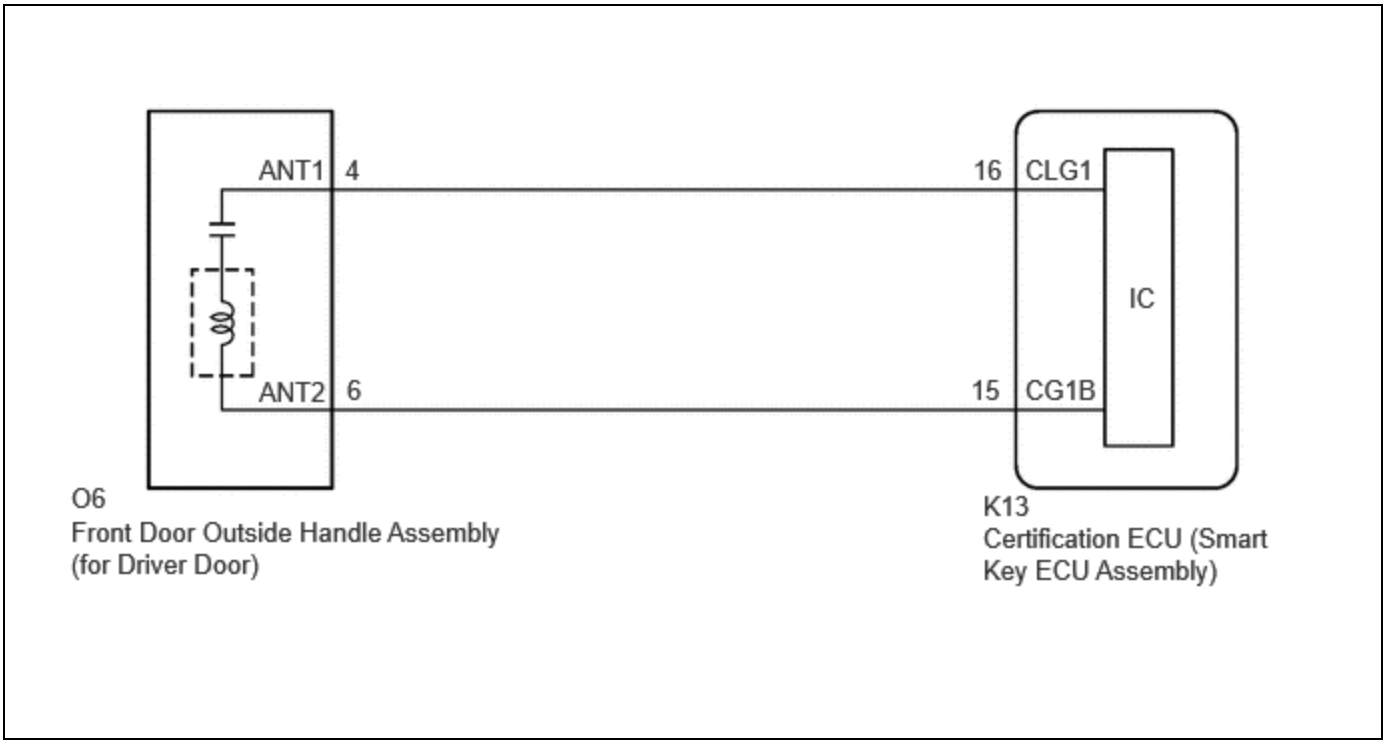
Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002908U
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: THEFT DETERRENT / KEYLESS ENTRY: SMART KEY SYSTEM (for Entry Function): Driver Side Door Entry Lock and Unlock Functions do not Operate; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

Driver Side Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

If the entry lock and unlock functions do not operate for the driver door only, the request code may not be being transmitted from the driver door or the front door outside handle assembly (for driver door) (touch sensor) may be malfunctioning. If the entry functions for other doors operate properly, communication between the electrical key transmitter sub-assembly and electrical key and tire pressure monitoring system receiver assembly is normal. In this case, there may be a problem with request code transmission (communication between the certification ECU (smart key ECU assembly) and front door outside handle assembly (for driver door) (electrical key antenna)), or there may be wave interference.

