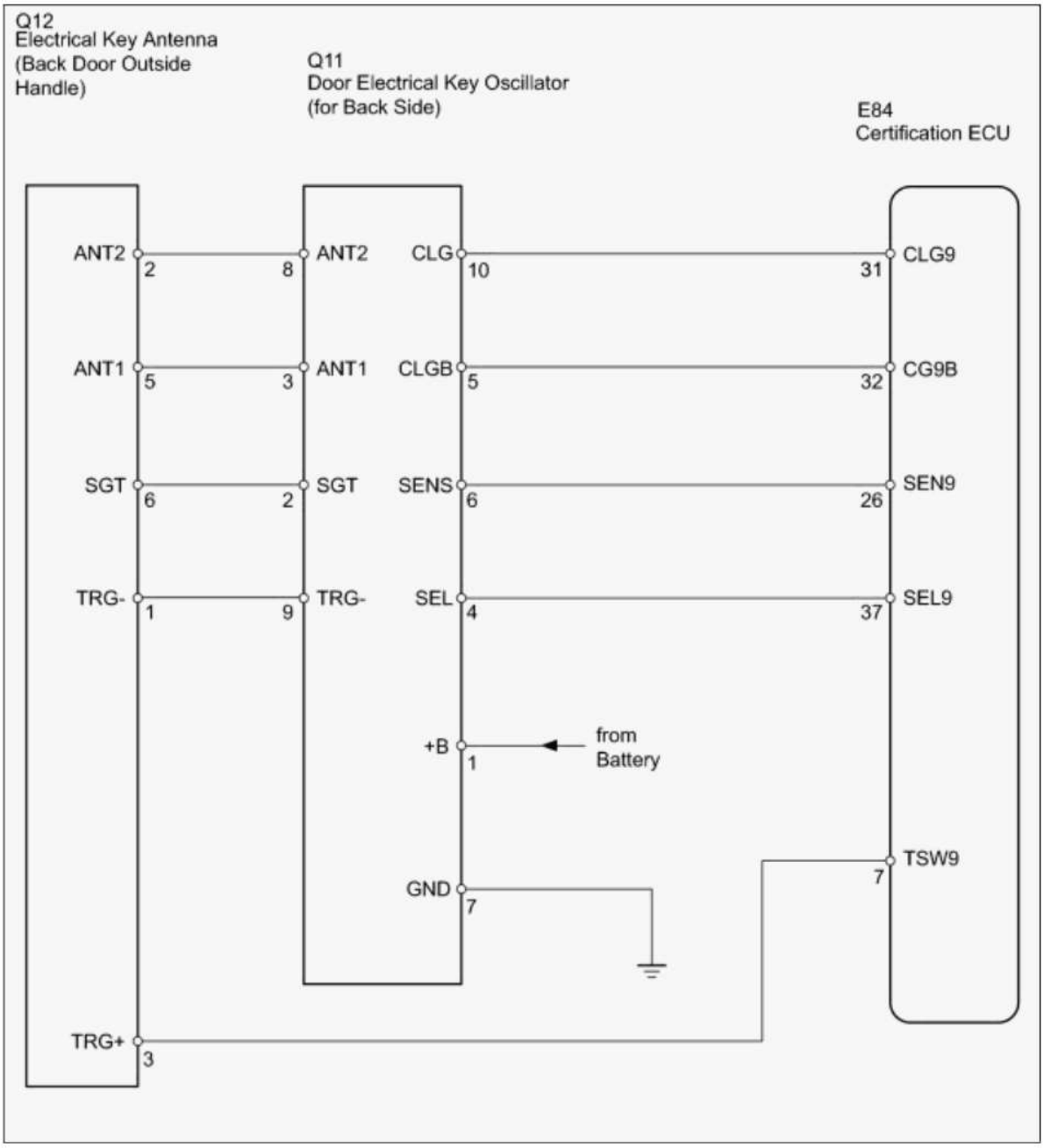
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021SX02CX
Title: DOOR LOCK: SMART KEY SYSTEM: Back Door Entry Lock and Unlock Functions do not Operate (2011 RAV4)		

Back Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

Neither the entry nor unlock functions operate when: 1) nothing is output from the door electrical key oscillator (back door), 2) the smart key system is disabled through customization, or 3) the entire power door lock control system is malfunctioning.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:

No DTC output.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A

▼

2.	**CHECK MANUAL DOOR LOCK AND UNLOCK OPERATION**

(a) Check that all the doors lock when the door control switch (for manual operation) is turned to LOCK and UNLOCK.

OK:

All doors can be locked and unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK

▼

3.	**PERFORM ACTIVE TEST USING TECHSTREAM (DOOR ELECTRICAL KEY OSCILLATOR)**

(a) Select the Active Test, use the Techstream to generate a control command, and then check that the oscillator operates.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE

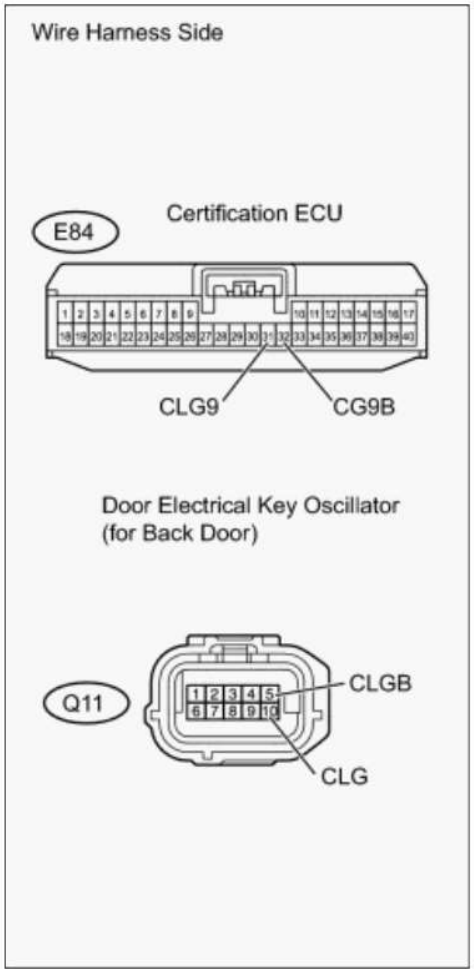
TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Outside Trunk/Backdoor Transmitter	Door electrical key oscillator (back door)	ON or OFF	-

OK:
When key is brought close to door oscillator that is ON, indicator light on key illuminates.

NG ▶ **CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR ELECTRICAL KEY OSCILLATOR)**

OK ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

4.	CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR ELECTRICAL KEY OSCILLATOR)



(a) Disconnect the E84 ECU connector.

(b) Disconnect the Q11 oscillator connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
E84-31 (CLG9) - Q11-10 (CLG)	Below 1 Ω
E84-32 (CG9B) - Q11-5 (CLGB)	
E84-31 (CLG9) or Q11-10 (CLG) - Body ground	10 kΩ or higher
E84-32 (CG9B) or Q11-5 (CLGB) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

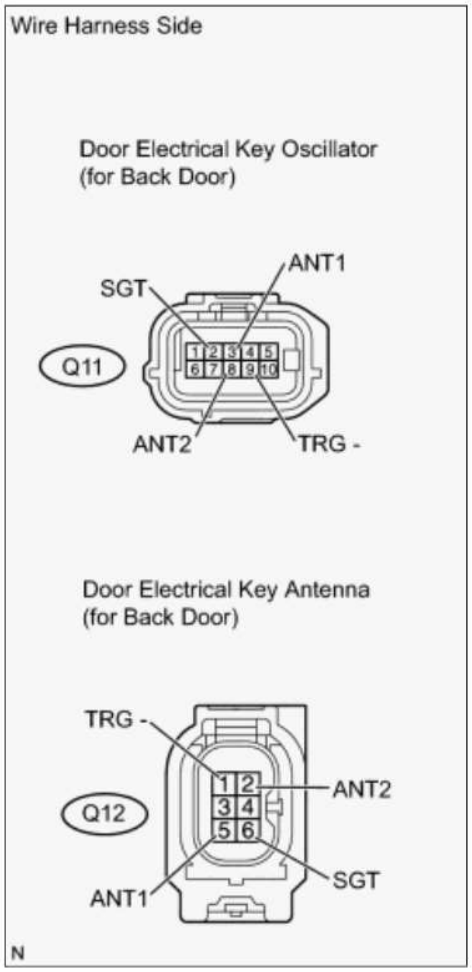
5.	**CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - DOOR ELECTRICAL KEY ANTENNA)**

(a) Disconnect the Q11 oscillator connector.

(b) Disconnect the Q12 antenna connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:



TESTER CONNECTION	SPECIFIED CONDITION
Q11-2 (SGT) - Q12-6 (SGT)	Below 1 Ω
Q11-3 (ANT1) - Q12-5 (ANT1)	
Q11-8 (ANT2) - Q12-2 (ANT2)	
Q11-9 (TRG-) - Q12-1 (TRG-)	
Q11-2 (SGT) or Q12-6 (SGT) - Body ground	10 kΩ or higher
Q11-3 (ANT1) or Q12-5 (ANT1) - Body ground	
Q11-8 (ANT2) or Q12-2 (ANT2) - Body ground	
Q11-9 (TRG-) or Q12-1 (TRG-) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

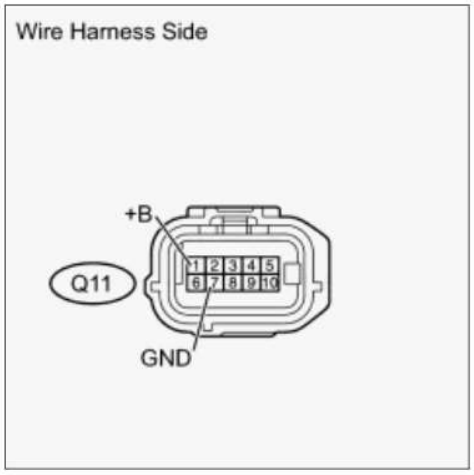
6.	**CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - BATTERY AND BODY GROUND)**

(a) Disconnect the Q11 oscillator connector.

(b) Measure the resistance and voltage of the wire harness side connector.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
Q11-7 (GND) - Body ground	Below 1 Ω



Standard voltage:

TESTER CONNECTION	SPECIFIED CONDITION
Q11-1 (+B) - Body ground	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

7.	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY ANTENNA - CERTIFICATION ECU)

(a) Disconnect the Q12 antenna connector.

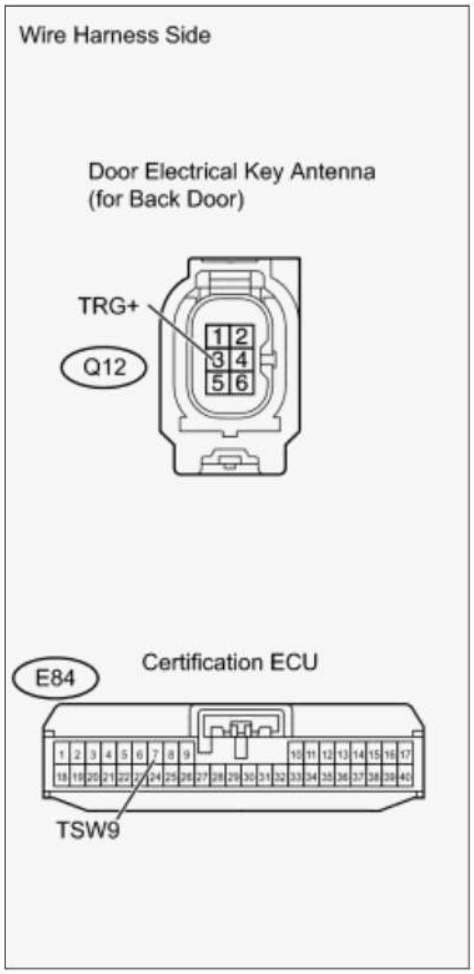
(b) Disconnect the E84 ECU connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
Q12-3 (TRG+) - E84-7 (TSW9)	Below 1 Ω
Q12-3 (TRG+) or E84-7 (TSW9) - Body ground	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS**



AND

CONNECTOR

OK

8.	CHECK BACK DOOR OUTSIDE HANDLE (OPERATION)

(a) Temporarily replace the back door outside handle with a new or normally functioning one INFO .

(b) Check that the entry lock and unlock functions operate normally INFO .

OK:

Entry lock and unlock functions operate normally.

NG **END (ELECTRICAL KEY ANTENNA IS DEFECTIVE)**

OK

9.	CHECK DOOR ELECTRICAL KEY OSCILLATOR (OPERATION)

(a) Temporarily replace the door electrical key oscillator (back door) with a new or normally

(b) Check that the entry lock and unlock functions operate normally.

OK:

Entry lock and unlock functions operate normally.

NG ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

OK ▶ **END (DOOR KEY OSCILLATOR IS DEFECTIVE)**

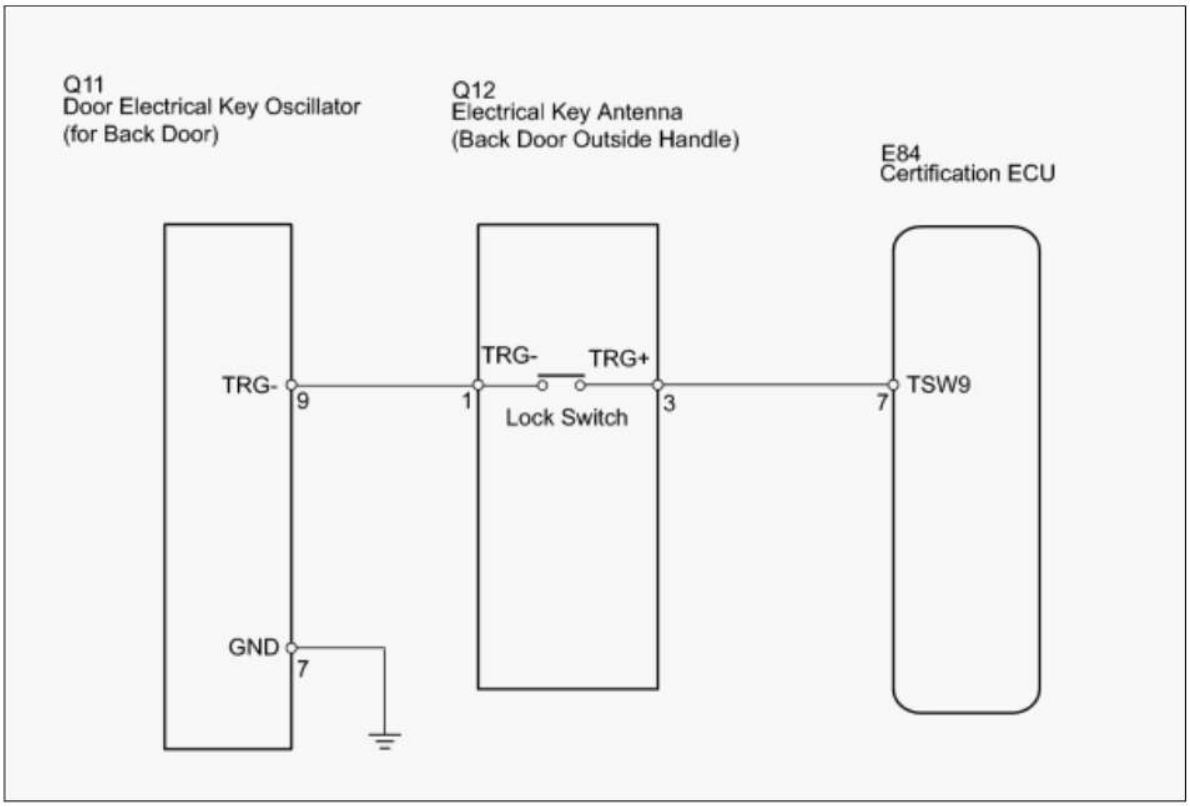
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021SW02CX
Title: DOOR LOCK: SMART KEY SYSTEM: Back Door Entry Lock Function does not Operate (2011 RAV4)		

Back Door Entry Lock Function does not Operate

DESCRIPTION

When the lock switch built into the back door outside handle is turned on, a lock switch ON signal is transmitted to the certification ECU, and a request signal is then transmitted to both the indoor electrical key oscillator and door electrical key oscillator by the certification ECU. Upon receipt of the request signal, the electrical key transmitter transmits an ID code to the certification ECU. When the certification ECU recognizes that the key is not in the cabin and is outside the vehicle, a door lock signal is transmitted to the main body ECU, causing all the doors to be locked.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CHECK FOR DTC

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:

No DTC output.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A ▼

2.	CHECK MANUAL DOOR UNLOCK OPERATION

(a) Check that all the doors unlock when the door control switch (for manual operation) is turned to LOCK and UNLOCK.

OK:

All doors can be lock and unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK ▼

3.	CHECK WIRELESS DOOR LOCK CONTROL OPERATION

(a) Check that the wireless door lock and unlock functions operate normally INFO .

OK:
Wireless door lock and unlock functions operate normally.

NG ▶ **Go to WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System)**

OK ▼

4.	**READ VALUE USING TECHSTREAM (LOCK SWITCH)**

(a) Check the Data List for proper functioning of the door lock switch.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Tr/B-Door Lock SW	Back door lock switch / ON or OFF	ON: Back door lock switch pushed OFF: Back door lock switch is not pushed	-

OK:
On Techstream screen, item changes between ON and OFF according to above chart.

NG ▶ **INSPECT BACK DOOR OUTSIDE HANDLE**

OK ▼

5.	**CHECK ECU AGGREGATION BOX (OPERATION)**

(a) Temporarily replace the ECU aggregation box (certification ECU) with a new or normally functioning one INFO .

(b) Check that the entry lock and unlock functions operate normally INFO .

OK:
Entry lock and unlock functions operate normally.

NG ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

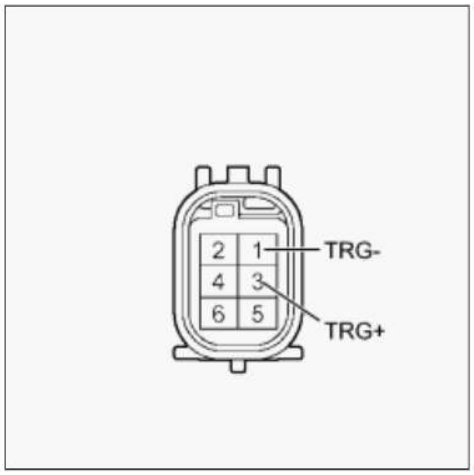
OK ▶ **END (CERTIFICATION ECU IS DEFECTIVE)**

6.	**INSPECT BACK DOOR OUTSIDE HANDLE**

(a) Disconnect the back door outside handle connector.

(b) Measure the resistance between the terminal when the lock switch is operated.

Standard resistance:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (TRG-) - 3 (TRG+)	Switch released	10 kΩ or higher
	Switch pressed in	Below 1 Ω

NG ▶ **REPLACE BACK DOOR OUTSIDE HANDLE**

OK ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

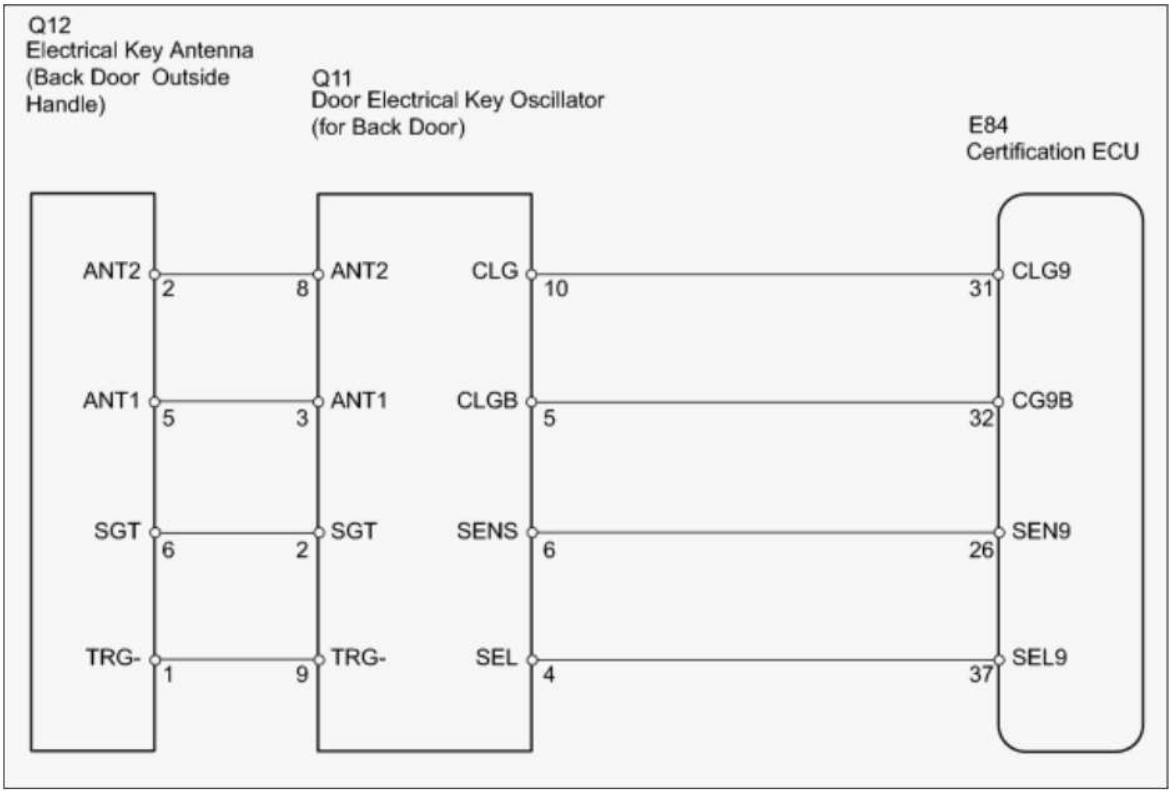
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021SV007X
Title: DOOR LOCK: SMART KEY SYSTEM: Back Door Entry Unlock Function does not Operate (2011 RAV4)		

Back Door Entry Unlock Function does not Operate

DESCRIPTION

When an ID code from the door electrical key oscillator (back door) matches the ID code from the key, the certification ECU outputs an SEL signal (Lo when output) to the door electrical key oscillator (back door), activates the touch sensor located on the backside of the outside door handle, and enters unlock standby mode. When the touch sensor is touched, the door electrical key oscillator (back door) sends an SENS signal (Lo when output) to the certification ECU and the certification ECU sends an unlock signal to the back door lock.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:

No DTC output.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A ▼

2.	**CHECK MANUAL DOOR UNLOCK OPERATION**

(a) Check that all the doors unlock when the door control switch (for manual operation) is turned to UNLOCK.

OK:

All doors can be unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK ▼

3.	**CHECK WIRELESS DOOR LOCK CONTROL OPERATION**

(a) Check that the wireless door lock and unlock functions operate normally INFO .

OK:

Wireless door lock and unlock functions operate normally.

NG ▶ **Go to WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System)**

OK ▼

4.	READ VALUE USING TECHSTREAM (DOOR COURTESY SWITCH)

(a) Check the Data List for proper functioning of the back door courtesy light switch.

Main Body

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Back Door Courtesy SW	Back door courtesy light switch signal / ON or OFF	ON: Back door is open OFF: Back door is closed	-

OK:
On Techstream screen, item changes between ON and OFF according to above chart.

NG ▶ **Go to LIGHTING SYSTEM**

OK ▼

5.	PERFORM ACTIVE TEST USING TECHSTREAM (BACK DOOR SELECT)

(a) Select the Active Test, use the Techstream to generate a control command, and then check that the door electrical key oscillator operates.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Back Door Select	Door electrical key oscillator (back door)	ON or OFF	-

OK:
ON (Outside Trunk/Backdoor Transmitter is ON) appears on screen.

NG ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

OK

6.	**READ VALUE USING TECHSTREAM (TOUCH SENSOR)**

(a) With "Back Door Select" ON, check the Data List to confirm the operation of the touch sensor.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
B-Door Touch Sensor	Back door touch sensor / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor is not touched	-

OK:
When back door sensor is set to ON, ON (sensor is touched) appears on screen.

NG ▶ **CHECK DOOR ELECTRICAL KEY OSCILLATOR (for Back Door)**

OK

7.	**CHECK ECU AGGREGATION BOX (OPERATION)**

(a) Temporarily replace the ECU aggregation box (certification ECU) with a new or normally functioning one.

(b) Check that the entry back door unlock function operates normally.

OK:
Entry back door unlock function operates normally.

NG ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

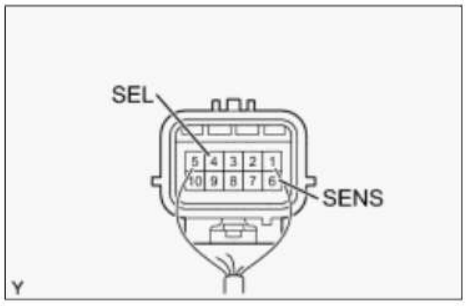
OK ▶ **END (CERTIFICATION ECU IS DEFECTIVE)**

8.	**CHECK DOOR ELECTRICAL KEY OSCILLATOR (for Back Door)**

(a) Measure the voltage of the oscillator.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
4 (SEL) - Body ground	During Active Test	Below 1 V
6 (SENS) - Body ground	Touch sensor is touched during Active Test	Below 1 V
	Touch sensor is not touched during Active Test	11 to 14 V



NG ▶ **CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - ELECTRICAL KEY ANTENNA)**

OK ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

9.	**CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - ELECTRICAL KEY ANTENNA)**

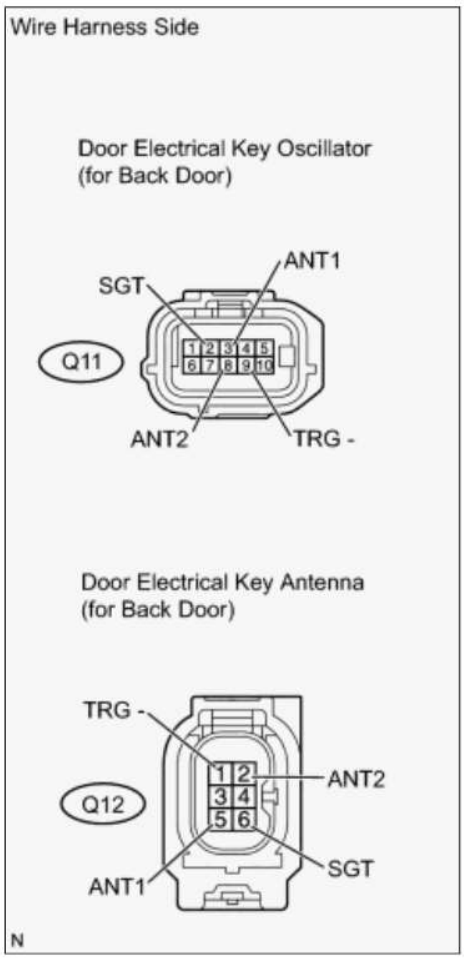
(a) Disconnect the Q11 oscillator connector.

(b) Disconnect the Q12 antenna connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
Q11-2 (SGT) - Q12-6 (SGT)	Below 1 Ω
Q11-3 (ANT1) - Q12-5 (ANT1)	
Q11-8 (ANT2) - Q12-2 (ANT2)	



TESTER CONNECTION	SPECIFIED CONDITION
Q11-9 (TRG-) - Q12-1 (TRG-)	
Q11-2 (SGT) or Q12-6 (SGT) - Body ground	10 kΩ or higher
Q11-3 (ANT1) or Q12-5 (ANT1) - Body ground	
Q11-8 (ANT2) or Q12-2 (ANT2) - Body ground	
Q11-9 (TRG-) or Q12-1 (TRG-) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

10.	CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR ELECTRICAL KEY OSCILLATOR)

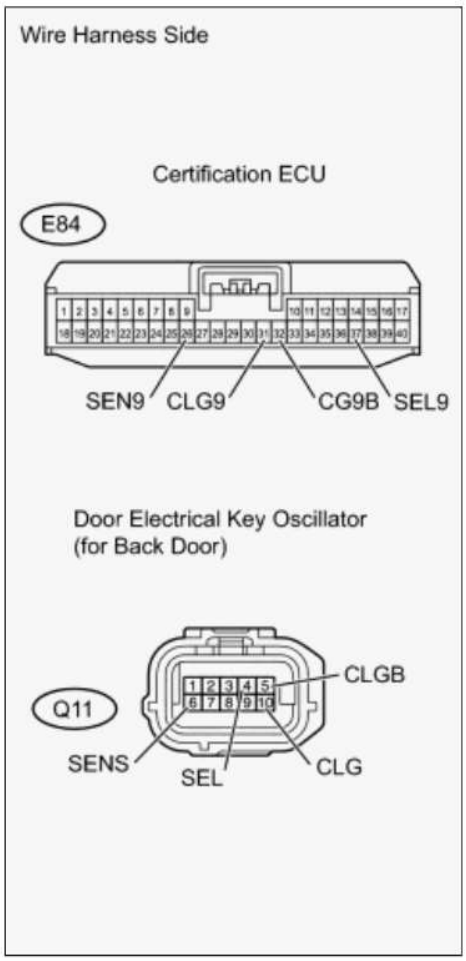
(a) Disconnect the E84 ECU connector.

(b) Disconnect the Q11 oscillator connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
E84-37 (SEL9) - Q11-4 (SEL)	Below 1 Ω
E84-26 (SEN9) - Q11-6 (SENS)	
E84-31 (CLG9) - Q11-10 (CLG)	
E84-32 (CG9B) - Q11-5 (CLGB)	
E84-37 (SEL9) or Q11-4 (SEL) - Body ground	10 kΩ or higher



TESTER CONNECTION	SPECIFIED CONDITION
E84-26 (SEN9) or Q11-6 (SENS) - Body ground	
E84-31 (CLG9) or Q11-10 (CLG) - Body ground	
E84-32 (CG9B) or Q11-5 (CLGB) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▶ **REPLACE DOOR ELECTRICAL KEY OSCILLATOR (for Back Door)**

Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGI007X
Title: DOOR LOCK: SMART KEY SYSTEM: CUSTOMIZE PARAMETERS (2011 RAV4)		

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH TECHSTREAM (REFERENCE)

HINT:

The items in the table below can be customized.

NOTICE:

- When the customer requests a change in a function, first make sure that the function can be customized.
- Be sure to make a note of the current settings before customizing.
- When troubleshooting a function, first make sure that the function is set to the default setting.

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Customize Setting.

(e) Select the setting by referring to the table below.

Smart Key / Access

DISPLAY	DEFAULT	CONTENTS	SETTING
Park Wait Time*1	2.5s	Function that sets the waiting time to permit unlocking the door after the door is locked with the entry lock function.	0.5s/1.5s /2.5s/5s
Ignition Available Area*2	ALL	Function to choose the available area for the key to start the engine and cancel the steering lock.	FRONT/ALL*3

Warning

DISPLAY	DEFAULT	CONTENTS	SETTING
Key Low Battery Warning*4	ON	Function that warns the driver that the key battery power is low.	ON/OFF

HINT:

***1: Waiting time to permit unlocking door after locking.**

***2: Entry ignition available area.**

***3: "FRONT" means front, and "ALL" means front and rear.**

***4: Warn when key battery becomes weak.**

2. KEY CANCEL

The key cancel operation disables the following functions:

- Entry unlock / lock function

- Key lock-in prevention function
- Warning function

(a) The operation procedures are as follows:

Precondition:

Engine switch off, driver side door closed and unlocked

(1) Unlock the doors once with the UNLOCK switch of the key.

(2) Open the driver door within 5 seconds.

(3) Unlock the doors twice with the UNLOCK switch of the key within 5 seconds.

(4) Perform close → open twice for the driver door within 30 seconds.

(Driver door: Open condition → Close → Open → Close → Open)

(5) Unlock the driver side door twice with the UNLOCK switch of the key within 5 seconds.

(6) Perform close → open once for the driver door within 30 seconds.

(Driver door: Open condition → Close → Open)

(7) Close the driver door within 5 seconds.

When key cancel is activated, the wireless door lock buzzer sounds twice.

To return to the original condition, perform the procedures again. When the original condition is returned, the wireless door lock buzzer sounds once.

Last Modified: 9-7-2011	6.4 U	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGH007X
Title: DOOR LOCK: SMART KEY SYSTEM: DATA LIST / ACTIVE TEST (2011 RAV4)		

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Body Electrical / (desired system) / Data List.

