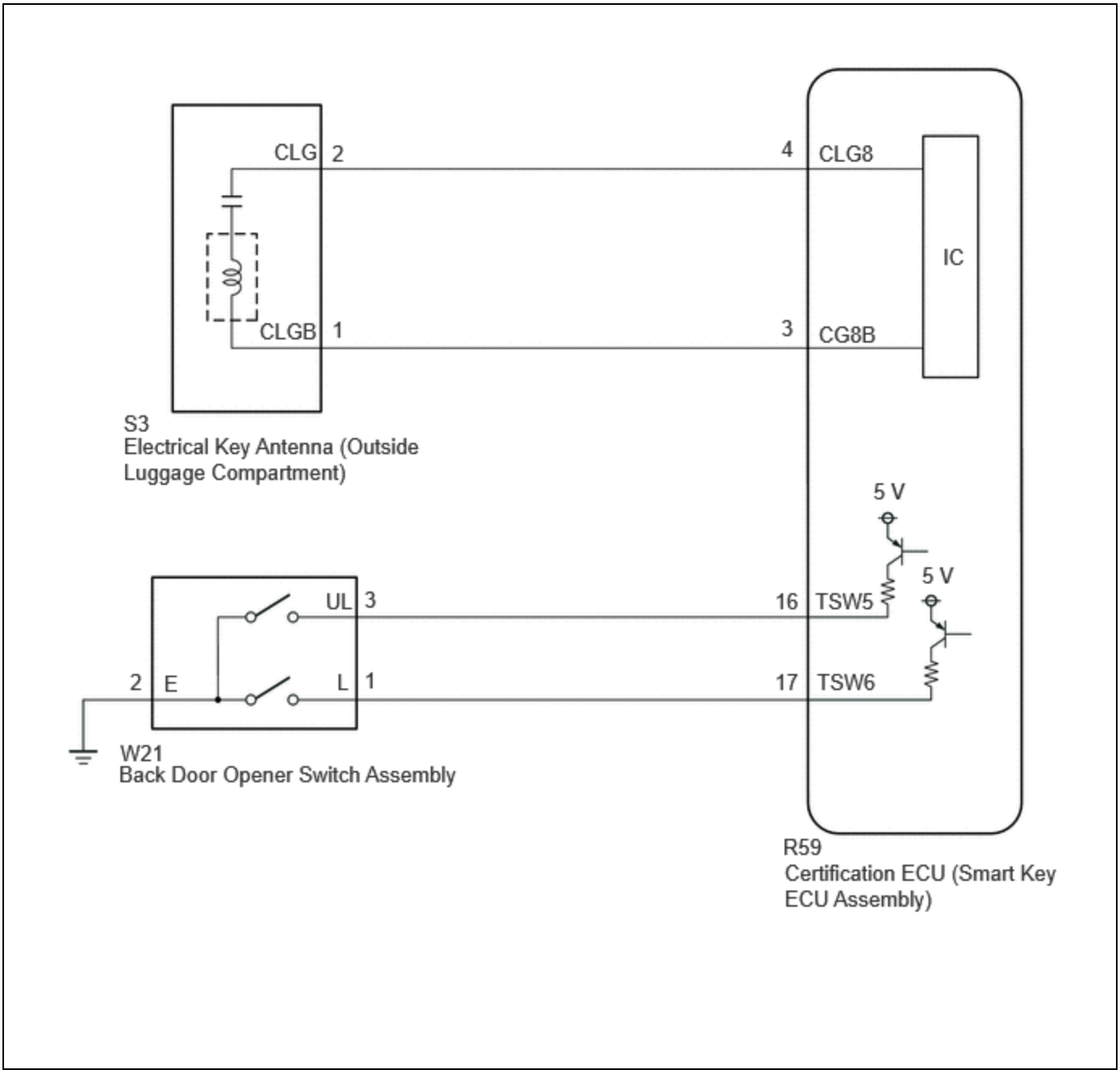
Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM1000000029094
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: THEFT DETERRENT / KEYLESS ENTRY: SMART KEY SYSTEM (for Entry Function): Back Door Entry Lock and Unlock Functions do not Operate; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

Back Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

If the entry lock and unlock functions do not operate for the back door only, the request code may not be being transmitted from the back door. 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 electrical key antenna (outside luggage compartment)) 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 back door entry lock and unlock function does 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 back door lock and unlock according to the switch operation.

Click here INFO

OK:

Back door lock/unlock operate normally.

