

- ATTENTION:**
- GENERAL MANAGER
 - PARTS MANAGER
 - CLAIMS PERSONNEL
 - SERVICE MANAGER

IMPORTANT - All Service Personnel Should Read and Initial in the boxes provided, right.

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QUALITY DRIVEN® SERVICE

SERVICE BULLETIN

APPLICABILITY: All Telematics Equipped Models
Except Solterra

NUMBER: 15-308-23

DATE: 04/27/23

SUBJECT: Diagnostic Information - Testing Telematics Systems for Dark/Standby Current

INTRODUCTION:

This Service Information Bulletin announces important diagnostic information to utilize when the Data Communication Module (DCM) is being tested as a dark current/standby current source. When a DCM is the suspected root cause of an excessive dark/standby current draw, the coverage, and the signal strength PID are verified prior to the DCM being condemned. The DCM is constantly searching for a network to attach to when it first starts or is in an area of poor coverage. If an excessive DCM dark/standby current draw is confirmed, it is necessary also to ensure signal strength is approximately 23% or greater. In cases where signal strength is close to or at zero and DCM dark/standby draw is suspected, moving the car to an area with better coverage would be helpful with confirmation and duplication of test results. On vehicles with a subscribed or unsubscribed subscription status, a non-varying signal strength of 0% is a problem. Efforts should be made to ensure the Telematics system is working within the expected parameters. The presence of Telematics DTCs, a compromised primary antenna, or a non-communicating DCM should be addressed accordingly. When a DTC is current, or the antenna path is compromised, DCM replacement may not repair the parasitic draw. A customer interview will be valuable to aid in diagnosis. Vehicles that park in areas of a low signal strength may experience an excessive DCM dark/standby draw, for example, when parked in an underground parking lot but not while at the retailer. Understanding where the customer parks their car is beneficial in understanding how the DCM may contribute to battery load and state of charge. It is always important to inform the customer what outcome these scenarios may cause. The low signal will cause the DCM to always be awake and seeking a network connection for up to 14 days until the DCM hibernates.

DIAGNOSTIC INFORMATION:

Dark current or standby current is any electrical current used with the ignition turned off to maintain volatile memory in modules, maintain clock time, and await the approach or press of a key fob button. An excessive amount of current drain on the battery will cause it to discharge and may lead to a no-start condition.

CAUTION: VEHICLE SERVICING PERFORMED BY UNTRAINED PERSONS COULD RESULT IN SERIOUS INJURY TO THOSE PERSONS OR TO OTHERS.

Subaru Service Bulletins are intended for use by professional technicians ONLY. They are written to inform those technicians of conditions that may occur in some vehicles, or to provide information that could assist in the proper servicing of the vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do the job correctly and safely. If a condition is described, DO NOT assume that this Service Bulletin applies to your vehicle, or that your vehicle will have that condition.

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ISO 14001 is the international standard for excellence in Environmental Management Systems. Please recycle or dispose of automotive products in a manner that is friendly to our environment and in accordance with all local, state and federal laws and regulations.

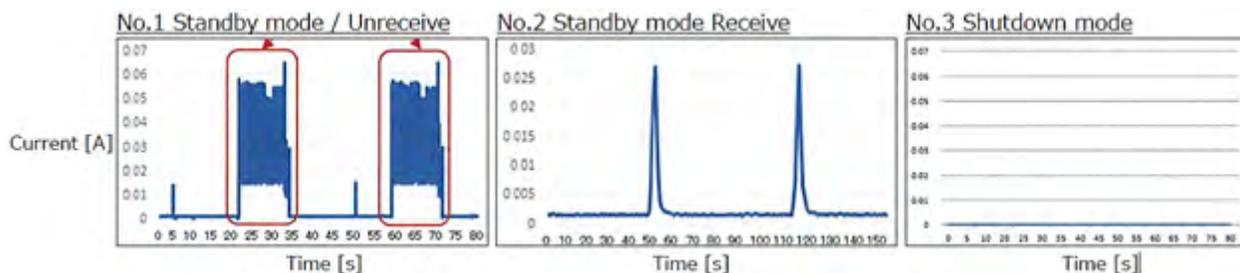
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The DCM **MUST** be clear of all Telematics DTCs before starting diagnosis for dark/standby current draw. The presence of any DTC in the DCM will skew diagnostic test results as DCM behavior differs when DTCs are current. The DCM will consume more power and delay powering down until all DTCs have been cleared.

CRITICAL: DCM voltage draws pulses between periods of low and higher usage as it attempts a connection to the network. This pulsation **MUST NOT** be mistaken as dark/standby draw. When looking for DCM dark/standby current draw, a non-oscillating pull of higher than expected current. Using a DVOM with a graph function is the preferred method to identify this pulsation behavior and calculate the average dark/standby current draw. Refer to the figure below for reference to DCM pulsation characteristics. If there is doubt the total dark/standby current draw is caused solely by the DCM, isolate testing to just the DCM to determine how much the DCM contributes to the entire vehicle dark/standby current draw.