(e) According to the display on the Techstream, read the Data List.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
D-Door Touch Sensor	Driver side door touch sensor / ON or OFF	ON: Sensor is touched OFF: Sensor is not touched	-
P-Door Touch Sensor	Front passenger side door touch sensor / ON or OFF	ON: Sensor is touched OFF: Sensor is not touched	-
B-Door Touch Sensor	Back door touch sensor / ON or OFF	ON: Sensor is touched OFF: Sensor is not touched	-
D-Door Trigger Switch	Driver side outside door handle (lock switch) / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-
P-Door Trigger Switch	Front passenger side door handle (lock switch) / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-
Tr/B-Door Lock SW	Back door lock switch / ON or OFF	ON: Back door lock switch is pushed	-

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		OFF: Back door lock switch is not pushed	
Ignition Switch	Ignition switch / ON or OFF	ON: Engine switch is on (IG) OFF: Engine switch is off	-
Unmatched Vehicle-ID	No communication condition between vehicle and electrical key transmitter (vehicle-ID) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
No Response	No communication condition between vehicle and electrical key transmitter (response) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
Unmatch Code or Form	No communication condition between vehicle and electrical key transmitter (response code and format) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
Key Low Battery	Key low battery / Yes or No	Yes: Key battery voltage low No: Key battery voltage normal	-
Power Save Cnt 10 Min.	Power save counter - 10 minutes / Min: 0; Max: 255	Power save counter - 10 minutes	-
Power Save Cnt 5 Days	Power save counter - 5 days / Min: 0; Max: 255	Power save counter - 5 days	-
Power Save Cnt 14 Days	Power save counter - 14 days / Min: 0; Max: 255	Power save counter - 14 days	-
ACC Switch	Ignition switch / ON or OFF	ON: Engine switch is on (ACC) OFF: Engine switch is off	-
ID Code Difference (Resp)	No communication condition between vehicle and electrical key transmitter (ID code) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
C Code Difference	No communication condition between vehicle and electrical key transmitter (challenge code) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
Auto Entry Cancel SW	Key cancel switch signal/ ON or OFF	ON: Key cancel switch is ON	-

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		OFF: Key cancel switch is OFF	

Main Body

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
ACC SW	Ignition switch / ON or OFF	ON: Engine switch is on (ACC) OFF: Engine switch is off	-
IG SW	Ignition switch / ON or OFF	ON: Engine switch is on (IG) OFF: Engine switch is off	-
D Door Courtesy SW	Driver side door courtesy light switch signal / ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-
P Door Courtesy SW	Passenger side door courtesy light switch signal / ON or OFF	ON: Passenger side door is open OFF: Passenger side door is closed	-
RR Door Courtesy SW	Rear right side door courtesy light switch signal / ON or OFF	ON: Rear right side door is open OFF: Rear right side door is closed	-
RL Door Courtesy SW	Rear left side door courtesy light switch signal / ON or OFF	ON: Rear left side door is open OFF: Rear left side door is closed	-
Back Door Courtesy SW	Back door courtesy light switch signal / ON or OFF	ON: Back door is open OFF: Back door is closed	-
D-Door Lock Pos SW	Driver side door lock position switch signal / ON or OFF	ON: Driver side door is unlocked OFF: Driver side door is closed	-
P-Door Lock Pos SW	Passenger side door lock position switch signal / ON or OFF	ON: Passenger side door is unlocked OFF: Passenger side door is locked	-

2. PERFORM ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Body Electrical / Smart Key / Active Test.

(e) According to the display on the Techstream, perform the Active Test.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Overhead Tuner Power Supply ON	Door control receiver	ON or OFF	-
D-Seat Outside Transmitter	Driver side electrical key oscillator	ON or OFF	-
P-Seat Outside Transmitter	Front passenger side electrical key oscillator	ON or OFF	-
Fr-Seat Inside Transmitter	Indoor electrical key oscillator (front)	ON or OFF	-
Inside Trunk/Backdoor Transmitter	Indoor electrical key oscillator (rear)	ON or OFF	-
Outside Trunk/Backdoor Transmitter	Door electrical key oscillator (back door)	ON or OFF	-
D-Seat Select	Driver side select	ON or OFF	-
P-Seat Select	Front passenger side select	ON or OFF	-
Back Door Select	Back door select	ON or OFF	-
Wireless Buzzer Operation	Wireless door lock buzzer	ON or OFF	-

Main Body

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Hazard	Hazard warning lights	ON or OFF	-

Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGD007X
Title: DOOR LOCK: SMART KEY SYSTEM: DIAGNOSIS SYSTEM (2011 RAV4)		

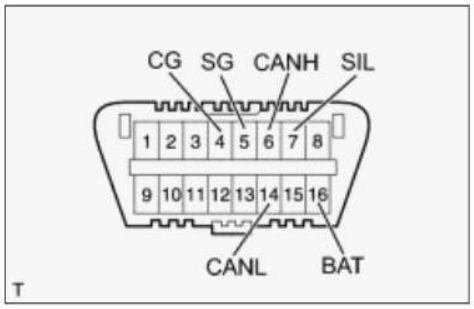
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Smart key system data and the Diagnostic Trouble Codes (DTCs) can be read through the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the Techstream to check for malfunctions and perform repairs.

2. CHECK DLC3

(a) The vehicle uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



SYMBOLS (TERMINAL NO.)	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Engine switch off*	54 to 69 Ω
CANH (6) - BAT (16)	HIGH-level CAN bus line	Engine switch off*	6 kΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Engine switch off*	200 Ω or higher
CANL (14) - BAT (16)	LOW-level CAN bus line	Engine switch off*	6 kΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Engine switch off*	200 Ω or higher

NOTICE:

***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the engine switch, other switches or doors.**

If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

(b) Connect the cable of the Techstream to the DLC3, turn the engine switch on (IG) and attempt to use the

tester. If the display indicates that a communication error has occurred, there is a problem either with the vehicle or with the Techstream.

HINT:

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem may be in the Techstream itself. Consult the Service Department listed in the tester's instruction manual.





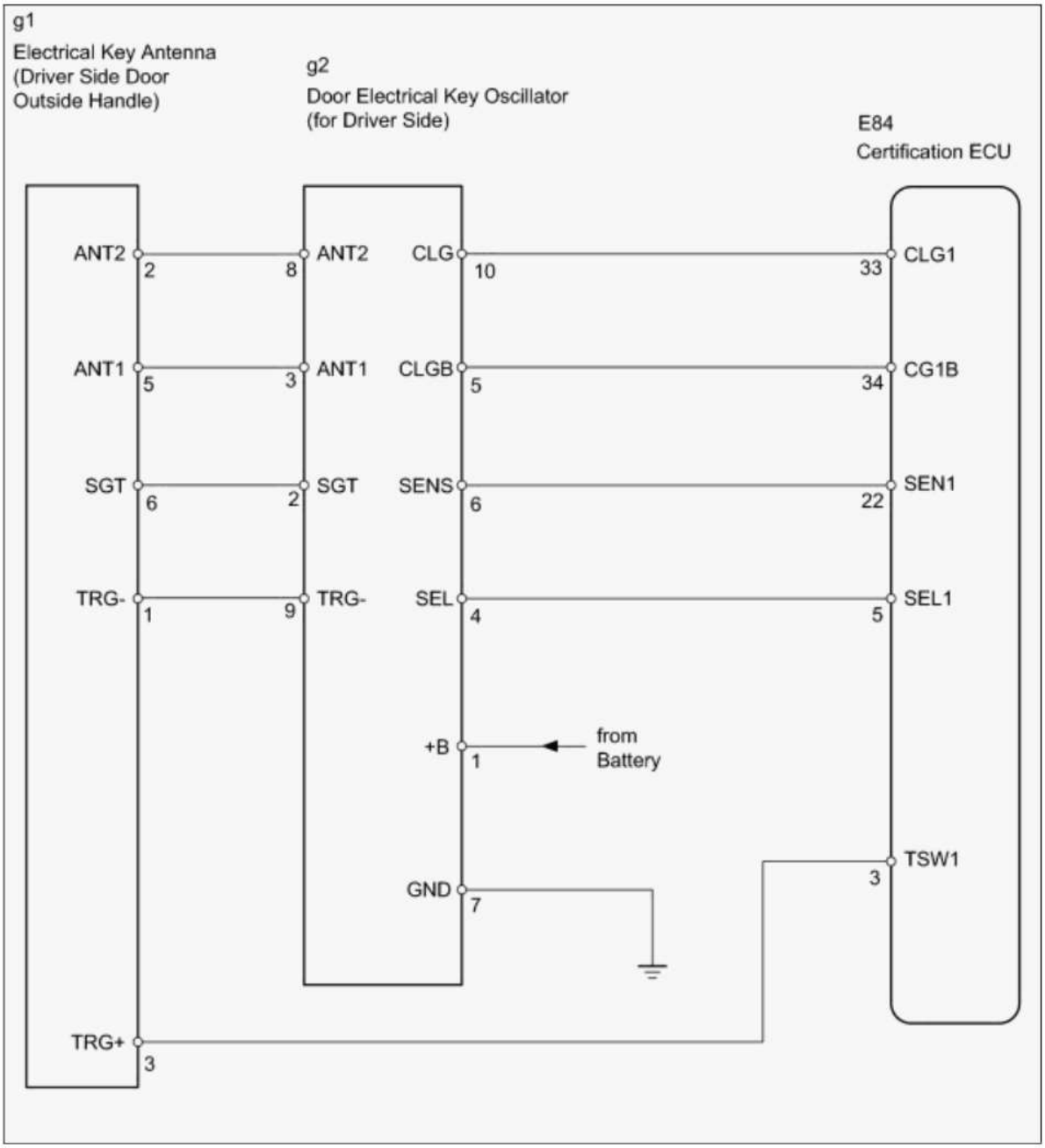
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGM00LX
Title: DOOR LOCK: SMART KEY SYSTEM: Driver Side Door Entry Lock and Unlock Functions do not Operate (2011 RAV4)		

Driver Side Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

Neither the entry lock nor unlock functions operate when: 1) nothing is output from the door electrical key oscillator (driver side), 2) the smart key system is disabled through customization, or 3) the entire power door lock control system is malfunctioning.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:

No DTC output.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A ▼

2.	**CHECK MANUAL DOOR LOCK AND UNLOCK OPERATION**

(a) Check that all the doors lock when the door control switch (for manual operation) is turned to LOCK and all doors unlock when turned to UNLOCK.

OK:

All doors can be locked and unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK ▼

3.	**PERFORM ACTIVE TEST USING TECHSTREAM (DOOR ELECTRICAL KEY OSCILLATOR)**

(a) Select the Active Test, use the Techstream to generate a control command, and then check that the oscillator operates.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
D-Seat Outside Transmitter	Driver side door electrical key oscillator	ON or OFF	-

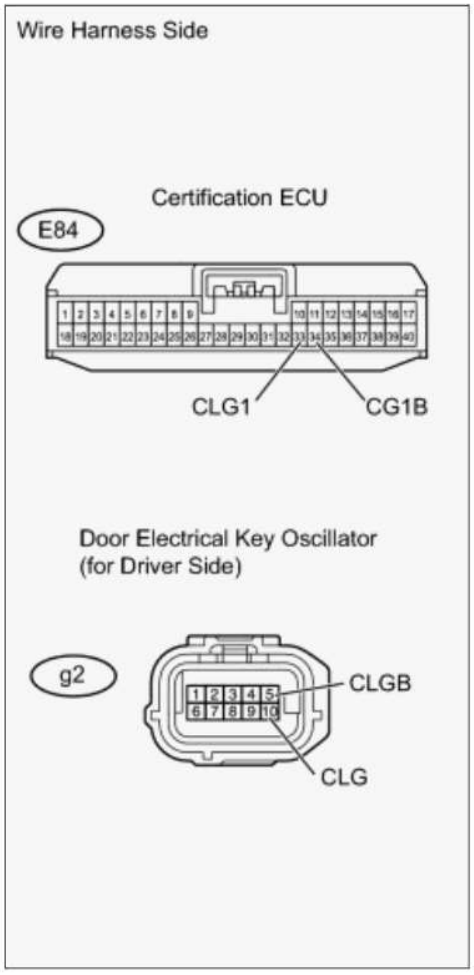
OK:

When key is brought close to door oscillator that is ON, indicator light on key illuminates.

NG ▶ **CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR ELECTRICAL KEY OSCILLATOR)**

OK ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

4.	CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR ELECTRICAL KEY OSCILLATOR)



(a) Disconnect the E84 ECU connector.

(b) Disconnect the g2 oscillator connector.

(c) Measure the resistance of the wire harness side connectors.

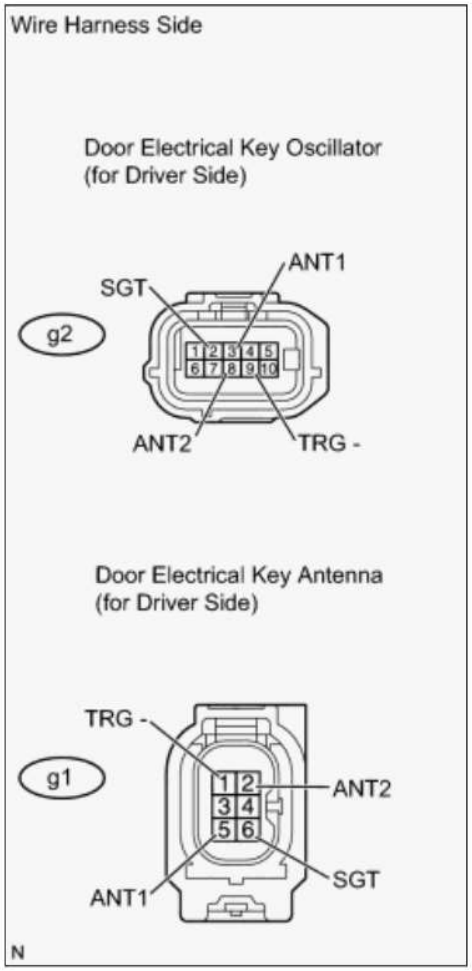
Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
E84-33 (CLG1) - g2-10 (CLG)	Below 1 Ω
E84-34 (CG1B) - g2-5 (CLGB)	
E84-33 (CLG1) or g2-10 (CLG) - Body ground	10 kΩ or higher
E84-34 (CG1B) or g2-5 (CLGB) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

5.	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - DOOR ELECTRICAL KEY ANTENNA)



(a) Disconnect the g2 oscillator connector.

(b) Disconnect the g1 antenna connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
g2-2 (SGT) - g1-6 (SGT)	Below 1 Ω
g2-3 (ANT1) - g1-5 (ANT1)	
g2-8 (ANT2) - g1-2 (ANT2)	
g2-9 (TRG-) - g1-1 (TRG-)	
g2-2 (SGT) or g1-6 (SGT) - Body ground	10 kΩ or higher
g2-3 (ANT1) or g1-5 (ANT1) - Body ground	
g2-8 (ANT2) or g1-2 (ANT2) - Body ground	
g2-9 (TRG-) or g1-1 (TRG-) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

6.	**CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - BATTERY AND BODY GROUND)**

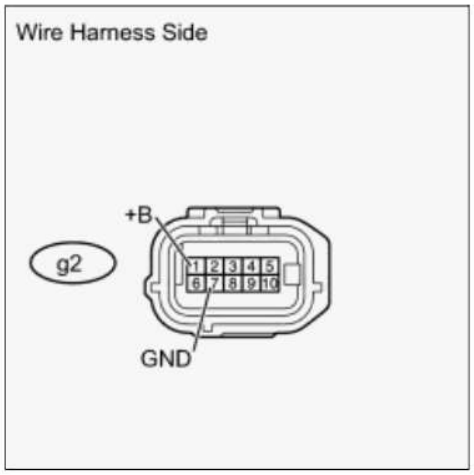
(a) Disconnect the g2 oscillator connector.

(b) Measure the resistance and voltage of the wire harness side connector.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
g2-7 (GND) - Body ground	Below 1 Ω

Standard voltage:



TESTER CONNECTION	SPECIFIED CONDITION
g2-1 (+B) - Body ground	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

7.	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY ANTENNA - CERTIFICATION ECU)

(a) Disconnect the g1 antenna connector.

(b) Disconnect the E84 ECU connector.

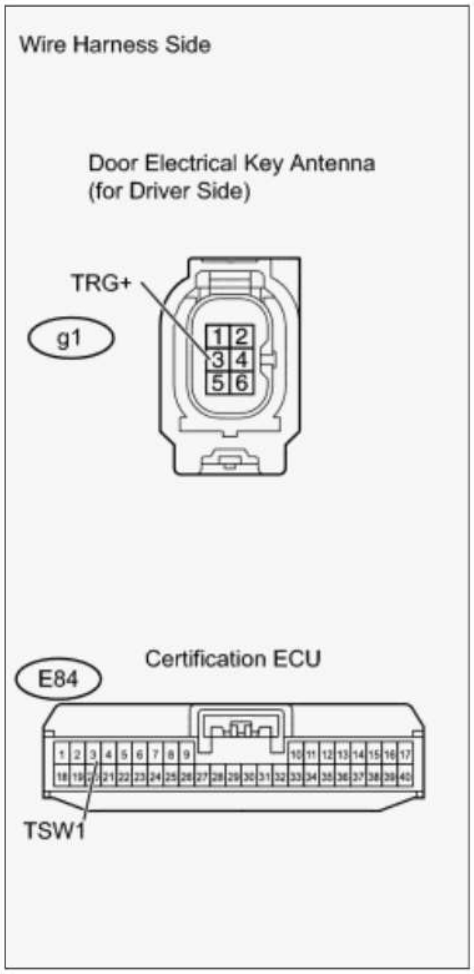
(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
g1-3 (TRG+) - E84-3 (TSW1)	Below 1 Ω
g1-3 (TRG+) or E84-3 (TSW1) - Body ground	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼



8.	**CHECK FRONT DOOR OUTSIDE HANDLE ASSEMBLY (OPERATION)**

(a) Temporarily replace the front door outside handle (electrical key antenna) with a new or normally functioning one INFO .

(b) Check that the entry lock and unlock functions operate normally INFO .

OK:

Entry lock and unlock functions operate normally.

NG ▶ **CHECK DOOR ELECTRICAL KEY OSCILLATOR (OPERATION)**

OK ▶ **END (ELECTRICAL KEY ANTENNA IS DEFECTIVE)**

9.	**CHECK DOOR ELECTRICAL KEY OSCILLATOR (OPERATION)**

(a) Temporarily replace the door electrical key oscillator (driver side) with a new or normally functioning one.

(b) Check that the entry lock and unlock functions operate normally.

OK:
Entry lock and unlock functions operate normally.

NG ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

OK ▶ **END (DOOR KEY OSCILLATOR IS DEFECTIVE)**

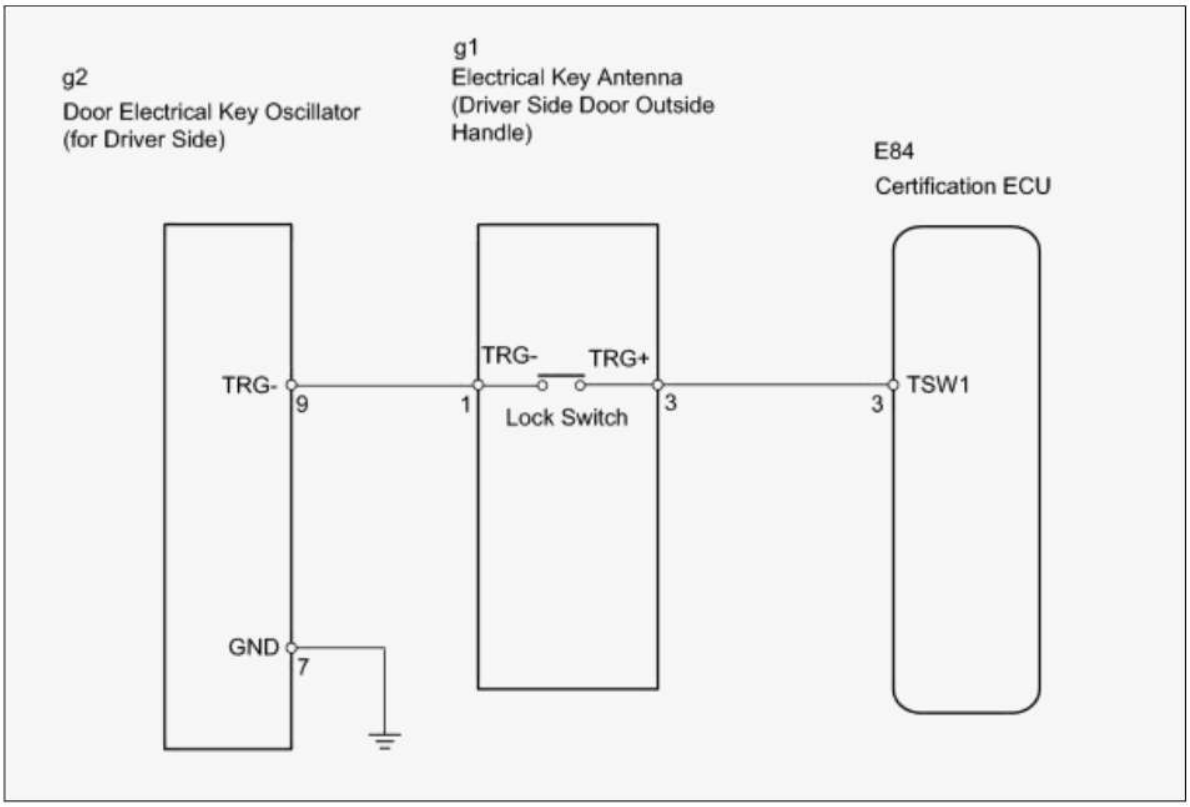
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021SQ00LX
Title: DOOR LOCK: SMART KEY SYSTEM: Driver Side Door Entry Lock Function does not Operate (2011 RAV4)		

Driver Side Door Entry Lock Function does not Operate

DESCRIPTION

When the lock switch built into the front door outside handle (for driver side) is turned on, a lock switch ON signal is transmitted to the certification ECU, and a request signal is then transmitted to both the indoor electrical key oscillator and door electrical key oscillator by the certification ECU. Upon receipt of the request signal, the electrical key transmitter transmits an ID code to the certification ECU. When the certification ECU recognizes that the key is not in the cabin and is outside the vehicle, a door lock signal is transmitted to the main body ECU, causing all the doors to be locked.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:

No DTC output.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A ▼

2.	**CHECK MANUAL DOOR LOCK OPERATION**

(a) Check that all the doors lock when the door control switch (for manual operation) is turned to LOCK and UNLOCK.

OK:

All doors can be locked and unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK ▼

3.	**CHECK WIRELESS DOOR LOCK CONTROL OPERATION**

(a) Check that the wireless door lock and unlock functions operate normally INFO .

OK:
Wireless door lock and unlock functions operate normally.

NG ▶ **Go to WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System)**

OK ▼

4.	**READ VALUE USING TECHSTREAM (LOCK SWITCH)**

(a) Check the Data List for proper functioning of the door lock switch.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
D-Door Trigger Switch	Driver side outside door handle (lock switch) / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-

OK:
On Techstream screen, item changes between ON and OFF according to above chart.

NG ▶ **INSPECT FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Driver Side)**

OK ▼

5.	**CHECK ECU AGGREGATION BOX (OPERATION)**

(a) Temporarily replace the ECU aggregation box (certification ECU) with a new or normally functioning one INFO .

(b) Check that the entry lock and unlock functions operate normally INFO .

OK:
Entry lock and unlock functions operate normally.

NG ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK**

(MAIN BODY ECU)

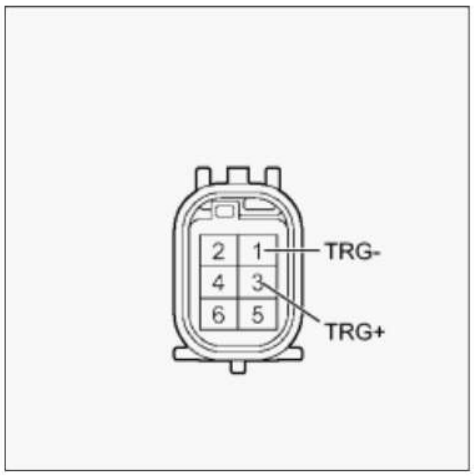
OK ▶ **END (CERTIFICATION ECU IS DEFECTIVE)**

6.	**INSPECT FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Driver Side)**

(a) Disconnect the front door outside handle (for driver side) connector.

(b) Measure the resistance between the terminal when the trigger switch is operated.

Standard resistance:



TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (TRG-) - 3 (TRG+)	Switch released	10 kΩ or higher
	Switch pressed in	Below 1 Ω

NG ▶ **REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Driver Side)**

OK ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

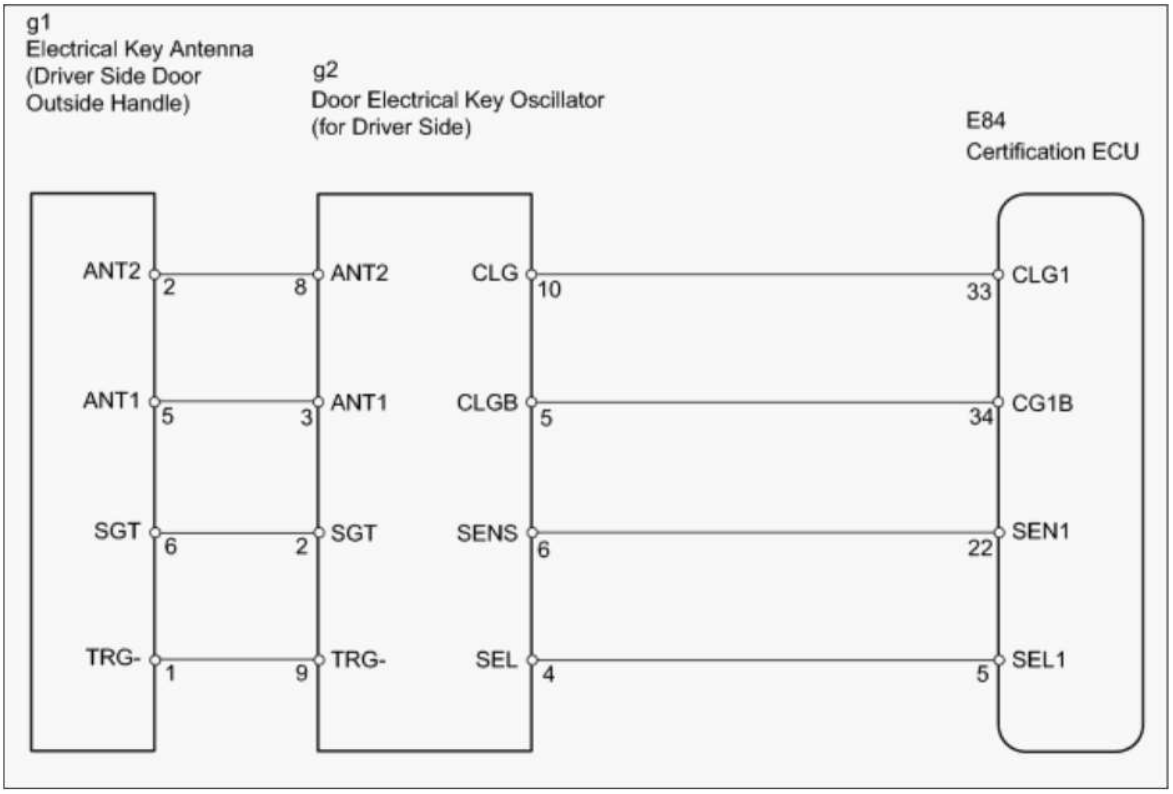
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGK00LX
Title: DOOR LOCK: SMART KEY SYSTEM: Driver Side Door Entry Unlock Function does not Operate (2011 RAV4)		

Driver Side Door Entry Unlock Function does not Operate

DESCRIPTION

When an ID code from the door electrical key oscillator LH matches the ID code from the key, the certification ECU outputs an SEL signal (Lo when output) to the door electrical key oscillator LH, activates the touch sensor located on the backside of the outside door handle, and enters unlock standby mode. When the touch sensor is touched, the door electrical key oscillator LH sends a SENS signal (Lo when output) to the certification ECU and the certification ECU sends an unlock signal to the driver side door lock.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:

No DTC output.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A
▼

2.	**CHECK MANUAL DOOR UNLOCK OPERATION**

(a) Check that all the doors unlock when the door control switch (for manual operation) is turned to UNLOCK.

OK:

All doors can be unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK
▼

3.	**CHECK WIRELESS DOOR LOCK CONTROL OPERATION**

(a) Check that the wireless door lock and unlock functions operate normally INFO .

OK:

Wireless door lock and unlock functions operate normally.

NG ▶ **Go to WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System)**

OK ▼

4.	READ VALUE USING TECHSTREAM (DOOR COURTESY LIGHT SWITCH)

(a) Check the Data List to confirm the operation of the door courtesy light switch (driver side).

Main Body

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
D Door Courtesy SW	Driver side door courtesy light switch signal ON / OFF	ON: Driver side door is open OFF: Driver side door is closed	-

OK:
On Techstream screen, item changes between ON and OFF according to above chart.

NG ▶ **Go to LIGHTING SYSTEM**

OK ▼

5.	READ VALUE USING TECHSTREAM (LOCK POSITION SWITCH)

(a) Check the Data List for proper functioning of the door lock position switch (driver side).

Main Body

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
D-Door Lock Pos SW	Driver side door lock position switch signal / ON or OFF	ON: Door is unlocked OFF: Door is locked	-

OK:
On Techstream screen, item changes between ON and OFF according to above chart.

NG ▶ Go to POWER DOOR LOCK CONTROL SYSTEM

OK ▼

6.	PERFORM ACTIVE TEST USING TECHSTREAM (DRIVER SIDE SELECT)

(a) Select the Active Test, use the Techstream to generate a control command, and then check that the door electrical key oscillator operates.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
D-Seat Select	Driver side electrical key oscillator	ON or OFF	-

OK:
ON (D-Seat Select is ON) appears on screen.

NG ▶ REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)

OK ▼

7.	READ VALUE USING TECHSTREAM (TOUCH SENSOR)

(a) With "D-Seat Select" ON, check the Data List to confirm the operation of the touch sensor (driver side).

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
D-Door Touch Sensor	Driver side door touch sensor / ON or OFF	ON: Sensor is touched OFF: Sensor is not touched	-

OK:
When driver side door touch sensor is set to ON, ON (sensor is touched) appears on screen.

NG ▶ CHECK DOOR ELECTRICAL KEY OSCILLATOR (for Driver Side)

OK

8.	**CHECK ECU AGGREGATION BOX (OPERATION)**

(a) Temporarily replace the ECU aggregation box (certification ECU) with a new or normally functioning one INFO .

(b) Check that the entry unlock function operates normally INFO .

OK:
Entry unlock function operates normally.

NG ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

OK ▶ **END (CERTIFICATION ECU IS DEFECTIVE)**

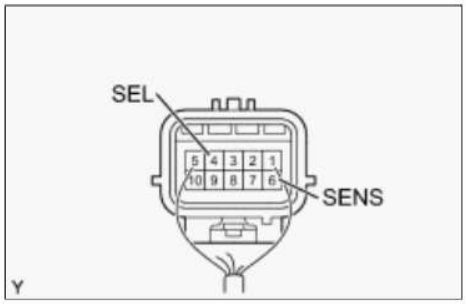
9.	**CHECK DOOR ELECTRICAL KEY OSCILLATOR (for Driver Side)**

(a) Measure the voltage of the oscillator.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
4 (SEL) - Body ground	During Active Test	Below 1 V
6 (SENS) - Body ground	Touch sensor is touched during Active Test	Below 1 V
	Touch sensor is not touched during Active Test	11 to 14 V

10.	**CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - DOOR ELECTRICAL KEY ANTENNA)**



(a) Disconnect the g2 oscillator connector.

(b) Disconnect the g1 antenna connector.

