TST 2022 VIRTUAL
19th ANNUAL BIG
EVENT

MOST WITH A TWIST

- DIAGNOSING GM MOST NETWORKS

WORLDPAC
Wholesale Distributor of Original Equipment Automotive Parts

Course Objectives

- New Model Viewing
- Case Study
- Infotainment Technology Overview

Course Objectives

- Infotainment Technology Overview
- Center Stack Designs
- MOST Exercises

New Model Viewing

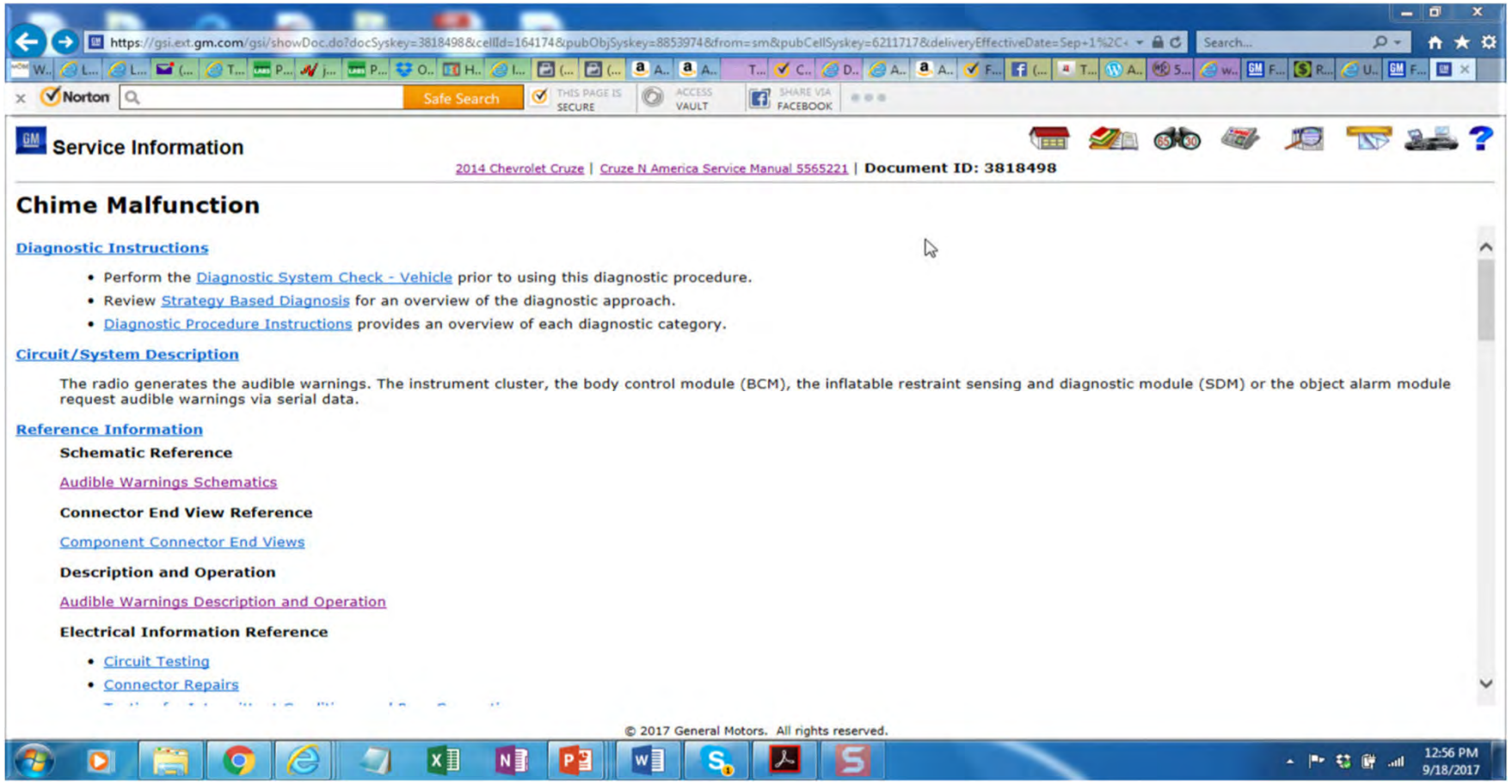

2017 Buick Cascada


BUICK

Case Study#1


Chime is not Loud Enough
mylink
CLOCK
TONE
INFO
AS
FAV
BACK
SRCE
CONFIG
MENU SEL

Chime Malfunction



Service Information

2014 Chevrolet Cruze | Cruze N America Service Manual 5565221 | **Document ID: 3818498**

Chime Malfunction

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

Circuit/System Description

The radio generates the audible warnings. The instrument cluster, the body control module (BCM), the inflatable restraint sensing and diagnostic module (SDM) or the object alarm module request audible warnings via serial data.