The DCM has six possible states of amperage current waveform patterns. The DCM will shut down after a 15-day time period without the ignition being turned on. During Factory Mode (*) the DCM will shut down after approximately 30 seconds. When the DCM cannot receive a radio wave signal, it will attempt to find a signal once a minute causing an increase in current draw (detailed in **red** below).

DCM		Radio wave	
Status	Mode	Receive	Unreceive
Factory	Standby	-	No.1*
	Shutdown	-	No.3
Unsubscribed	Standby	No.2	No.1
	Shutdown	No.3	No.3
Subscribed	Standby	No.2	No.1
	Shutdown	No.3	No.3



PREPARATION AND MEASUREMENT OVERVIEW:

Through dark/standby draw testing, determine the source of the draw following the procedure below. If it is determined the root cause of the dark/standby draw is the DCM, it must be replaced to repair the draw in the Telematics system.

1. Prepare the DVOM with capability to measure down to 1mA.

NOTE: The battery health state can influence the dark/standby current test results. Determining the battery condition prior to testing can be vital. Additional battery testing and charging information can be found in TSB **07-178-21R**.

2. Remove or disconnect any aftermarket electrical accessories. This includes cameras, non-Subaru remote start equipment, insurance trackers, etc. Always check all USB ports for connected devices.

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3. Start the engine and set the switch positions for each system as shown in the table below.

System	Position
Headlight	ON or Auto
Fog light	ON
Wiper (front and rear)	ON or Low speed
Audio and navigation system	ON
Rear defogger	ON
Room light	DOOR
Luggage light	DOOR
Map light	OFF
Auto A/C	ON (AUTO)
Manual A/C	ON (Speed 1)
Electronic parking brake	ON
Electrical parts other than listed above (electrical parts that users can confirm the operation with the key removed)	OFF

4. Turn the ignition switch to OFF.
5. Operate the front hood lock release lever to unlock the front hood.
6. Close all the doors (including the rear gate and trunk lid) then lock the doors. (Security alarm is in set condition)
7. **Wait at least 55 minutes before continuing for the most accurate test results. Performing this step is CRITICAL.**
8. Measure the amount of current drawn from the battery.

NOTES:

- **ALWAYS** store the access key fob at least **15 feet** away from the vehicle after the doors are locked. The access key fob **MUST NOT** be stored adjacent to the vehicle during dark/standby current testing.
- The Electronic Power Steering System (EPS) may still be active 55 minutes after turning the ignition switch to the OFF position.
- For a model with a keyless access function, the dark/standby current can change periodically because the keyless access system is continuously searching for the access key (polling).
- When measuring the standby current with a graphing DVOM, the reading may oscillate. Read the average value (median value).
- The standby current may become significant when the vehicle system (ELCM) is activated five times at 30-minute intervals or 5 hours after turning the ignition switch to OFF. The measurement should be completed in 20 minutes. If it takes more than 20 minutes, start the engine once, stop the engine, then perform the inspection.

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TEST RESULTS:

If the maximum measurement value is less than 70mA Standby current is normal.

If the maximum measurement value is 70mA or more, Perform the following steps.

1. If excessive current draw is recorded, remove all fuses one by one to identify which system changes the standby current value significantly.
2. The chart below lists the fuses feeding the Telematics system. If removing one of these fuses causes the dark/standby draw to move from a reading greater than 70mA to a value less than 70 mA, DCM replacement would be indicated.

IMPORTANT: If removal of the fuses below does not adjust DVOM readings below 70 mA, the DCM IS NOT the root cause of the dark/standby draw and replacement is not required.

Model	Year	ACC Fuse	IG Fuse	Batt Fuse
Ascent	19 - 22	FB-54 Fuse #4	FB-44 Fuse #8	MB-40 Fuse #5
Forester	19 - 22	FB-54 Fuse #4	FB-44 Fuse #8	MB-41 Fuse #5
Imprezza	17 - 22	FB-54 Fuse #4	FB-44 Fuse #8	MB-41 Fuse#18
Legacy / Outback	20 - 22	FB-51 Fuse #4	FB-41 Fuse #8	MB-1 SBF-3
Crosstrek ICE / Hybrid	18 - 23	FB-54 Fuse #4	FB-44 Fuse #8	MB-41 use #18
WRX	22-23	FB-51 Fuse #4	FB-41 Fuse #8	MB-1 SBF-3
BRZ	22-23	FB-28 Fuse #13	FB-70 Fuse #29	MB-23 Fuse #9
Crosstrek ICE / Hybrid	16-17	FB-25 Fuse #24	FB-37 Fuse #12	MB-34
Imprezza	16	FB-25 Fuse #24	FB-37 Fuse #12	MB-34
Legacy / Outback	16-19	FB-48 Fuse #4	FB-58 Fuse #5	MB-52 Fuse #9
Forester	16-18	FB-25 Fuse #24	FB-37 Fuse #12	MB-34
WRX	17-21	FB-25 Fuse #24	FB-37 Fuse #12	MB-34
WRX	17-21	X	X	MB-33