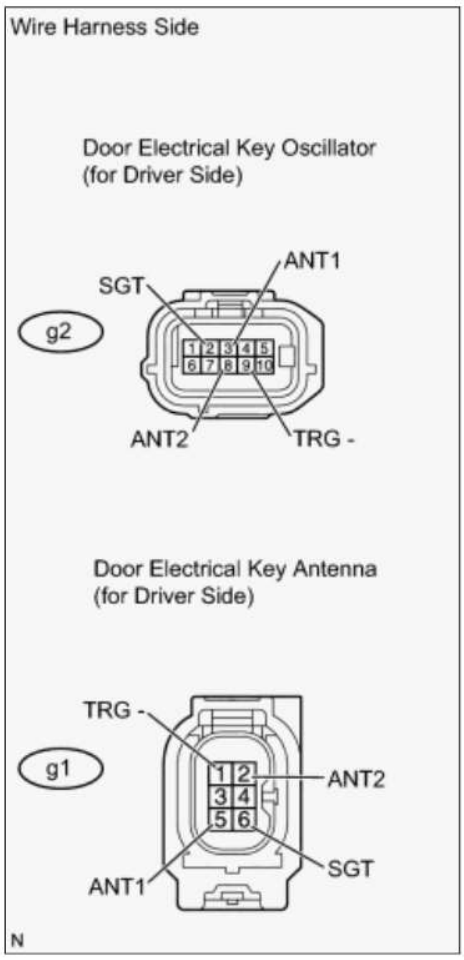
(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
g2-2 (SGT) - g1-6 (SGT)	Below 1 Ω
g2-3 (ANT1) - g1-5 (ANT1)	Below 1 Ω
g2-8 (ANT2) - g1-2 (ANT2)	Below 1 Ω
g2-9 (TRG-) - g1-1 (TRG-)	Below 1 Ω

OK ▶ **REPLACE ENTRY AND START ANTENNA (DOOR ELECTRICAL KEY OSCILLATOR - DOOR ELECTRICAL KEY ANTENNA)**

NG ▶ **REPLACE WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - DOOR ELECTRICAL KEY ANTENNA)**



TESTER CONNECTION	SPECIFIED CONDITION
g2-2 (SGT) or g1-6 (SGT) - Body ground	10 kΩ or higher
g2-3 (ANT1) or g1-5 (ANT1) - Body ground	
g2-8 (ANT2) or g1-2 (ANT2) - Body ground	
g2-9 (TRG-) or g1-1 (TRG-) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

11.	**CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR ELECTRICAL KEY OSCILLATOR)**

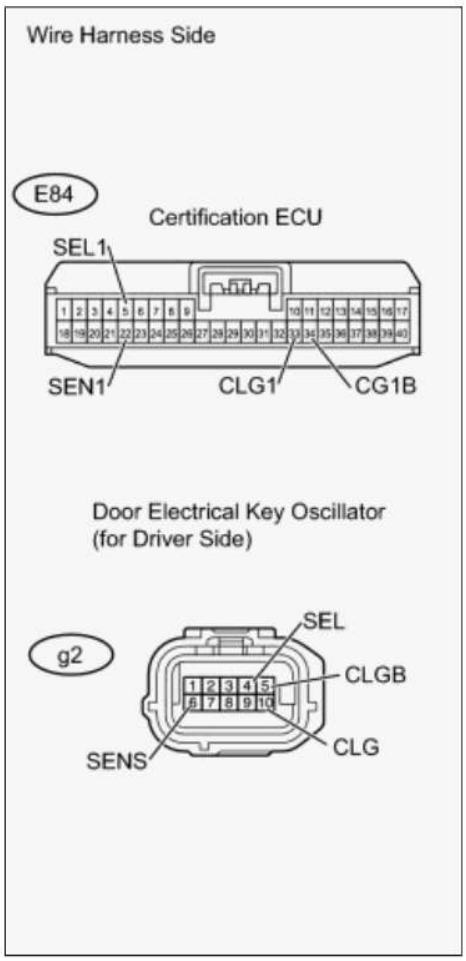
(a) Disconnect the E84 ECU connector.

(b) Disconnect the g2 oscillator connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
E84-5 (SEL1) - g2-4 (SEL)	Below 1 Ω
E84-22 (SEN1) - g2-6 (SENS)	
E84-33 (CLG1) - g2-10 (CLG)	
E84-34 (CG1B) - g2-5 (CLGB)	
E84-5 (SEL1) or g2-4 (SEL) - Body ground	10 kΩ or higher



TESTER CONNECTION	SPECIFIED CONDITION
E84-22 (SEN1) or g2-6 (SENS) - Body ground	
E84-33 (CLG1) or g2-10 (CLG) - Body ground	
E84-34 (CG1B) or g2-5 (CLGB) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▶ **REPLACE DOOR ELECTRICAL KEY OSCILLATOR (for Driver Side)**

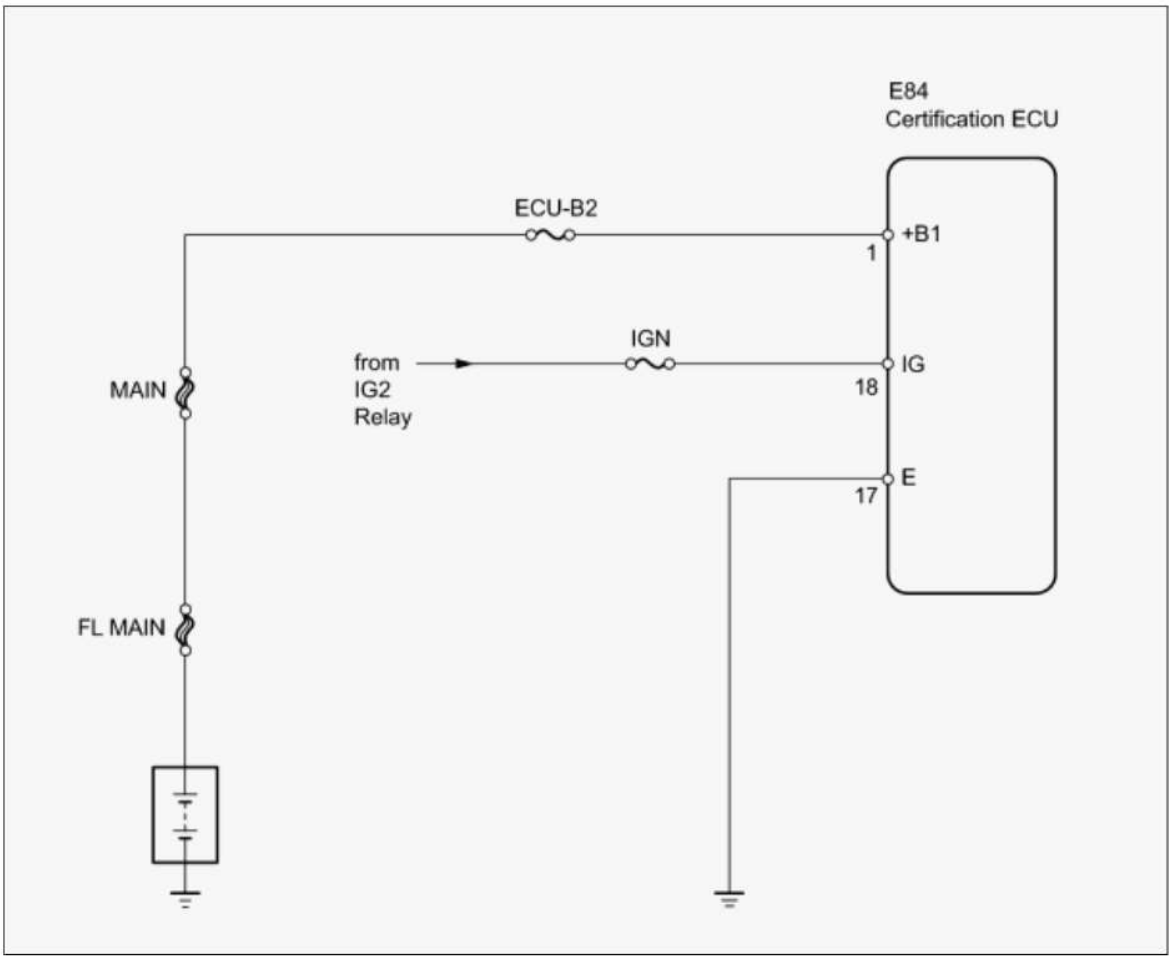
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021SU008X
Title: DOOR LOCK: SMART KEY SYSTEM: Entry Functions do not Operate at All (2011 RAV4)		

Entry Functions do not Operate at All

DESCRIPTION

When the entry functions do not operate at all, it is possible that the certification ECU is malfunctioning or that the wire harness leading to the certification ECU is short circuited.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CHECK KEY CANCEL FUNCTION

(a) Check that the key cancel function has been set INFO .

OK:

Key cancel function is set.

NG ▶ **CHECK WIRE HARNESS (CERTIFICATION ECU - BATTERY AND BODY GROUND)**

OK ▶ **END (UNSET KEY CANCEL FUNCTION)**

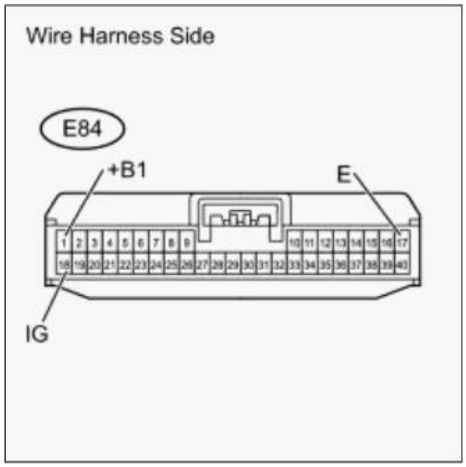
2.	CHECK WIRE HARNESS (CERTIFICATION ECU - BATTERY AND BODY GROUND)

(a) Disconnect the E84 ECU connector.

(b) Measure the resistance and voltage of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E84-17 (E) - Body ground	Always	Below 1 Ω



Standard voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E84-18 (IG) - Body ground	Engine switch on (IG)	11 to 14 V
	Engine switch off	Below 1 V
E84-1 (+B1) - Body ground	Always	11 to 14 V

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION**

ECU)

Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021ST00DX
Title: DOOR LOCK: SMART KEY SYSTEM: Entry Interior Alarm does not Sound (2011 RAV4)		

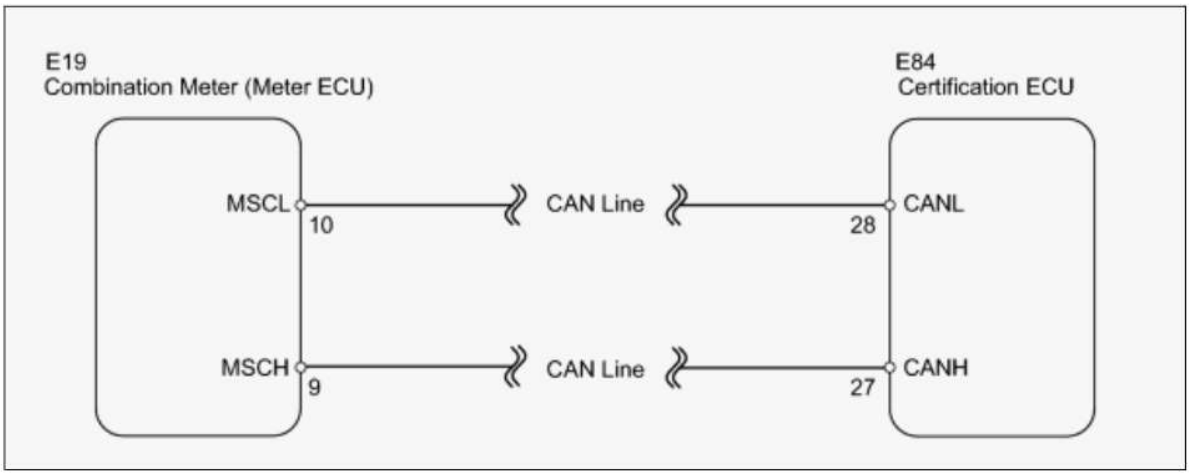
Entry Interior Alarm does not Sound

DESCRIPTION

Each of the smart key system's warning uses the warning buzzer in the combination meter to alert the driver.

The combination meter repeatedly sounds the warning buzzer when one of the following occurs: 1) the activation conditions for the smart key system warning are met, or 2) the certification ECU sends a warning buzzer signal via the CAN communication line to the combination meter (meter ECU).

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK WHETHER ENGINE STARTS**

(a) Check that the engine starts.

HINT:

The engine starts when the correct warning buzzer signal is transmitted from the steering lock ECU to the combination meter.

OK:
Engine starts.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to SMART KEY SYSTEM (for Starting)**

C ▶ **Go to SMART KEY SYSTEM (for Starting)**

A ▼

2.	**CHECK COMBINATION METER ASSEMBLY (OPERATION)**

(a) Place the door control transmitter in an undetectable area outside the vehicle, and turn the engine switch on (IG) with all doors closed.

OK:

Warning buzzer sounds once.

NG ▶ **Go to METER / GAUGE SYSTEM**

OK ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

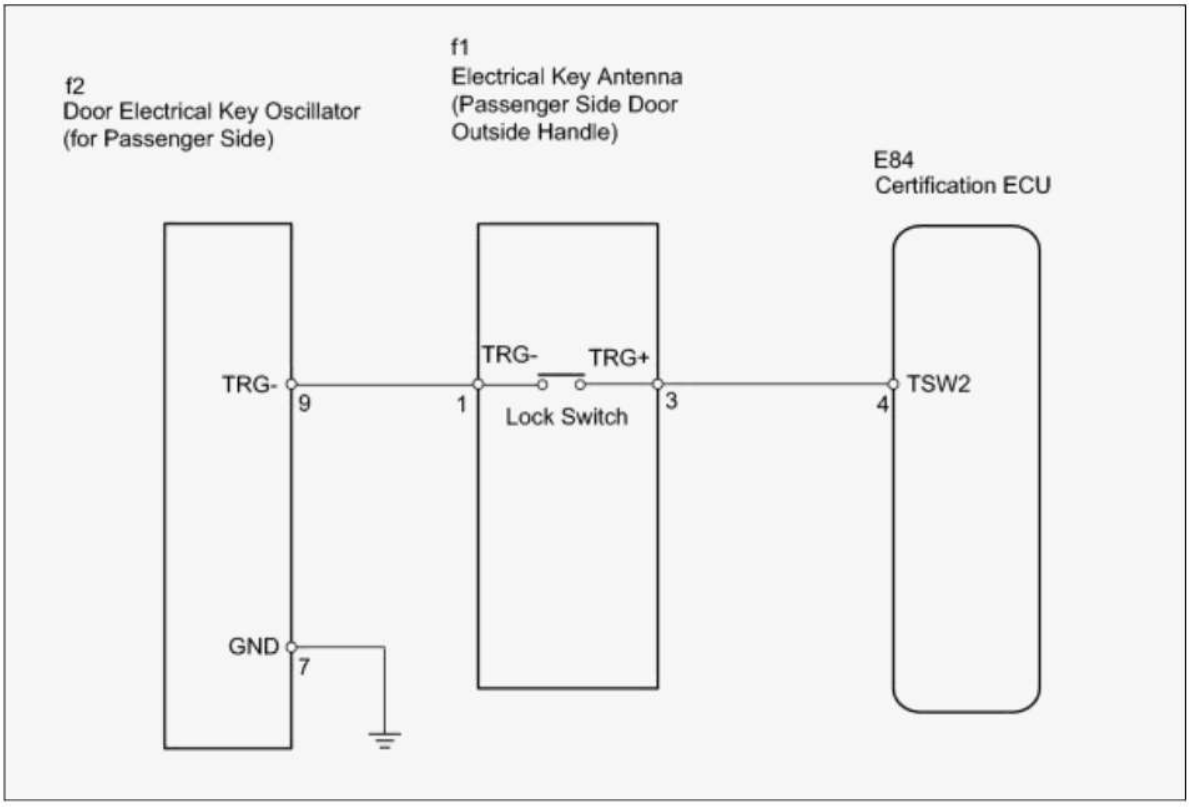
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021SR00CX
Title: DOOR LOCK: SMART KEY SYSTEM: Front Passenger Side Door Entry Lock Function does not Operate (2011 RAV4)		

Front Passenger Side Door Entry Lock Function does not Operate

DESCRIPTION

When the lock switch built into the front door outside handle (for passenger side) in turned on, a lock switch ON signal is transmitted to the certification ECU, and a request signal is then transmitted to both the indoor electrical key oscillator and door electrical key oscillator by the certification ECU. Upon receipt of the request signal, the electrical key transmitter transmits an ID code to the certification ECU. When the certification ECU recognizes that the key is not in the cabin and is outside the vehicle, a door lock signal is transmitted to the main body ECU, causing all the doors to be locked.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:

No DTC output.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A ▼

2.	**CHECK MANUAL DOOR LOCK OPERATION**

(a) Check that all the doors lock when the door control switch (for manual operation) is turned to LOCK and all doors unlock when turned to UNLOCK.

OK:

All doors can be locked and unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK ▼

3.	**CHECK WIRELESS DOOR LOCK CONTROL OPERATION**

(a) Check that the wireless door lock and unlock functions operate normally INFO .

OK:
Wireless door lock and unlock functions operate normally.

NG ▶ **Go to WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System)**

OK ▼

4.	**READ VALUE USING TECHSTREAM (LOCK SWITCH)**

(a) Check the Data List to confirm the operation of the door lock switch.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
P-Door Trigger Switch	Front passenger side door handle (lock switch) / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-

OK:
On Techstream screen, item changes between ON and OFF according to above chart.

NG ▶ **INSPECT FRONT DOOR OUTSIDE HANDLE (for Passenger Side)**

OK ▼

5.	**CHECK ECU AGGREGATION BOX (OPERATION)**

(a) Temporarily replace the ECU aggregation box (certification ECU) with a new or normally functioning one INFO .

(b) Check that the entry lock function operates normally INFO .

OK:
Entry lock function operates normally.

NG ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK**

(MAIN BODY ECU)

OK ▶ END (CERTIFICATION ECU IS DEFECTIVE)

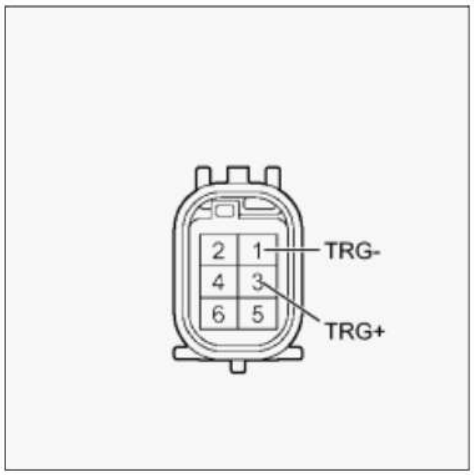
6.	**INSPECT FRONT DOOR OUTSIDE HANDLE (for Passenger Side)**

(a) Disconnect the front door outside handle (for passenger side) connector.

(b) Measure the resistance between the terminals when the trigger switch is operated.

Standard resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 (TRG-) - 3 (TRG+)	Switch released	10 kΩ or higher
	Switch pressed in	Below 1 Ω



NG ▶ REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Passenger Side)

OK ▶ REPAIR OR REPLACE HARNESS AND CONNECTOR

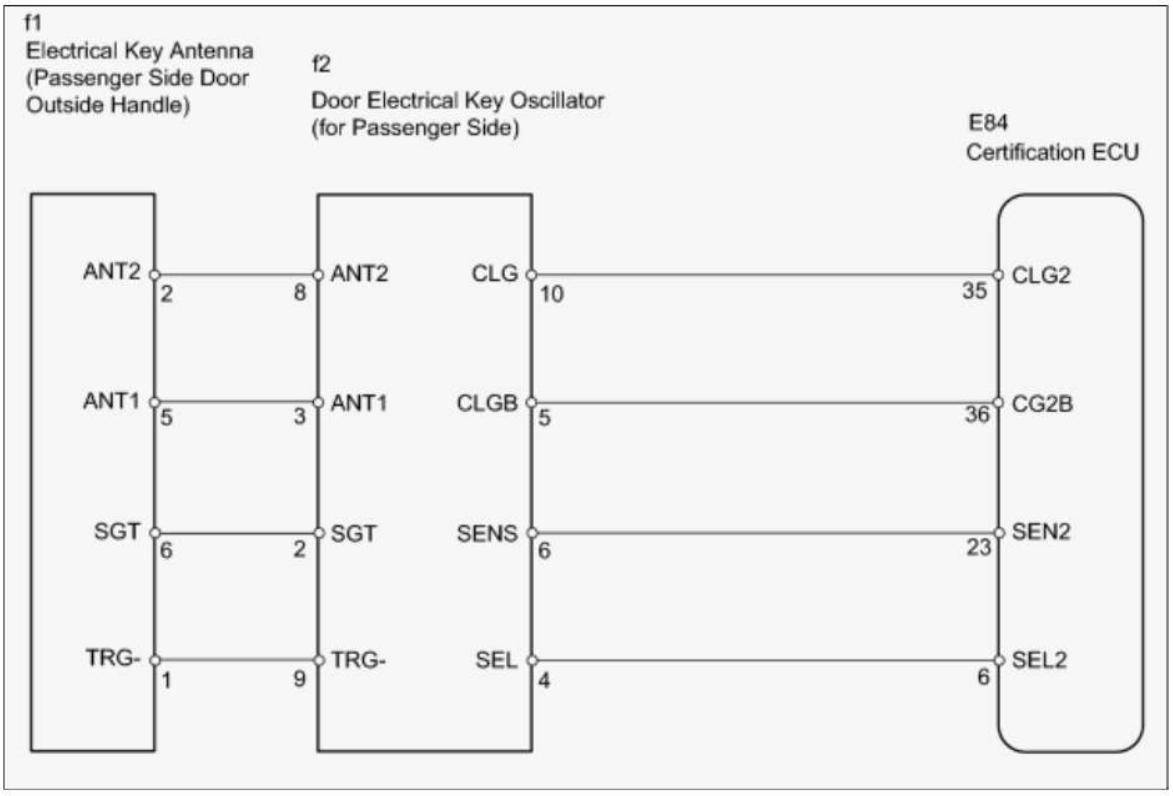
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGL00CX
Title: DOOR LOCK: SMART KEY SYSTEM: Front Passenger Side Door Entry Unlock Function does not Operate (2011 RAV4)		

Front Passenger Side Door Entry Unlock Function does not Operate

DESCRIPTION

When an ID code from the door electrical key oscillator RH matches the ID code from the key, the certification ECU outputs an SEL signal (Lo when output) to the door electrical key oscillator RH, activates the touch sensor located on the backside of the outside door handle, and enters unlock standby mode. When the touch sensor is touched, the door electrical key oscillator RH sends a SENS signal (Lo when output) to the certification ECU and the certification ECU sends an unlock signal to the front passenger side door lock.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK FOR DTC**

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream ON.

(c) By following the Techstream screen display, check whether any DTCs are output.

OK:

No DTC output.

Result

RESULT	PROCEED TO
OK	A
NG (2AR-FE)	B
NG (2GR-FE)	C

B ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

C ▶ **Go to DIAGNOSTIC TROUBLE CODE CHART**

A ▼

2.	**CHECK MANUAL DOOR UNLOCK OPERATION**

(a) Check that all the doors unlock when the door control switch (for manual operation) is turned to UNLOCK.

OK:

All doors can be unlocked with door control switch.

NG ▶ **Go to POWER DOOR LOCK CONTROL SYSTEM**

OK ▼

3.	**CHECK WIRELESS DOOR LOCK CONTROL OPERATION**

(a) Check that the wireless door lock and unlock functions operates normally INFO .

OK:

Wireless door lock and unlock functions operate normally.

NG ▶ **Go to WIRELESS DOOR LOCK CONTROL SYSTEM (w/**

Smart Key System)

OK

4.	READ VALUE USING TECHSTREAM (DOOR COURTESY LIGHT SWITCH)

(a) Check the Data List for proper functioning of the door courtesy light switch (passenger side).

Main Body

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
P Door Courtesy SW	Passenger side courtesy light switch signal / ON or OFF	ON: Passenger side door is open OFF: Passenger side door is closed	-

OK:
On Techstream screen, item changes between ON and OFF according to above chart.

NG ▶ Go to LIGHTING SYSTEM

OK

5.	READ VALUE USING TECHSTREAM (LOCK POSITION SWITCH)

(a) Check the Data List for proper functioning of the door lock position switch (passenger side).

Main Body

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
P-Door Lock Pos SW	Passenger side door unlock detection switch signal / ON or OFF	ON: Door is unlocked OFF: Door is locked	-

OK:
On Techstream screen, item changes between ON and OFF according to above chart.

NG ▶ Go to POWER DOOR LOCK CONTROL SYSTEM

OK

6.	**PERFORM ACTIVE TEST USING TECHSTREAM (FRONT PASSENGER SIDE SELECT)**

(a) Select the Active Test, use the Techstream to generate a control command, and then check that the door electrical key oscillator operates.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
P-Seat Select	Passenger side electrical key oscillator	ON or OFF	-

OK:
ON (P-Seat Select is ON) appears on screen.

NG ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

OK

7.	**READ VALUE USING TECHSTREAM (TOUCH SENSOR)**

(a) With "P-Seat Select" ON, check the Data List to confirm the operation of the touch sensor.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM / RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
P-Door Touch Sensor	Front passenger side door touch sensor / ON or OFF	ON: Sensor is touched OFF: Sensor is not touched	-

OK:
When passenger side door touch sensor is set to ON, ON (sensor is touched) appears on screen.

NG ▶ **CHECK DOOR ELECTRICAL KEY OSCILLATOR (for Passenger Side)**

OK

8.	**CHECK ECU AGGREGATION BOX (OPERATION)**

(a) Temporarily replace the ECU aggregation box (certification ECU) with a new or normally functioning one INFO .

(b) Check that the entry unlock function operates normally INFO .

OK:

Entry unlock function operates normally.

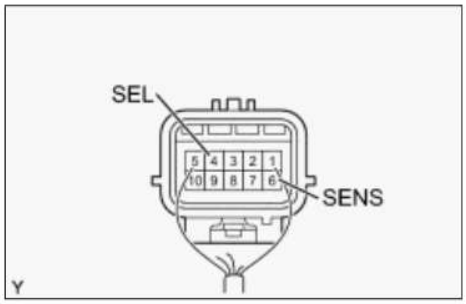
NG ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

OK ▶ **END (CERTIFICATION ECU IS DEFECTIVE)**

9.	**CHECK DOOR ELECTRICAL KEY OSCILLATOR (for Passenger Side)**

(a) Measure the voltage of the oscillator.

Standard voltage:

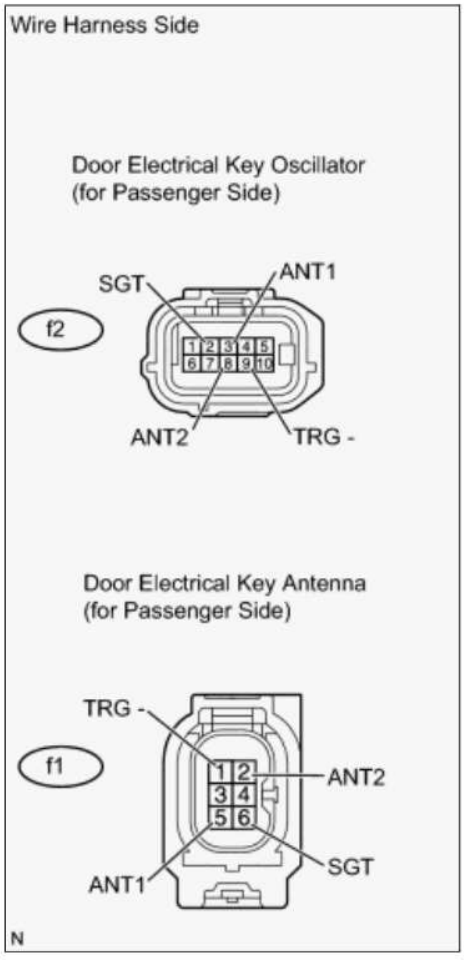


TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
4 (SEL) - Body ground	During Active Test	Below 1 V
6 (SENS) - Body ground	Touch sensor is touched during Active Test	Below 1 V
	Touch sensor is not touched during Active Test	11 to 14 V

NG ▶ **CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - ELECTRICAL KEY ANTENNA)**

OK ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

10.	**CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - ELECTRICAL KEY ANTENNA)**



(a) Disconnect the f2 oscillator connector.

(b) Disconnect the f1 antenna connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
f2-2 (SGT) - f1-6 (SGT)	Below 1 Ω
f2-3 (ANT1) - f1-5 (ANT1)	
f2-8 (ANT2) - f1-2 (ANT2)	
f2-9 (TRG-) - f1-1 (TRG-)	
f2-2 (SGT) or f1-6 (SGT) - Body ground	10 kΩ or higher
f2-3 (ANT1) or f1-5 (ANT1) - Body ground	
f2-8 (ANT2) or f1-2 (ANT2) - Body ground	
f2-9 (TRG-) or f1-1 (TRG-) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

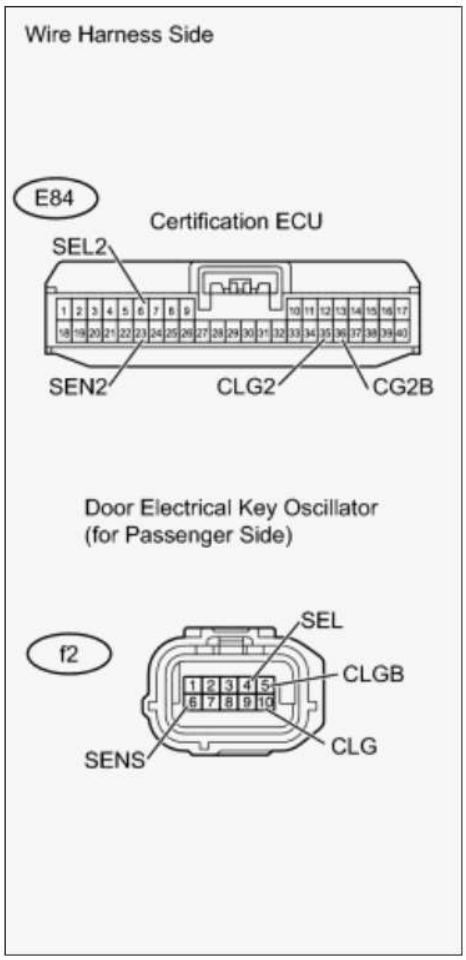
11.	**CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR ELECTRICAL KEY OSCILLATOR)**

(a) Disconnect the E84 ECU connector.

(b) Disconnect the f2 oscillator connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:



TESTER CONNECTION	SPECIFIED CONDITION
E84-6 (SEL2) - f2-4 (SEL)	Below 1 Ω
E84-23 (SEN2) - f2-6 (SENS)	
E84-35 (CLG2) - f2-10 (CLG)	
E84-36 (CG2B) - f2-5 (CLGB)	
E84-6 (SEL2) or f2-4 (SEL) - Body ground	10 kΩ or higher
E84-23 (SEN2) or f2-6 (SENS) - Body ground	
E84-35 (CLG2) or f2-10 (CLG) - Body ground	
E84-36 (CG2B) or f2-5 (CLGB) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▶ **REPLACE DOOR ELECTRICAL KEY OSCILLATOR (for Passenger Side)**

Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VG9007X
Title: DOOR LOCK: SMART KEY SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2011 RAV4)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the smart key system.
- *: Use the Techstream.

1.	**VEHICLE BROUGHT TO WORKSHOP**

NEXT

2.	**INSPECT BATTERY VOLTAGE**

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

3.	**INSPECT COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM***

(a) Use the Techstream to check if the CAN communication system is functioning normally.

Result:

RESULT	PROCEED TO
CAN DTC is not output	A
CAN DTC is output	B

B INFO **Go to CAN COMMUNICATION SYSTEM**


A

DOOR LOCK: SMART KEY SYSTEM: HOW TO PROCEED WITH ... https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...

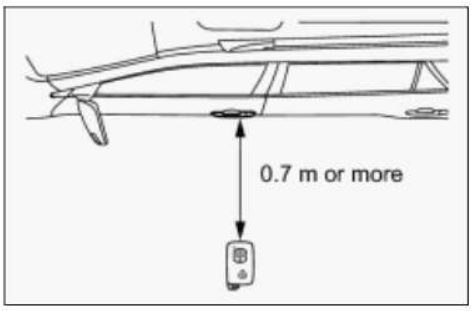
Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGF008X
Title: DOOR LOCK: SMART KEY SYSTEM: OPERATION CHECK (2011 RAV4)		

OPERATION CHECK

1. INSPECT SMART KEY SYSTEM

(a) Check the entry unlock function.

- Use the wireless lock operation to lock the doors. With the key in your possession, touch a door's outside handle (touch sensor) and check that the door unlocks.



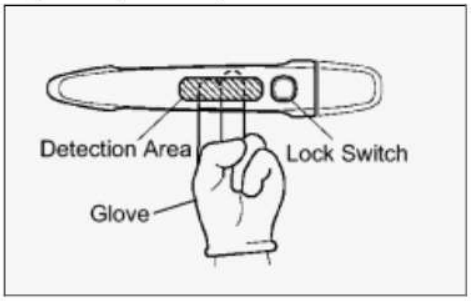
(b) Check the entry unlock operation's detection area.

- Step 1: Hold the key at the same height as the door's outside handle (approximately 0.8 m (2.6 ft.)).
- Step 2: Check that when the key is brought within 0.7 to 1.0 m (2.3 to 3.3 ft.) of the vehicle, the system enters unlock standby mode.

HINT:

Unlock standby mode is signified by the illumination of the electrical key's red LED.

- Step 3: After the system enters unlock standby mode, touch the outside handle's sensor within 3 seconds. Check that the door unlocks.
- Step 4: Repeat step 2 and 3 for the remaining doors.



- Step 5: Inspect the door electrical key oscillator's response sensitivity. Wear protective gloves, set the system to unlock standby mode, and check that touching the inner side of the outside handle (the highlighted area in the illustration) with your finger causes the door to unlock.

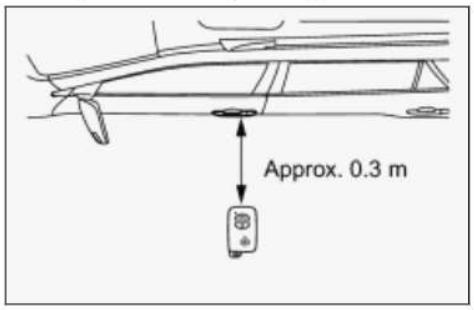
NOTICE:

When touching the highlighted area, tapping too quickly or touching too long may not trigger the sensor. In such a case, the door will not unlock.

- Step 6: Repeat step 5 for the remaining doors.