Reference Information

Schematic Reference

Audible Warnings Schematics

Connector End View Reference

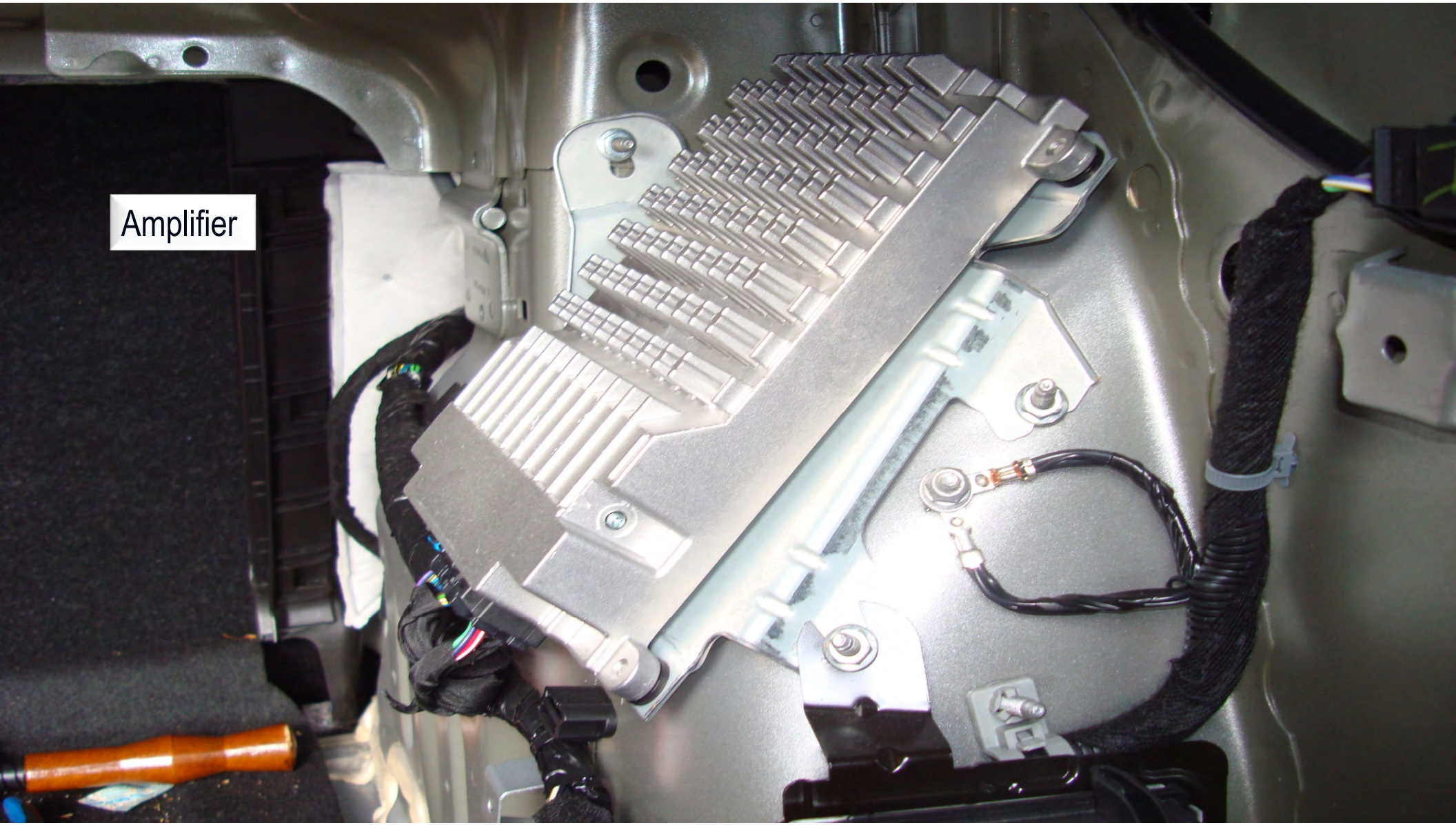
Component Connector End Views

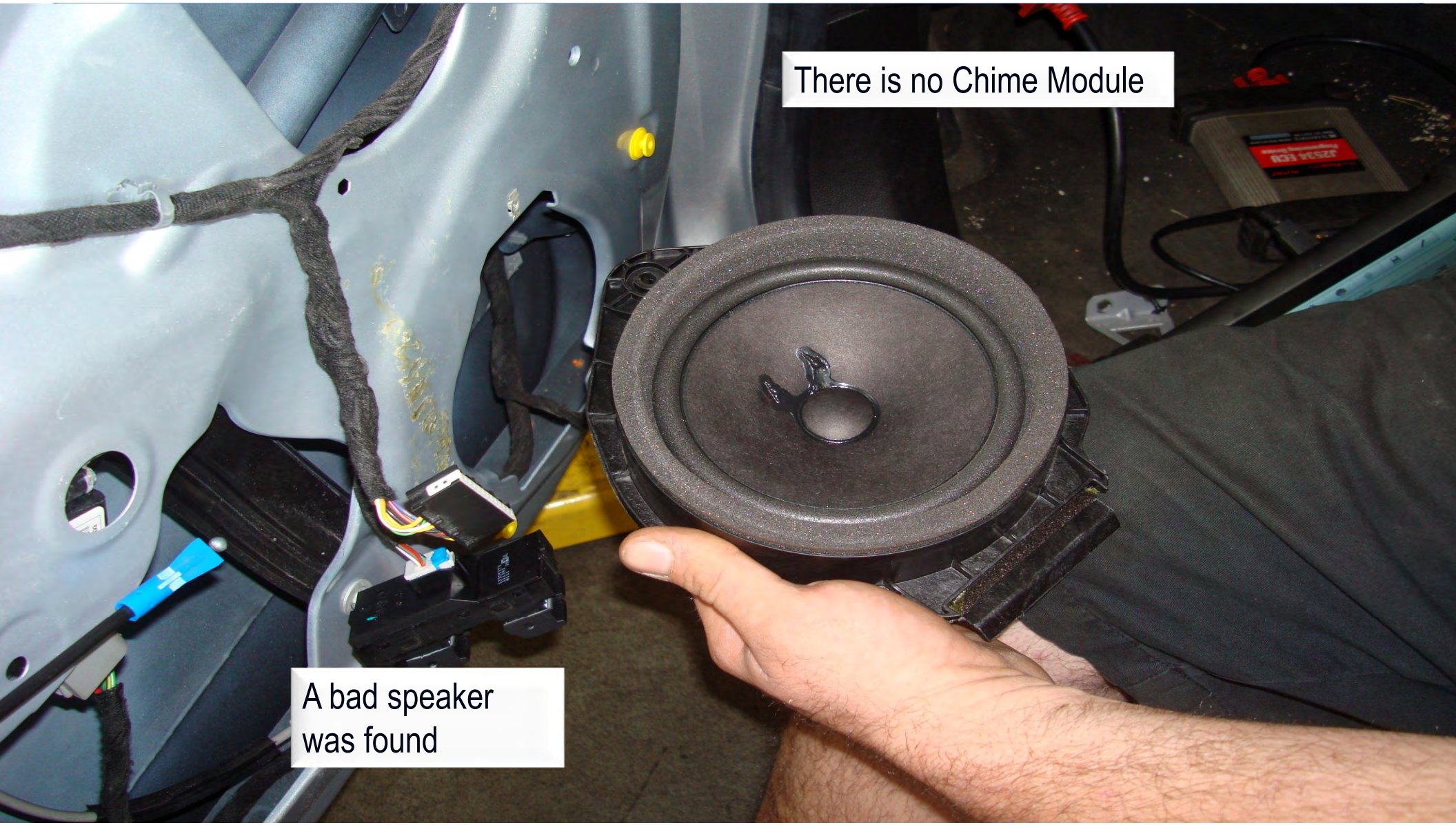
Description and Operation

Audible Warnings Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs


Amplifier


There is no Chime Module
A bad speaker was found

Infotainment System Modules

Human Machine Interface

- The Human Machine Interface (HMI) module is responsible for the following: **Video for the Infotainment display, Bluetooth ®, USB, memory card reader, and speech recognition functions**. The HMI module communicates with the Info Display Module via the LIN bus for control information, touch communications and dimming level.

Amplifier

- The purpose of the amplifier is to increase the power of a voltage or current signal. The output signal of an amplifier may consist of the same frequencies as the input signal or it may consist of only a portion of the frequencies as in the case of a subwoofer or midrange speaker. The audio amplifier amplifies the signal and sends it to the appropriate speakers.

Instrument Cluster

- The instrument cluster is a multifunction module that provides the vehicle operator with information such as vehicle speed and engine RPM using analog gauges. Oil pressure, battery voltage, fuel level, and coolant temperature can also be displayed using an interactive LCD display.

Radio

- The radio is the MOST BUS master. The radio also communicates with other components and systems within the vehicle via GMLAN.

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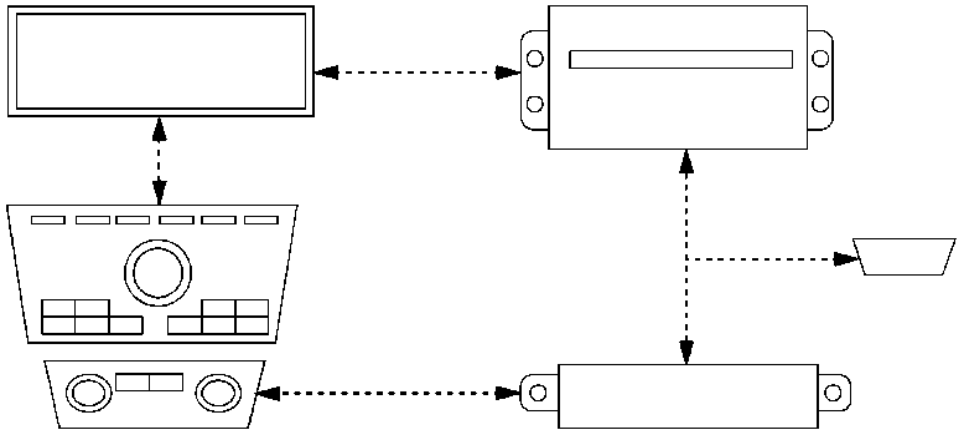
Radio/HVAC Controls

- The Radio and HVAC controls are communicated on Low Speed GMLAN. The **information display** communicates via a LIN Buss to the Radio and HVAC controls. The HVAC controls will communicate via LIN Buss to the HVAC control module.

Infotainment Technology Overview

GM Infotainment

Infotainment: An information and entertainment infrastructure



Connected Radios

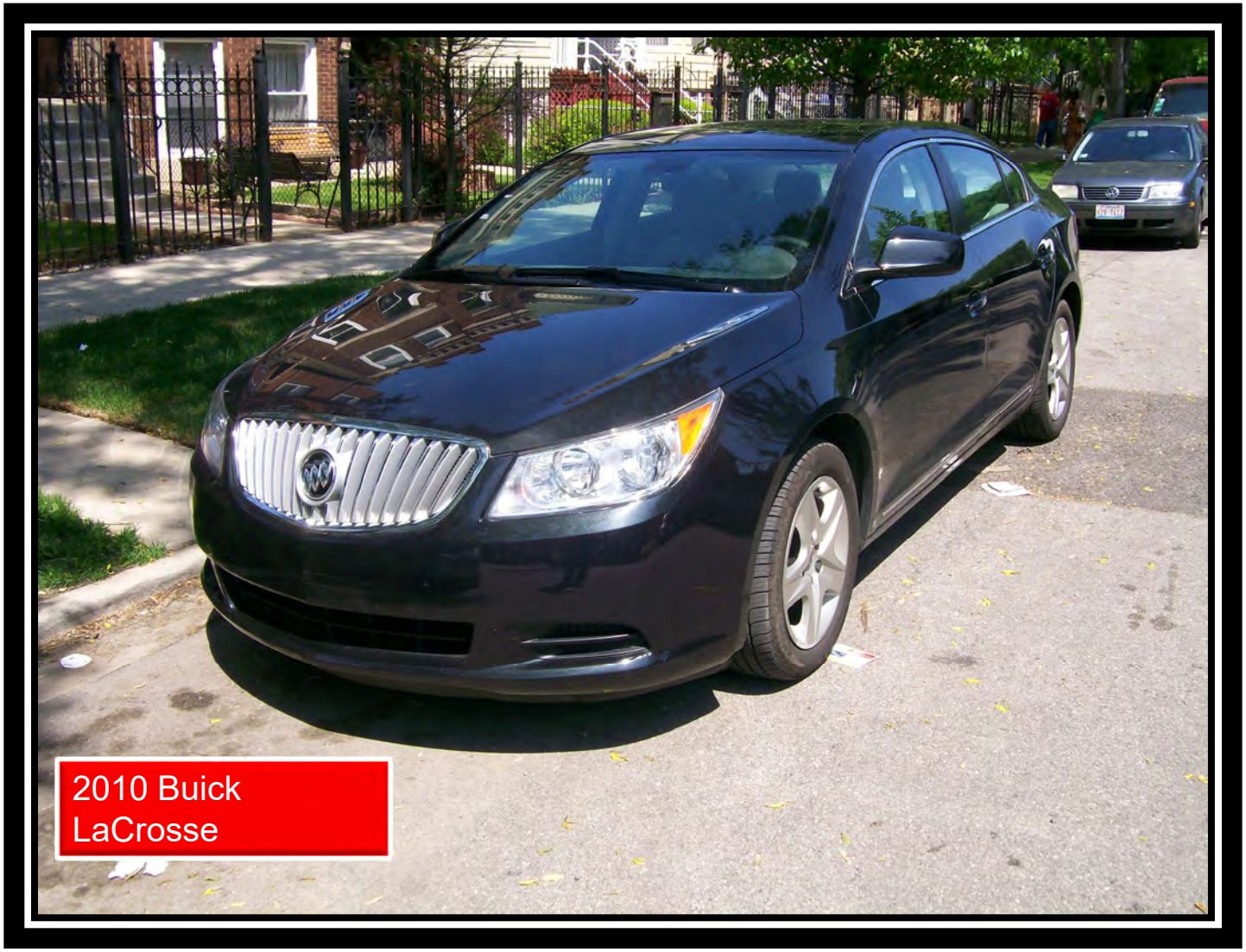
- Connected Radios
  - Beamed In
  - Built In
  - Brought In