WIRING DIAGRAM



CAUTION / NOTICE / HINT

NOTICE:

- When using the GTS with the ignition switch off, perform lock and unlock operations using the door control switch of the multiplex network master switch assembly at intervals of 1.5 seconds or less until communication between the GTS and the vehicle begins, and then select the vehicle model manually.

  Then select Model Code "KEY REGIST" under manual mode and enter the following menus: Body Electrical / Smart Key(CAN). While using the GTS, periodically perform lock and unlock operations using the door control switch of the multiplex network master switch assembly at intervals of 1.5 seconds or less to maintain communication between the GTS and the vehicle.

- The smart key system (for Entry Function) uses the CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Troubleshoot the smart key system (for Entry Function) after confirming that the communication systems are functioning properly.

  Click here INFO
- Before replacing the certification ECU (smart key ECU assembly), refer to Precaution.

  Click here INFO
- Check that there are no electrical key transmitter sub-assemblies in the vehicle.
- After repair, confirm that no DTCs are output.

HINT:

- If the driver door entry lock and unlock functions do not operate, the cause of the malfunction may be stored in the certification ECU (smart key ECU assembly).
- If the cause of the malfunction is stored in the certification ECU (smart key ECU assembly), the following table is helpful in checking whether the malfunction was caused by wave interference.

Body Electrical > Smart Key > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

PROCEDURE

1.	**CHECK POWER DOOR LOCK SYSTEM**

(a) When the door control switch on the multiplex network master switch assembly is operated, check that the doors unlock and lock according to the switch operation.

Click here INFO

OK:
Door locks operate normally.

NG ▶ **GO TO POWER DOOR LOCK SYSTEM**

Click here INFO

OK ▼

2.	**CHECK ENTRY OPERATION**

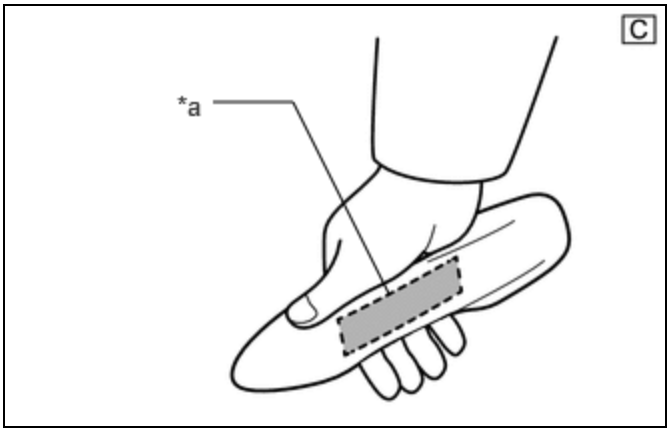
(a) Check the operation of the entry lock and unlock functions.

(1) Check the entry unlock function.

1. Turn the ignition switch off.
2. Open and close the driver door.

3. With the electrical key transmitter sub-assembly outside of the vehicle, press the lock switch of the electrical key transmitter sub-assembly to lock all of the doors.
4. Hold the electrical key transmitter sub-assembly at the same height as the door outside handle assembly and approximately 0.3 m (0.984 ft.) from the driver door.
5. Check that the LED of the electrical key transmitter sub-assembly blinks.
6. Touch the unlock sensor on the backside of the front door outside handle assembly (for driver door) for 2 seconds or more.*

*: Perform this step 3 seconds or more after performing step (3).