(c) Check the entry lock function

- Step 1: Close all of the vehicle's doors. With the electrical key in your possession outside of the vehicle, check that pressing the lock switch locks the doors.



- Step 2: Inspect the entry lock operation's detection area and the indoor electrical key oscillator for wave leaks. Hold the electrical key at a height of 1 m (3.3 ft.) (0.1 m (0.3 ft.) above the lower edge of the window frame). Pay attention to the direction and position of the electrical key in the illustration. Check that when the electrical key is approximately 0.3 m (0.9 ft.) from the vehicle and the lock switch is pressed, the front doors lock and the warning buzzer (for when the electrical key is forgotten) does not sound. If the warning buzzer sounds, the indoor electrical key oscillator may have a wave leak.

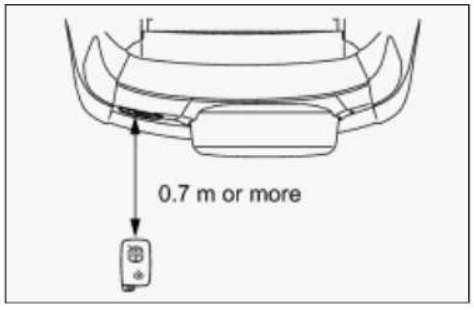
HINT:

Due to the electrical key being unable to communicate with the system within a 0.2 m (0.6 ft.) distance from the outside handle, do not press the lock switch with the same hand that is holding the key. The doors will not lock.

- Step 3: Repeat step 1 and step 2 for the remaining doors.

(d) Check the entry back door lock function.

- Close the back door. With the electrical key in your possession, check that pressing the back door open switch opens the back door.
-



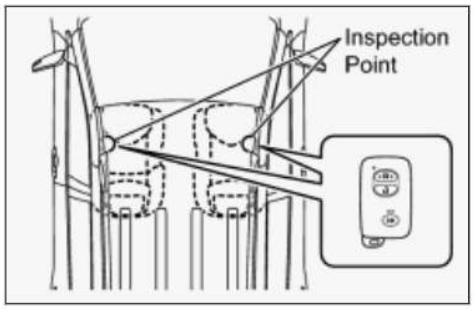
Inspect the back door open operation's detection area. Hold the electrical key at the same height as the back door open switch (approximately 0.8 m (2.6 ft.)). Pay attention to the direction of the key shown in the illustration. Check that the when the key is brought within 0.7 to 1.0 m (2.3 to 3.3 ft.) of the vehicle, pressing the back door open switch opens the back door.

(e) Check the entry ignition function.

- When the engine is off:

  With the electrical key in your possession and the brake pedal depressed, check that pressing the engine switch releases the steering wheel lock and starts the engine.
- When the engine is running:

With the electrical key in your possession, check that pressing the engine switch stops the engine and activates the steering wheel lock.



- Inspect the entry ignition operation's detection area. Pay attention to the direction of the electrical key in the illustration. When the electrical key is in either of the 2 locations in the illustration, check that the engine can start.

NOTICE:

The engine cannot be started when the electrical key is on the instrument panel or rear package tray, in a cup holder, etc. or in the glove box.

(f) Check the key cancel function.

- While the key cancel function (smart key system cancel function) is ON, check that none of the functions in the smart key system can be operated.

(g) Check the answer-back function (hazard warning lights flashing).

Answer-back function:

ENTRY OPERATION	HAZARD WARNING LIGHTS
Entry Door Lock	Flash once
Entry Door Unlock	Flash twice

(h) Check that the warning buzzer (interior) sounds.

- Carry the electrical key in the vehicle and close the driver side door. Then turn the engine switch off or on (ACC).
- Open the driver side door and check that the buzzer sounds intermittently.

(i) Check that the warning buzzer (interior) stops.

- When the buzzer is sounding, check that the buzzer stops sounding if either of the following are performed:

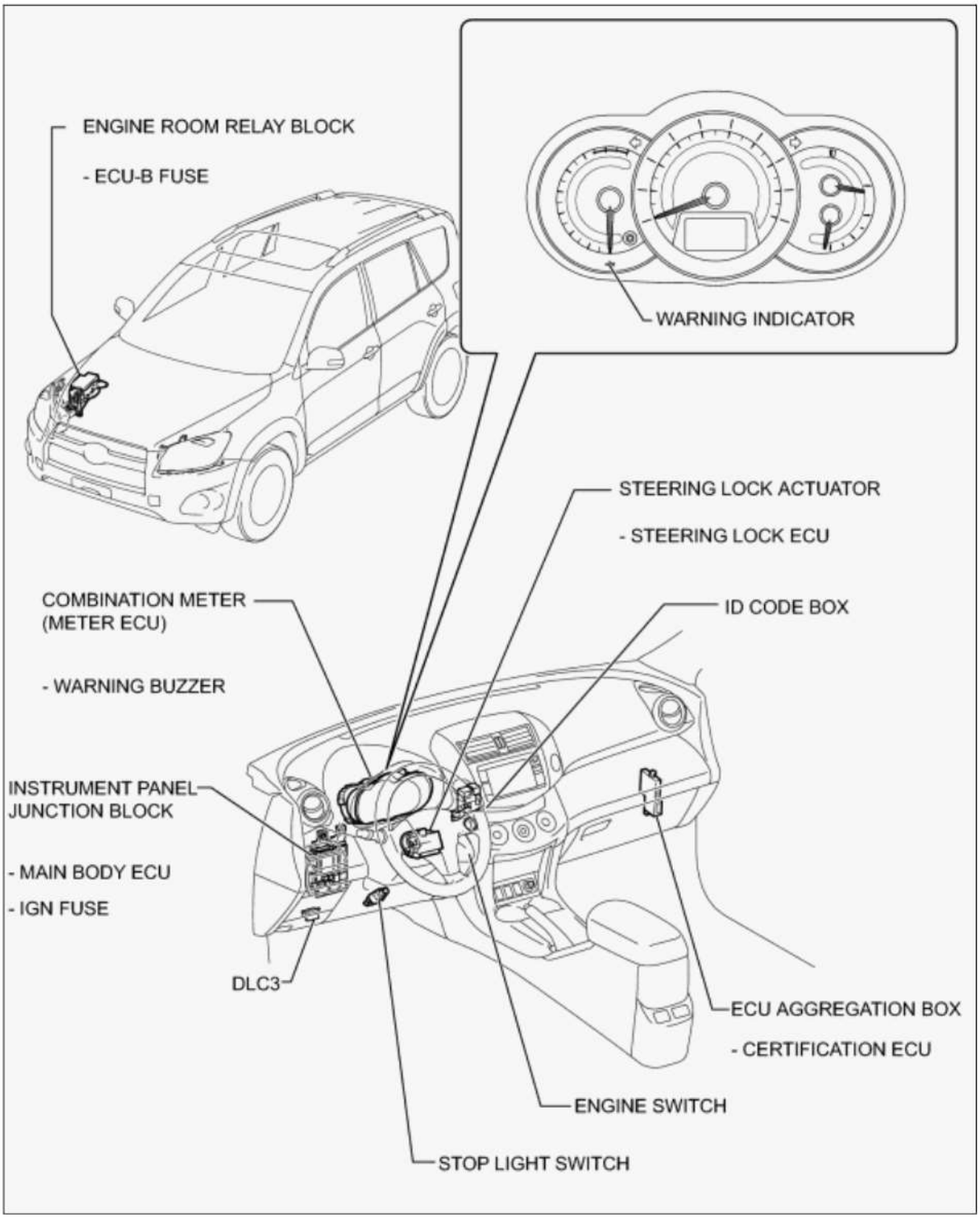
  - Close the driver side door (front door courtesy light switch is off).

  - Turn the engine switch on (IG).

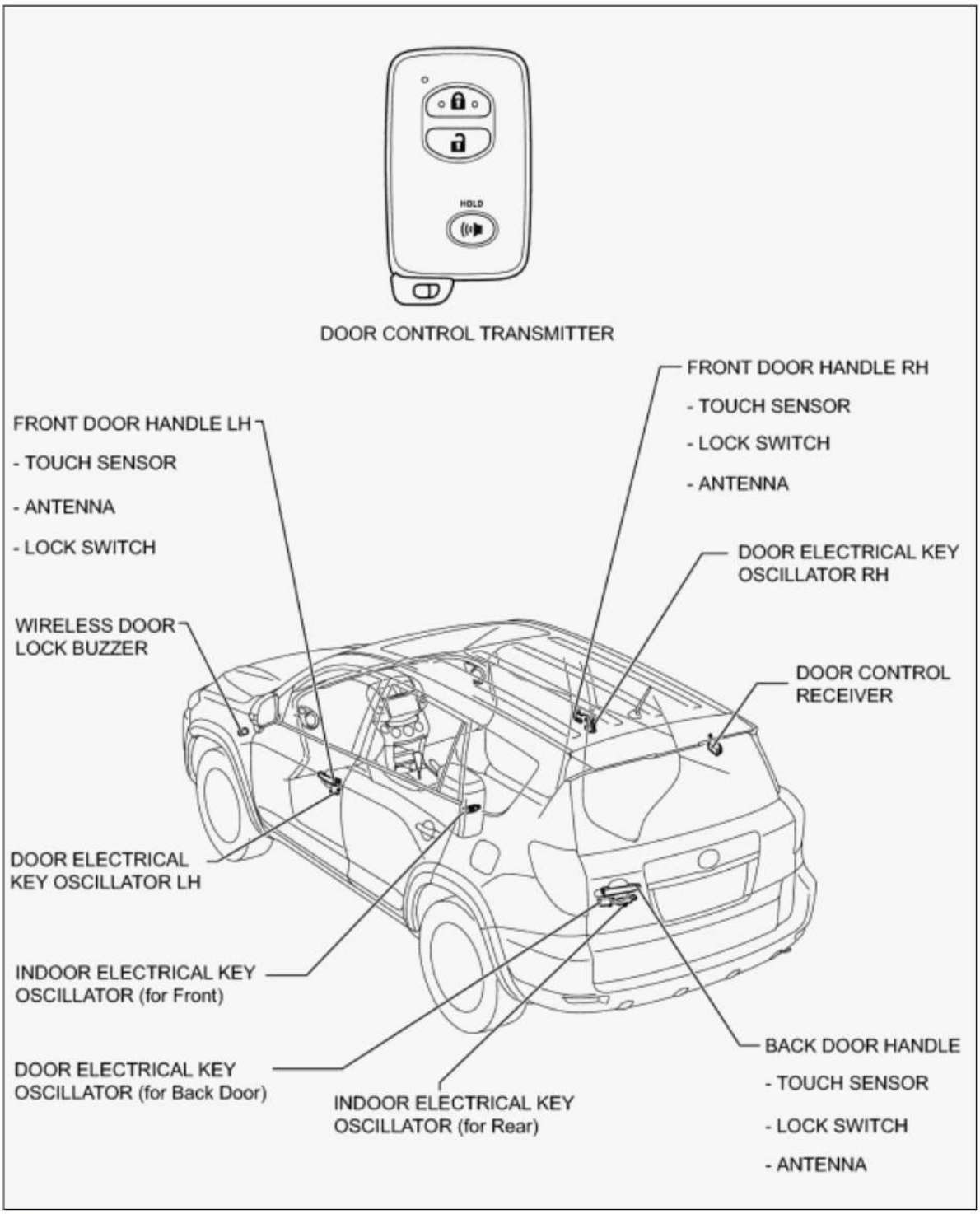
Last Modified: 9-7-2011	6.4 R	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGA006X
Title: DOOR LOCK: SMART KEY SYSTEM: PARTS LOCATION (2011 RAV4)		

PARTS LOCATION

ILLUSTRATION



ILLUSTRATION



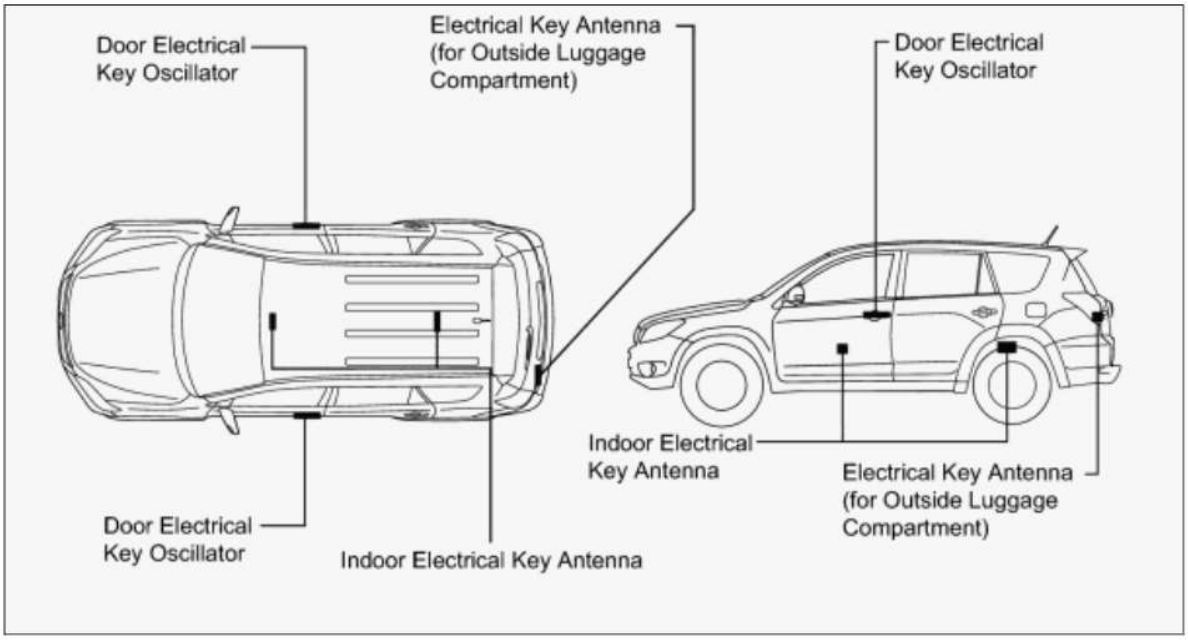
Last Modified: 9-7-2011	6.4 L	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VG800AX
Title: DOOR LOCK: SMART KEY SYSTEM: PRECAUTION (2011 RAV4)		

PRECAUTION

1. PRECAUTIONS FOR USERS WITH PACEMAKERS

(a) Weak electric waves are emitted from the key. If a pacemaker is being used, read the pacemaker instruction manual before using the smart key system.

- If implanted pacemakers or cardioverter defibrillators are being used, make sure they are not brought near the electrical key antenna and electrical key oscillator. The electric waves may affect them.
- If electric devices (for medical purposes) other than an implantable pacemaker or implantable cardioverter defibrillator are used, confirm with the manufacturer if electric waves affect their operation. Electric waves may affect the electric devices.
- The smart key system can be set so that it does not operate. Refer to Key Cancel for more information INFO .



2. PRECAUTIONS FOR SMART KEY SYSTEM AND KEY

(a) The smart key system does not operate in the following situations. If it does not operate at all, check that the following is not the cause.

(1) The key cancel operation has been performed.

(2) There is no key battery.

(Key indicator does not blink when key switches are pressed).

(b) The key must be in the possession of the user.

(A requirement of the smart key system. This is to make sure the user maintains a habit of carrying the key).

(c) As the key only emits weak electric waves, if any of the following conditions are met, the detection area of

the key may become smaller or the key may become undetectable.

HINT:

In this case, remove the cause or unlock the door using the mechanical key.

(1) The battery is depleted.

(2) There are TV towers, electric power plants, broadcasting stations, gas stations or other areas of strong electric wave output nearby.

(3) Wireless products such as cell phones, etc. are carried with the key.

(4) The key is covered by or in contact with metal.

(5) Electric wave type keyless entry systems are being operated nearby.

(6) The key is placed near high-voltage, electric noise emitting equipment.

(7) Film with some metallic content is stuck to the back glass.

(d) Even if the key is in the vehicle exterior key detection area, the key may not operate properly due to the vehicle body design.

(e) Even if the key is in the vehicle exterior key detection area, the key may not be properly detected if the key is near a window, a door handle or the center of a bumper.

(f) Even if the key is in the vehicle interior key detection area, the key may not be properly detected if the key is on the instrument panel, on the rear tray, in the glove box, on the floor, in a cup holder, etc.

(g) Depending on the way the key is held, the key may not operate properly.

3. PRECAUTIONS WHEN USING TECHSTREAM

(a) When using the Techstream to troubleshoot the LIN communication line: Connect the Techstream to the vehicle, and turn a courtesy light switch on and off at 1.5 second intervals until communication between the tester and vehicle begins.

(b) After all DTCs are cleared, check if the trouble occurs again 6 seconds after the engine switch is turned on (IG).

4. PRECAUTIONS FOR EACH FUNCTION

(a) Precautions for the key:

The key is a precision instrument. Be sure to observe the following:

(1) Do not drop or strike the key.

(2) Do not keep the key in a high temperature area for a long time.

(3) Do not use an ultrasonic washing machine to clean the key.

(4) Keep the key away from magnets or magnetized items during use.

(5) Do not attach any stickers to the key.

(b) Precautions for the entry unlock function:

(1) As the sensor is built into the backside of the outside door handle, the user must touch the backside part of the handle when performing the unlock function.

(2) If touched with gloved hands, the response of the door may be delayed.

(3) During the entry unlock operation, if the door handle is pulled before the door unlocks, the unlock function cannot be completed. Confirm that the door has been unlocked before pulling the door handle to open the door.

(4) Make sure that the doors are unlocked when touching the touch sensor on the outside door handle

while the key is being carried.

If the doors cannot be unlocked, the certification ECU orders each door ECU to perform the door unlock operation 4 times at intervals of 0.75 seconds.

At this time the door may not be unlocked because the handle is being pulled due to some mechanical reasons.

Be sure to return the door handle to its original position.

If the door cannot be opened by pulling the handle, perform the entry unlock operation again.

(5) If the key is too close to the oscillator on the outside of the vehicle, the door may not be unlocked because the key cannot react to the strong wave output from the transmitter.

(6) If the key is within the vehicle exterior detection area, the door can be unlocked even when a person other than the person carrying the key holds the door handle.

However, the doors other than the door that the codes match will not be unlocked.

(If the key is within the driver side door's detection area outside the vehicle, the doors will be unlocked when the person carrying the key holds the driver side door handle. However, if any door handle other than that of the driver side door is held, the doors will not be unlocked).

(7) If a door is not opened after the door unlock operation, the doors automatically lock after approximately 60 seconds.

(8) If a large amount of water is applied to the door handle due to a car wash or heavy rain, and the key is brought within the vehicle exterior detection area, it may cause the doors to be unlocked.

However, the doors will be locked again after approximately 60 seconds if a door is not opened.

(9) If the key of the smart key system is used while it is being carried with the key of another smart key system, the time before the entry unlock operation will become longer than usual. This is not a malfunction.

(c) Precautions for the entry lock function:

(1) When performing the entry lock operation, firmly press the lock switch on the outside door handle.

If pressed too quickly or lightly, the entry lock may not operate.

(2) It is possible that signals output from the indoor electrical key oscillator may leak through the window. Also, if the key is too close to a door electrical key oscillator, the oscillator output signals are too strong and the key cannot respond. As a result, when the key is near the vehicle interior (window, door handle), the entry lock function may not operate. Also, the warning buzzer may sound and the entry unlock operation may stop functioning. In this situation, move the key away from the vehicle interior (window, door handle), perform the entry lock operation and perform the entry unlock operation.

(3) Do not touch the lock switch while opening or closing the door.

If the lock switch is pressed when opening or closing the door while the key is being carried, the door ajar warning buzzer sounds. (Beeps outside the vehicle for 10 seconds.)

(4) If the key is on the instrument panel, rear package tray or floor, in a cup holder, or in the glove box, etc. the key reminder function may not operate and the key may be locked in the vehicle. Always carry the key.

(5) If the key is outside the vehicle but is very close to a window or door handle (the ECU determines that the key is inside the vehicle) and the transmitter or mechanical key is used to lock the doors (entry lock is not used), entry unlock will not operate. To unlock the doors, perform a wireless door unlock operation. The entry lock function operates in this way to prevent doors from being unlocked by the door oscillator (vehicle exterior) without the knowledge of the user. For example, when a user operates the wireless door lock operation from inside the vehicle, radio waves from a door electrical key oscillator may leak into the vehicle interior.

(6) To allow the user enough time to check if the doors are locked after performing a door lock operation (entry lock function or wireless door lock operation), the entry unlock function will not be permitted for 3 seconds after the door lock operation.

(d) Precautions for the entry ignition function:

(1) To start the engine, first depress the (brake pedal) firmly until the engine switch indicator illuminates in green.

(2) When operating the engine switch, firmly press the switch. If the switch is pressed too quickly, power source control and engine starting may not operate.

(3) Do not touch the engine switch with oily hands.

(4) If the vehicle has been in a hot location for an extended period of time, be careful when touching the engine switch. It may be very hot and lead to burns.

(5) Take care to avoid spilling beverages on the engine switch. Keep all liquids away from the engine switch.

(6) The vehicle continually records the power source mode (off, on (ACC), on (IG), start). When the battery cable is disconnected and reconnected, the power source mode will return to the mode it was in before disconnecting the battery cable. Always turn the engine switch off before disconnecting the battery cable. When the vehicle battery is fully depleted, power is cut, and the power source mode before the power was cut is unknown, so be extremely careful.

(7) Do not connect any electronic products to the ACC, IG1 or IG2 coil side wiring, as the vehicle power supply may be unable to be turned on, or other problems may occur.

(8) After the battery cable has been disconnected and reconnected, the engine will not start on the first attempt. The engine will start normally on the second attempt.

(9) When starting the engine immediately after reconnecting the battery cable, connect the cable and wait at least 10 seconds before attempting to start the engine. The engine may not start when attempting an engine start immediately after disconnecting and reconnecting the battery cable.

(10) When the key battery is depleted and the key is held up to the engine switch to start the engine, a warning alarm may sound. This does not indicate actual malfunctions. The alarm under such conditions is caused by the system being unable to determine whether the key is inside the cabin due to the key battery depletion. However, the warning alarm is designed to indicate that the key is being taken out of the cabin by means of the opening and closing of any door other than the driver door.

(e) Precautions for back door entry function:

Even if the key is within the door electrical key oscillator (back door) detection area, the back door cannot be opened if the key is in the following areas:

- Near the center of the tuner
- Too close to the ground or in a high place

(f) Precautions for the battery built into the key and the vehicle battery:

(1) The key is constantly checking for signals from the vehicle, which requires power from the built-in battery. The life of the battery is approximately 1 to 2 years depending on the usage conditions. Also, if the key is in contact with a cell phone while the user walks around (by putting them together into a pocket, etc.), the battery may significantly deplete. Be sure to replace the battery when its power is low. When replacing the battery, do not touch the inner circuit board or other inner parts.

(2) The key is constantly checking for signals from the vehicle and using battery power, whether the key is being used or not. Even if the user is carrying 2 keys and only 1 key is used, both keys will consume battery power.

(3) In order to communicate with the vehicle, the key is constantly checking for signals. Therefore if the

key is in contact with a cell phone while the user walks around (by putting them together into a pocket, etc.), the battery may significantly deplete.

(4) The key receives radio waves at approximately 134 kHz. If the key continuously receives strong, identical frequency waves, this may drain the key battery. Store the key at least 1 m (3.28 ft.) from TVs, personal computers, chargers for cell phone, etc. or other electrical products.

(5) When the door is being locked, the vehicle battery is used to transmit radio waves. The battery may be fully depleted if the vehicle remains stopped for a long time. If the vehicle is not used for a long time, remove the battery from the vehicle or cancel the smart key system.

(6) When the door is being locked with the key in the detection area of a door electrical key oscillator, the battery is used for regular communication between the key and vehicle. If the vehicle is not used, keep the key away from the vehicle (more than 2 m (6.6 ft.)).

(7) After disconnecting and reconnecting the battery cable, the entry unlock function may not operate. If this occurs, perform a wireless door unlock and lock operation.

(8) When the battery is fully depleted and the engine does not start even after recharging, perform the following: 1) move the shift lever to P; 2) turn the engine switch off; and 3) open and close the driver door. Then start the engine.

(9) When starting the engine system after the removal and installation of the vehicle battery, first perform the following: 1) open and close the driver door; and 2) wait 10 seconds or more. When an engine system start is attempted after the above procedures, the engine system will not start. However, this is not a malfunction. The engine system will start normally starting from the second attempt.

5. PRECAUTION FOR ECU AGGREGATION BOX

NOTICE:

If the ECU aggregation box (certification ECU) and/or steering lock actuator (steering lock ECU) are replaced, open and close the driver side door to record the current steering lock position into the certification ECU. If this is not performed, the engine may not start.

Last Modified: 9-7-2011	6.4 T	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001W6O00FX
Title: DOOR LOCK: SMART KEY SYSTEM: PROBLEM SYMPTOMS TABLE (2011 RAV4)		

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Smart key system:

SYMPTOM	SUSPECTED AREA	SEE PAGE
Entry answer-back does not occur	ECU aggregation box (certification ECU)	INFO
	Wireless door lock buzzer	INFO
	Wire harness	INFO
Entry lock and unlock functions do not operate on all doors	Wireless door lock function	INFO
	ECU aggregation box (certification ECU)	INFO
	Electrical key	INFO
	Wire harness	INFO
Entry unlock function does not operate on driver side door	Power door lock control system	INFO
	Door electrical key cylinder (for driver side)	INFO
	Front door handle outside (for driver side)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO
Entry unlock function does not operate on front passenger side door	Power door lock control system	INFO
	Door electrical key cylinder (for passenger side)	INFO
	Front door handle outside (for passenger side)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO

SYMPTOM	SUSPECTED AREA	SEE PAGE
Entry lock and unlock functions do not operate on driver side door	Power door lock control system	INFO
	Wireless door lock control system	INFO
	Door electrical key oscillator (for driver side)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO
Entry lock and unlock functions do not operate on front passenger side door	Power door lock control system	INFO
	Wireless door lock control system	INFO
	Door electrical key oscillator (for passenger side)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO
Entry lock function does not operate on driver side door	Power door lock control system	INFO
	Wireless door lock control system	INFO
	Front handle outside (for driver side)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO
Entry lock function does not operate on front passenger side door	Power door lock control system	INFO
	Wireless door lock control system	INFO
	Front door handle outside (for passenger side)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO
Room oscillator does not recognize key	Indoor electrical key oscillator (for front)	INFO
	Indoor electrical key oscillator (for rear)	INFO
	ECU aggregation box (certification ECU)	INFO

SYMPTOM	SUSPECTED AREA	SEE PAGE
	Electrical key	INFO
	Wire harness	INFO
Entry interior alarm does not sound	Combination meter	INFO
	ECU aggregation box (certification ECU)	INFO
Entry functions do not operate at all	Wireless door lock control system	INFO
	ECU aggregation box (certification ECU)	INFO
Back door entry unlock function does not operate	Power door lock control system	INFO
	Wireless door lock control system	INFO
	Back door outside handle (back door lock switch)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO
Back door entry lock function does not operate	Power door lock control system	INFO
	Wireless door lock control system	INFO
	Back door outside handle (back door lock switch)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO
Back door entry lock and unlock functions do not operate	Power door lock control system	INFO
	Wireless door lock control system	INFO
	Door electrical key oscillator (for back door)	INFO
	ECU aggregation box (certification ECU)	INFO
	Instrument panel junction block (main body ECU)	INFO
	Wire harness	INFO

Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000021SS008X
Title: DOOR LOCK: SMART KEY SYSTEM: Room Oscillator does not Recognize Key (2011 RAV4)		

Room Oscillator does not Recognize Key

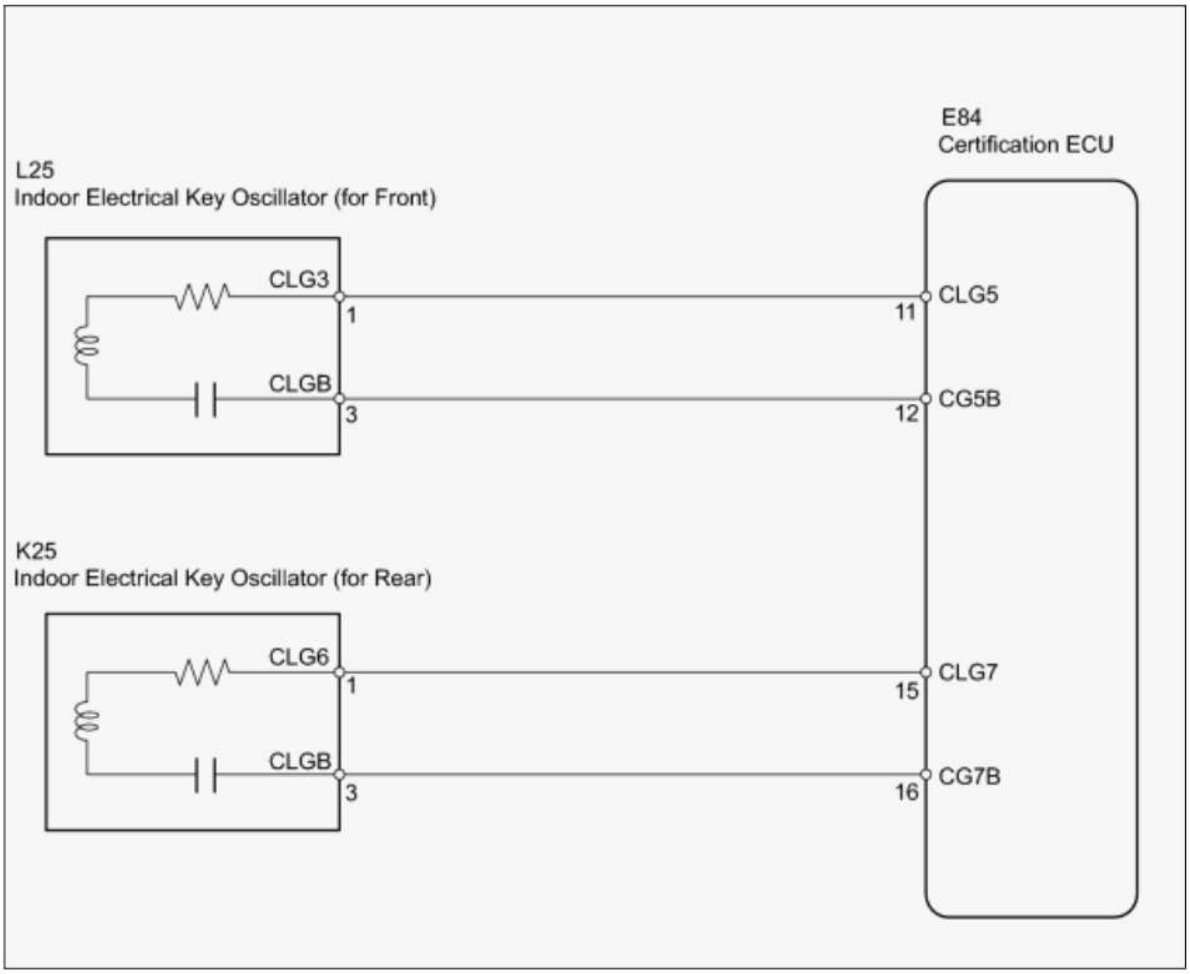
DESCRIPTION

If the entry ignition function does not operate, place the key in the vehicle and check whether the engine control system starts. If the engine control system starts (the ID code box outputs a start permission signal to the engine control system and the engine control system starts), it can be assumed that only the entry ignition system is malfunctioning.

The certification ECU uses the indoor electrical key oscillator to send a request signal to the key when: 1) the driver side door is opened and closed, or 2) the engine switch is turned from on (IG) to off or off to on (IG). Then, the key transmits its ID code to the door control receiver. The ID code, which is then sent to the certification ECU, is verified by the certification ECU and the verification result is sent to the ID code box. Turning the engine switch from on (IG) to off stops the engine control system.

The ID code box and the certification ECU communicate encryption codes to each other using the LIN communication line. When the return code from the certification ECU matches the ID code in the memory, the ID code box sends an engine control system start permission signal to the ECM. With the brake pedal depressed, pressing the engine switch starts the engine. With the engine running, pressing the engine switch stops engine.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK DOOR CONTROL TRANSMITTER (OPERATION)**

(a) Temporarily replace the door control transmitter with a new or normally functioning one INFO .

(b) Check that the wireless door lock and unlock functions operate normally.

OK:
Wireless door lock and unlock functions operate normally.

NG ▶ **END (DOOR CONTROL TRANSMITTER IS DEFECTIVE)**

OK ▼

2.	READ VALUE USING TECHSTREAM (INDOOR ELECTRICAL KEY OSCILLATOR)

(a) Select the Active Test, use the Techstream to generate a control command, and then check that the indoor electrical key oscillator (front, rear) operates.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Fr-Seat Inside Transmitter	Indoor electrical key oscillator (front)	ON or OFF	-
Inside Trunk/Backdoor Transmitter	Indoor electrical key oscillator (rear)	ON or OFF	-

OK:
When key is brought close to indoor electrical key oscillator, oscillator is turned OFF and indicator on key illuminates.