- Beamed In Features (Signals Received Over the Air)
  - Sirus
  - Satellite Navigation
  - Onstar Services

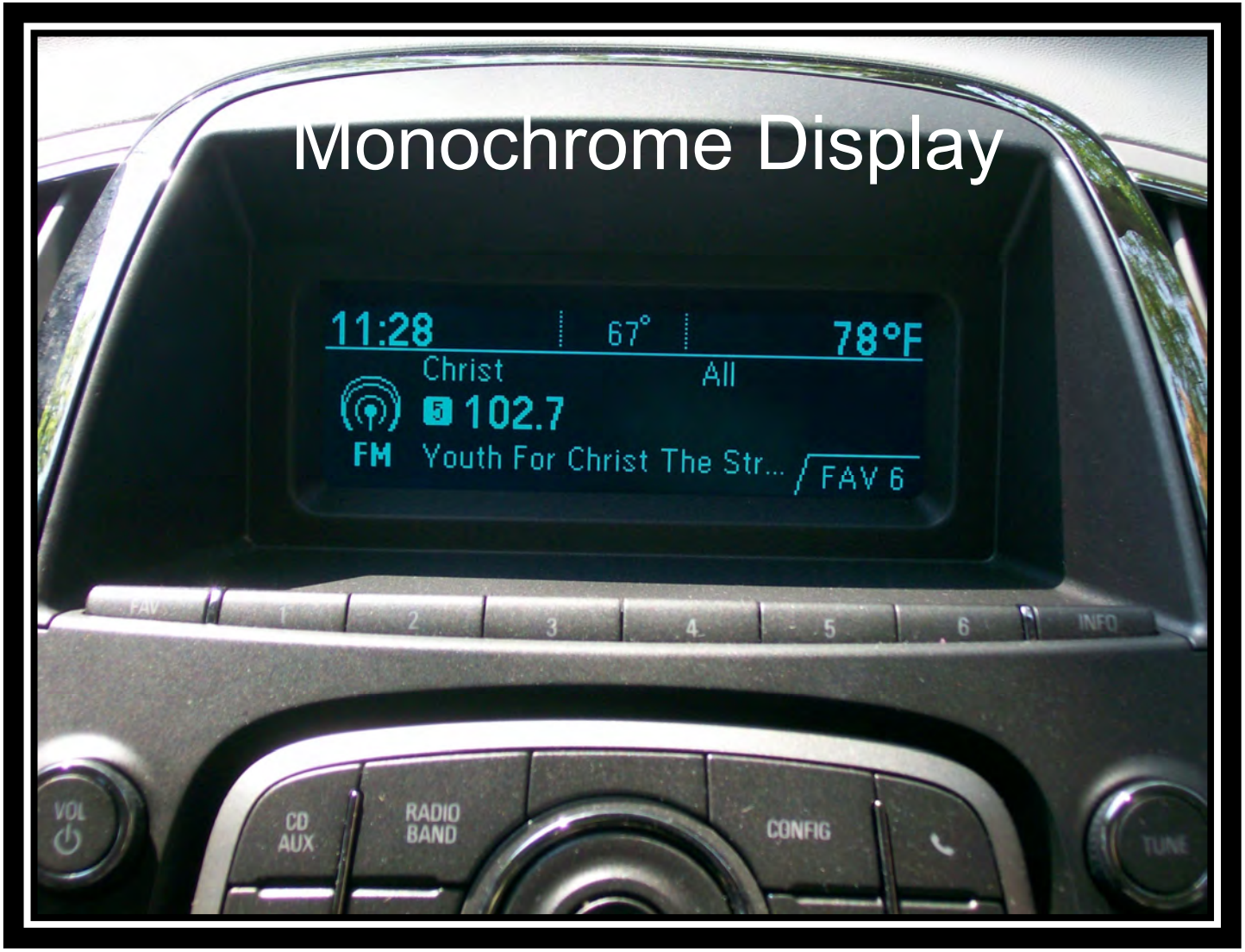
Connected Radios

- Built In(Uses Components inside the vehicle)
  - Speech Recognition
  - Noise Cancellation
  - Touch Screen
- Brought In(Interface with personal electronic devices)
  - Cellular Phones
  - MP3 Players
  - Tablet PC’s