*a	Unlock Sensor (Backside)

HINT:

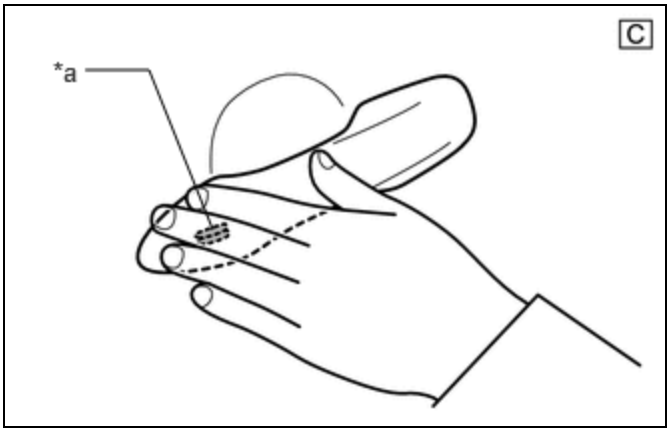
When checking the operation of the unlock sensor again, make sure to perform the procedure from step (1).

(2) Check the entry lock function.

1. Turn the ignition switch off.
2. Open and close the driver door.
3. Hold the electrical key transmitter sub-assembly at the same height as the door outside handle assembly and approximately 0.3 m (0.984 ft.) from the driver door.
4. Touch the lock sensor of the front door outside handle assembly (groove on the front door outside handle) with 2 or more fingers for 2 seconds or more.

HINT:

- If the door does not lock even when touching the lock sensor for 2 seconds or more, touch it with your palm.
- When checking the operation of the lock sensor again, make sure to perform the procedure from step (1).
- When checking the operation of the entry lock function several times, it can be operated up to 2 times consecutively. To operate the function 3 times or more consecutively, the doors need to be unlocked once. However, this is only for the entry lock function, other door lock operations, such as a wireless door lock operation can be performed consecutively.



*a	Lock Sensor

RESULT	PROCEED TO
Entry function does not operate normally	A
Entry function operates normally	B

B ▶ **GO TO CHECK FOR INTERMITTENT PROBLEMS (VEHICLE CONTROL HISTORY (ROB))**

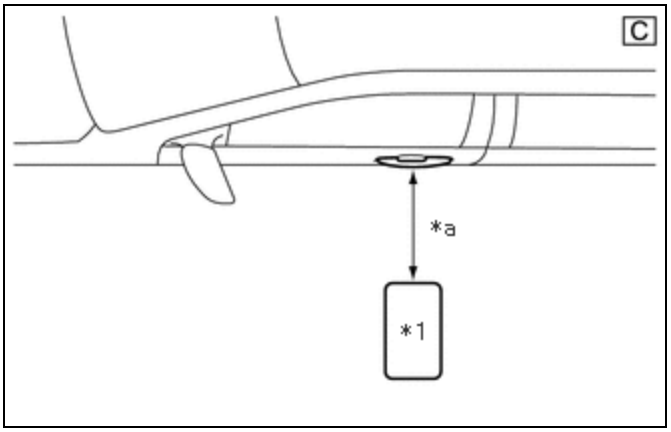
A ▼

3.	**CHECK WAVE ENVIRONMENT**

(a) Bring the electrical key transmitter sub-assembly approximately 0.3 m (0.984 ft.) from the front door outside handle assembly (for driver door) and perform an entry function check.

Click here INFO

- Communication may not be possible if the electrical key transmitter sub-assembly is within 0.2 m (0.656 ft.) of the front door outside handle assembly (for driver door).
- When the electrical key transmitter sub-assembly is brought near the front door outside handle assembly (for driver door), 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 at certain 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.
- There may be wave interference if the vehicle is near broadcasting antennas, large video displays, wireless garage door opener systems, wireless security cameras, home security systems, etc. In this case, move the vehicle to a different location and check if there is any improvement.
- If a tool for checking radio waves, such as a signal strength meter, is available, move around the area while observing both the LF band (used by the vehicle antenna to form the detection area) and RF band (used by the electrical key transmitter sub-assembly for transmission) to check for locations where there is wave interference.
- When checking the operation of the entry lock function several times, it can be operated up to 2 times consecutively. To operate the function 3 times or more consecutively, the doors need to be



*1	Electrical Key Transmitter Sub-assembly
*a	Approximately 0.3 m (0.984 ft.)

unlocked once. However, this is only for the entry lock function, other door lock operations, such as a wireless door lock operation can be performed consecutively.