NG ▶ **CHECK WIRE HARNESS (INDOOR ELECTRICAL KEY OSCILLATOR - CERTIFICATION ECU)**

OK ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

3.	CHECK WIRE HARNESS (INDOOR ELECTRICAL KEY OSCILLATOR - CERTIFICATION ECU)

(a) Disconnect the L25*1 and K25*2 oscillator connectors.

(b) Disconnect the E84 ECU connector.

(c) Measure the resistance of the wire harness side connectors.

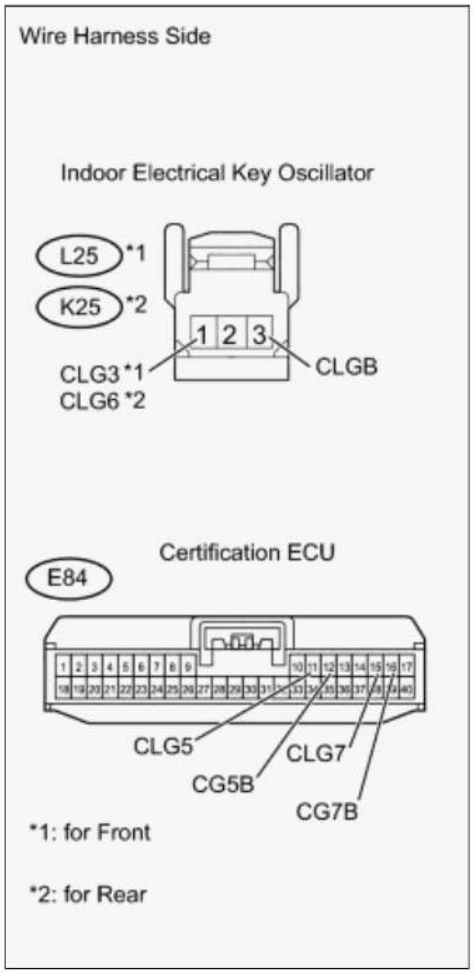
HINT:

***1: for Front**

***2: for Rear**

Standard resistance:
for Front
for Rear

TESTER CONNECTION	SPECIFIED



	CONDITION
L25-1 (CLG3) - E84-11 (CLG5)	Below 1 Ω
L25-3 (CLGB) - E84-12 (CG5B)	
L25-1 (CLG3) or E84-11 (CLG5) - Body ground	10 kΩ or higher
L25-3 (CLGB) or E84-12 (CG5B) - Body ground	

TESTER CONNECTION	SPECIFIED CONDITION
K25-1 (CLG6) - E84-15 (CLG7)	Below 1 Ω
K25-3 (CLGB) - E84-16 (CG7B)	
K25-1 (CLG6) or E84-15 (CLG7) - Body ground	10 kΩ or higher
K25-3 (CLGB) or E84-16 (CG7B) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

4.	**CHECK INDOOR ELECTRICAL KEY OSCILLATOR (OPERATION)**

(a) Carry the key into the vehicle.

(b) Temporarily replace the indoor electrical key oscillator with a new or normally functioning one.

(c) Depress the brake pedal and check that the engine switch indicator illuminates in green.

OK:
Engine switch indicator illuminates in green.

NG ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

OK	END (INDOOR ELECTRICAL KEY OSCILLATOR IS DEFECTIVE)

Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGC009X
Title: DOOR LOCK: SMART KEY SYSTEM: SYSTEM DESCRIPTION (2011 RAV4)		

SYSTEM DESCRIPTION

CAUTION:

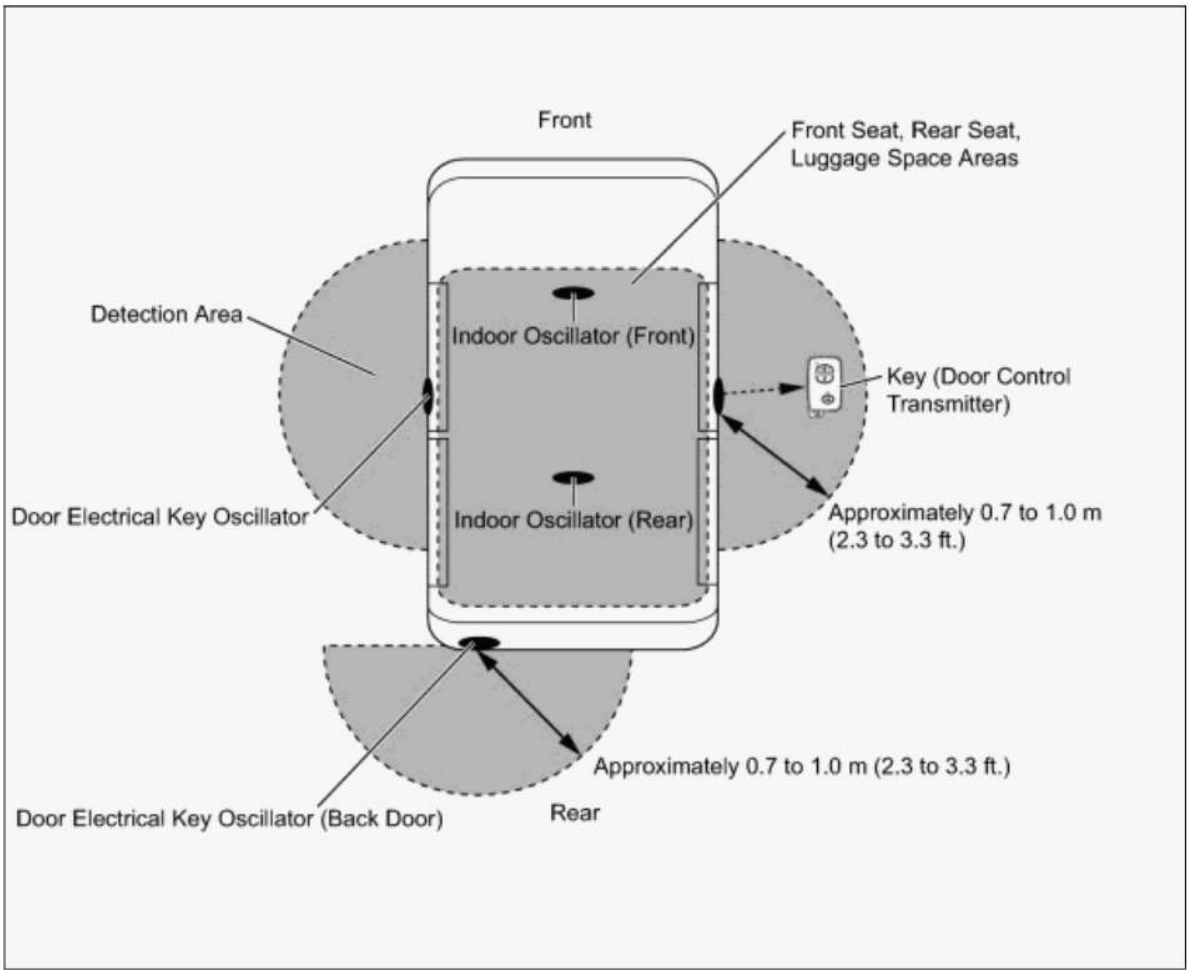
If using a pacemaker, be sure to read the manual of the pacemaker before using the key, as the radio waves of the key may affect the pacemaker.

1. SMART KEY SYSTEM

(a) In addition to conventional mechanical key and wireless door lock control functions, the smart key system enables door locking/unlocking, steering lock releasing, engine starting and back door opening without operating the key. The only requirement is that the key is in the user's possession.

- This system is controlled by the certification ECU. When the certification ECU detects the presence of the smart key system in one of the detection areas, it identifies and checks the ID code, and outputs operation signals to the related ECU in accordance with their functions.
- The detection areas are formed by 5 oscillators and 2 antennas (2 door oscillators, back door oscillator (outer), 2 indoor oscillators and 2 door antennas).

2. DETECTION AREA



(a) Precautions for the entire system:

- Be sure to carry the key during inspection of the smart key system.
- As weak radio waves are used to detect the key, the key detection area may decrease, or the key may not be detected correctly in the following situations:

    a. The key battery is depleted.
    b. Any facilities that generate strong radio waves, such as a TV tower, power plant, broadcast station or gas station, are located near the inspection site.
    c. A wireless device, such as a cellular phone, is carried with the key.
    d. The key is in contact with or covered with metal.
    e. Another wireless door lock control function is operated near the vehicle.
    f. The key is located near a device that generates high voltage or noise.

- The key may be difficult to operate for a reason relating to the vehicle body shape.
- The key may not be detected correctly if it is around the vehicle's windows, the door handle or center of the bumper even when it is in the detection area outside the vehicle.
- The key may not be detected correctly if it is on the instrument panel, rear package tray or floor, in a cup holder, or in the glove box, etc. even when it is in the detection area inside the vehicle.
- The key may not operate if the key is not held properly.
- The smart key system does not operate in the following conditions:

    a. The smart key system is canceled.
    b. The key battery is completely depleted (the indicator does not blink when pushing any of the buttons on the key).

3. FUNCTION OF MAIN COMPONENTS

COMPONENTS	FUNCTION
Key	• When LF wave that is output from vehicle interior / exterior antenna is received, RF wave format conversion is performed on key ID, vehicle ID and other information, and RF wave is then output • When key's lock / unlock button is pressed, signal is converted to RF wave and is then output • When the wave output from the engine switch's immobiliser amplifier is received, key ID, vehicle ID and other information is output through immobiliser communication • Has mechanical key for unlocking doors when the battery is fully depleted
Certification ECU	Controls smart key system in accordance with signals from each oscillator, various switches, ECUs and key • Performs key verification • Performs vehicle interior / exterior transmission • Performs occupant sensor control • Sends lock / unlock commands during entry function • Sends steering lock / unlock commands • Sends immobiliser set / unset commands • Records verification codes
Main body ECU	Controls push button start function in accordance with signals from various switches, ECUs and combination meter

COMPONENTS	FUNCTION
	• Controls ACC / IG power source by turning it ON / OFF • Sends engine start command to ECM • Controls indicator and word illumination of engine switch • Activates starter relay support
ID code box	• Receives command from certification ECU, and sends immobiliser set / unset command to ECM • Records verification codes
Outside door handle (driver, passenger and back doors) (antenna)	Transmits request signals
Outside door handle (driver, passenger and back doors) (touch sensor)	Detects when person touches inside of outside handle
Outside door handle (driver, passenger and back doors) (lock switch)	Transmits door lock request signals to certification ECU
Door electrical key oscillator (driver, passenger and back doors)	Receives request signal from certification ECU, and forms detection area around each door
Indoor electrical key oscillator (for front and for rear)	Receives request signal from certification ECU, and forms detection area in vehicle interior
Back door oscillator	Receives the request signal from the certification ECU, and forms the actuation area around the back door
Door control receiver	Receives the ID code from the key in the actuation area and transmits it to the certification ECU
Back door open switch	Transmits a back door open request signal to the main body ECU
Back door lock switch	Transmits a back door lock request signal to the certification ECU
Stop light switch	Outputs state of clutch brake pedal to main body ECU
Wireless door lock buzzer	When certification ECU detects human errors such as those below, it warns driver by sounding wireless door lock buzzer and sounds the buzzer in accordance with request signal from ECU Example: • Key is taken outside vehicle • Driver leaves vehicle while engine is still running
Combination meter • Buzzer	

4. CONSTRUCTION AND OPERATION

(a) Key:

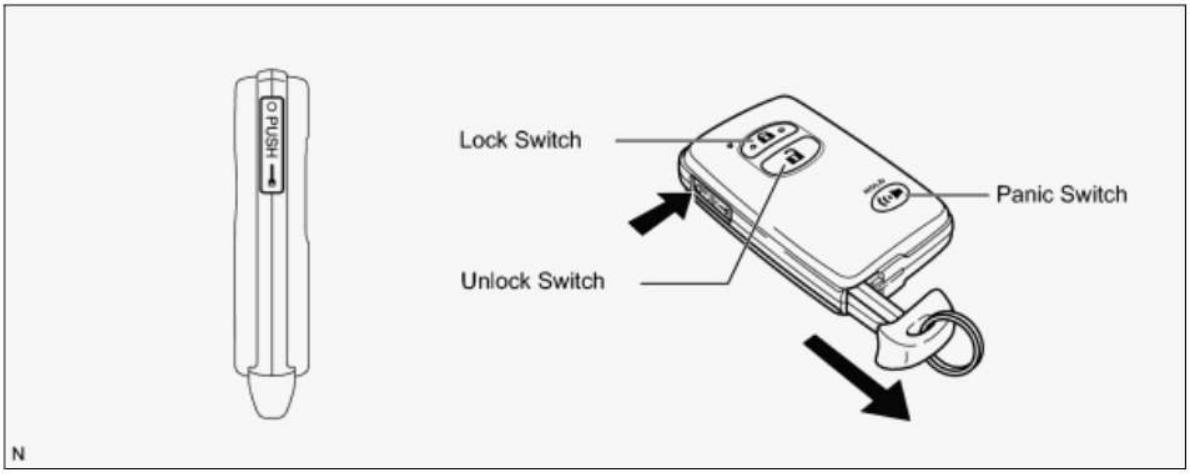
The key consists of a mechanical key, transmitter for the wireless door lock remote control, transceiver for the smart key system, and transponder chip for the engine immobiliser control.

- Upon receiving the LF radio waves that are output by the vehicle interior and exterior antennas,

the door control transmitter outputs information including the key ID and vehicle ID by modulating then into RF radio waves.

- When the drive presses the lock or unlock switch on the surface of the door control transmitter, the transmitter outputs the description of the operation by modulating it into RF radio waves.
- Upon receiving the radio waves that are output by the immobiliser amplifier in the engine switch, the door control transmitter outputs information including the key ID and vehicle ID through immobiliser communication.
- Has a built-in mechanical key to unlock the door if the transmitter battery is low.

A total of 7 keys can be registered.



(b) Oscillator (front LH and RH door oscillators, front and rear indoor oscillators, back door oscillator):

Each oscillator transmits the request signal received from the certification ECU, and forms a key detection area to detect the presence of a key. The detection area formed by each door electrical key oscillator and back door electrical key oscillator is approximately 0.7 to 1.0 m (2.3 to 3.3 ft.) from the outside handle of the front LH and RH doors or from the center of the rear bumper.

- The detection area of the front LH, front RH and back door oscillators are formed by transmitting a request signal every 0.25 seconds while the engine switch is off and each door is locked. In this way, it detects the proximity of a key. During entry lock, the detection area is formed with the lock switch ON.
- The detection area of the indoor electrical key oscillator (front and rear) is formed when the driver door is opened or closed, during ignition start, when a warning is activated, or when the lock switch is ON. It is formed twice until the key can be verified.
- The detection area of the front and rear room oscillators are formed when the driver door is opened or closed, during ignition start, when a warning is activated, or when the lock switch is ON.

5. ENTRY FUNCTION OPERATION

(a) The smart key system has the following functions.

FUNCTION	OUTLINE
Mechanical key	Operation is same as conventional mechanical key
Wireless door lock control function	This function remotely locks and unlocks all doors or back door. Operation is same as wireless door lock control system. However, the receiver in certification ECU uses entry door control receiver to control locking and unlocking.

FUNCTION	OUTLINE
Entry illumination function	When person carrying key enters detection area, door will enter unlock standby mode and map light and foot light will illuminate
Entry unlock function	When key is located in detection area of door oscillator, door will unlock by touching inside of outside door handle
Entry lock function	When key is located in detection area of door oscillator and engine switch is off, door can be locked by pressing lock switch on outside door handle
Key lock-in prevention function	Prevents confinement of key if door is locked using outside door handle while key is still inside vehicle
Warning function	When any of situations below occur, smart key system causes certification ECU to sound buzzer in combination meter and wireless door lock buzzer in order to alert driver: • Warning if occupant leaves with key • Warning if engine switch is operated while key is outside the detection area • Warning if entry lock is operated while key is inside vehicle • Warning if key battery is weak
Battery saving function	If key is constantly located within detection area of door oscillator, system maintains periodic communication with key. Therefore, if vehicle remains parked in that state for long time, key battery and vehicle battery could be drained.
Key cancel INFO	Following key functions can be canceled by following certain operations: • Entry unlock/lock • Key lock-in prevention • Warning • Entry ignition

6. WIRELESS DOOR LOCK AND UNLOCK AND BACK DOOR OPEN FUNCTION

Push the LOCK/UNLOCK switch on the key to operate each function.

7. ENTRY UNLOCK FUNCTION

(a) The detection area is formed by communication between a door electrical key oscillator and door control receiver when the door is locked in order to detect access of the person carrying the key.

(b) When the person carrying the key enters the detection area around the vehicle, the matching of the ID codes for a door electrical key oscillator and key will automatically be performed. After the matching is completed, the door will enter unlock standby mode.

(c) In unlock standby mode, the antenna built into the outside handle starts sensing. If the outside handle is held (the back side of the handle is touched), the door unlock operation will be performed. At this time, the hazard warning lights blink twice.

(d) If none of the doors are opened within 60 seconds of a door unlock operation, all doors are automatically locked.

8. ENTRY LOCK FUNCTION

(a) After leaving the vehicle carrying the key, push the lock switch on the outside handle when all the doors are closed.

(b) The certification ECU determines whether the key is located inside or outside of the cabin based on the information from a door electrical key oscillator and indoor electrical key oscillator. Then matching of the ID codes is performed.

(c) When the matching result shows that the ID codes of the key and indoor electrical key oscillator do not match and the ID codes of the key and door electrical key oscillator match, the door lock function will operate. At this time, the hazard warning lights blink once.

(d) If the key is located inside of the cabin, the door lock function will not operate and the alarm buzzer (beep sound) will sound for 2 seconds.

9. PREVENTION OF KEY CONFINEMENT FUNCTION

(a) If the user attempts to lock the door through keyless operation (move the lock knob to the lock position and then close the door) with the key in the cabin, the system determines that the key is located in the cabin and unlocks the door.

(b) If the back door is closed with the key in it, the alarm will sound and the back door can be opened only when all the doors are locked in order to prevent key confinement in the vehicle.

10. ENTRY ILLUMINATION FUNCTION

When a person carrying the key enters the detection area, the door will enter unlock standby mode and the room light and foot light will illuminate.

HINT:

The entry illumination function operates when the key enters the vehicle exterior detection area from out of the detection area. If the key remains in the detection area for 3 seconds or more, the illumination function does not operate.

11. WARNING FUNCTION

(a) General:

When any of the situations below occur, the smart key system causes the certification ECU to sound the buzzer in the combination meter and the wireless door lock buzzer, and illuminates the smart key system warning light to alert the driver.

WARNING FUNCTION OPERATION CONDITION	SITUATION
Warning if occupant leaves with key	A
Warning if engine switch is operated while key is outside the detection area	B
Warning if entry lock is operated while key is inside vehicle	C
Warning if key battery is weak	D

(b) Situation A:

In this situation, the following control is performed.

POSSIBLE EFFECTS WITHOUT WARNING	ENGINE CANNOT BE RESTARTED
Warning Condition	Certification ECU gives warning when all of following conditions are satisfied:

POSSIBLE EFFECTS WITHOUT WARNING	ENGINE CANNOT BE RESTARTED
	• Engine switch is not off • Except driver door changed from open to close • Vehicle speed is 0 km/h (0 mph) • Key is not in vehicle
Combination Meter • Buzzer • Telltale • Master warning	Warning: • Sounds once • Illuminates
Wireless Door Lock Buzzer	Warning: Sounds 3 times Warning is stopped when one of following conditions is met • Engine switch is off • Vehicle speed is above 0 km/h (0 mph) • Key is in the vehicle

(c) Situation B:

In this situation, the following control is performed.

POSSIBLE EFFECTS WITHOUT WARNING	CONFUSES THE USER
Warning Condition	Certification ECU gives warning when all of following conditions are satisfied: • Engine switch is not off • Key is not in vehicle
Combination Meter • Buzzer • Telltale • Master warning	Warning: • Sounds once • Illuminates for 8 seconds or less

(d) Situation C:

In this situation, the following control is performed.

POSSIBLE EFFECTS WITHOUT WARNING	VEHICLE THEFT
Warning Condition	Certification ECU gives a warning when all of following conditions are satisfied: • Engine switch is off

POSSIBLE EFFECTS WITHOUT WARNING	VEHICLE THEFT
	• All door are closed • Lock switch is "ON" • Key is in vehicle
Wireless Door Lock Buzzer	Warning: Sounds for 2 seconds

(e) Situation D:

In this situation, the following control is performed.

POSSIBLE EFFECTS WITHOUT WARNING	SMART KEY SYSTEM DOES NOT FUNCTION
Warning Condition	Certification ECU gives warning when all of following conditions are satisfied: • Engine switch off after being left in on (IG) for over 20 minutes • Key battery voltage is low • Key is in vehicle
Combination Meter • Buzzer • Telltale	Warning: • Sounds once • None

12. BATTERY SAVING

HINT:

Leaving the electrical key close to electrical appliances that emit radio waves could cause the key to accidentally respond, which could cause the key battery to become quickly depleted.

(a) Vehicle battery saving function:

In the smart key system, signals are emitted outside of the vehicle at a prescribed interval (0.25 seconds) when the doors are locked. Therefore, the vehicle battery could be drained if the vehicle remains parked for a long time. For this reason, the controls listed below are affected.

CONDITION	CONTROL
Both conditions below are met for 5 days: • Key is not in detection area • Touch sensor or lock switch operation is not performed	Signal transmission interval time is extended
Both conditions below are met for 14 days: • Key is not in detection area	Automatically deactivates the smart key system

CONDITION	CONTROL
• Touch sensor or lock switch operation is not performed	

Reinstatement conditions

- A wireless door lock control signal (lock, unlock, or back door open) is input and the ID code matches.
- A user carries the electrical key and pushes a lock switch on an outside door handle.
- A door is locked or unlocked by the mechanical key.

(b) Key battery and vehicle battery saving function:

In the smart key system, if the electrical key is constantly located within the vehicle exterior detection area of the doors, the system maintains periodic communication with the electrical key. Therefore, if the vehicle remains parked in that state for a long time, the electrical key battery and the vehicle battery could be drained. For this reason, if this state continues longer than 10 minutes, the smart key system automatically becomes deactivated.

Reinstatement conditions:

- A wireless door lock control signal (lock or unlock) is input and the ID code matches.
- A user carries the key and pushes a lock switch on an outside handle.
- A door is locked or unlocked by the mechanical key.

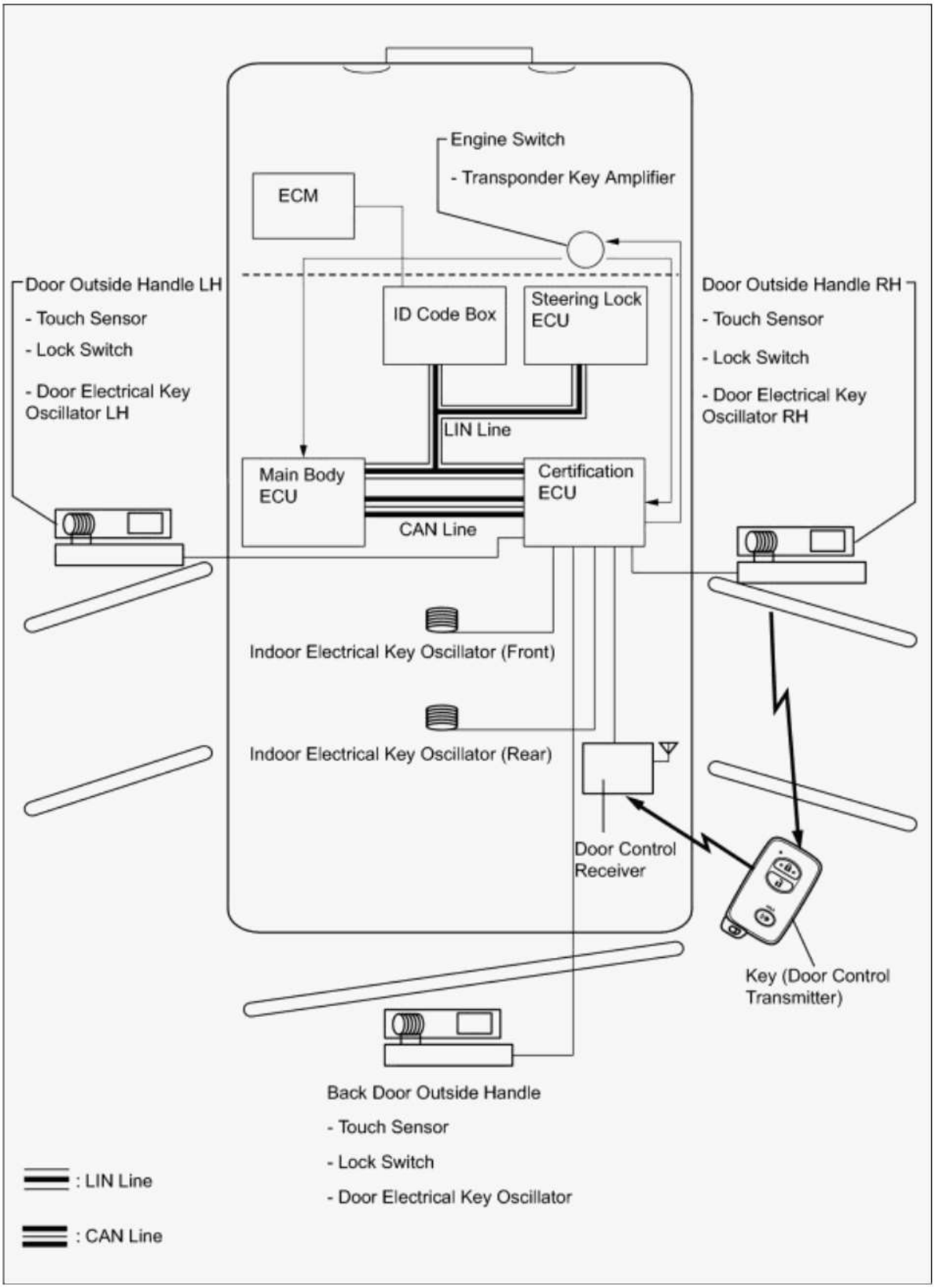


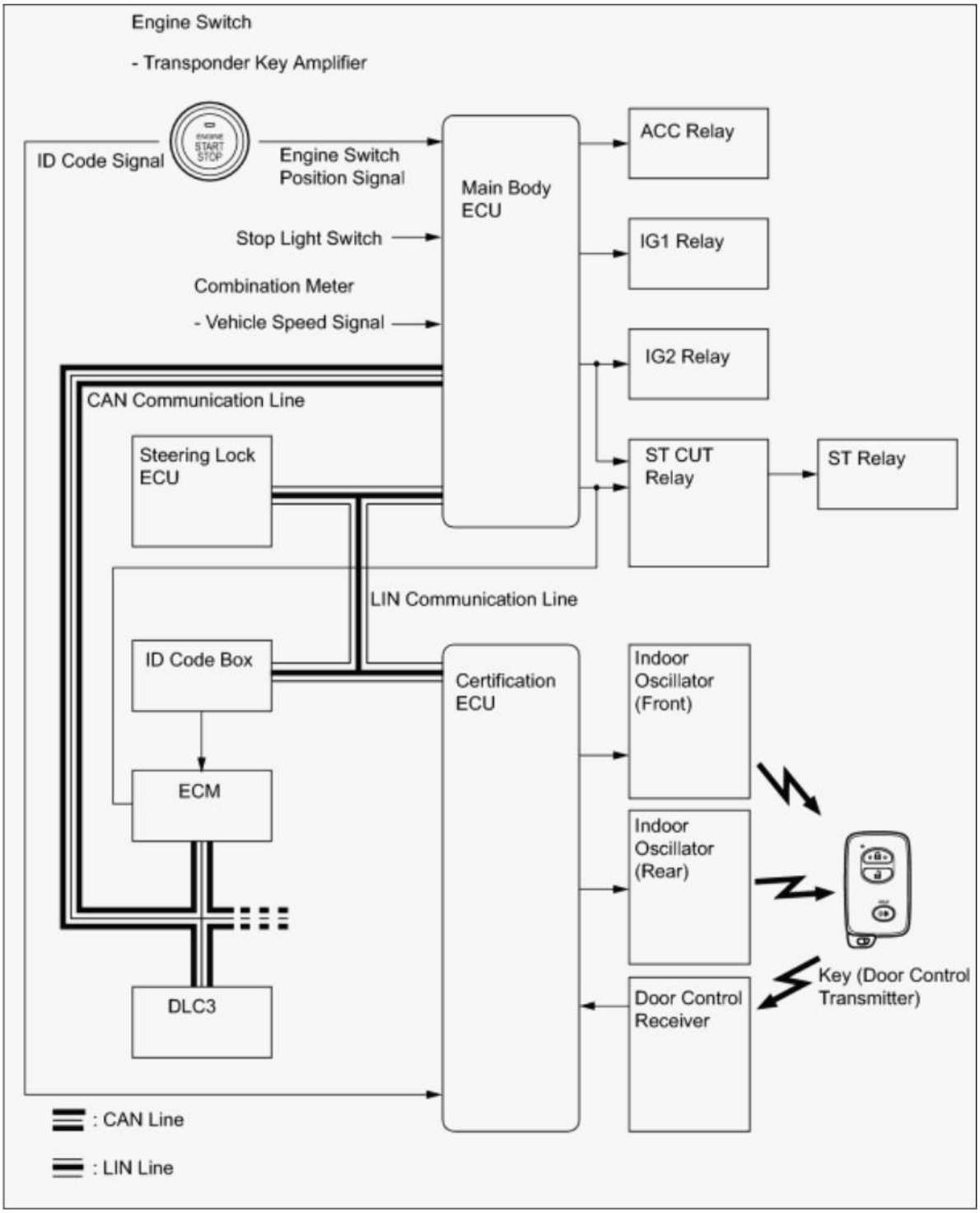


Last Modified: 9-7-2011	6.4 U	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGG008X
Title: DOOR LOCK: SMART KEY SYSTEM: SYSTEM DIAGRAM (2011 RAV4)		

SYSTEM DIAGRAM

DOOR LOCK: SMART KEY SYSTEM: SYSTEM DIAGRAM (2011 ... https://techinfo.toyota.com/t3Portal/document/rm/RM16B0U/xhtml/RM...





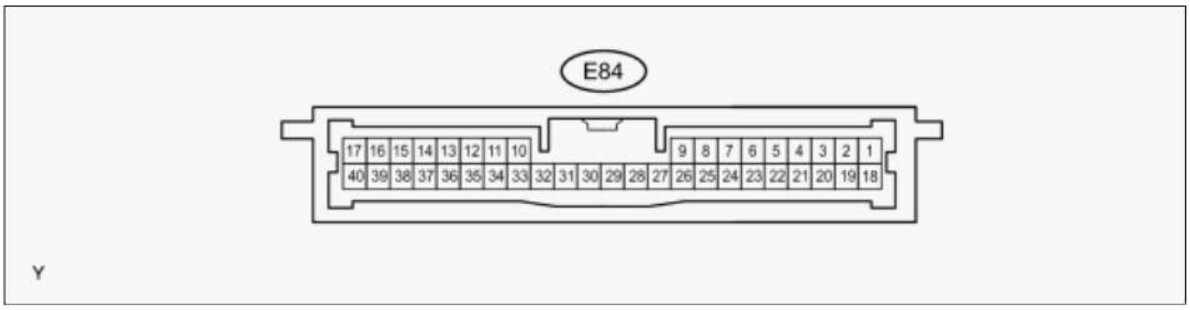
SENDER	RECEIVER	SIGNAL	LINE
Main body ECU	Certification ECU	• Back door courtesy light switch signal	CAN
	ECM	• IG signal • ACC signal • Inside illumination control signal for entry • Door courtesy light switch signal (driver and passenger	CAN

SENDER	RECEIVER	SIGNAL	LINE
		doors) • Vehicle type handle signal	
Certification ECU	Main body ECU	• Back door lock signal • Entry lock switch signal	CAN
		• Immobiliser ID entry required signal • Key code check signal	CAN / LIN
Steering lock ECU	Certification ECU	• Encryption code signal • Encryption code finish signal • Encryption calculate fixed number memory requirement signal • During entry control signal	LIN
ID code box	Certification ECU	• DTC (B2791) signal • Matching request random number signal	LIN

Last Modified: 9-7-2011	6.4 U	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGB007X
Title: DOOR LOCK: SMART KEY SYSTEM: TERMINALS OF ECU (2011 RAV4)		

TERMINALS OF ECU

1. CHECK ECU AGGREGATION BOX (CERTIFICATION ECU)



(a) Disconnect the E84 ECU connector.