Center Stack Designs


2010 Buick
LaCrosse

Monochrome Display



2016 Chev Silverado

2016 Chev Silverado

2016 Chev Equinox

2016 Chev Equinox

2016 Chev Equinox

2017 Chev Camaro

2017 Chev Camaro

2017 Chev Spark

2017 Chev Spark

2017 Chev Spark

2017 Chev Spark

2017 Chev Volt

2017 Chev Volt

2017 Chev Volt

2017 Chev Volt

2016 Chev Cruze

2017 Chev Cruze

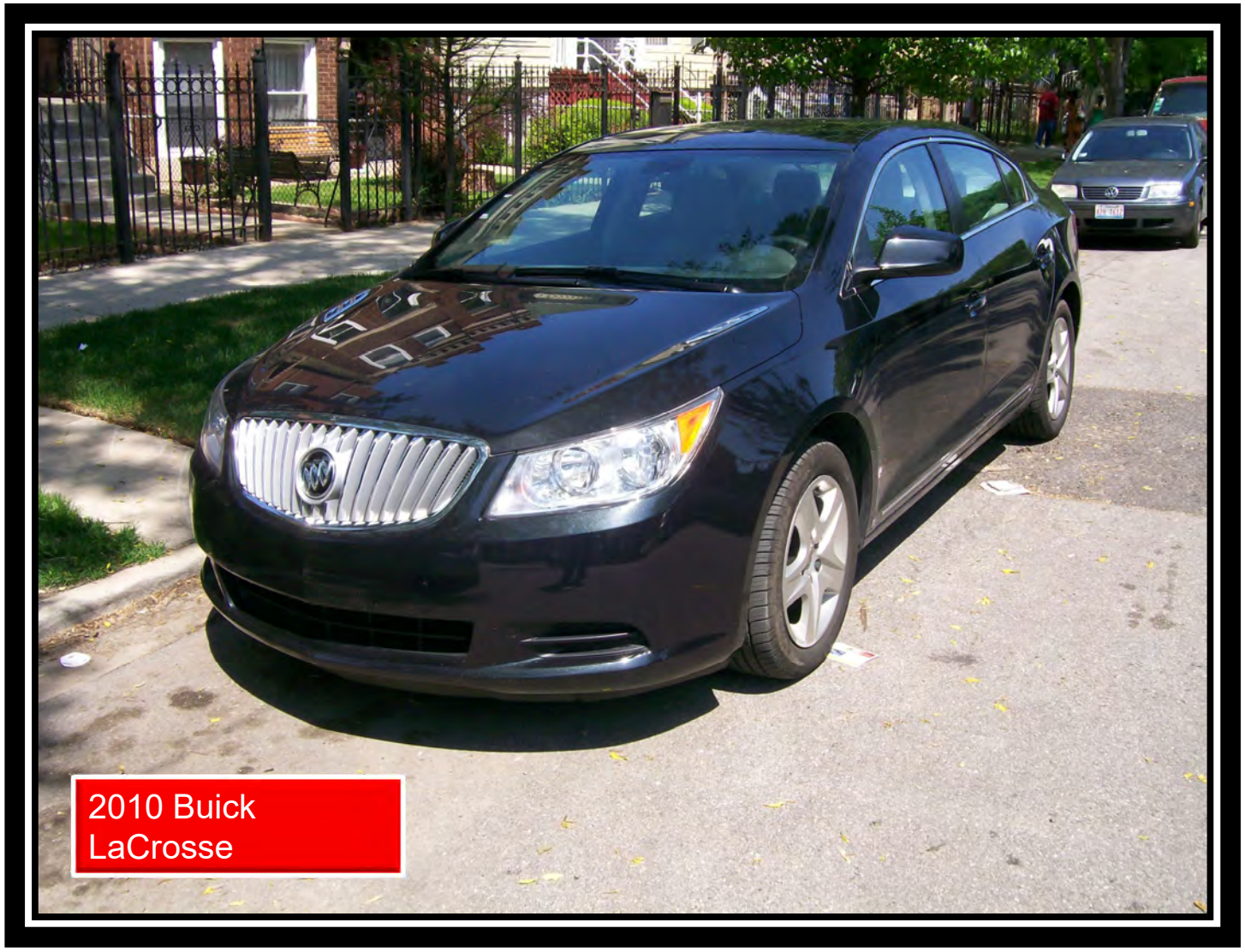
2017 GMC Truck

2017 GMC Truck

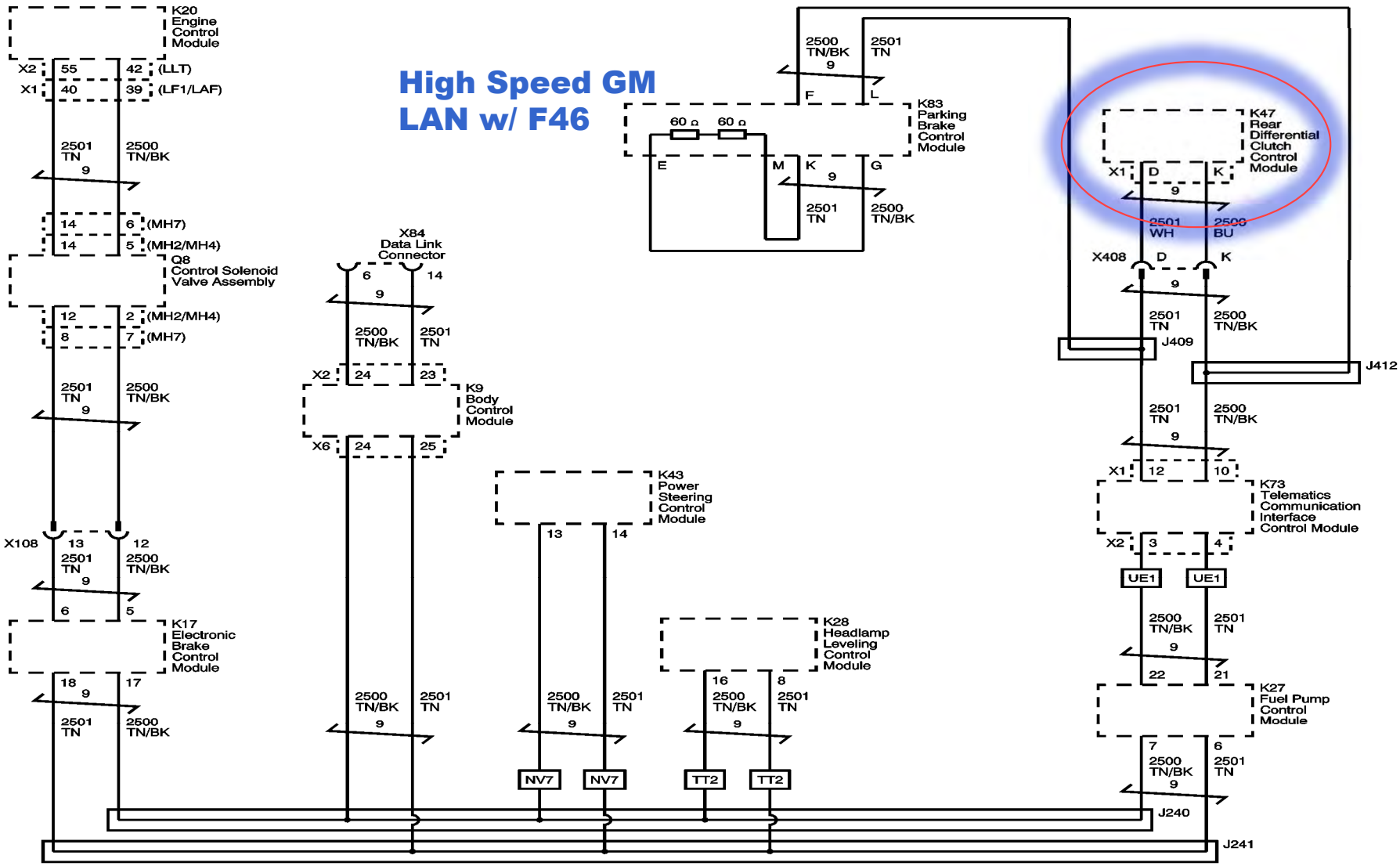
2015 Buick Lacrosse

2015 Buick Lacrosse

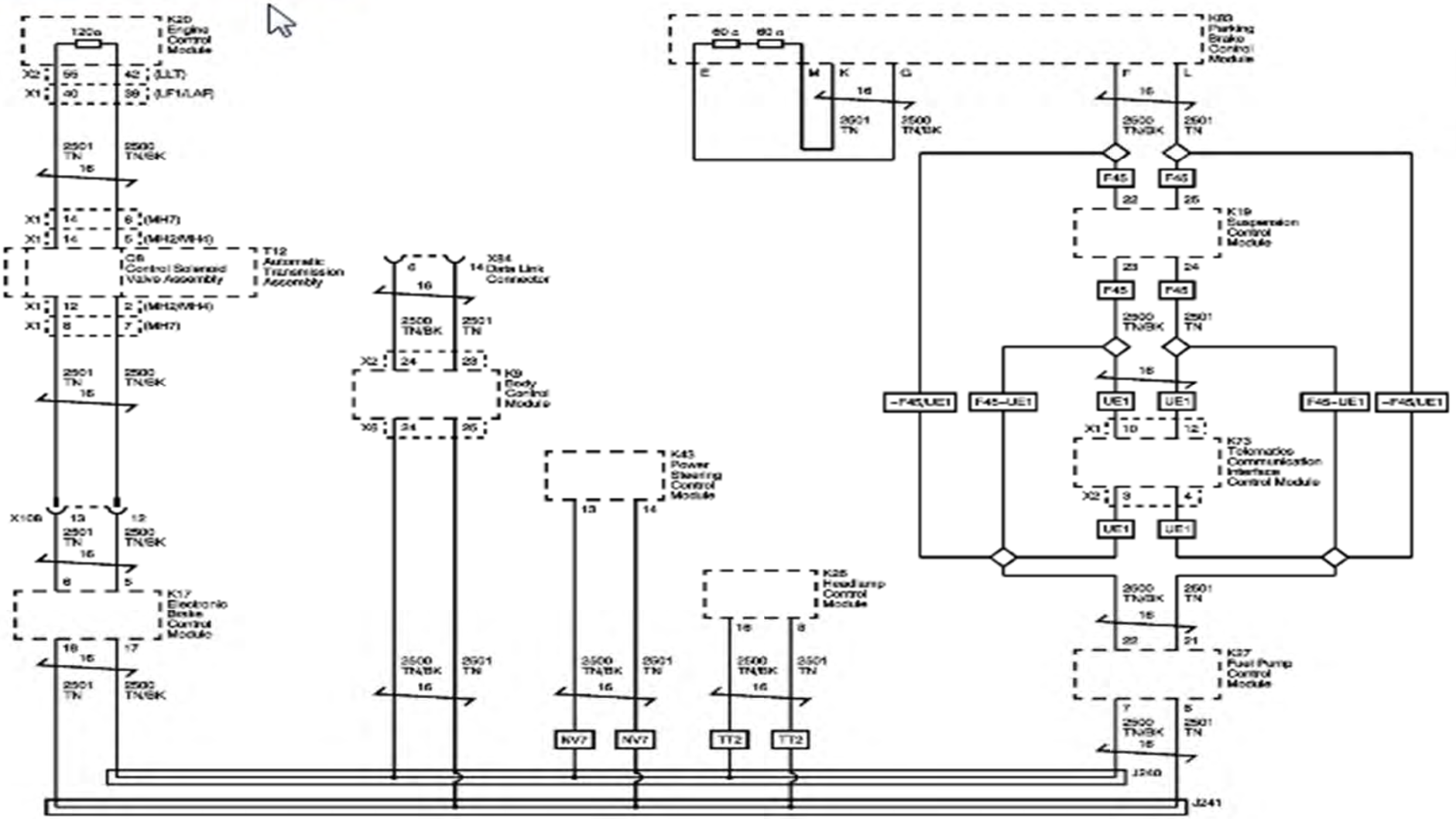
RPO Codes and SPI Labels


2010 Buick
LaCrosse

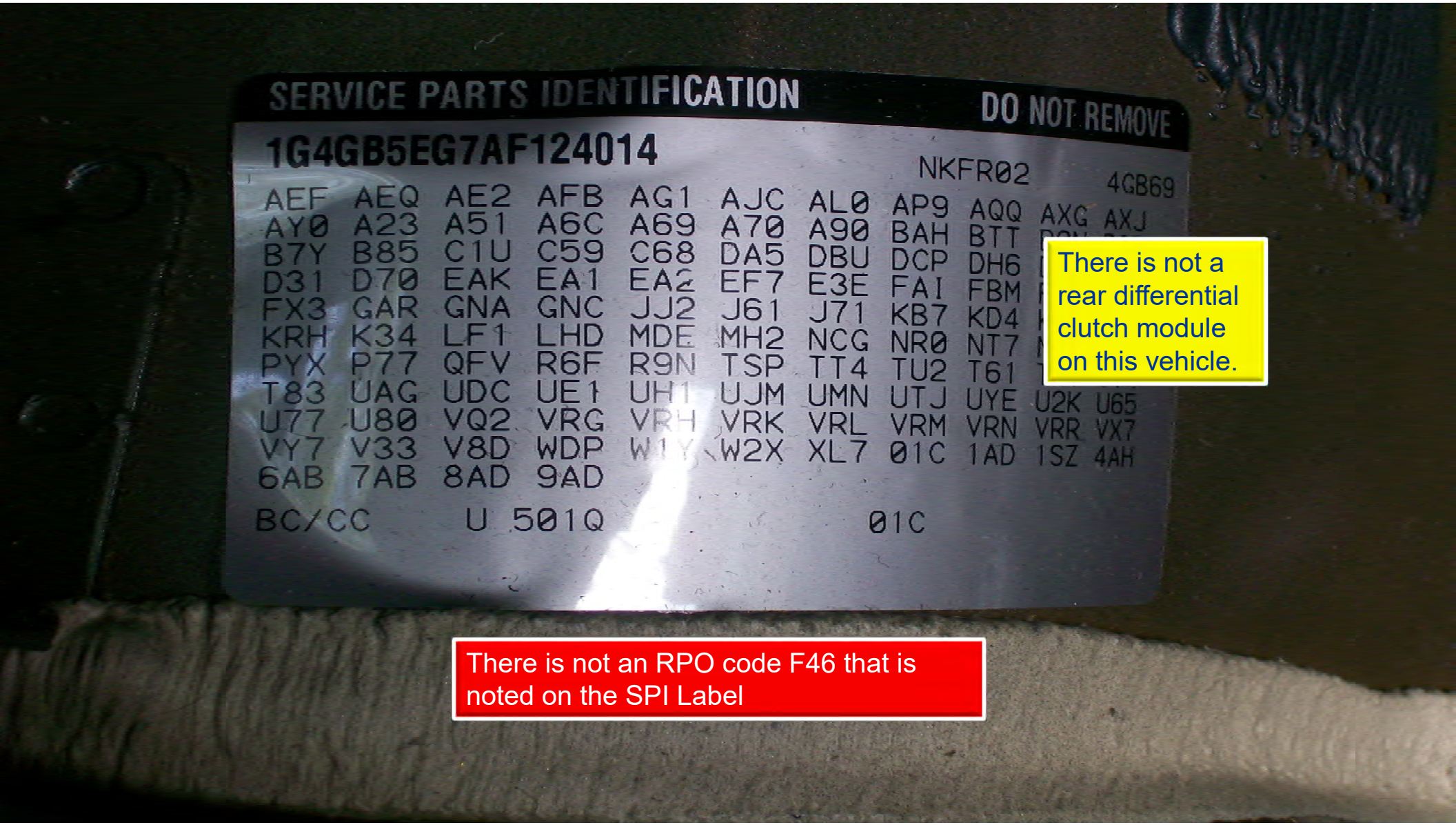
High Speed GM LAN w/ F46



High Speed GMLAN (without F46)