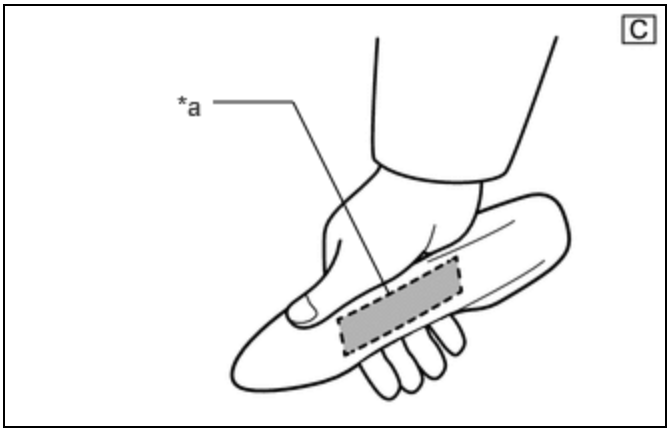
RESULT	PROCEED TO
Entry function does not operate normally	A
Entry function operates normally	B

B ▶ **AFFECTED BY WAVE INTERFERENCE**

A ▼

4.	**READ VALUE USING GTS (DRIVER SIDE UNLOCK SENSOR)**

(a) Open and close the driver door.



*a	Unlock Sensor (Backside)

(b) With the electrical key transmitter sub-assembly outside of the vehicle, press the lock switch of the electrical key transmitter sub-assembly to lock all of the doors.

(c) Hold the electrical key transmitter sub-assembly at the same height as the door outside handle assembly and approximately 0.3 m (0.984 ft.) from the driver door.

(d) Check that the LED of the electrical key transmitter sub-assembly blinks.

(e) Read the Data List according to the display on the GTS.

(f) Touch the unlock sensor on the backside of the front door outside handle assembly (for driver door) for 2 seconds or more.*

*: Perform this step 3 seconds or more after performing step (b).

HINT:

When checking the operation of the unlock sensor again, make sure to perform the procedure from step (a).

Body Electrical > Smart Key > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Driver Side Unlock Sensor	Driver door touch sensor (unlock sensor)	OFF or ON	OFF: Driver door touch sensor (unlock sensor) not touched ON: Driver door touch sensor (unlock sensor) touched	• Displays whether the unlock sensor is on or off (even if the sensor is touched and contact is maintained, "ON" is displayed only momentarily). • Use this Data List item to help determine if there is an unlock sensor malfunction when the entry unlock function does not operate.

Body Electrical > Smart Key > Data List

TESTER DISPLAY
Driver Side Unlock Sensor

OK:

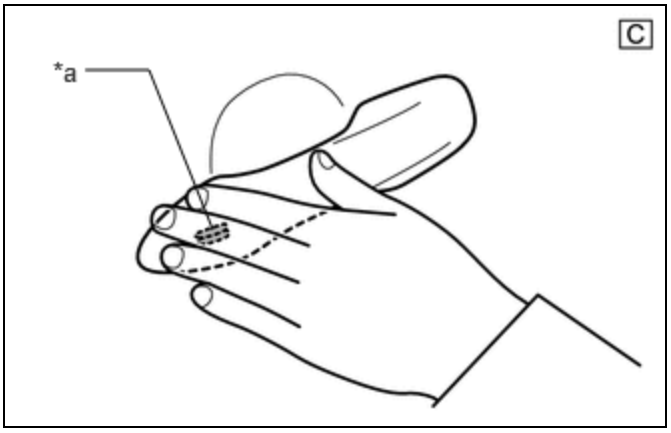
The GTS display changes correctly in response to the operation of the front door outside handle assembly (for driver door).

NG ▶ **GO TO STEP 6**

OK ▼

5.	**READ VALUE USING GTS (DRIVER SIDE LOCK SENSOR)**

(a) Open and close the driver door.



*a	Lock Sensor

(b) Hold the electrical key transmitter sub-assembly at the same height as the door outside handle assembly and approximately 0.3 m (0.984 ft.) from the driver door.