3. Check related parts, harnesses, and connectors of the system whose standby current has changed significantly. A component left on or stuck on, shorts to power, and shorts to ground can cause an excessive dark current draw.

SERVICE PROCEDURE / INFORMATION:

- The work procedure for dark/standby current has not changed. Refer to the applicable vehicle Service Manual: STARTING/CHARGING SYSTEMS > Battery
- MY 20-22 Legacy/Outback refer to TechTip May 2022 pg. 3 section 1: Replacement components on the CAN network and Central Gateway Control module LAN registration.
- All Models and Years refer to TechTip April 2022, pg. 7 section 15: The Telematics LED: When green does not mean GO.
- All Models and Years refer to TechTip Sept. 2019, pg. 5 section 15: Telematics RES feature inoperative and revised B2A16 diagnostics.
- For all Models and Years with currently active STARLINK Subscription, refer to TSB **15-266-20R** for minimum testing requirements post DCM replacement.
- MY 20-21 Legacy/Outback, MY19-21 Forester, MY19-21 Ascent refer to TSB **07-199-21R**.

WARRANTY / CLAIM INFORMATION:

There have been no changes made to the Labor Time Guide for these procedures.

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APPENDIX A: Alternate Dark Current/Standby Current Draw Test Procedure

Old Technique vs New Technique

The traditional method detailed in the body of this TSB – disconnecting the battery, putting the multimeter in series, and pulling fuses until the draw source is found – is the method detailed in STIS but may not always be the most efficient method of finding dark/standby draw. This inefficiency is because the very disconnection of the battery may temporarily fix the issue by sending the system to sleep along with the error or having to wait an excessive time for the module to go back to sleep. This behavior can complicate isolation testing and make recorded results confusing.

An alternative diagnostic method of dark/standby current draw testing can be performed by measuring the voltage drop across the fuses. This can be done by using the test points on the fuses without breaking the battery connection, pulling fuses, disturbing the circuit, or awakening any modules. What you are looking for is a voltage drop in the millivolts range. This is caused by an increase in resistance brought about by heating the fuse through the movement of current.

Different sized fuses will show different voltage drops. For example, a 10A fuse with 175 mA flowing through it will show a voltage drop of 1.5mV. When measuring the same fuse with no current flow, it would be more like 0.1mV or 0.2mV.

While using this dark/standby draw isolation method, excessive mV readings indicate the need for further root cause isolation. Disconnecting components fed by the fuse until mV readings come within expected tolerances.

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Fuse Color	Grey	Violet	Pink	Tan	Brown	Red	Blue	Yellow	Clear	Green
Measurement mV	Mini 2 Amp	Mini 3 Amp	Mini 4 Amp	Mini 5 Amp	Mini 7.5 Amp	Mini 10 Amp	Mini 15 Amp	Mini 20 Amp	Mini 25 Amp	Mini 30 Amp
0.1	2	3	4	6	9	13	22	31	42	54
0.2	4	6	9	11	18	27	44	62	85	108
0.3	5	9	13	17	28	40	66	93	127	162
0.4	7	12	17	23	37	54	87	125	169	216
0.5	9	15	21	28	46	67	109	156	212	270
0.6	11	18	26	34	55	81	131	187	254	324
0.7	13	21	30	39	65	94	153	218	297	378
0.8	14	24	34	45	74	108	175	249	339	432
0.9	16	27	38	51	83	121	197	280	381	486
1	18	30	43	56	92	135	218	312	424	541
1.1	20	33	47	62	101	148	240	343	466	595
1.2	22	36	51	68	111	162	262	374	508	649
1.3	23	39	55	73	120	175	284	405	551	703
1.4	25	41	60	79	129	189	306	436	593	757
1.5	27	44	64	85	138	202	328	467	636	811
1.6	29	47	68	90	147	216	349	498	678	865
1.7	31	50	72	96	157	229	371	530	720	919
1.8	32	53	77	101	166	243	393	561	763	973
1.9	34	56	81	107	175	256	415	592	805	1027
2	36	59	85	113	184	270	437	623	847	1081

↑↑↑↑↓milliamp Equivalent draw value↑↑↑↑