SERVICE PARTS IDENTIFICATION
DO NOT REMOVE
The SPI Label is located in the trunk area of the vehicle

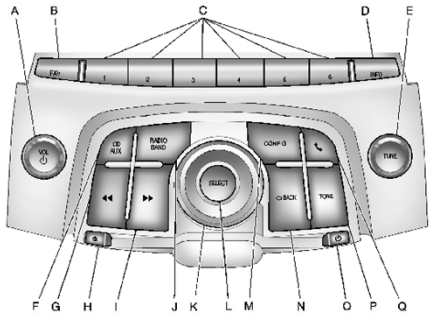

SERVICE PARTS IDENTIFICATION
DO NOT REMOVE
1G4GB5EG7AF124014
NKFR02
4GB69
AEF AEQ AE2 AFB AG1 AJC AL0 AP9 AQQ AXG AXJ
AY0 A23 A51 A6C A69 A70 A90 BAH BTT
B7Y B85 C1U C59 C68 DA5 DBU DCP DH6
D31 D70 EAK EA1 EA2 EF7 E3E FAI FBM
FX3 GAR GNA GNC JJ2 J61 J71 KB7 KD4
KRH K34 LF1 LHD MDE MH2 NCG NR0 NT7
PYX P77 QFV R6F R9N TSP TT4 TU2 T61
T83 UAG UDC UE1 UH1 UJM UMN UTJ UYE U2K U65
U77 U80 VQ2 VRG VRH VRK VRL VRM VRN VRR VX7
VY7 V33 V8D WDP W1Y W2X XL7 01C 1AD 1SZ 4AH
6AB 7AB 8AD 9AD
BC/CC U 501Q 01C
There is not a rear differential clutch module on this vehicle.
There is not an RPO code F46 that is noted on the SPI Label

Networks

LIN

Monochrome Display

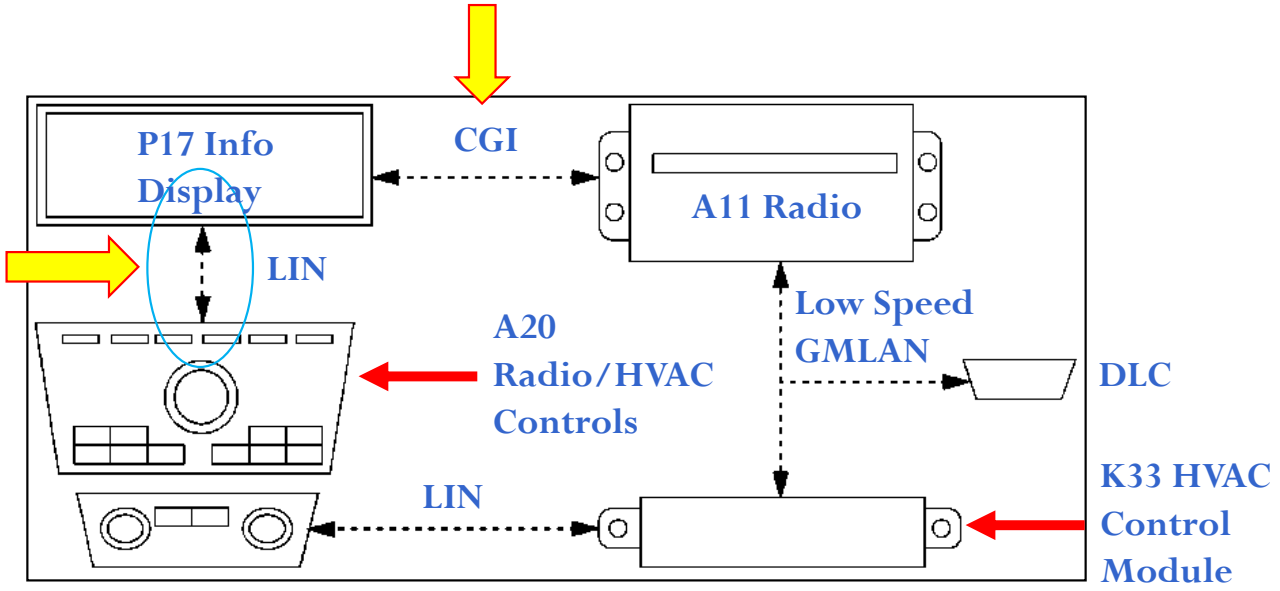
- This 2010 Buick Lacrosse uses what is called a “monochrome Display”
- The word "monochrome" literally means "one color." Therefore, a monochrome image only includes one color.



How it all works

- The radio/HVAC controls is a separate component from the radio. The radio/HVAC controls contain the radio control knobs and buttons for all audio functions.
- The radio/HVAC controls operate radio functions through serial data messages. The radio/HVAC controls communicate to the info display module through LIN serial data. The info display module communicates to radio through CGI serial data.

Local Interconnect Network (LIN)



- Infotainment systems with a monochrome display use a LIN Bus to connect the faceplate to the display
- In most infotainment systems, the radio sets DTCs in the event of a fault with the LIN Bus or a fault with the device that is connected

2017 Buick Lacrosse

2017 Buick Lacrosse

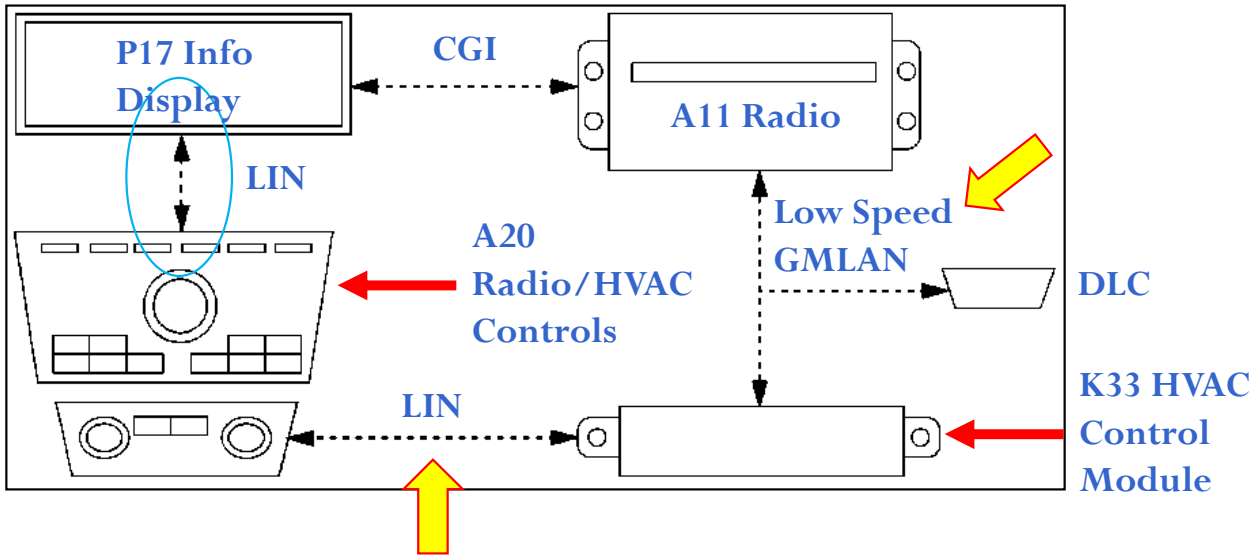
How it all works

- When the operator rotates a radio control knob to change radio stations or increase the volume a message is sent to the radio over serial data. After receiving the message the radio will make the adjustment. Messages communicated between the radio and the radio/HVAC controls and info display include the following:
- Button presses/knob rotations
- Info display module dimming
- Radio/HVAC controls back-lighting
- Graphics and text information