(b) Measure the resistance and voltage of the wire harness side connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E (E84-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
+B1 (E84-1) - Body ground	R - Body ground	+B power supply	Always	11 to 14 V
IG (E84-18) - Body ground	B - Body ground	Ignition power supply	Engine switch off	Below 1 V
			Engine switch on (IG)	11 to 14 V
TSW1 (E84-3) - E (E84-17)	V - W-B	Door outside handle (driver side) lock switch signal	Switch released	10 kΩ or higher
			Switch pressed in	Below 1 Ω
TSW2 (E84-4) - E (E84-17)	R - W-B	Door outside handle (passenger side) lock switch signal	Switch released	10 kΩ or higher
			Switch pressed in	Below 1 Ω
TSW9 (E84-7) - E (E84-17)	LG - W-B	Back door outside handle unlock switch signal	Switch released	10 kΩ or higher
			Switch pressed in	Below 1 Ω
LIN (E84-10) - E (E84-17)	V - W-B	LIN line	Always	10 kΩ or higher

- If the result is not as specified, the wire harness side may have a malfunction.

(c) Reconnect the E84 ECU connector.

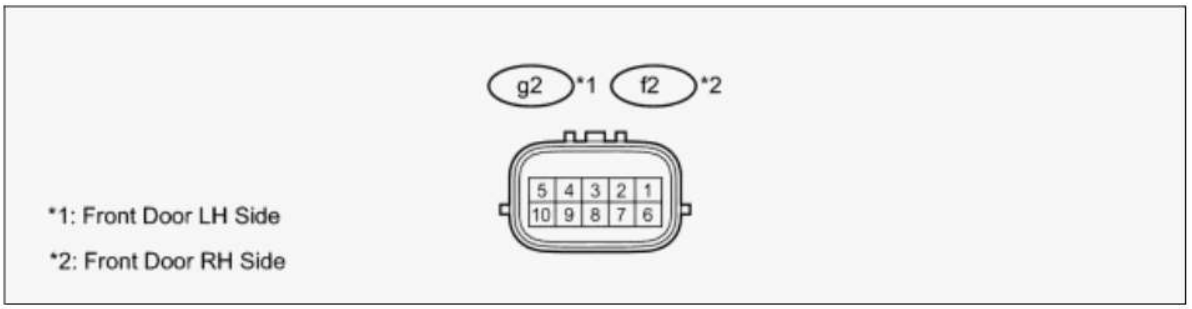
(d) Measure the voltage of the connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
CLG1 (E84-33) - CG1B (E84-34)	R - B	Door electrical key oscillator (driver side) sensor signal	All doors closed, all doors locked and engine switch off	Alternating between 5 V and below 1 V
			Door unlocked or door open	Below 1 V
SEN1 (E84-22) - E (E84-17)	R - W-B	Touch sensor detection signal	Outside door handle touched	Below 1 V
			Outside door handle not touched	11 to 14 V
SEL1 (E84-5) - E (E84-17)	Y - W-B	Touch sensor activation control signal	Key at least 3 m (9.8 ft.) away from door	11 to 14 V
			Close to door	Below 1 V
CLG2 (E84-35) - CG2B (E84-36)	B - R	Door electrical key oscillator (passenger side) sensor signal	All doors closed, all doors locked and engine switch off	Alternating between 5 V and below 1 V
			Door unlocked or door open	Below 1 V
SEN2 (E84-23) - E (E84-17)	W - W-B	Touch sensor detection signal	Outside door handle touched	Below 1 V
			Outside door handle not touched	11 to 14 V
SEL2 (E84-6) - E (E84-17)	B - W-B	Touch sensor activation control signal	Key at least 3 m (9.8 ft.) away from door	11 to 14 V
			Close to door	Below 1 V
CLG5 (E84-11) - CG5B (E84-12)	R - G	Indoor electrical key oscillator (front) sensor signal	30 seconds after driver side door opened and closed, engine switch off	Below 1 V
			Within 30 seconds driver side door opened and closed, engine switch off	Alternating between 5 V and below 1 V
CLG7 (E84-15) - CG7B (E84-16)	W - B	Indoor electrical key oscillator (rear) sensor signal	30 seconds after driver side door opened and closed, engine switch off	Below 1 V
			Within 30 seconds driver side door opened and closed, engine switch off	Alternating between 5 V and below 1 V
CLG9 (E84-31) - CG9B (E84-32)	B - W	Door electrical key oscillator (back door) sensor signal	All doors closed, all doors locked and engine switch off	Alternating between 5 V and below 1 V
			Door unlocked or door open	Below 1 V
RCO (E84-29) - E (E84-17)	V - W-B	Door control receiver input	Engine switch off, all doors closed and transmitter switch not pressed → pressed	5 to Below 1 V → 5 V

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
RSSI (E84-39) - E (E84-17)	R - W-B	Door control receiver output	Engine switch off, all doors closed and transmitter switch not pressed → pressed	11 to 14 V → Below 1 V
RDA (E84-38) - E (E84-17)	Y - W-B	Door control receiver input	Engine switch off, all doors closed and transmitter switch not pressed	11 to 14 V pulse generation at regular intervals
			Engine switch off, all doors closed and transmitter switch pressed	Pulse generation

- If the result is not as specified, the ECU may have a malfunction.

2. CHECK DOOR ELECTRICAL KEY OSCILLATOR (for FRONT DOOR)



(a) Disconnect the f2 or g2 oscillator connector.

(b) Measure the resistance and voltage of the wire harness side connector.

Front door LH side:

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
GND (g2-7) - Body ground	BR - Body ground	Ground	Always	Below 1 Ω
+B (g2-1) - GND (g2-7)	Y - BR	+B power supply	Always	11 to 14 V

Front door RH side:

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
GND (f2-7) - Body ground	BR - Body ground	Ground	Always	Below 1 Ω
+B (f2-1) - GND (f2-7)	Y - BR	+B power supply	Always	11 to 14 V

- If the result is not as specified, the wire harness side may have a malfunction.

(c) Reconnect the f2 or g2 oscillator connector.

(d) Measure the voltage of the wire harness side connector.

Front door LH side:

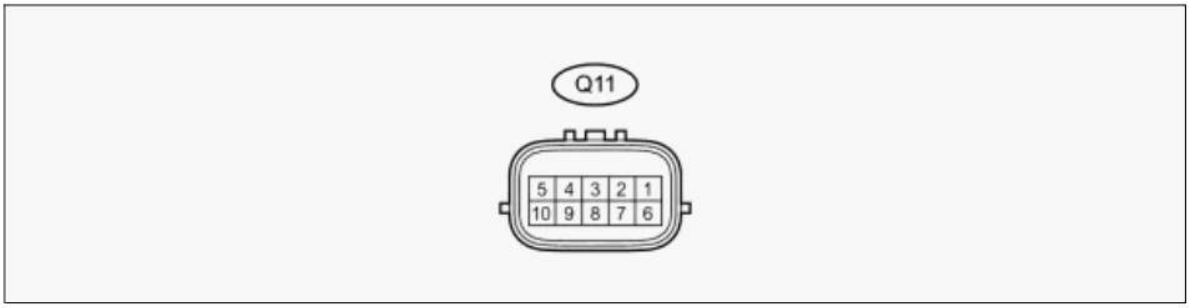
SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
CLG (g2-10) - GND (g2-7)	R - BR	Door electrical key oscillator (driver side) sensor signal	All doors closed, all doors locked and engine switch off	Alternating between 5 V and below 1 V
			Door unlocked or door open	Below 1 V
SEL (g2-4) - GND (g2-7)	O - BR	Touch sensor activation control signal	Key at least 3 m (9.8 ft.) away from door	11 to 14 V
			Close to door	Below 1 V
SENS (g2-6) - GND (g2-7)	V - BR	Touch sensor detection signal	Outside door handle touched	11 to 14 V
			Outside door handle not touched	Below 1 V

Front door RH side:

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
CLG (f2-10) - GND (f2-7)	R - BR	Door electrical key oscillator sensor signal	All doors closed, all doors locked and engine switch off	Alternating between 5 V and below 1 V
			Door unlocked or door open	Below 1 V
SEL (f2-4) - GND (f2-7)	O - BR	Touch sensor activation control signal	Key at least 3 m (9.8 ft.) away from door	11 to 14 V
			Close to door	Below 1 V
SENS (f2-6) - GND (f2-7)	V - BR	Touch sensor detection signal	Outside door handle touched	11 to 14 V
			Outside door handle not touched	Below 1 V

- If the result is not as specified, the oscillator may have a malfunction.

3. CHECK DOOR ELECTRICAL KEY OSCILLATOR (for Back Door)

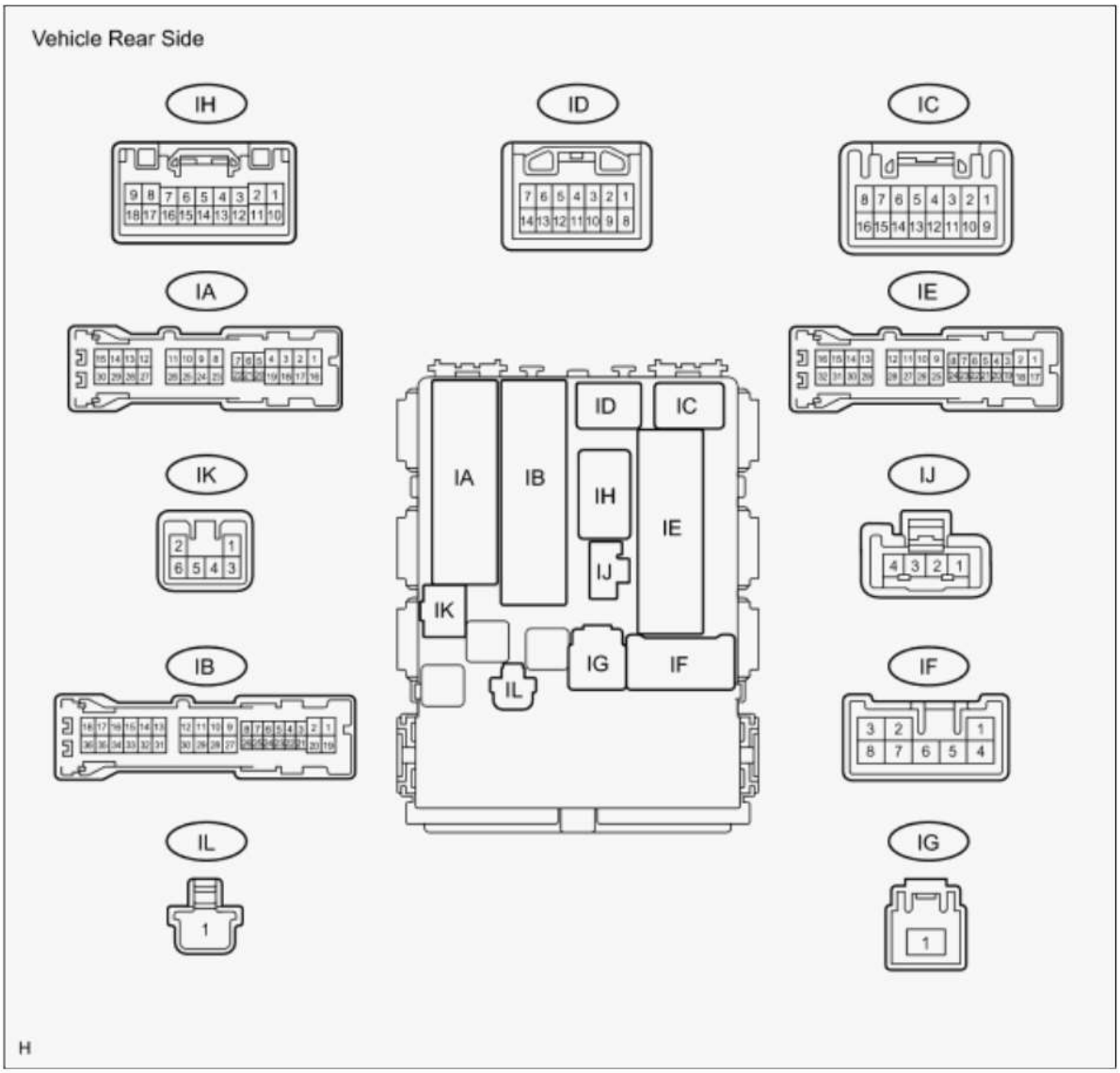


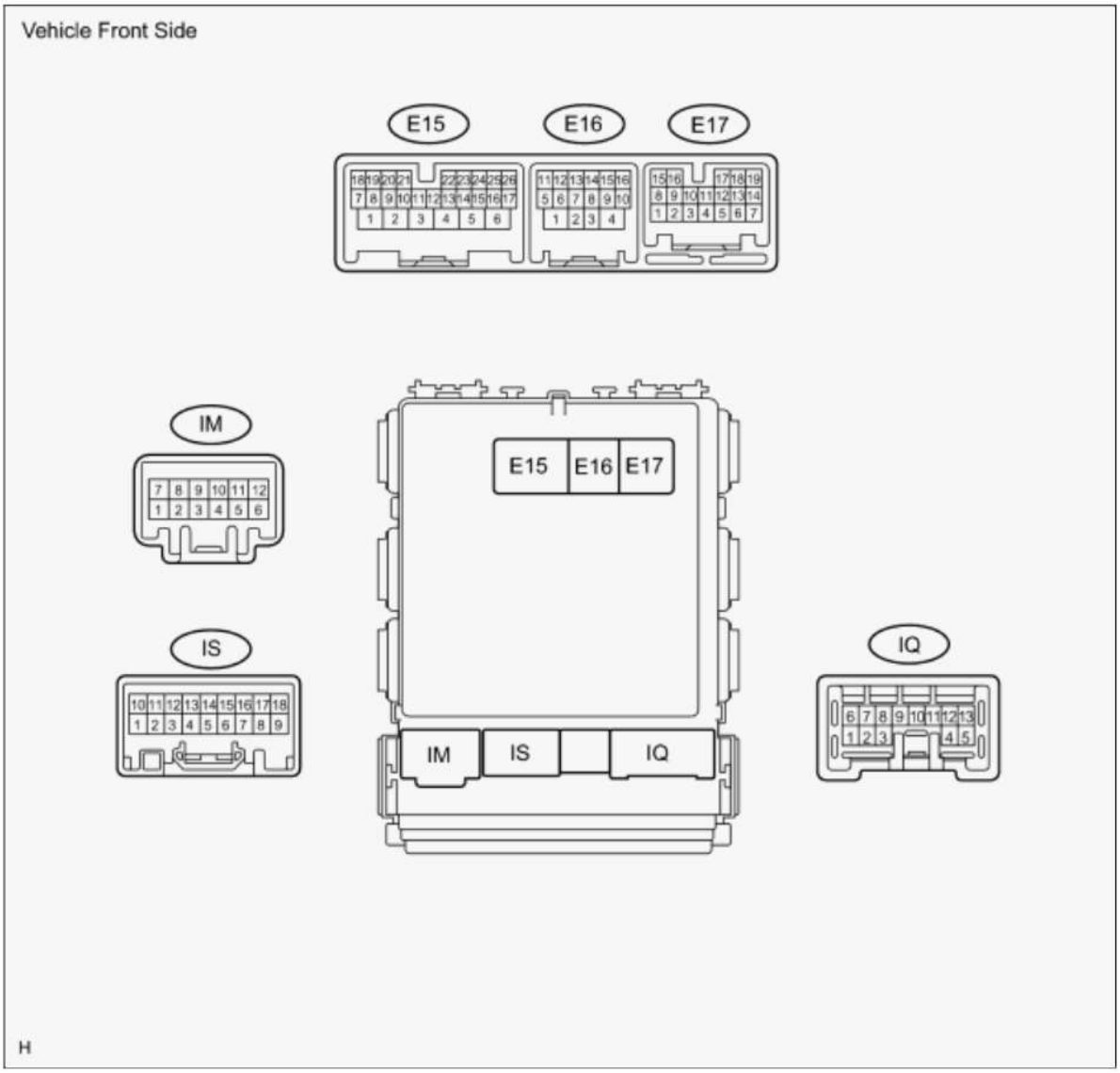
(a) Measure the voltage of the wire harness side connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
CLG (Q11-10) - CLGB (Q11-5)	B - W	Door electrical key oscillator (back door) sensor signal	Back door unlock switch OFF	Alternating between 5 V and below 1 V
			Back door unlock switch ON	Below 1 V

- If the result is not as specified, the oscillator may have a malfunction.

4. CHECK INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)





(a) Disconnect the ID, IE and IF junction block connectors.

(b) Disconnect the E15, E16 and E17 ECU connectors.

(c) Measure the resistance and voltage of the wire harness side connectors.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
GND1(IE-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
GND2 (E16-4) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
AM1 (E16-1) - Body ground	W - Body ground	+B power supply	Always	11 to 14 V
AM2 (E15-6) - Body ground	W - Body ground	+B power supply	Always	11 to 14 V

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
IG (IF-3) - Body ground	P - Body ground	IG1 signal	Engine switch on (IG)	11 to 14 V
			Engine switch off	Below 1 V
ACC (IF-5) - Body ground	W - Body ground	ACC signal	Engine switch on (ACC)	11 to 14 V
CANH (E17-15) - Body ground	R - Body ground	CAN communication line	Always	10 kΩ or higher
CANL (E17-16) - Body ground	W - Body ground	CAN communication line	Always	10 kΩ or higher
LIN1 (ID-9) - Body ground	V - Body ground	LIN communication line	Always	10 kΩ or higher

- If the result is not as specified, the wire harness side may have a malfunction.

(d) Reconnect the IB, ID, IE and IF junction block connectors.

(e) Reconnect the E15, E16 and E17 ECU connectors.

(f) Measure the voltage of the connectors.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
DCTY (IA-21) - Body ground	W - Body ground	Driver side door courtesy light switch input	Driver side door closed	11 to 14 V
			Driver side door open	Below 1 V
PCTY (IC-14) - Body ground	BR - Body ground	Passenger side door courtesy light switch input	Passenger side door closed	11 to 14 V
			Passenger side door open	Below 1 V
RRCY (ID-7) - Body ground	LG- Body ground	Rear RH door courtesy light switch input	Rear RH door closed	11 to 14 V
			Rear RH door open	Below 1 V
LCTY (E15-8) - Body ground	SB - Body ground	Rear LH door courtesy light switch input	Rear LH door closed	11 to 14 V
			Rear LH door open	Below 1 V
BCTY (IA-7) - Body ground	LG- Body ground	Back door courtesy light switch input	Back side door closed	11 to 14 V
			Back side door open	Below 1 V
HAZ (IS-17) - Body ground	GR- Body ground	Hazard warning light signal	Answer-back ON	Below 1 V
			Answer-back OFF	11 to 14 V

- If the result is not as specified, the main body ECU may have a malfunction.




TOYOTA

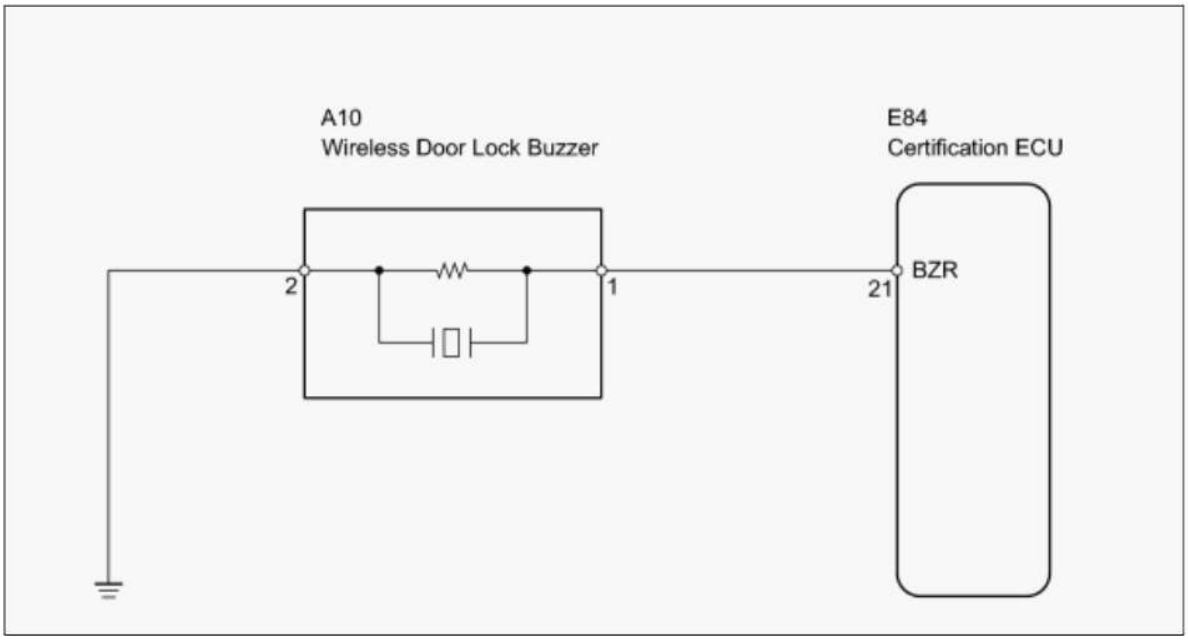
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VGU007X
Title: DOOR LOCK: SMART KEY SYSTEM: Wireless Door Lock Buzzer Does not Sound (2011 RAV4)		

Wireless Door Lock Buzzer Does not Sound

DESCRIPTION

Each of the smart key system warnings use the wireless door lock buzzer to alert the driver. The certification ECU determines whether the wireless door lock buzzer must sound in accordance with the warning conditions.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**PERFORM ACTIVE TEST USING TECHSTREAM (WIRELESS DOOR LOCK BUZZER)**

(a) Select the Active Test, use the Techstream to generate a control command, and then check that the wireless door lock buzzer sounds.

Smart Key

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE

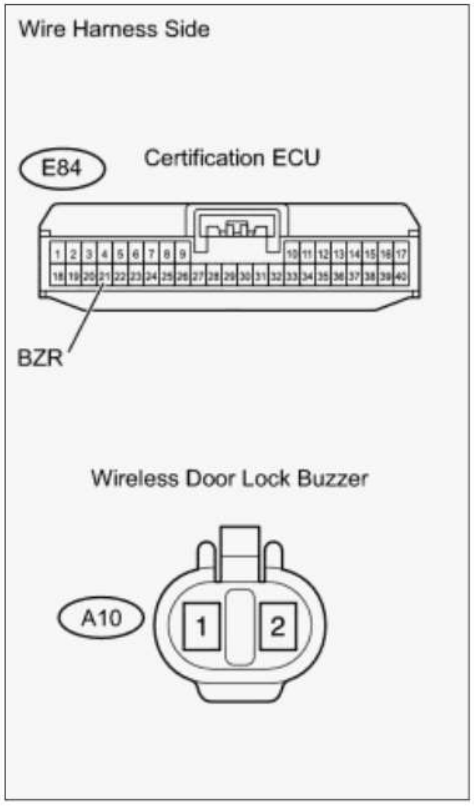
TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Wireless Buzzer Operation	Wireless door lock buzzer	ON or OFF	-

OK:
Wireless door lock buzzer sounds.

NG ▶ **CHECK WIRE HARNESS (CERTIFICATION ECU - WIRELESS DOOR LOCK BUZZER AND BODY GROUND)**

OK ▶ **END (WIRELESS DOOR LOCK BUZZER IS DEFECTIVE)**

2.	**CHECK WIRE HARNESS (CERTIFICATION ECU - WIRELESS DOOR LOCK BUZZER AND BODY GROUND)**



(a) Disconnect the E84 ECU connector.

(b) Disconnect the A10 buzzer connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	SPECIFIED CONDITION
BZR (E84-21) - A10-1	Below 1 Ω
A10-2 - Body ground	
BZR (E84-21) or A10-1 - Body ground	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

3.	**CHECK WIRELESS DOOR LOCK BUZZER**

(a) Temporarily replace the wireless door lock buzzer with a new one.

(b) Check that the wireless door buzzer sounds by using the transmitter lock/unlock switch.

OK:

Wireless door lock buzzer sounds.

NG ▶ **REPLACE ECU AGGREGATION BOX (CERTIFICATION ECU)**

OK ▶ **END (WIRELESS DOOR LOCK BUZZER IS DEFECTIVE)**

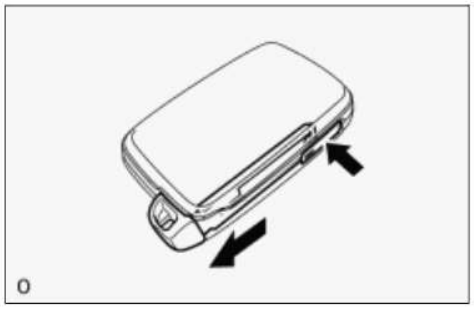
Last Modified: 9-7-2011	6.4 A	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM0000039HF011X
Title: DOOR LOCK: TRANSMITTER BATTERY (w/ Smart Key System): REPLACEMENT (2011 RAV4)		

REPLACEMENT

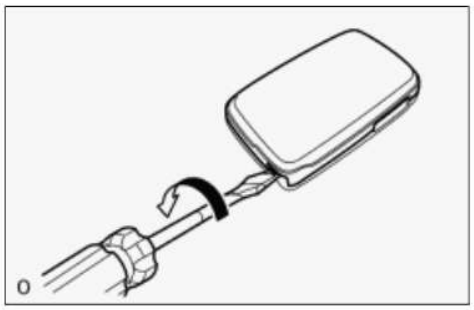
1. REMOVE TRANSMITTER BATTERY

NOTICE:

Take extra care when handling these precision electronic components.



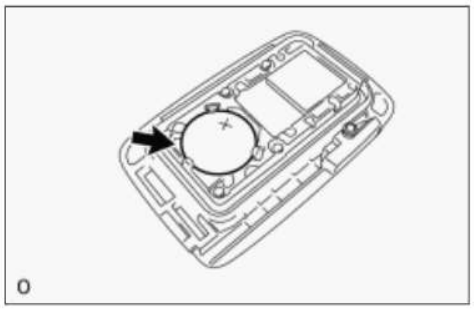
(a) Push the release hook knob and extract the emergency key.



(b) Insert a precision screwdriver into the gap, and turn the screwdriver to detach the transmitter housing cover.

HINT:

Tape the screwdriver tip before use.



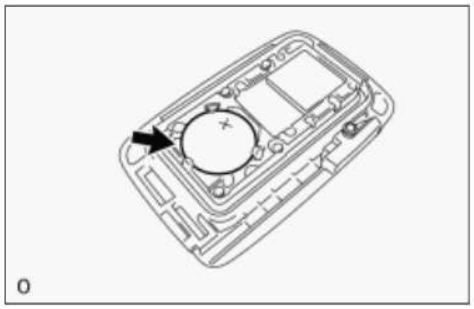
(c) Remove the battery (lithium battery: CR1632).

NOTICE:

- Do not push the terminals with your finger.
- Do not forcibly pry up the battery. The terminals may be damaged.
- Do not touch the battery with wet hands. Water may cause rust.
- Do not touch or move any components inside the transmitter. It may interfere with proper operation.

2. INSTALL TRANSMITTER BATTERY

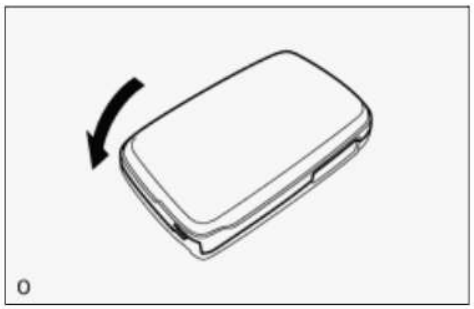
(a) Install a new battery (lithium battery: CR1632) with the positive



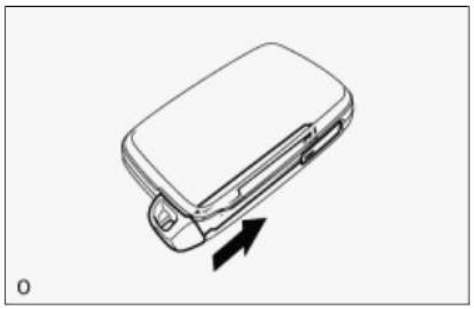
(+) side facing upward, as shown in the illustration.

NOTICE:

- Do not bend the transmitter battery electrode during insertion.
- Keep the transmitter cover interior free of dust and oil.



(b) Install the transmitter housing cover by pressing down on it as shown in the illustration.



(c) Insert the emergency key into the transmitter.

(d) Press one of the transmitter switches and check that the LED illuminates.

Last Modified: 9-7-2011	6.4 C	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VRS007X
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): B1242: Wireless Door Lock Tuner Circuit Malfunction (2011 RAV4)		

DTC	**B1242**	**Wireless Door Lock Tuner Circuit Malfunction**

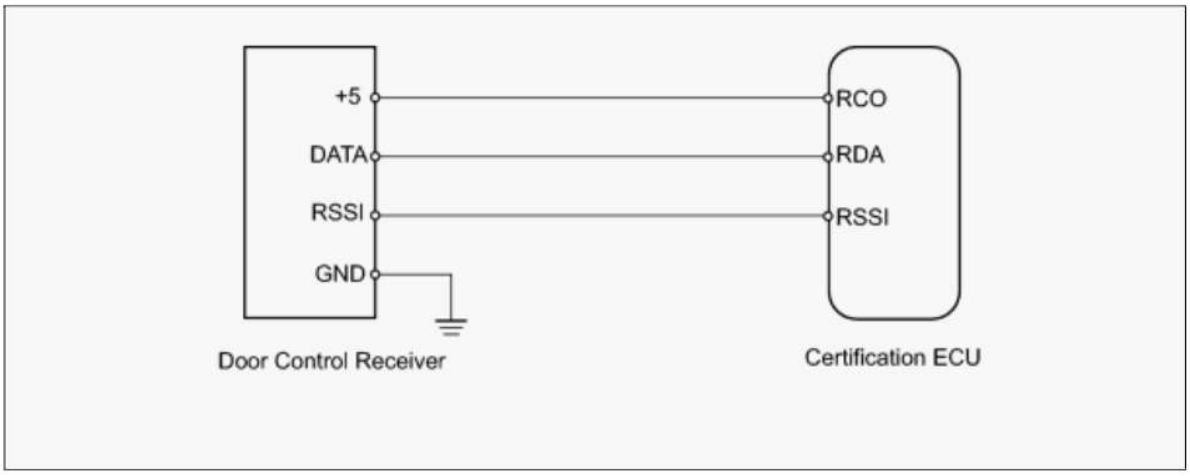
DESCRIPTION

The door control receiver receives lock / unlock signals from the transmitter and sends these signals to the main body ECU via the certification ECU using the serial line.

The main body ECU then activates the door lock motor on each door in accordance with these signals.

DTC CODE	DTC DETECTION CONDITION	TROUBLE AREA
B1242	One of following conditions is met: • Short in RDA or RSSI ground between certification ECU and door control receiver • Short in RDA or RSSI ground when RCO (5 V) output from ECU off	• Wire harness • Door control receiver • ECU aggregation box (certification ECU)

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

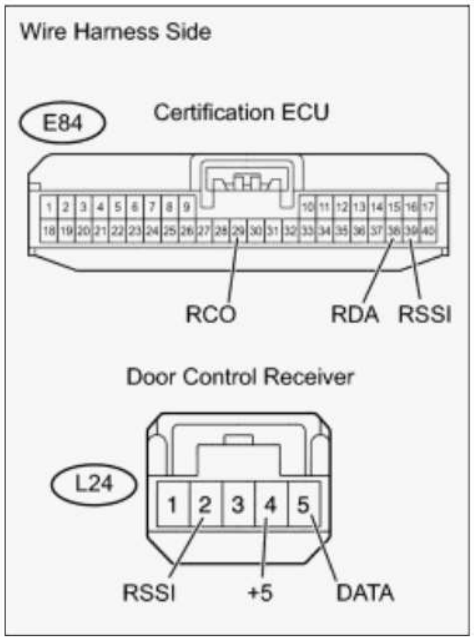
1.	CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR CONTROL RECEIVER)

(a) Disconnect the E84 ECU connector.

(b) Disconnect the L24 receiver connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:



TESTER CONNECTION	SPECIFIED CONDITION
E84-38 (RDA) - L24-5 (DATA)	Below 1 Ω
E84-39 (RSSI) - L24-2 (RSSI)	
E84-29 (RCO) - L24-4 (+5)	
E84-38 (RDA) or L24-5 (DATA) - Body ground	10 kΩ or higher
E84-39 (RSSI) or L24-2 (RSSI) - Body ground	
E84-29 (RCO) or L24-4 (+5) - Body ground	

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

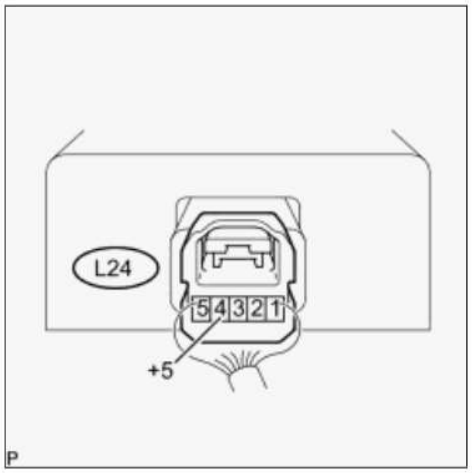
OK ▼

2.	CHECK DOOR CONTROL RECEIVER (+B TERMINAL)

(a) Measure the voltage of the connector.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L24-4 (+5) - Body ground	Engine switch off, all doors closed and transmitter switch not pressed → pressed	5 to below 1 V → 5 V



NG ▶ REPLACE CERTIFICATION ECU

OK ▼

3.	REPLACE DOOR CONTROL RECEIVER

(a) Temporarily replace the door control receiver with a new or normally functioning one INFO .