(c) Read the Data List according to the display on the GTS.

(d) Touch the lock sensor of the front door outside handle assembly (groove on the front door outside handle) with 2 or more fingers for 2 seconds or more.

HINT:

- If the door does not lock even when touching the lock sensor for 2 seconds or more, touch it with your palm.
- When checking the operation of the lock sensor again, make sure to perform the procedure from step (a).
- When checking the operation of the entry lock function several times, it can be operated up to 2 times consecutively. To operate the function 3 times or more consecutively, the doors need to be unlocked once. However, this is only for the entry lock function, other door lock operations, such as a wireless door lock operation can be performed consecutively.

Body Electrical > Smart Key > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Driver Side Lock Sensor	Driver door touch sensor (lock sensor)	OFF or ON	OFF: Driver door touch sensor (lock sensor) not touched ON: Driver door touch sensor (lock sensor) touched	• Displays whether the lock sensor is on or off (even if the sensor is touched and contact is maintained, "ON" is displayed only momentarily). • Use this Data List item to help determine if there is a lock sensor malfunction when the entry lock function does not operate.

Body Electrical > Smart Key > Data List

TESTER DISPLAY
Driver Side Lock Sensor

RESULT	PROCEED TO
The GTS display does not change correctly in response to the operation of the front door outside handle assembly (for driver door).	A
The GTS display changes correctly in response to the operation of the front door outside handle assembly (for driver door).	B

B ▶ **GO TO STEP 10**

A

6.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) - FRONT DOOR OUTSIDE HANDLE ASSEMBLY (FOR DRIVER DOOR))**

(a) Disconnect the K13 certification ECU (smart key ECU assembly) connector.

(b) Disconnect the O6 front door outside handle assembly (for driver door) connector.

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

Standard Resistance:

EWD INFO

Click Location & Routing(K13,O6)
Click Connector(K13)
Click Connector(O6)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K13-16 (CLG1) - O6-4 (ANT1)	Always	Below 1 Ω
K13-15 (CG1B) - O6-6 (ANT2)	Always	Below 1 Ω
K13-16 (CLG1) or O6-4 (ANT1) - Other terminals and body ground	Always	10 kΩ or higher
K13-15 (CG1B) or O6-6 (ANT2) - Other terminals and body ground	Always	10 kΩ or higher

(d) Connect the K13 certification ECU (smart key ECU assembly) connector.

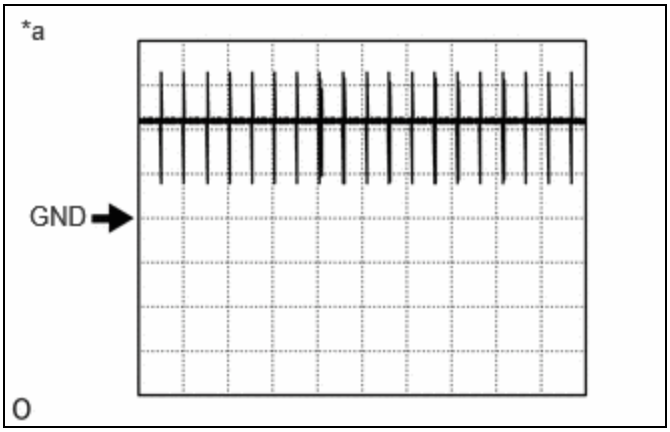
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

7.	**CHECK CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (OUTPUT TO DRIVER DOOR ELECTRICAL KEY ANTENNA)**

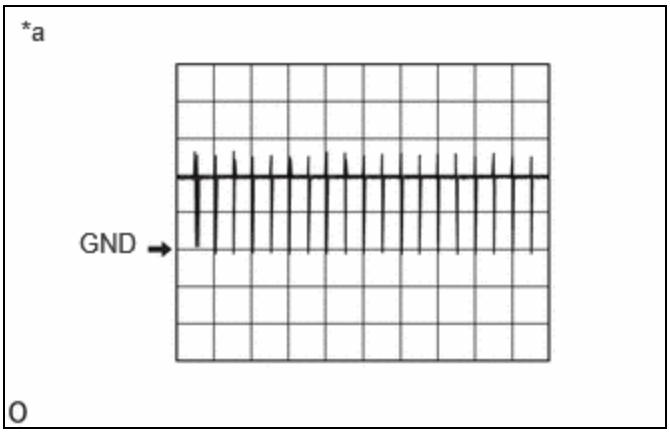
(a) Using an oscilloscope, check the waveform.