How it all works

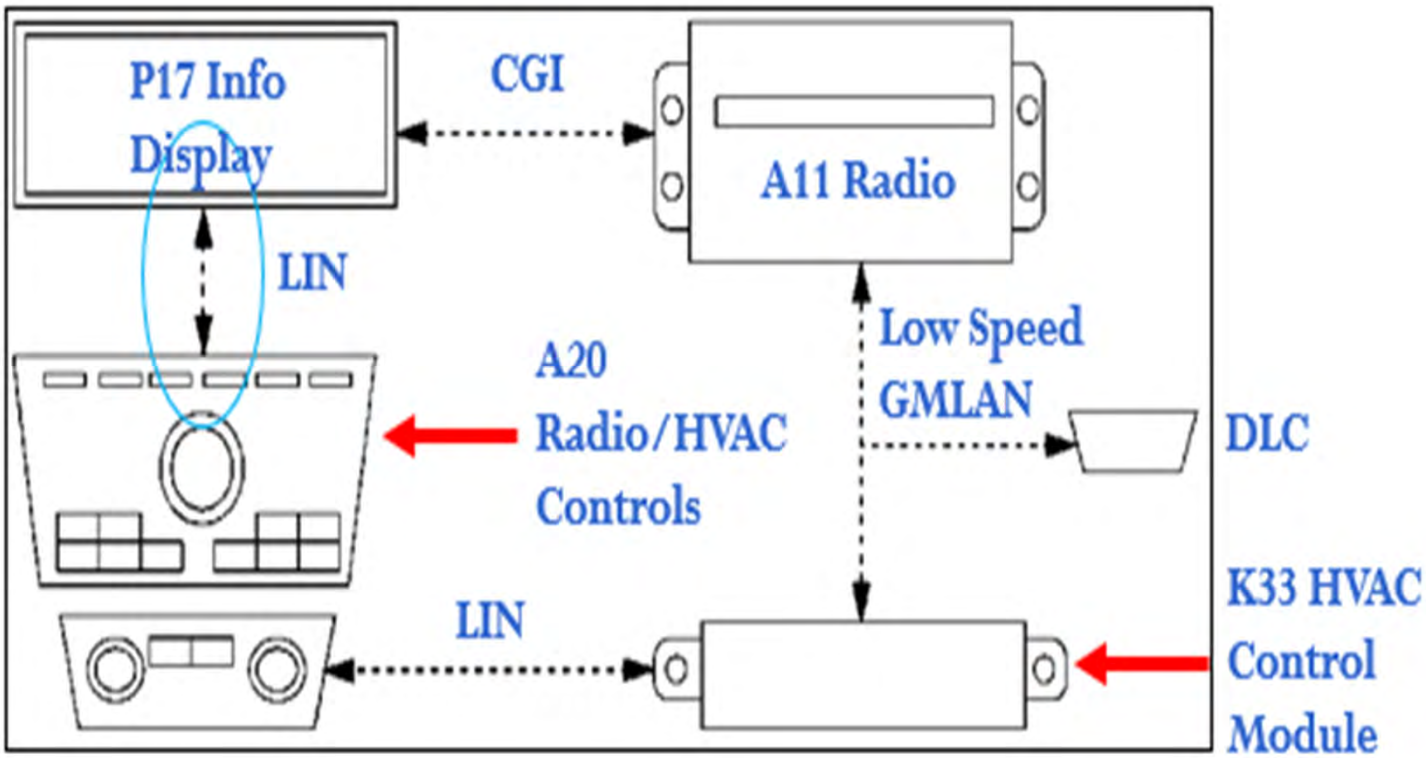
- HVAC data for controls and status indicators is communicated between the radio/HVAC controls and the HVAC control module with a separate LIN serial data circuit. HVAC status screen information from the HVAC control module is transmitted to the radio on the GMLAN serial data circuit. The radio then displays the desired screen information on the info display using the video data circuits.

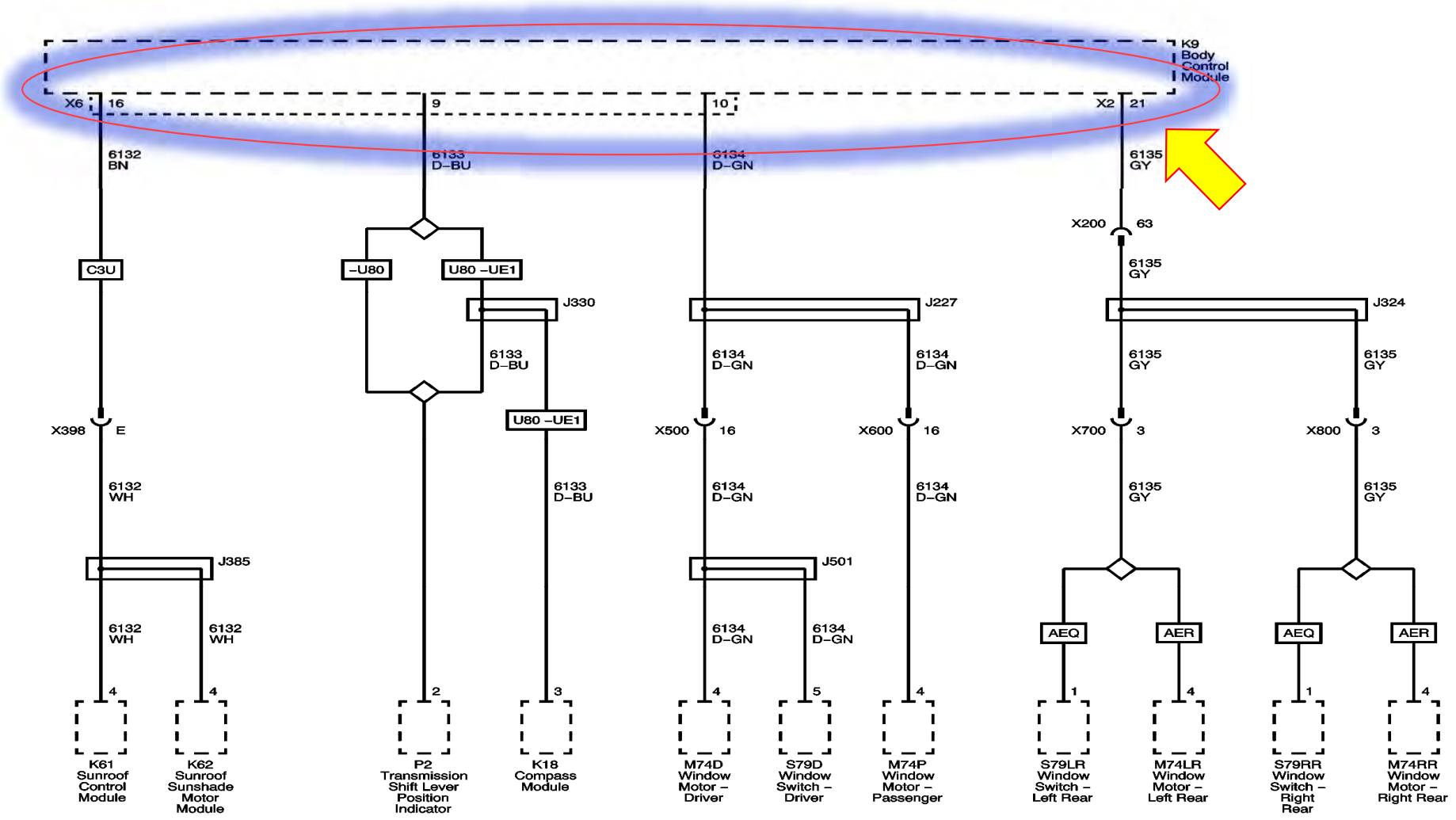
Local Interconnect Network (LIN)



- Infotainment systems with a monochrome display use a LIN Bus to connect the faceplate to the display
- In most infotainment systems, the radio sets DTCs in the event of a fault with the LIN Bus or a fault with the device that is connected

Expanded View

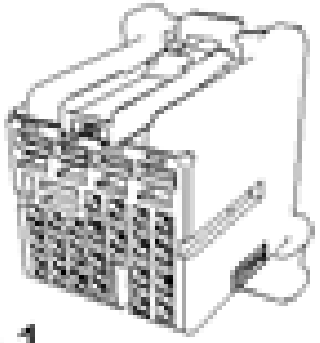


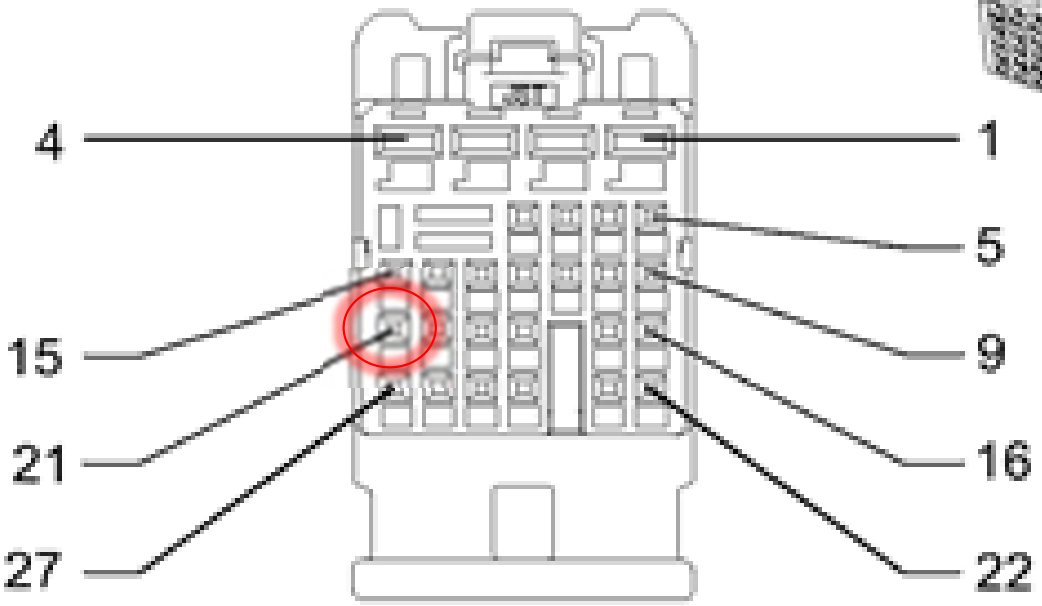


Local Interconnect Network Bus 1,2,3,4

K9 Body Control Module X2

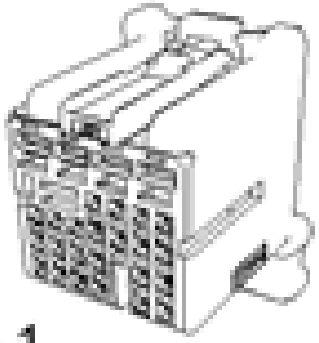
Pin 21 of the X2 Connector (Gray Wire)