NG ▶ **GO TO POWER DOOR LOCK SYSTEM**

Click here INFO

OK ▼

2.	**CHECK WAVE ENVIRONMENT**

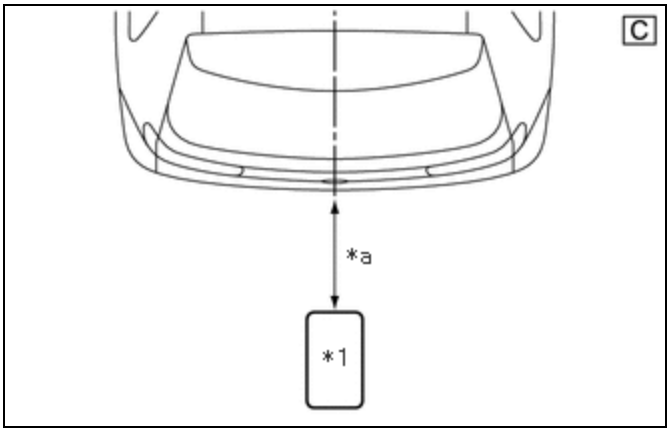
(a) Bring the electrical key transmitter sub-assembly approximately 0.3 m (0.984 ft.) from the electrical key antenna (outside luggage compartment) and perform an entry back door open/lock function check.

Click here INFO

HINT:

- Communication may not be possible if the electrical key transmitter sub-assembly is within 0.2 m (0.656 ft.) of the electrical key antenna (outside luggage compartment)

- When the electrical key transmitter sub-assembly is brought near the electrical key antenna (outside luggage compartment), 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.



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

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

B ▶ **AFFECTED BY WAVE INTERFERENCE**

A ▼

3.	**READ VALUE USING GTS (TRUNK LID/BACK DOOR LOCK SWITCH, TRUNK LID/BACK DOOR UNLOCK SWITCH)**

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

Body Electrical > Smart Key > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Trunk Lid/Back Door Lock Switch	Back door opener switch assembly (lock switch)	OFF or ON	OFF: Back door opener switch assembly (lock switch) not pressed	• Displays whether the back door opener switch assembly (lock switch) is on or off. • Use this Data List item to help determine if there is a switch

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
			ON: Back door opener switch assembly (lock switch) pressed	malfunction when the back door lock function does not operate.
Trunk Lid/Back Door Unlock Switch	Back door opener switch assembly (open switch)	OFF or ON	OFF: Back door opener switch assembly (open switch) not pressed ON: Back door opener switch assembly (open switch) pressed	• Displays whether the back door opener switch assembly (unlock switch) is on or off. • Use this Data List item to help determine if there is a switch malfunction when the entry back door open function does not operate.

Body Electrical > Smart Key > Data List

TESTER DISPLAY
Trunk Lid/Back Door Lock Switch
Trunk Lid/Back Door Unlock Switch

OK:
The GTS display changes correctly in response to the operation of the back door opener switch assembly.

NG ▶ **GO TO STEP 8**

OK ▼

4.	**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)

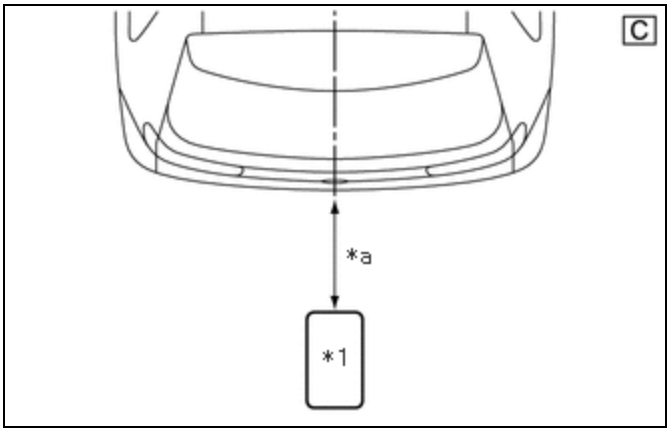
(b) Select either channel 1 or channel 2 and perform the key diagnostic mode inspection for each channel.

(1) Check the electrical key antenna (outside luggage compartment):

When the electrical key transmitter sub-assembly is brought within 0.7 to 1 m (2.30 to 3.28 ft.) of the electrical key antenna (outside luggage compartment), 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

5.	**CHECK HARNESS AND CONNECTOR (ELECTRICAL KEY ANTENNA (OUTSIDE LUGGAGE COMPARTMENT) - CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))**

(a) Disconnect the R59 certification ECU (smart key ECU assembly) connector.

(b) Disconnect the S3 electrical key antenna (outside luggage compartment) connector.

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

Standard Resistance:

EWD INFO

Click Location & Routing(R59,S3)
Click Connector(R59)
Click Connector(S3)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R59-4 (CLG8) - S3-2 (CLG)	Always	Below 1 Ω
R59-3 (CG8B) - S3-1 (CLGB)	Always	Below 1 Ω
R59-4 (CLG8) or S3-2 (CLG) - Other terminals and body ground	Always	10 kΩ or higher
R59-3 (CG8B) or S3-1 (CLGB) - Other terminals and body ground	Always	10 kΩ or higher

(d) Connect the R59 certification ECU (smart key ECU assembly) connector.