Type A:



*a	Waveform 1

Type B:



*a	Waveform 1

OK:

EWD INFO

Click Location & Routing(O6)
Click Connector(O6)

TESTER CONNECTION	CONDITION	TOOL SETTING	SPECIFIED CONDITION
O6-4 (ANT1) - O6-6 (ANT2)	Procedure: 1. Ignition switch off 2. All doors closed 3. Electrical key transmitter sub-assembly not inside vehicle 4. All doors locked through wireless operation (electrical key transmitter sub-assembly brought outside detection area*)	5 V/DIV., 500 ms./DIV.	Pulse generation (See waveform 1)

*: For details about the entry function detection area, refer to Operation Check.

Click here INFO

NG ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

Click here INFO

OK ▼

8.	**REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (FOR DRIVER DOOR)**

(a) Replace the front door outside handle assembly (for driver door) with a new one or the front door outside handle assembly (for front passenger door) if it is functioning properly.

Click here INFO

NEXT ▼

9.	**CHECK ENTRY OPERATION**

(a) Check that the function operates normally.

Click here INFO

RESULT	PROCEED TO
Entry function operates normally	A
Entry function does not operate normally	B

A ▶ **END (FRONT DOOR OUTSIDE HANDLE ASSEMBLY (FOR DRIVER DOOR) WAS DEFECTIVE)**

B ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

Click here INFO

10.	**CHECK KEY DIAGNOSTIC MODE**

(a) Check the following antenna in key diagnostic mode.

Body Electrical > Smart Key > Utility

TESTER DISPLAY
Communication Check(Key Diag Mode)

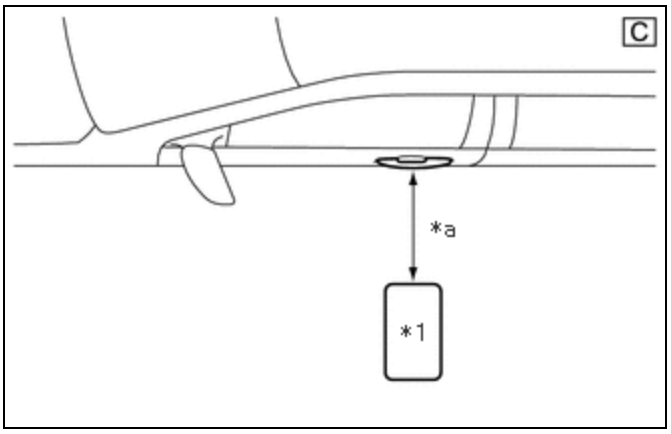
(b) Select either channel 1 or channel 2 and perform key diagnostic mode inspection for each channel.

(1) Check the electrical key antenna (for driver door):

When the electrical key transmitter sub-assembly is brought within 0.7 to 1 m (2.30 to 3.28 ft.) of the front door outside handle assembly (for driver door), check that the wireless buzzer sounds.

HINT:

- Select either channel 1 or channel 2 and perform the key diagnostic mode inspection for each channel.
- If the buzzer sounds with [CH1] displayed but not with [CH2], the electrical key transmitter sub-assembly cannot be detected by channel 2 due to a malfunction, such as wave interference.



*1	Electrical Key Transmitter Sub-assembly
*a	0.7 to 1 m (2.30 to 3.28 ft.)

RESULT	PROCEED TO
Wireless buzzer does not sound	A
Wireless buzzer sounds	B

B **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

Click here INFO

A

11.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) - FRONT DOOR OUTSIDE HANDLE ASSEMBLY (FOR DRIVER DOOR))**

(a) Disconnect the K13 certification ECU (smart key ECU assembly) connector.