(b) Perform the REGISTRATION procedures.

NEXT ▼

4.	CHECK FOR DTC

(a) Clear the DTC INFO .

(b) Check if the same DTC is detected.

OK:
DTC B1242 is not output.

NG ▶ REPLACE CERTIFICATION ECU

OK ▶ END (DOOR CONTROL RECEIVER IS DEFECTIVE)

Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001WYK00PX
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): CUSTOMIZE PARAMETERS (2011 RAV4)		

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH TECHSTREAM (REFERENCE)

HINT:

The following items can be customized.

NOTICE:

- When the customer requests a change in a function, first make sure that the function can be customized.
- Record the current settings before customizing.
- When troubleshooting a function, first make sure that the function is set to the default setting.

Wireless Door Lock Control System:

DISPLAY (ITEM)	DEFAULT	CONTENTS	SETTING
Hazard Answer Back	ON	When LOCK switch on transmitter pressed, all hazard warning lights illuminate once. When UNLOCK switch pressed, all hazard warning lights illuminate twice	ON / OFF
Wireless Buzzer Resp	ON	Function that makes wireless buzzer sound for answer-back when transmitter LOCK / UNLOCK switch pressed	ON / OFF
Open Door Warning	ON	If door is not completely closed and transmitter LOCK switch is pressed, this function sounds a buzzer for 10 seconds	ON / OFF
Wireless Control	ON	ON / OFF of wireless door lock function	ON / OFF
Panic Alarm Function	ON	Operates security alarm when PANIC switch on transmitter continuously pressed for 1 second	ON / OFF
Unlock 2 Operation	ON	Function that unlocks driver side door when unlock switch on transmitter is pressed once, and unlocks all doors when pressed twice. If setting is OFF, pressing unlock switch once makes all doors unlock.	ON / OFF
Auto Lock Time	60s	Function to change the time until relocking after unlocking with the wireless door lock function.	30s / 60s / 120s
Wireless Auto Lock	ON	Function to control the automatic relocking of doors after unlocking with the wireless door lock function.	ON / OFF

Last Modified: 9-7-2011	6.4 U	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001WYJ00PX
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): DATA LIST / ACTIVE TEST (2011 RAV4)		

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the Techstream's DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG).

(c) Read the Data List.

Main Body:

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
D Door Courtesy SW	Driver side door courtesy light switch signal / ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-
D-Door Lock Pos SW	Driver side door lock position switch signal / ON or OFF	ON: Driver side door is unlocked OFF: Driver side door is locked	-
Door Lock SW-Lock	Door manual lock switch signal / ON or OFF	ON: Door control switch (for front driver door side) is turned to lock position OFF: Door control switch (for front driver door side) is turned to unlock position	-
Door Lock SW-Unlock	Door manual unlock switch signal / ON or OFF	ON: Door control switch (for front driver door side) is turned to unlock position OFF: Door control switch (for front driver door side) is turned to lock position	-
Door Key SW-Lock	Door key linked lock switch signal / ON or OFF	ON: Driver side door key cylinder is turned to lock position OFF: Driver side door key cylinder is turned to unlock position	-
Door Key SW-Unlock	Driver side door key linked unlock switch signal / ON or OFF	ON: Driver side door key cylinder is turned to unlock position OFF: Driver side door key cylinder is turned to lock position	-
P Door Courtesy SW	Passenger side door courtesy light switch signal / ON or OFF	ON: Passenger side door is open OFF: Passenger side door is closed	-
P-Door Lock Pos SW	Passenger side door lock position switch signal / ON or OFF	ON: Passenger side door is unlocked ON: Passenger side door is locked	-

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
RR Door Courtesy SW	Rear door RH courtesy light switch signal / ON or OFF	ON: Rear door RH is open OFF: Rear door RH is closed	-
RL Door Courtesy SW	Rear door LH courtesy light switch signal / ON or OFF	ON: Rear door LH is open OFF: Rear door LH is closed	-
Back Door Courtesy SW	Back door courtesy light switch signal / ON or OFF	ON: Back door is open OFF: Back door is closed	-

2. PERFORM ACTIVE TEST

HINT:

Performing the Techstream's ACTIVE TEST allows relays, VSV, actuators and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG).

(c) Select the following menu items: Body Electrical / Main Body / Active Test.

(d) Perform the ACTIVE TEST by referring to the table below.

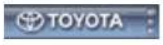
Main Body:

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Door Lock	Operate door lock motor	LOCK / UNLOCK	-
D-Door Unlock	Operate driver door lock motor unlock side	ON / OFF	-
Vehicle Horn	Sounds vehicle horn	ON / OFF	-
Hazard	Turns FLSH relay	ON / OFF	-

Smart Key:

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Wireless Buzzer Operation	Sounds wireless door lock buzzer	ON / OFF	-





Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001WYF00IX
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): DIAGNOSIS SYSTEM (2011 RAV4)		

DIAGNOSIS SYSTEM

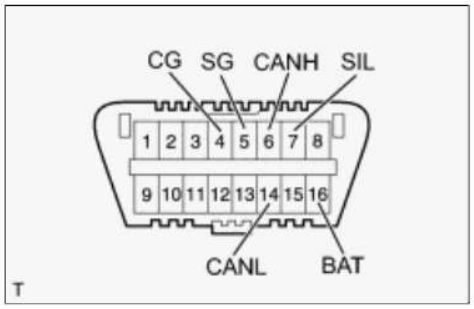
1. DESCRIPTION

(a) Wireless door lock control system data and Diagnostic Trouble Codes (DTCs) can be read through the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the Techstream to check for malfunctions and perform repairs.

2. CHECK DLC3

The vehicle's ECU uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.

If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.



SYMBOLS (TERMINAL NO.)	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Engine switch off*	54 to 69 Ω
CANH (6) - Battery positive	HIGH-level CAN bus line	Engine switch off*	1 kΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Engine switch off*	1 kΩ or higher
CANL (14) - Battery positive	LOW-level CAN bus line	Engine switch off*	1 MΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Engine switch off*	1 MΩ or higher

NOTICE:

***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the engine switch, other switches or doors.**

HINT:

Connect the cable of the Techstream to the DLC3, turn the engine switch on (IG) and attempt to use the Techstream. If the screen displays UNABLE TO CONNECT TO VEHICLE, a problem exists in the vehicle side or the Techstream side.

If the communication is normal when the Techstream is connected to another vehicle, inspect the DLC3 on the original vehicle.

If the communication is still not possible when the Techstream is connected to another vehicle, the problem is probably in the Techstream itself. Consult the Service Department listed in the Techstream's instruction manual.

Last Modified: 9-7-2011	6.4 S	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VRO007X
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): DIAGNOSTIC TROUBLE CODE CHART (2011 RAV4)		

DIAGNOSTIC TROUBLE CODE CHART

Wireless Door Lock Control System:

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
B1242	Wireless Door Lock Tuner Circuit Malfunction	- Wire harness - Door control receiver - ECU aggregation box (certification ECU)	INFO

Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001WYG00SX
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): DTC CHECK / CLEAR (2011 RAV4)		

DTC CHECK / CLEAR

1. CHECK DTC

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) and turn the Techstream on.

(c) Select the following menu items: Body Electrical / (desired system) / Trouble Codes.

(d) Check DTCs and then write them down.

HINT:

Refer to the Techstream operator's manual for further details.

(e) Confirm the details of the DTCs INFO .

2. CLEAR DTC

(a) Connect the Techstream to the DLC3.

(b) Turn the engine switch on (IG) (do not start the engine) and turn the Techstream on.

(c) Select the following menu items: Body Electrical / (desired system) / Trouble Codes.

(d) Erase the DTCs.

Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001WY700ZX
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): HOW TO PROCEED WITH TROUBLESHOOTING (2011 RAV4)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- The wireless door lock control system troubleshooting procedures are based on the premise that the power door lock system is operating normally. Check the power door lock system first before troubleshooting the wireless door lock control system INFO .
- Use these procedures to troubleshoot the wireless door lock control system.
- *: Use the Techstream.

1.	**VEHICLE BROUGHT TO WORKSHOP**

NEXT

2.	**INSPECT BATTERY VOLTAGE**

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

3.	**PROBLEM SYMPTOMS TABLE**

Result:

RESULT	PROCEED TO
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B ▶ Go to step 5

A ▼

4.	**OVERALL ANALYSIS AND TROUBLESHOOTING***

(a) Operation Check INFO

(b) DATA LIST / ACTIVE TEST INFO

(c) Terminals of ECU INFO

NEXT ▼

5.	**REPAIR OR REPLACE**

NEXT ▼

6.	**CONFIRMATION TEST**

NEXT ▶ **END**

Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001WYD01HX
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): No Answer-Back (2011 RAV4)		

No Answer-Back

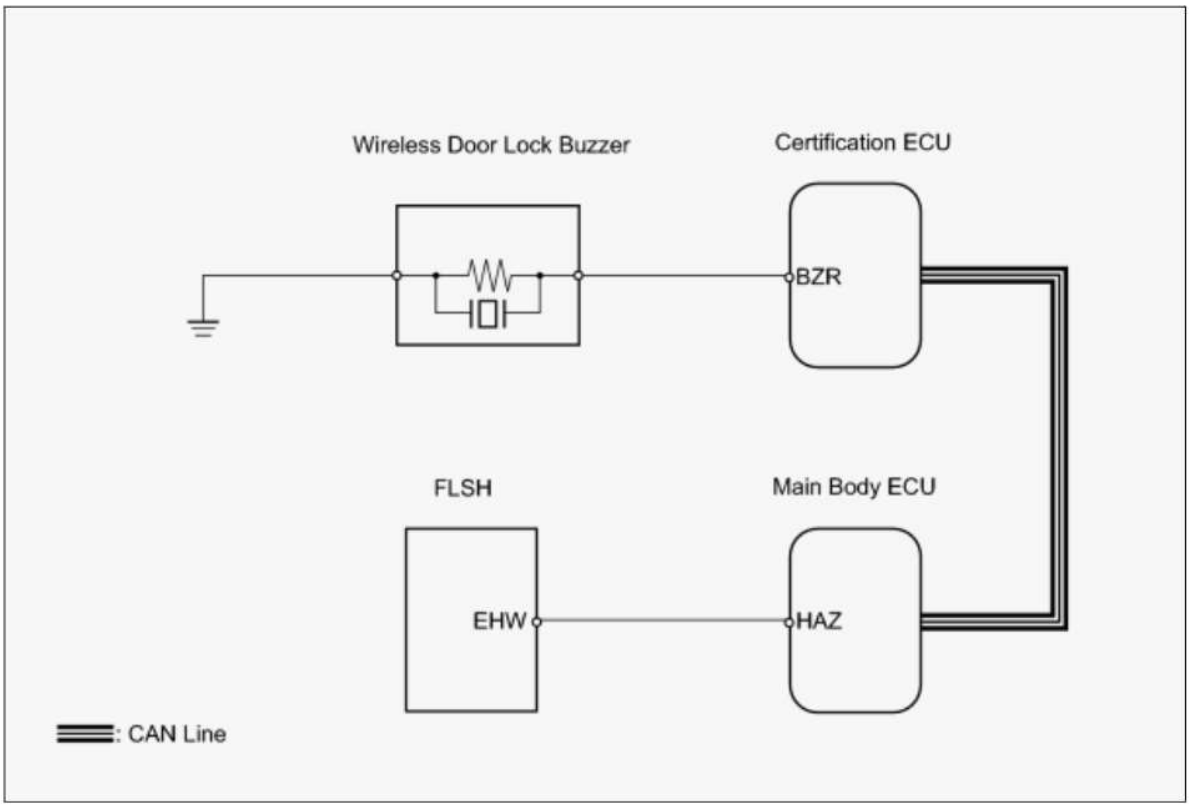
DESCRIPTION

In some cases, wireless door lock control functions are normal but the hazard warning lights and wireless door lock buzzer are not. Malfunctions may be present in the main body ECU, certification ECU, hazard warning lights, and/or wireless door lock buzzer signal outputs.

NOTICE:

- Before performing the inspection, check that there are no problems related to the CAN communication system.
- When troubleshooting a function, first make sure that the answer-back function is set to the default setting.
- Check that DTC B1242 is not output.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK WIRELESS DOOR LOCK CONTROL FUNCTION**

(a) Check the wireless door lock control functions by operating the transmitter switch.

Result:

RESULT	PROCEED TO
Wireless door lock functions are normal but hazard warning lights answer-back does not occur	A
Wireless door lock functions are normal but wireless door lock buzzer answer-back does not occur	B
Doors cannot be locked and unlocked with transmitter	C

B ▶ **PERFORM ACTIVE TEST USING TECHSTREAM (WIRELESS DOOR LOCK BUZZER)**

C ▶ **Go to FLOWCHART**

A ▼

2.	**PERFORM ACTIVE TEST USING TECHSTREAM (FLSH RELAY)**

(a) Select the ACTIVE TEST, use the Techstream to generate a control command, and then check that the hazard warning lights flash.

Main Body:

ITEM	TEST DETAILS	CONTROL RANGE	DIAGNOSTIC NOTE
Hazard	Turns FLSH relay	ON / OFF	-

OK:
Hazard warning lights are turned ON / OFF.

NG ▶ **CHECK HAZARD WARNING LIGHT**

OK ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

3.	**CHECK HAZARD WARNING LIGHT**

(a) Check that the hazard warning lights flash continuously when the hazard warning signal switch is pressed.

OK:

Hazard warning lights flash continuously.

NG ▶ **Go to LIGHTING SYSTEM**

OK ▶ **REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)**

4.	**PERFORM ACTIVE TEST USING TECHSTREAM (WIRELESS DOOR LOCK BUZZER)**

(a) Select the ACTIVE TEST, use the Techstream to generate a control command, and then check that the wireless door lock buzzer sounds.

Smart Key:

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Wireless Buzzer Operation	Sounds wireless door lock buzzer	ON / OFF	-

OK:

Wireless door lock buzzer sounds.

NG ▶ **CHECK WIRE HARNESS (WIRELESS DOOR LOCK BUZZER - MAIN BODY ECU AND BODY GROUND)**

OK ▶ **REPLACE CERTIFICATION ECU**

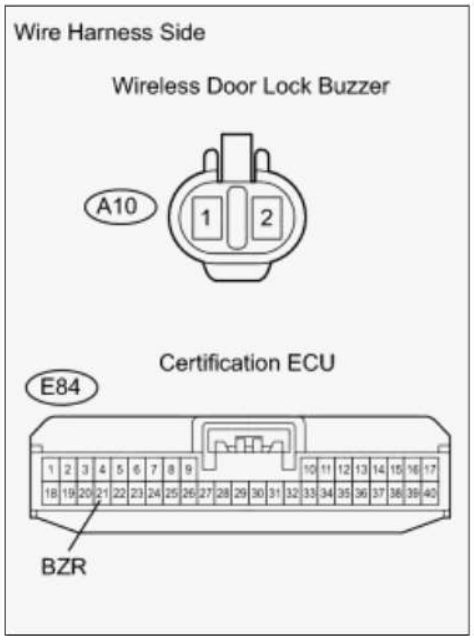
5.	**CHECK WIRE HARNESS (WIRELESS DOOR LOCK BUZZER - MAIN BODY ECU AND BODY GROUND)**

(a) Disconnect the A10 buzzer connector.

(b) Disconnect the E84 ECU connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:



TESTER CONNECTION	SPECIFIED CONDITION
A10-1 - E84-21 (BZR)	Below 1 Ω
A10-2 - Body ground	
A10-1 or E84-21 (BZR) - Body ground	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK ▼

6.	CHECK WIRELESS DOOR LOCK BUZZER (OPERATION)

(a) Temporarily replace the wireless door lock buzzer with a new one.

(b) Check that the wireless door lock buzzer sounds by using the transmitter lock/unlock switch.

OK:
Wireless door lock buzzer sounds.

NG ▶ **REPLACE CERTIFICATION ECU**

OK ▶ **END (WIRELESS DOOR LOCK BUZZER IS DEFECTIVE)**

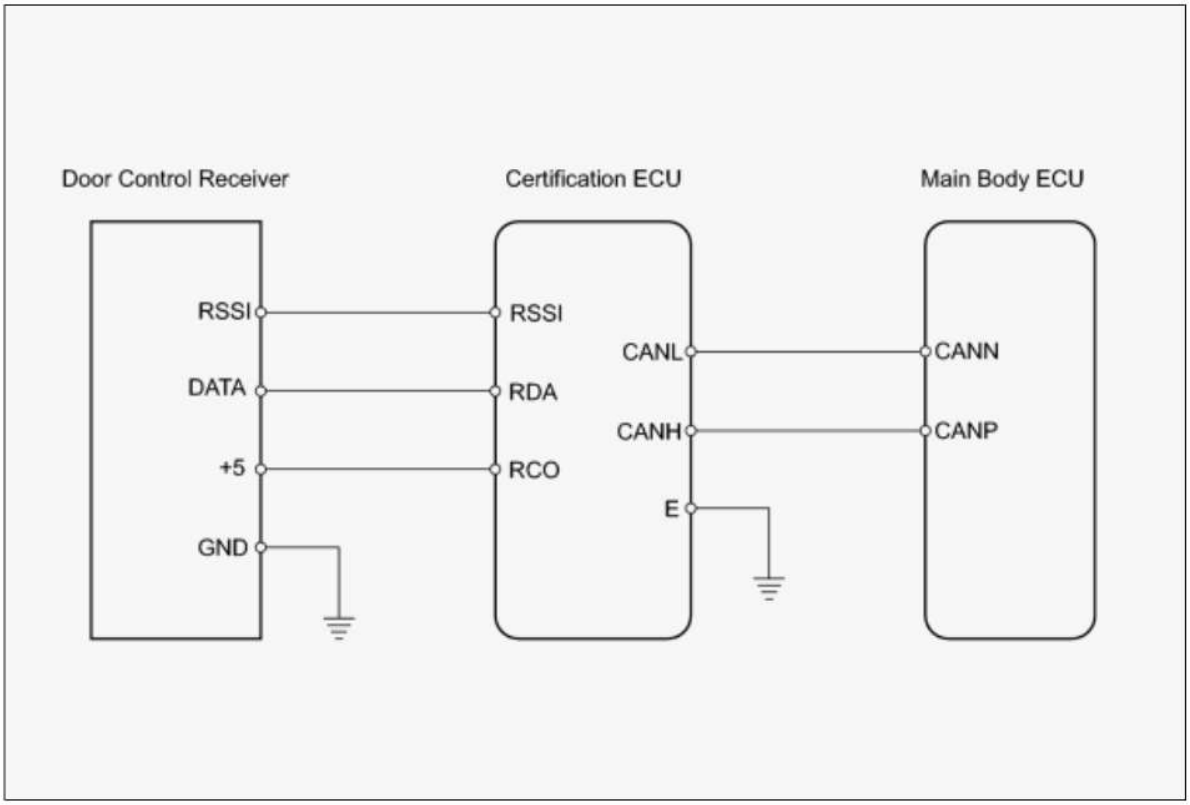
Last Modified: 9-7-2011	6.4 J	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VRR007X
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): Only Wireless Control Function is Inoperative (2011 RAV4)		

Only Wireless Control Function is Inoperative

DESCRIPTION

The door control receiver receives signals from the transmitter and sends these signals to the main body ECU via the certification ECU using the serial line. The main body ECU then controls all doors by sending lock / unlock signals to each door, and sends hazard flasher relay signals to the FLSH relay.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**CHECK POWER DOOR LOCK OPERATION**

(a) When the door control switch on the master switch assembly is operated, check that the locked doors unlock INFO .

OK:

Locked doors unlock.

NG ▶ **GO TO POWER DOOR LOCK CONTROL SYSTEM (PROBLEM SYMPTOMS TABLE)**

OK ▼

2.	**CHECK ELECTRICAL KEY TRANSMITTER**

(a) When another registered door control transmitter is used, check that the wireless door lock control function operate normally INFO .

OK:

Wireless door lock control function operates normally.

NG ▶ **CHECK WAVE ENVIRONMENT**

OK ▼

3.	**CHECK ELECTRICAL KEY TRANSMITTER (LED)**

(a) Check that the transmitter LED illuminates 3 times when the switch is pressed 3 times.

Result:

RESULT	PROCEED TO
Transmitter LED does not illuminate at all when switch is pressed 3 times	A
Transmitter LED illuminates each time when switch is pressed 3 times	B
Transmitter LED does not illuminate the second or third time	C

HINT:

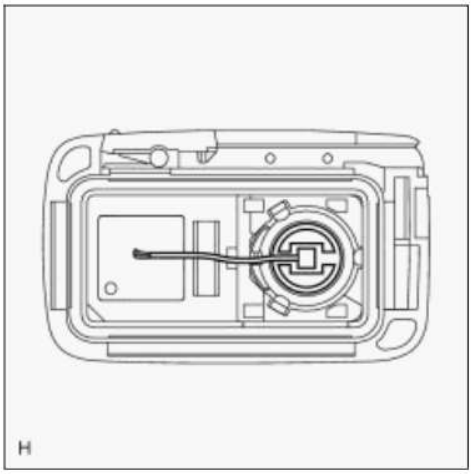
If the transmitter LED does not illuminate the second or third time, the transmitter battery is depleted.

B ▶ **REPLACE ELECTRICAL KEY TRANSMITTER**

C ▶ **REPLACE TRANSMITTER BATTERY**

A ▼

4.	**INSPECT TRANSMITTER BATTERY (VOLTAGE)**

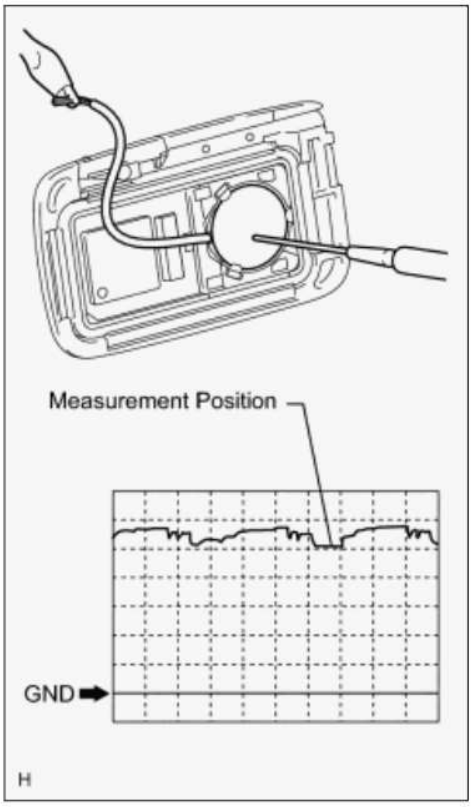


(a) Remove the battery from the electrical key transmitter that does not operate. Attach a lead wire (0.6 mm (0.0236 in.) or less in diameter including wire sheath) with tape or equivalent to the negative terminal INFO .

NOTICE:

Do not wrap the lead wire around the terminal; wedge it between the terminals, or solder it. The terminal may be deformed or damaged, and the battery will not be able to be installed correctly.

(b) Carefully pull the lead wire out from the position shown in the illustration and install the previously removed transmitter battery.



(c) Using an oscilloscope, check the transmitter battery voltage waveform.

HINT:

When measuring the battery voltage, while operating the lock switch of a door outside handle, bring the electrical key transmitter within the entry operating range to perform the measurement. For the entry operating range.

Standard Voltage:

ITEM	CONTENT
Tester Connection	Battery positive (+) - Battery negative (-)
Tool Setting	0.5 V/DIV., 100 ms/DIV.
Condition	Engine switch off, all doors closed, and lock switch pushed
Specified Condition	2.2 to 3.2 V (Refer to the waveform)

NG ▶ REPLACE TRANSMITTER BATTERY

OK ▶ REPLACE ELECTRICAL KEY TRANSMITTER

5.	**CHECK WAVE ENVIRONMENT**

(a) Bring the electrical key transmitter near the door control receiver, and perform a wireless and entry

operation check.

HINT:

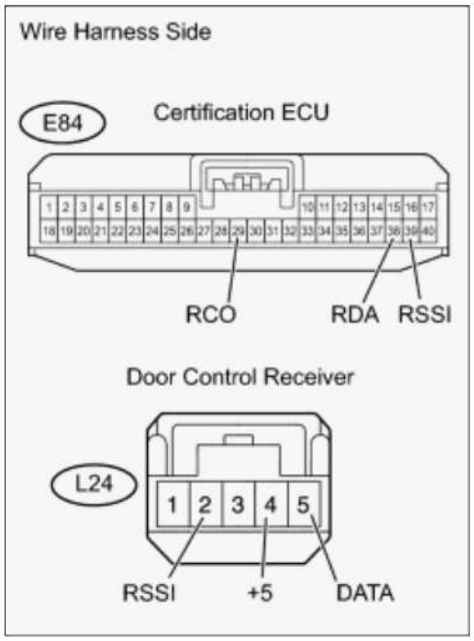
- When the electrical key transmitter is brought near the door control receiver, the possibility of wave interference decreases, and it can be determined if wave interference is causing the problem symptom.
- If the inspection result is that the problem only occurs in certain locations or times of day, the possibility of wave interference is high. Also, added vehicle components may cause wave interference. If installed, remove them and perform the operation check.

OK:
Wireless door lock control function operate normally.

NG ▶ **CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - DOOR CONTROL RECEIVER)**

OK ▶ **AFFECTED BY WAVE INTERFERENCE**

6.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - DOOR CONTROL RECEIVER)**



(a) Disconnect the E84 ECU connector.

(b) Disconnect the L24 receiver connector.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E84-38 (RDA) - L24-5 (DATA)	Always	Below 1 Ω
E84-39 (RSSI) - L24-2 (RSSI)		
E84-29 (RCO) - L24-4 (+5)		
E84-38 (RDA) or L24-5 (DATA) - Body ground	Always	10 kΩ or higher
E84-39 (RSSI) or L24-2 (RSSI) - Body ground		
E84-29 (RCO) or L24-4 (+5) - Body ground		

NG ▶ **REPAIR OR REPLACE HARNESS OR**

CONNECTOR

OK

7.	**CHECK DOOR CONTROL RECEIVER**

(a) Temporarily replace the door lock control receiver with a new or normally functioning one INFO .

(b) Check that the doors can be locked and unlocked by using the transmitter LOCK and UNLOCK switches.

OK:

Doors can be locked and unlocked with transmitter.

NG ▶ **REPLACE AGGREGATION BOX (CERTIFICATION ECU)**

OK ▶ **END (DOOR CONTROL RECEIVER IS DEFECTIVE)**

Last Modified: 9-7-2011	6.4 D	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001WYH00YX
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): OPERATION CHECK (2011 RAV4)		

OPERATION CHECK

1. NOTICES WHEN CHECKING

(a) Wireless door LOCK / UNLOCK function:

This function operates only when the vehicle is in its initial condition (the following 3 conditions are met).

- All the doors are closed.
- The power door lock system is functioning normally.

HINT:

The UNLOCK function operates even when one of the doors is open.

(b) The operating range differs depending on the situation.

- The operating range differs depending on the user, the way the transmitter is held and the location.
- In certain areas, the operating range will be reduced due to the vehicle body shape and the influence of the surrounding environment.
- The transmitter's weak electric waves may be affected if the area has strong electric waves or noise. The transmitter's operating range may be reduced or the transmitter may not function.
- When the battery weakens, the operating range is reduced or the transmitter may not function.

HINT:

If the transmitter has had prolonged exposure to direct sunlight, such as being left on the instrument panel, the battery may weaken or other problems may occur.

2. CHECK WIRELESS DOOR LOCK CONTROL FUNCTIONS

HINT:

- The switches described below transmit signals and are built into the door control transmitter.
- The transmitter's operating range must be taken into account while checks are being made.

(a) Make sure the vehicle is in a condition in which the wireless control functions can be operated (see above).

(b) Check the basic functions:

- Check that the transmitter's LED illuminates 3 times when each switch is pressed 3 times.

HINT:

If the LED does not illuminate when the switch has been pressed 3 times or more, the battery may be depleted.

(c) Check the chattering prevention function:

- When a switch is pressed, check that the corresponding operation occurs only once. When the switch is held down, check that the corresponding operation occurs only once and does not repeatedly activate. Lastly, when the switch is pressed at 1 second intervals, check that the corresponding operation activates once for each press of the switch.

(d) Check the automatic locking function:

- When all doors are unlocked with the UNLOCK switch and none of the doors are opened or locked within 60 seconds, check that the doors are relocked automatically.

(e) Check the door ajar warning function:

- If a door is open or not completely closed, check that the doors cannot be locked by the LOCK switch and that the wireless door lock buzzer sounds for 10 seconds.

(f) Check the answer-back function:

- When the LOCK switch is pressed, confirm the simultaneous occurrence of all the hazard warning lights flashing once, the buzzer sounding once and all the doors locking.
- When the UNLOCK switch is pressed, confirm the simultaneous occurrence of all the hazard warning lights flashing twice, the buzzer sounding twice and the driver side door unlocking.
- When the UNLOCK switch is pressed again within 3 seconds, confirm the simultaneous occurrence of all the hazard warning lights flashing twice, the buzzer sounding twice and all the doors unlocking.

(g) Check the illuminated entry function:

- When all the doors are locked, pressing the UNLOCK switch causes the room light (when the light switch is in the DOOR position) to illuminate simultaneously with the unlock operation.
- Check that the room light turns off in approximately 15 seconds if doors have not been opened.

(h) Check the panic function:

- Check that if PANIC switch is held down for 0.8 seconds or more, the theft deterrent alarm function sounds the horn and flashes the hazard warning light, headlights, taillights and room right for 60 seconds. And, with the theft alarm function active, check if pressing any switch on the transmitter causes the horn to stop sounding and the hazard warning light, headlights, taillights and room right to stop flashing.

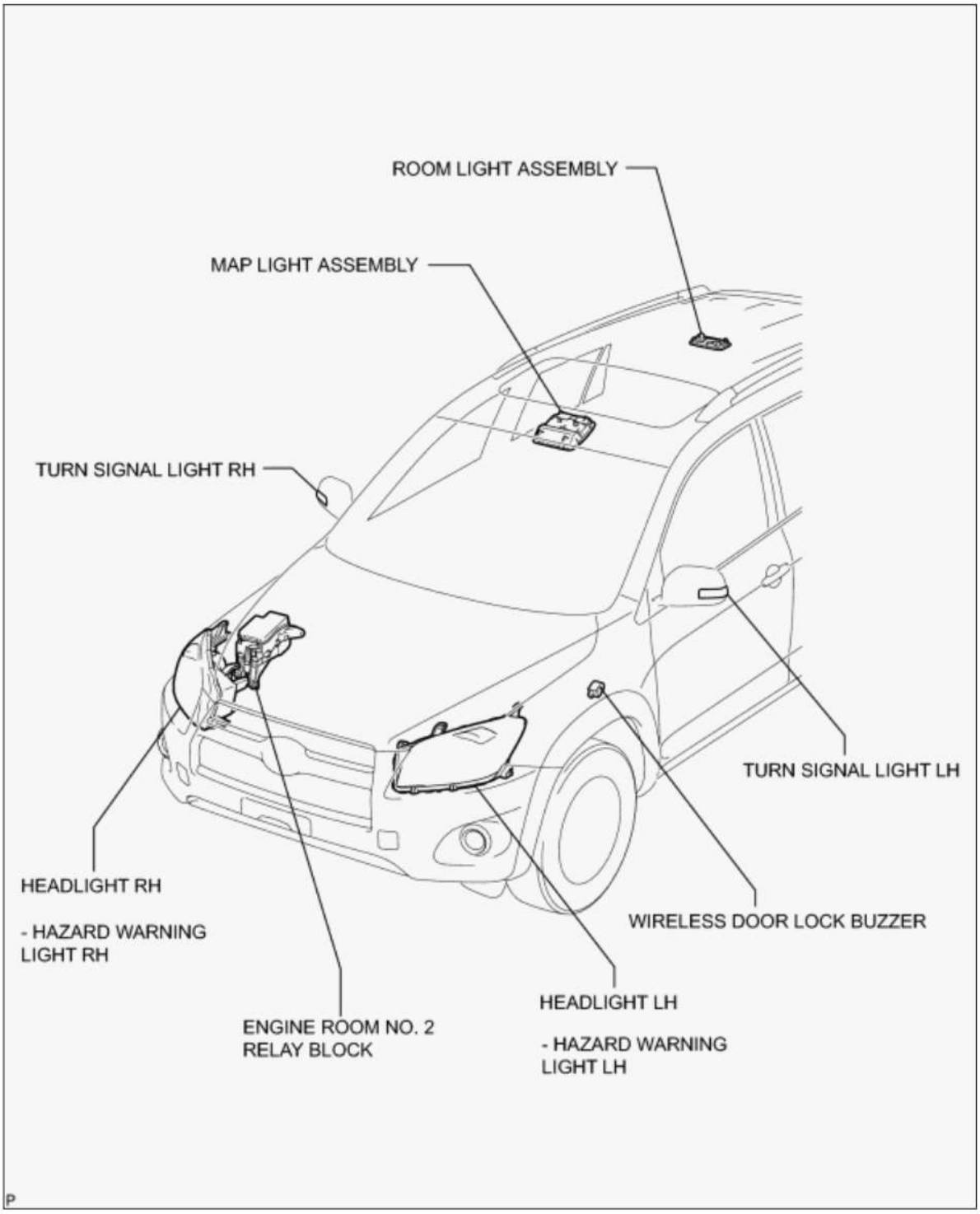
(i) All door unlock operation function (2 step unlock function).