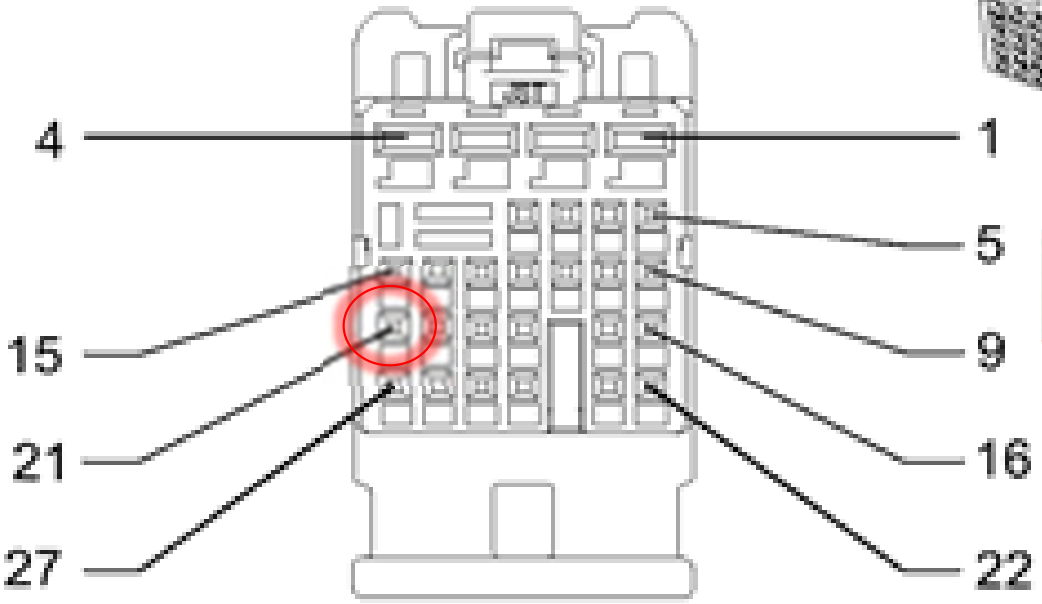




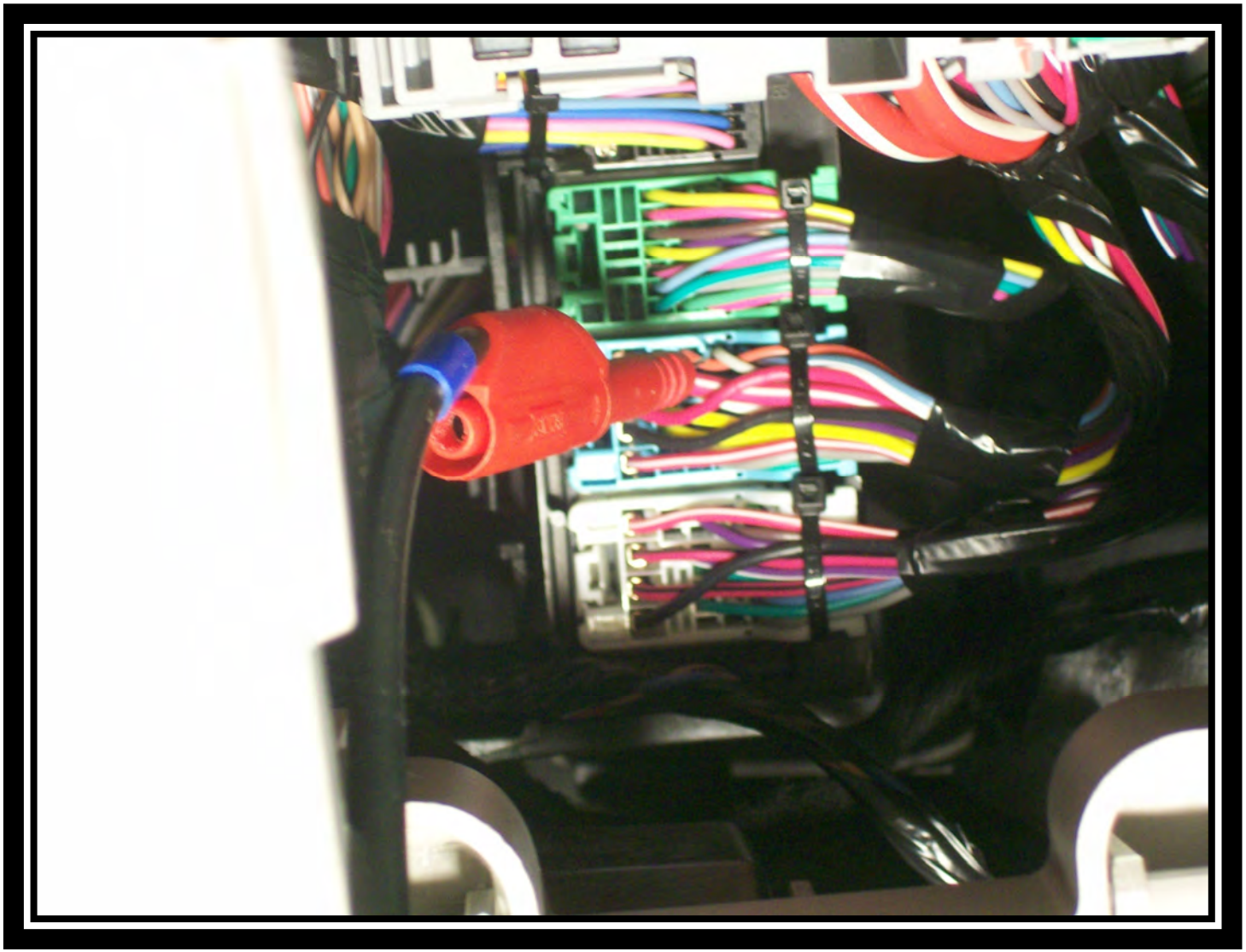
K9 Body Control Module X2

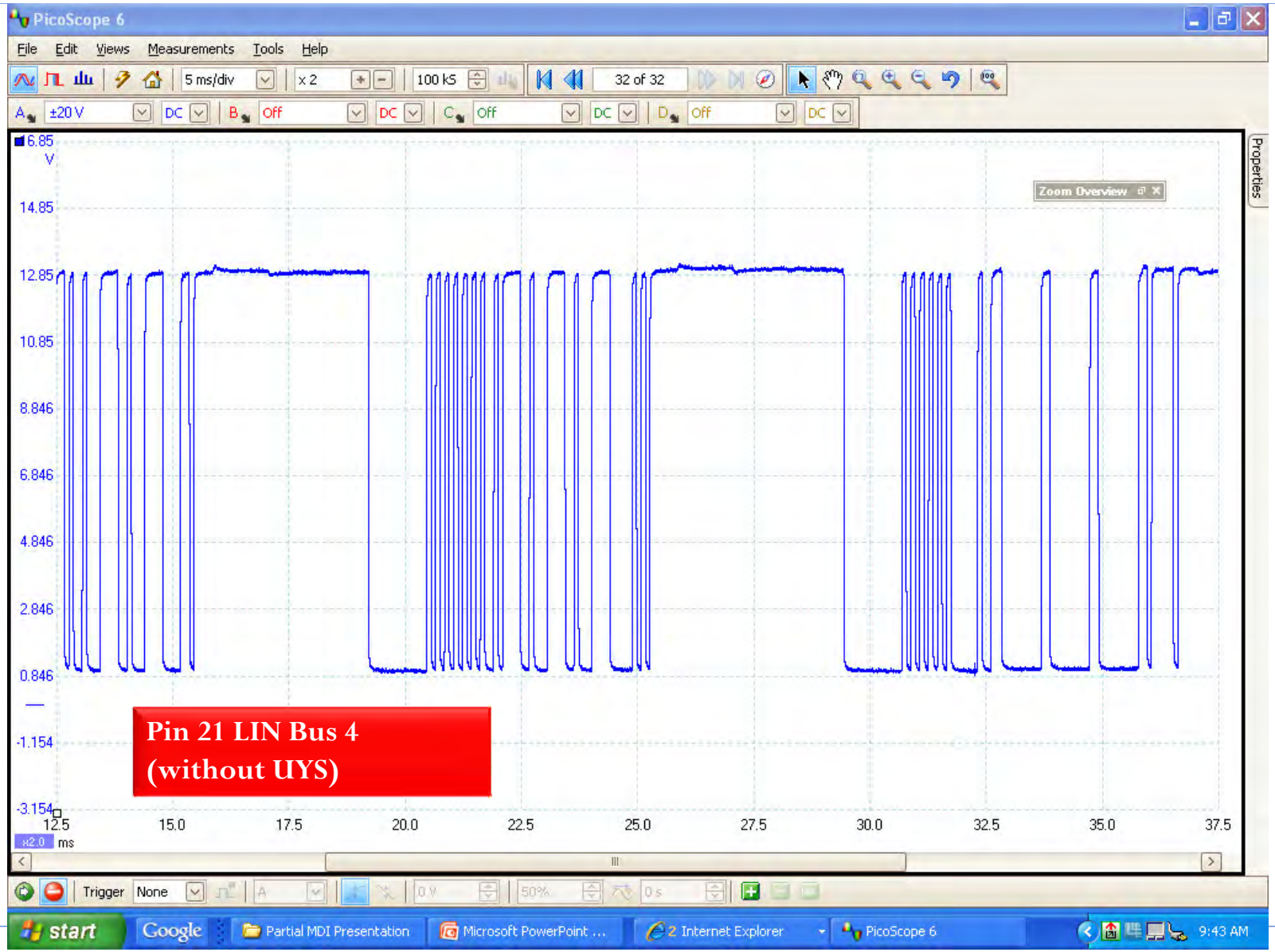
18	—	—	Not Used
19	0.35 PK/BK	780	Driver Door Lock Switch Lock Signal
20	—	—	Not Used
21	0.35 GY	6135	Linear Interconnect Network Bus 4
22	0.35 D-GN	5060	Low Speed GMLAN Serial Data