(b) Disconnect the O6 front door outside handle assembly (for driver door) connector.

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

Standard Resistance:

EWD INFO

Click Location & Routing(K13,O6)
Click Connector(K13)
Click Connector(O6)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K13-16 (CLG1) - O6-4 (ANT1)	Always	Below 1 Ω
K13-15 (CG1B) - O6-6 (ANT2)	Always	Below 1 Ω
K13-16 (CLG1) or O6-4 (ANT1) - Other terminals and body ground	Always	10 kΩ or higher
K13-15 (CG1B) or O6-6 (ANT2) - Other terminals and body ground	Always	10 kΩ or higher

(d) Connect the K13 certification ECU (smart key ECU assembly) connector.

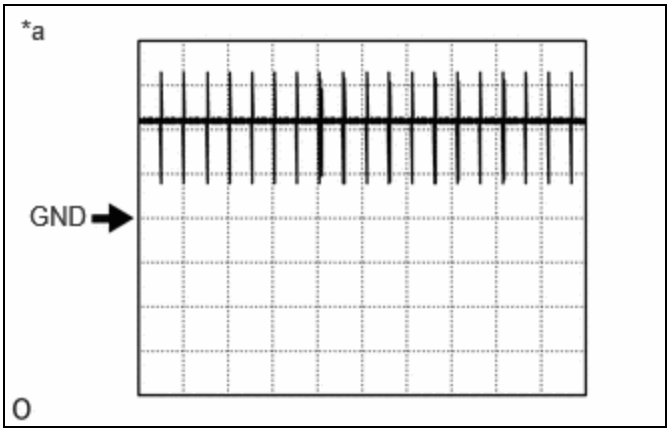
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

12.	**CHECK CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (OUTPUT TO DRIVER DOOR ELECTRICAL KEY ANTENNA)**

(a) Using an oscilloscope, check the waveform.

Type A:



*a	Waveform 1

OK:

EWD INFO

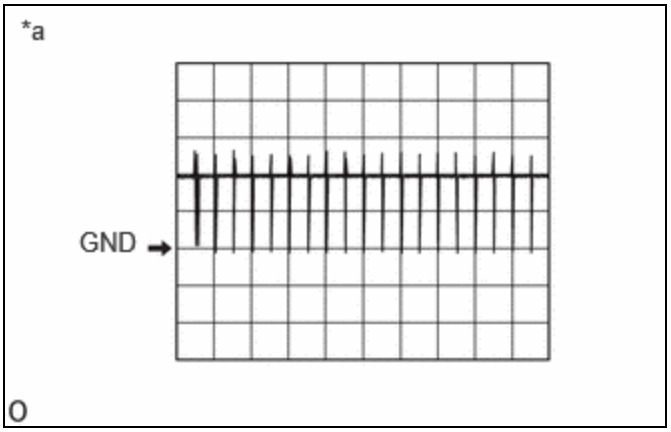
Click Location & Routing(O6)
Click Connector(O6)

TESTER CONNECTION	CONDITION	TOOL SETTING	SPECIFIED CONDITION
O6-4 (ANT1) - O6-6 (ANT2)	Procedure: 1. Ignition switch off 2. All doors closed 3. Electrical key transmitter sub-assembly not inside vehicle 4. All doors locked through wireless operation (electrical key transmitter sub-assembly brought outside detection area*)	5 V/DIV., 500 ms./DIV.	Pulse generation (See waveform 1)

*: For details about the entry function detection area, refer to Operation Check.

Click here INFO

Type B:



*a	Waveform 1

NG ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

Click here INFO

OK ▼

13.	**CHECK ENTRY OPERATION**

(a) Connect all connectors and check that the function operates normally.

Click here INFO

RESULT	PROCEED TO
Entry function does not operate normally	A
Entry function operates normally	B

A **REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (FOR DRIVER DOOR)**

Click here INFO

B **END (CONNECTOR WAS NOT CONNECTED SECURELY)**