- Pressing the UNLOCK switch twice within 3 seconds unlocks all the doors after the driver side door is unlocked.

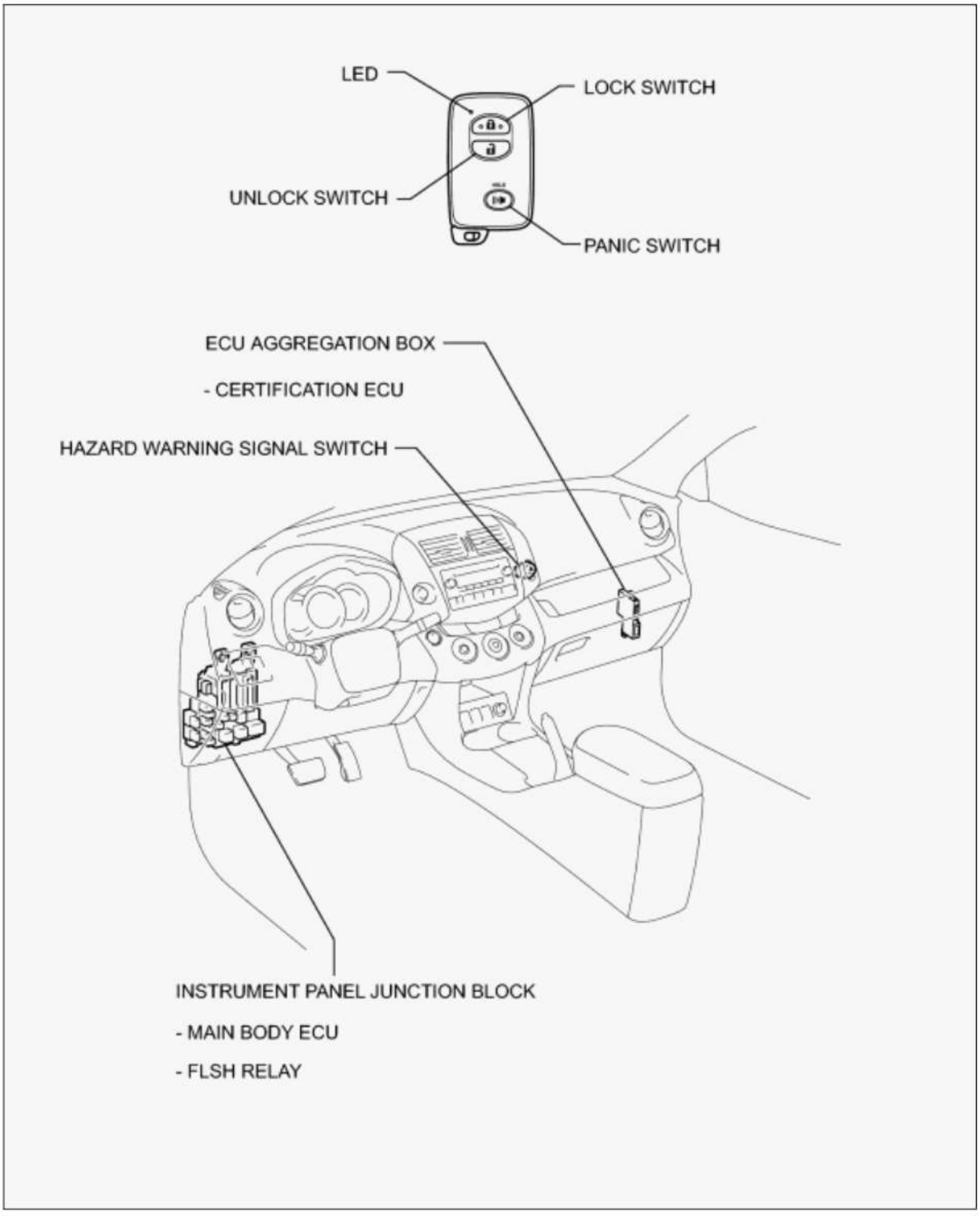
Last Modified: 9-7-2011	6.4 R	**From:** 201008
Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VRK006X
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): PARTS LOCATION (2011 RAV4)		

PARTS LOCATION

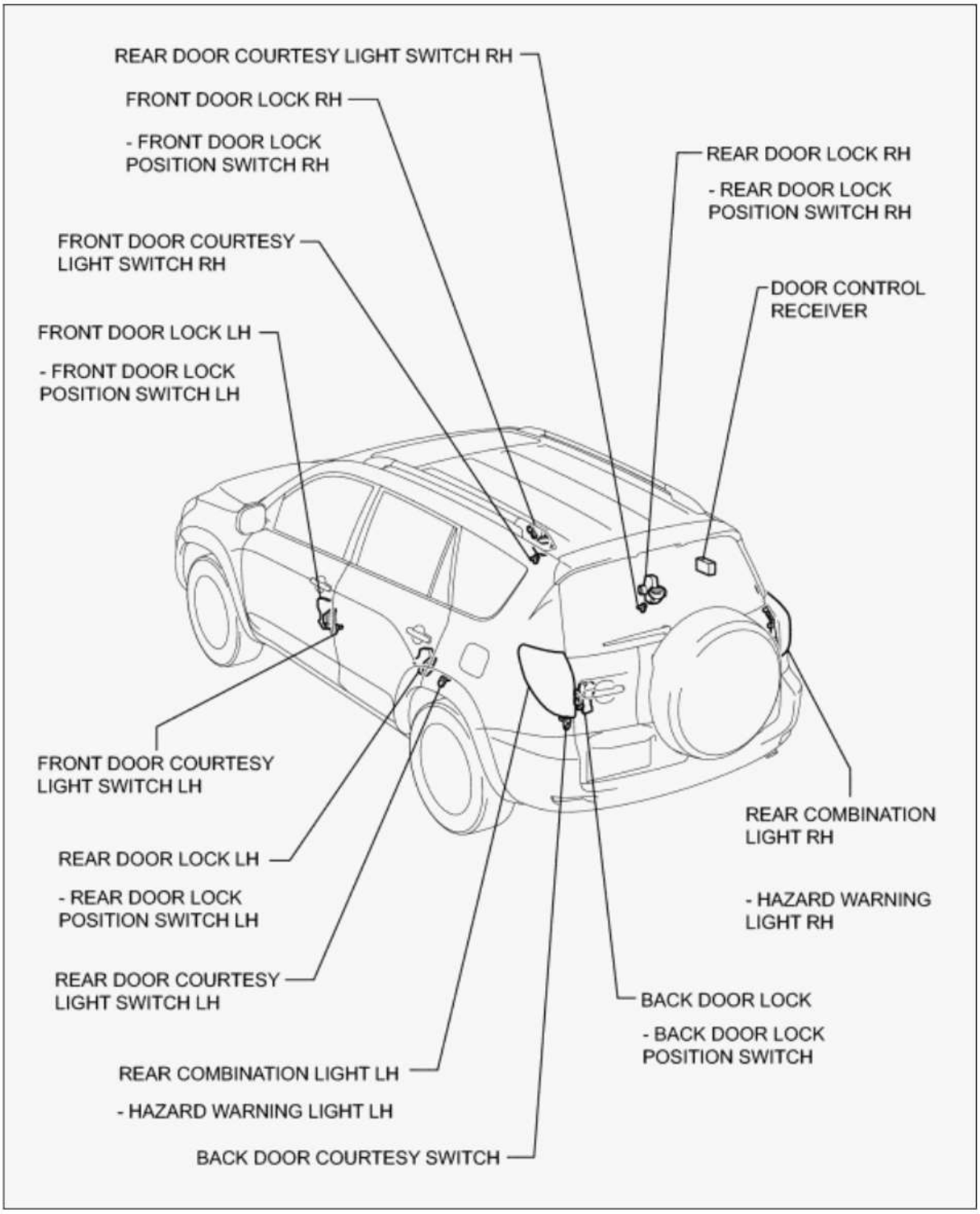
ILLUSTRATION



ILLUSTRATION



ILLUSTRATION


REAR DOOR COURTESY LIGHT SWITCH RH
FRONT DOOR LOCK RH
- FRONT DOOR LOCK POSITION SWITCH RH
REAR DOOR LOCK RH
- REAR DOOR LOCK POSITION SWITCH RH
FRONT DOOR COURTESY LIGHT SWITCH RH
DOOR CONTROL RECEIVER
FRONT DOOR LOCK LH
- FRONT DOOR LOCK POSITION SWITCH LH
FRONT DOOR COURTESY LIGHT SWITCH LH
REAR COMBINATION LIGHT RH
- HAZARD WARNING LIGHT RH
REAR DOOR LOCK LH
- REAR DOOR LOCK POSITION SWITCH LH
REAR DOOR COURTESY LIGHT SWITCH LH
BACK DOOR LOCK
- BACK DOOR LOCK POSITION SWITCH
REAR COMBINATION LIGHT LH
- HAZARD WARNING LIGHT LH
BACK DOOR COURTESY SWITCH

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Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): PRECAUTION (2011 RAV4)		

PRECAUTION

1. PRECAUTIONS WHEN USING TECHSTREAM

(a) When using the Techstream to troubleshoot the LIN communication line: Connect the Techstream to the vehicle, and turn a courtesy light switch on and off at 1.5 second intervals until communication between the Techstream and vehicle begins.

(b) After all DTCs are cleared, check if the trouble occurs again 6 seconds after the engine switch is turned on (IG).

2. PRECAUTIONS FOR EACH FUNCTION

(a) Precautions for the key:

The key is a precision instrument. Be sure to observe the following:

- Do not drop or strike the key.
- Do not keep the key in a high temperature area for a long time.
- Do not use an ultrasonic washing machine to clean the key.
- Keep the key away from magnets or magnetized items during use.
- Do not attach any stickers to the key.

(b) Precautions for the battery built into the key and the vehicle battery:

(1) When the door is being locked, the vehicle battery is used to transmit a radio wave. The battery may deplete if the vehicle remains stopped for a long time. If the vehicle is not used for a long time, recharge or replace the battery or cancel the smart key system.

(2) When the door is being locked with the key in the detection area of the door oscillator, the battery is used to regulate communication between the key and vehicle. If the vehicle is not used, keep the key away from the vehicle (more than 2 m (6.56 ft.)).

3. PRECAUTION FOR ECU AGGREGATION BOX

NOTICE:

If the ECU aggregation box (certification ECU) and/or steering lock actuator (steering lock ECU) is replaced, open and close the driver side door to record the current steering lock position into the certification ECU. If this is not performed, the engine may not start.

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Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): PROBLEM SYMPTOMS TABLE (2011 RAV4)		

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Wireless Door Lock Control System:

SYMPTOM	SUSPECTED AREA	SEE PAGE
Only wireless control function inoperative	1. Transmitter battery	INFO
	2. Instrument panel junction block (main body ECU)	INFO
	3. Door control transmitter	INFO
	4. Wire harness	INFO
	5. ECU aggregation box (certification ECU)	INFO
No answer-back	1. Instrument panel junction block (main body ECU)	INFO
	2. Lighting system	INFO
	3. Wire harness	INFO

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Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): SYSTEM DESCRIPTION (2011 RAV4)		

SYSTEM DESCRIPTION

1. WIRELESS DOOR CONTROL SYSTEM DESCRIPTION

(a) This system locks and unlocks the vehicle's doors remotely. The wireless control system has the following features:

- The certification ECU performs the code identification procedure and the main body ECU operates the door lock control. A serial data link is provided for communication between the certification ECU and main body ECU.
- A key holder type transmitter is used and it contains the following 3 switches: the door lock switch, door unlock switch and panic alarm switch.
- An LED is built into the transmitter so that the battery status can be checked.

2. FUNCTION OF MAIN COMPONENTS

COMPONENTS	FUNCTIONS
Door control transmitter	• Contains LOCK, UNLOCK and PANIC switches • Transmits weak electric waves (recognition codes and function codes) to door control receiver • Illuminates indicator light (LED) during transmission
Door control receiver	Receives weak electric waves (recognition codes and function codes) from door control transmitter, and changes waves to code data
Door lock (door lock position switch)	Transmits door lock conditions of each door to main body ECU
Door courtesy light switch	Turns ON when door is open and turns OFF when door is closed. Outputs door status (open or closed) to main body ECU.

3. SYSTEM FUNCTION

(a) Door lock / unlock function:

- With the engine switch off and all door courtesy light switches OFF, pressing the door control transmitter's LOCK / UNLOCK switch causes the transmitter to output weak electric waves. The transmitter sends a weak electrical wave to the door control receiver. The high frequency circuit built into the door control receiver demodulates the wave into code data, computes the data, and compares the data with previously registered ID codes. If the data is verified, a door lock / unlock request signal is output to the main body ECU via the certification ECU. When the request signal is received, the main body ECU outputs a door lock / unlock control signal to each door lock. Each door lock then locks / unlocks its respective door and turns ON / OFF its door lock position switch in accordance with the signal.

(b) Answer-back function:

- The certification ECU receives the door unlock detection switch's ON / OFF signals and uses these signals to confirm if the door control operation has been completed. The main body ECU then outputs the hazard

warning light control signals to flash the hazard warning lights as an answer-back indication. The certification ECU uses the wireless door lock buzzer signals to cause the wireless door buzzer to sound as an answer-back.

(c) Panic function:

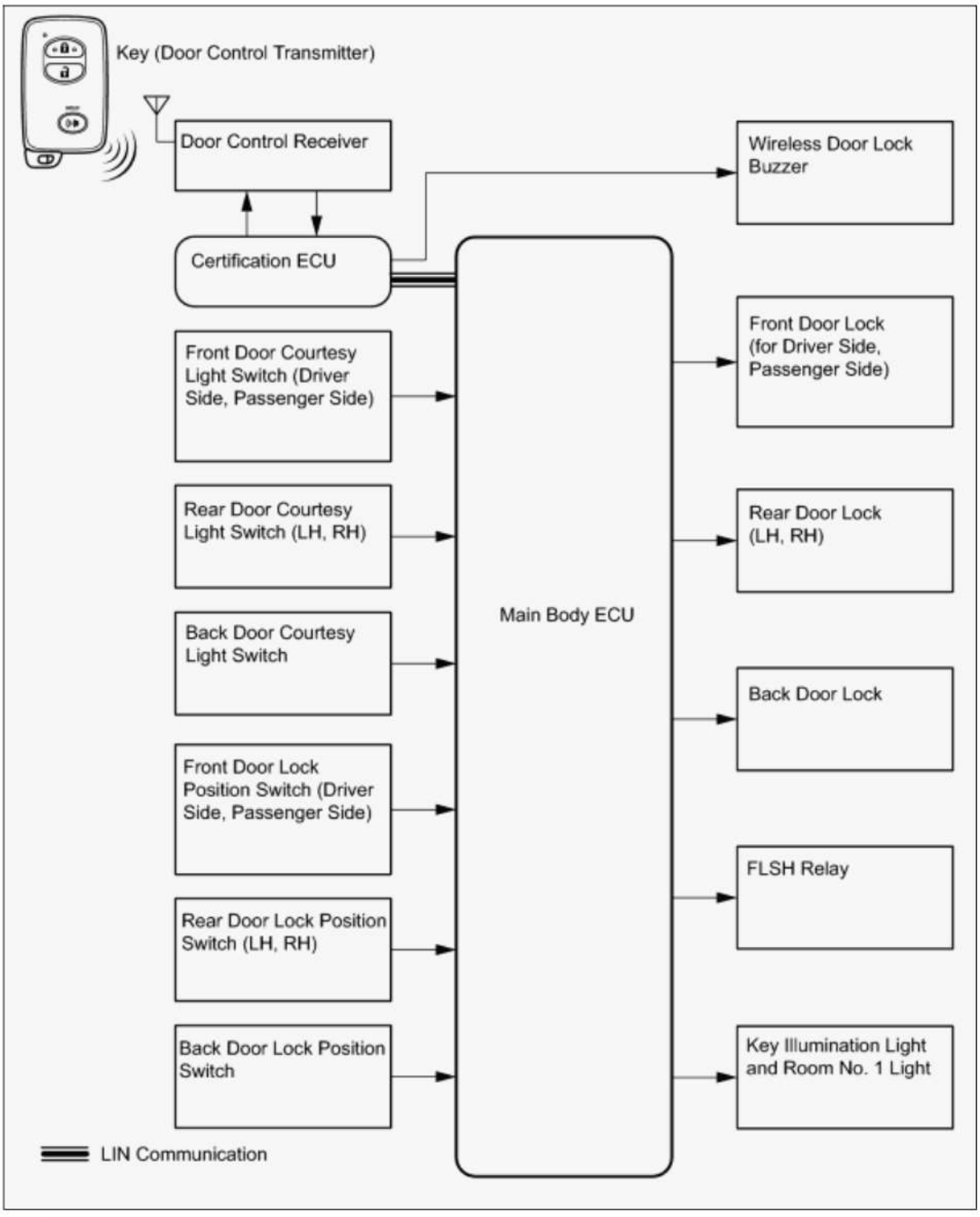
When the door control transmitter's PANIC switch is pressed, the certification ECU receives the code data (recognition codes and function codes) from the door control transmitter in the same way as when the LOCK / UNLOCK switch is pressed. Upon receiving a theft deterrent alarm control signal, the main body ECU transmits several kinds of warning control signals (hazard warning light control signal, headlight control signal, taillight control signal, vehicle horn warning control signal, and room light control signal) in order to output a theft deterrent alarm.

(d) The wireless door lock control system has the following functions.

FUNCTION	OUTLINE
All door lock function	Pressing LOCK switch locks all doors
All door unlock operation (2 step unlock operation) function	Pressing UNLOCK switch twice within 3 seconds unlocks all doors after driver side door is unlocked
Answer-back function	• Hazard warning lights flash once when doors are locked, and flash twice when doors are unlocked to indicate that operation has been completed • Wireless door lock buzzer sounds once when doors are locked and sounds twice when doors are unlocked to inform that operation has been completed
Automatic locking function	If no doors are opened within 60 seconds after being unlocked by wireless transmitter, all doors are locked again automatically
Door ajar warning function	If any door is open or ajar, pressing LOCK switch will cause wireless door lock buzzer to sound for about 10 seconds
Illuminated entry function	If locked doors are unlocked through wireless operation, room light illuminate. If one of following situations occurs, lights fade out: • Within 15 seconds, doors are not opened and doors are locked through wireless operation • Within 15 seconds, engine switch is turned on(IG) • No operations or actions are performed within 15 seconds
Panic function	Pressing PANIC switch for more than 1 second sounds horn
Security function	Sends signal as rolling code

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Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): SYSTEM DIAGRAM (2011 RAV4)		

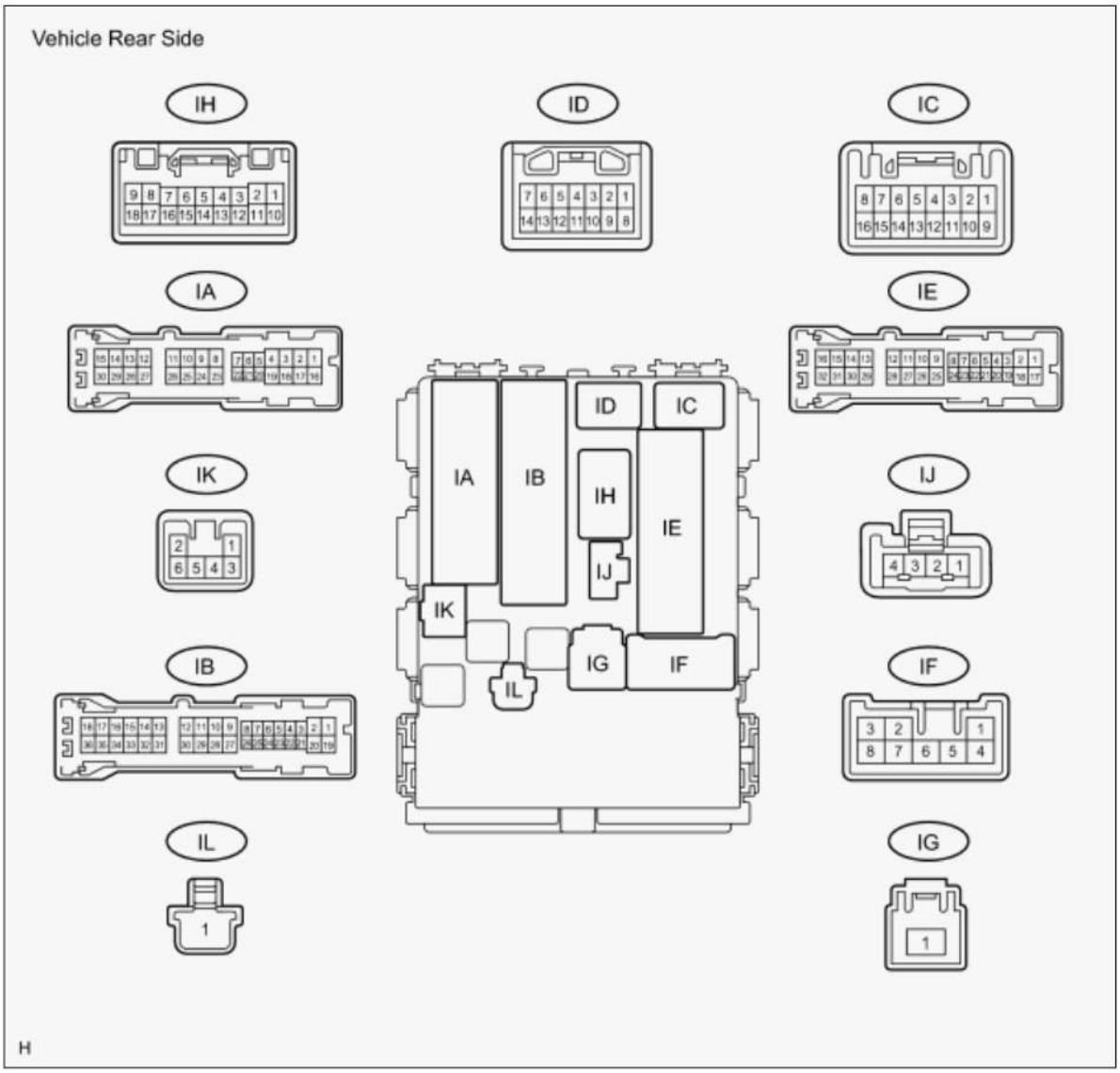
SYSTEM DIAGRAM

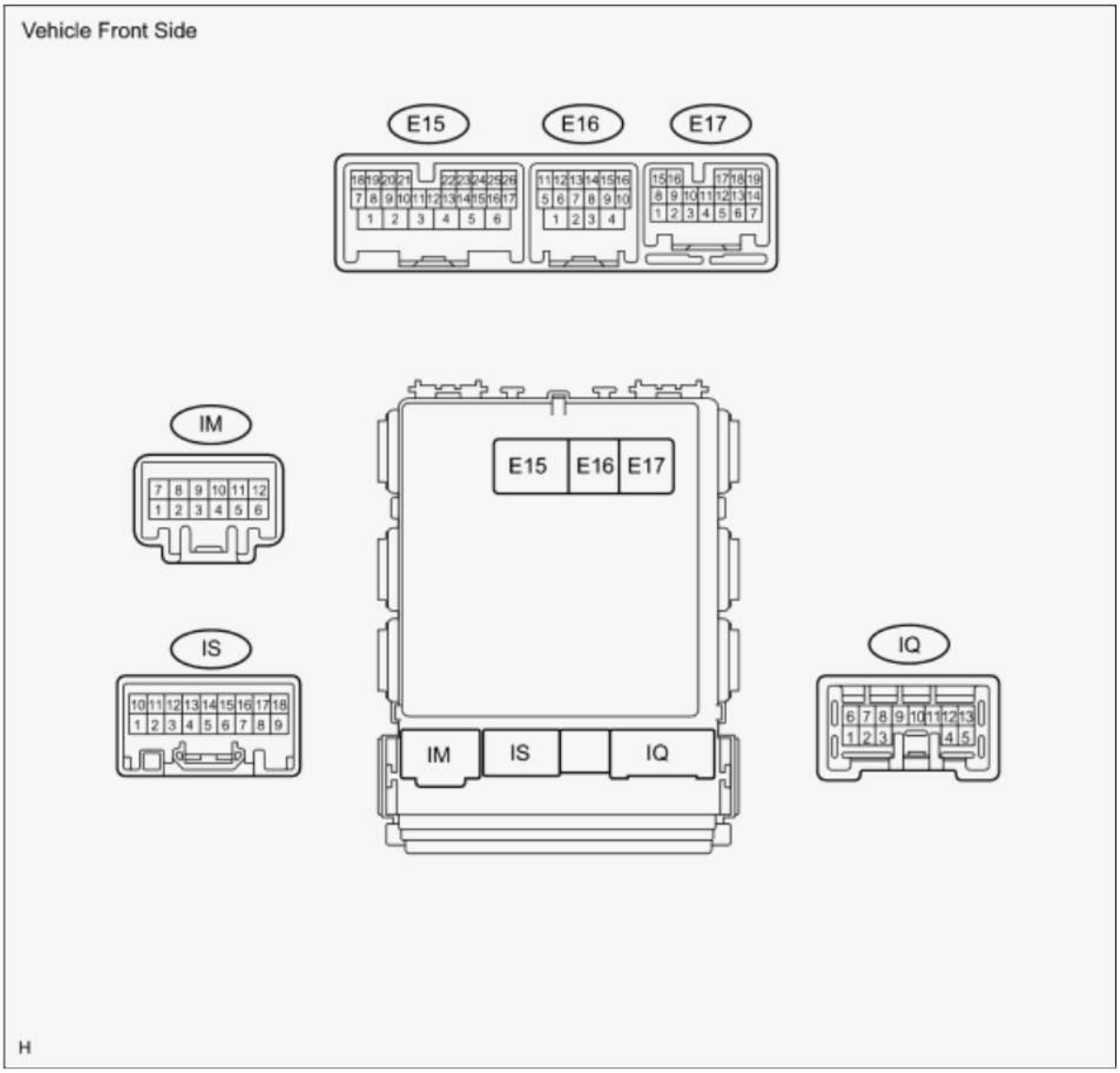


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Model Year: 2011	**Model:** RAV4	**Doc ID:** RM000001VRP006X
Title: DOOR LOCK: WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System): TERMINALS OF ECU (2011 RAV4)		

TERMINALS OF ECU

1. CHECK INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)





(a) Disconnect the E16 and IE junction block connectors.

(b) Measure the resistance and voltage of the wire harness side connectors.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
GND1 (IE-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
AM1 (E16-1) - GND1 (IE-17)	W - W-B	Battery (power supply)	Always	11 to 14 V

If the result is not as specified, there may be a malfunction in the wire harness.

(c) Reconnect the E16 and IE junction block connectors.

(d) Measure the voltage of the wire harness side connectors.

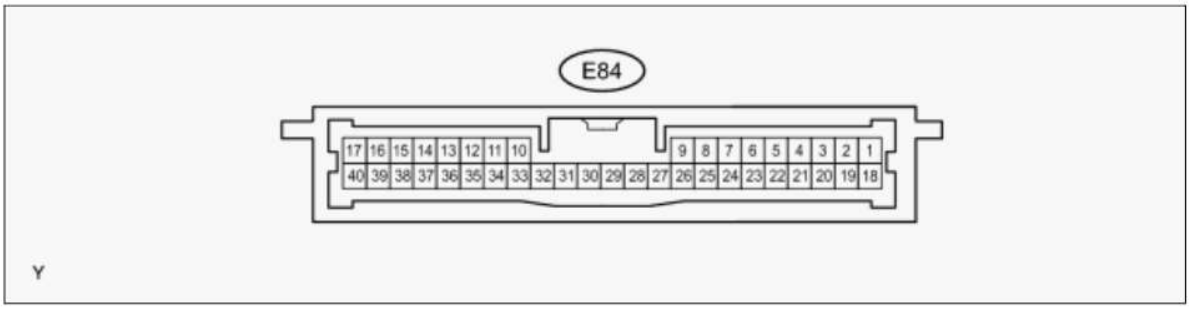
SYMBOLS	WIRING	TERMINAL DESCRIPTION	CONDITION	SPECIFIED

(TERMINAL NO.)	COLOR			CONDITION
DCTY (IA-21) - Body ground	W - Body ground	Driver side door courtesy switch input	Driver side door closed	11 to 14 V
			Driver side door open	Below 1 V
PCTY (IC-14) - Body ground	BR - Body ground	Passenger side door courtesy switch input	Passenger side door closed	11 to 14 V
			Passenger side door open	Below 1 V
RRCY (ID-7) - Body ground	LG - Body ground	Rear RH door courtesy switch input	Rear RH door closed	11 to 14 V
			Rear RH door open	Below 1 V
LCTY (E15-8) - Body ground	SB - Body ground	Rear LH door courtesy switch input	Rear LH door closed	11 to 14 V
			Rear LH door open	Below 1 V
BCTY (IA-7) - Body ground	LG - Body ground	Back door courtesy switch input	Back side door closed	11 to 14 V
			Back side door open	Below 1 V
L1 (IH-4) - Body ground	P - Body ground	Door lock motor LOCK drive output	Master switch (door control switch) OFF	Below 1 V
			Master switch (door control switch) ON (LOCK)	11 to 14 V → Below 1 V
UL1 (IH-5) - Body ground	B - Body ground	Door lock motor UNLOCK drive output	Master switch (door control switch) OFF	Below 1 V
			Master switch (door control switch) ON (UNLOCK)	11 to 14 V → Below 1 V
ACTD (E15-5) - Body ground	B - Body ground	Door lock motor UNLOCK drive output	Master switch (door control switch) or driver side door key cylinder OFF	Below 1 V
			Master switch (door control switch) or driver side door key cylinder ON (UNLOCK)	11 to 14 V → Below 1 V
ACT+ (IH-8) - Body ground	R - Body ground	Door lock motor LOCK drive output	Master switch (door control switch) or driver side door key cylinder OFF	Below 1 V
			Master switch (door control switch) or driver side door key cylinder ON (LOCK)	11 to 14 V → Below 1 V
ACT- (IH-18) - Body ground	B - Body ground	Door lock motor UNLOCK drive output	Master switch (door control switch) or driver side door key cylinder OFF	Below 1 V
			Master switch (door control switch) or driver side door key cylinder ON (UNLOCK)	11 to 14 V → Below 1 V
LSWD (E15-25) - Body ground	Y - Body ground	Driver side door lock position switch input	Driver side door UNLOCK	Below 1 V
			Driver side door LOCK	11 to 14 V
LSWP (E15-10) - Body ground	Y - Body ground	Passenger side door lock position switch input	Passenger side door UNLOCK	Below 1 V
			Passenger side door LOCK	11 to 14 V
UL3 (E15-9) -	LG - Body	Door lock motor	Driver side door key cylinder OFF	Below 1 V

Body ground	ground	UNLOCK drive output	Driver side door key cylinder ON (UNLOCK)	11 to 14 V → Below 1 V
L2 (IH-7) - Body ground	SB - Body ground	Door lock motor LOCK drive output	Master switch or driver side door key cylinder OFF	Below 1 V
			Master switch or driver side door key cylinder ON (LOCK)	11 to 14 V → Below 1 V
HAZ (IS-17) - Body ground	GR- Body ground	Hazard warning light signal	Answer-back ON	Pulse generation
			Answer-back OFF	Below 1 V

If the result is not as specified, the junction block (ECU) may have a malfunction.

2. CHECK CERTIFICATION ECU



(a) Disconnect the E84 ECU connector.

(b) Measure the resistance and voltage of the wire harness side connector.

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E (E84-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
+B1 (E84-1) - Body ground	R - Body ground	+B power supply	Always	11 to 14 V
IG (E84-18) - Body ground	B - Body ground	IG power supply	Engine switch on (IG)	11 to 14 V
			Engine switch off	Below 1 V
LIN (E84-10) - Body ground	V - Body ground	LIN line	Always	10 kΩ or higher
RSSI (E84-39) - Body ground	R - Body ground	Door control receiver output	Engine switch off, all doors closed and transmitter switch not pressed → pressed	11 to 14 V → Below 1 V
RDA (E84-38) - Body ground	Y - Body ground	Door control receiver input	Engine switch off, all doors closed and transmitter switch not pressed	11 to 14 V pulse generation at regular intervals

SYMBOLS (TERMINAL NO.)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
			Engine switch off, all doors closed and transmitter switch pressed	Pulse generation
RCO (E84-29) - Body ground	V - Body ground	Door control receiver input	Engine switch off, all doors closed and transmitter switch not pressed → pressed	5 to Below 1 V → 5 V

If the result is not as specified, there may be a malfunction in the wire harness.