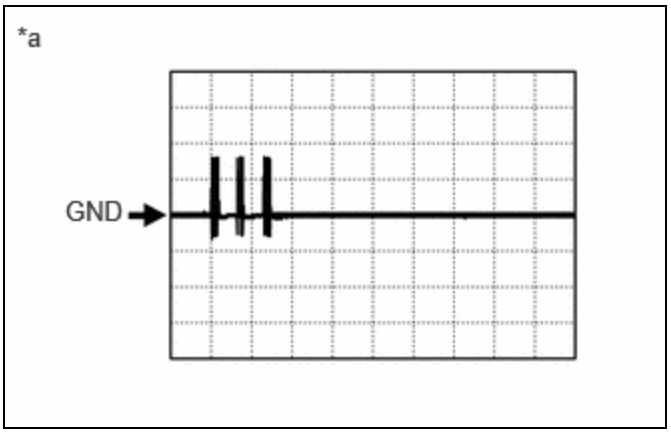
NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

6.	**INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (OUTPUT TO ELECTRICAL KEY ANTENNA (OUTSIDE LUGGAGE COMPARTMENT))**

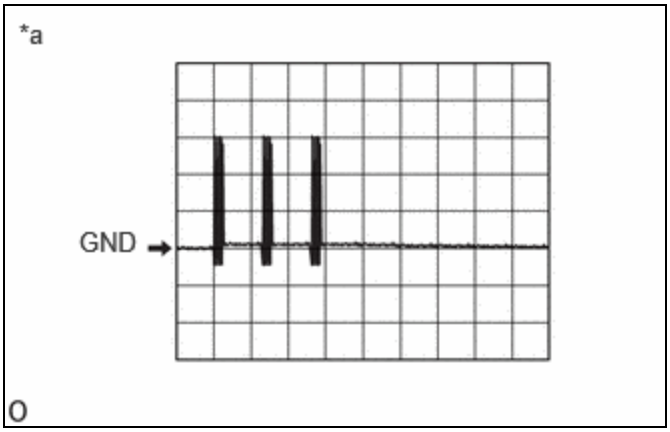
(a) Using an oscilloscope, check the waveform.

Type A:



*a	Waveform 1

Type B:



*a	Waveform 1

OK:

EWD INFO

Click Location & Routing(S3)
Click Connector(S3)

TESTER CONNECTION	CONDITION	TOOL SETTING	SPECIFIED CONDITION
S3-1 (CLGB) - S3-2 (CLG)	Procedure: 1. Ignition switch off 2. Electrical key transmitter sub-assembly brought outside vehicle 3. All doors closed 4. Back door opener switch assembly off → on	5 V/DIV., 50 ms./DIV.	Pulse generation (See waveform 1)

OK ▶ **REPLACE ELECTRICAL KEY ANTENNA (OUTSIDE LUGGAGE COMPARTMENT)**

NG ▼

7.	**CHECK ENTRY OPERATION**

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

Click here INFO

RESULT	PROCEED TO
Entry function operates normally	A

RESULT	PROCEED TO
Entry function does not operate normally	B

A ▶ **END (CONNECTOR WAS NOT CONNECTED SECURELY)**

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

Click here INFO

8.	**CHECK HARNESS AND CONNECTOR (BACK DOOR OPENER SWITCH ASSEMBLY - CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) AND BODY GROUND)**

(a) Disconnect the R59 certification ECU (smart key ECU assembly) connector.

(b) Disconnect the W21 back door opener switch assembly connector.

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

Standard Resistance:

EWD INFO

Click Location & Routing(R59,W21)
Click Connector(R59)
Click Connector(W21)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R59-16 (TSW5) - W21-3 (UL)	Always	Below 1 Ω
R59-17 (TSW6) - W21-1 (L)	Always	Below 1 Ω
W21-2 (E) - Other terminals and body ground	Always	Below 1 Ω
R59-16 (TSW5) or W21-3 (UL) - Other terminals and body ground	Always	10 kΩ or higher
R59-17 (TSW6) or W21-1 (L) - Other terminals and body ground	Always	10 kΩ or higher

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

OK ▼

9.	**INSPECT BACK DOOR OPENER SWITCH ASSEMBLY**

Click here INFO

NG ▶ **REPLACE BACK DOOR OPENER SWITCH ASSEMBLY**

OK ▼

10.	**CHECK ENTRY OPERATION**

(a) Connect all connectors and 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 (CONNECTOR WAS NOT CONNECTED SECURELY)**

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

Click here INFO