Pin 21 LIN Bus 4 (without UYS)




PicoScope 6
File Edit Views Measurements Tools Help
5 ms/div
x 2
100 kS
32 of 32
A ±20 V DC
B Off DC
C Off DC
D Off DC
Zoom Overview
Properties
6.85 V
14.85
12.85
10.85
8.846
6.846
4.846
2.846
0.846
-1.154
-3.154
12.5 15.0 17.5 20.0 22.5 25.0 27.5 30.0 32.5 35.0 37.5
x2.0 ms
Pin 21 LIN Bus 4
(without UYS)
Trigger None
start Google Partial MDI Presentation Microsoft PowerPoint ... 2 Internet Explorer PicoScope 6 9:43 AM

LIN
Case Study

Case Study

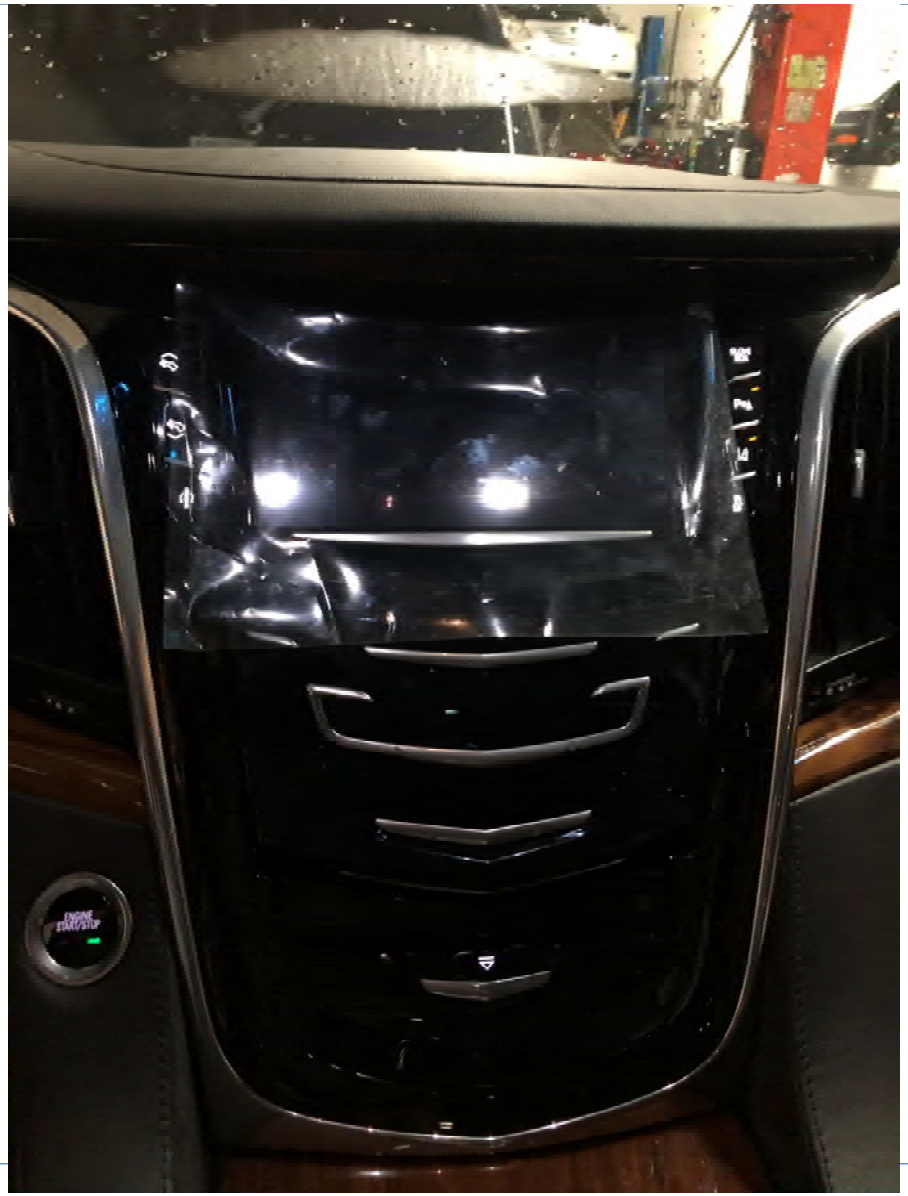
Vehicle: 2015 Cadillac Escalade 6.2L L86 4WD
vin: 1GYS4HKJ8FR215500
104,140 miles

Concern: The Info Display Module (P17) is blank. There is audio.

Performed diagnostics on Thursday, October 7, 2021.

Courtesy of John Thornton


0
Audio
SEL
ENGINE
START/STOP



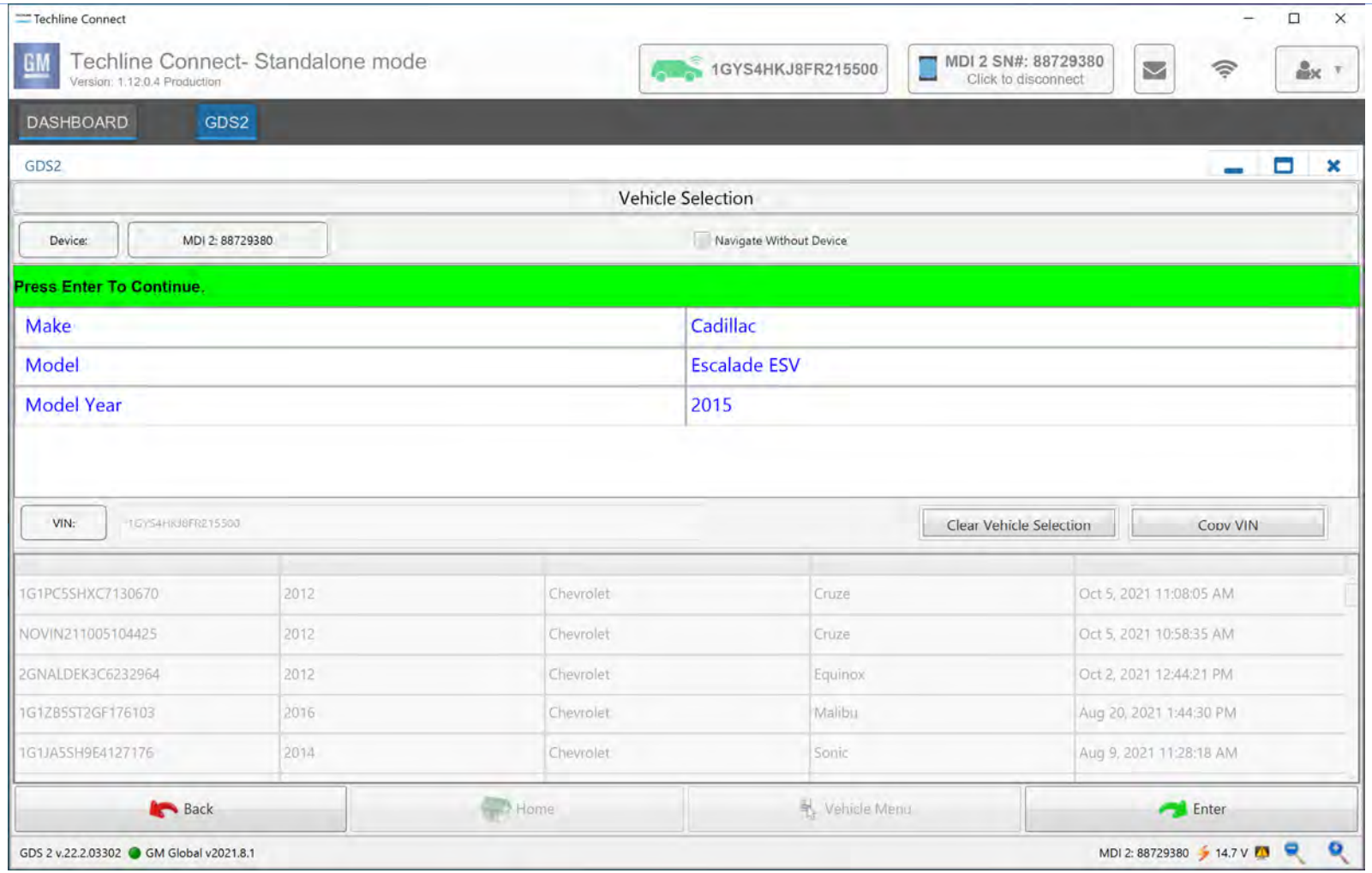
Case Study

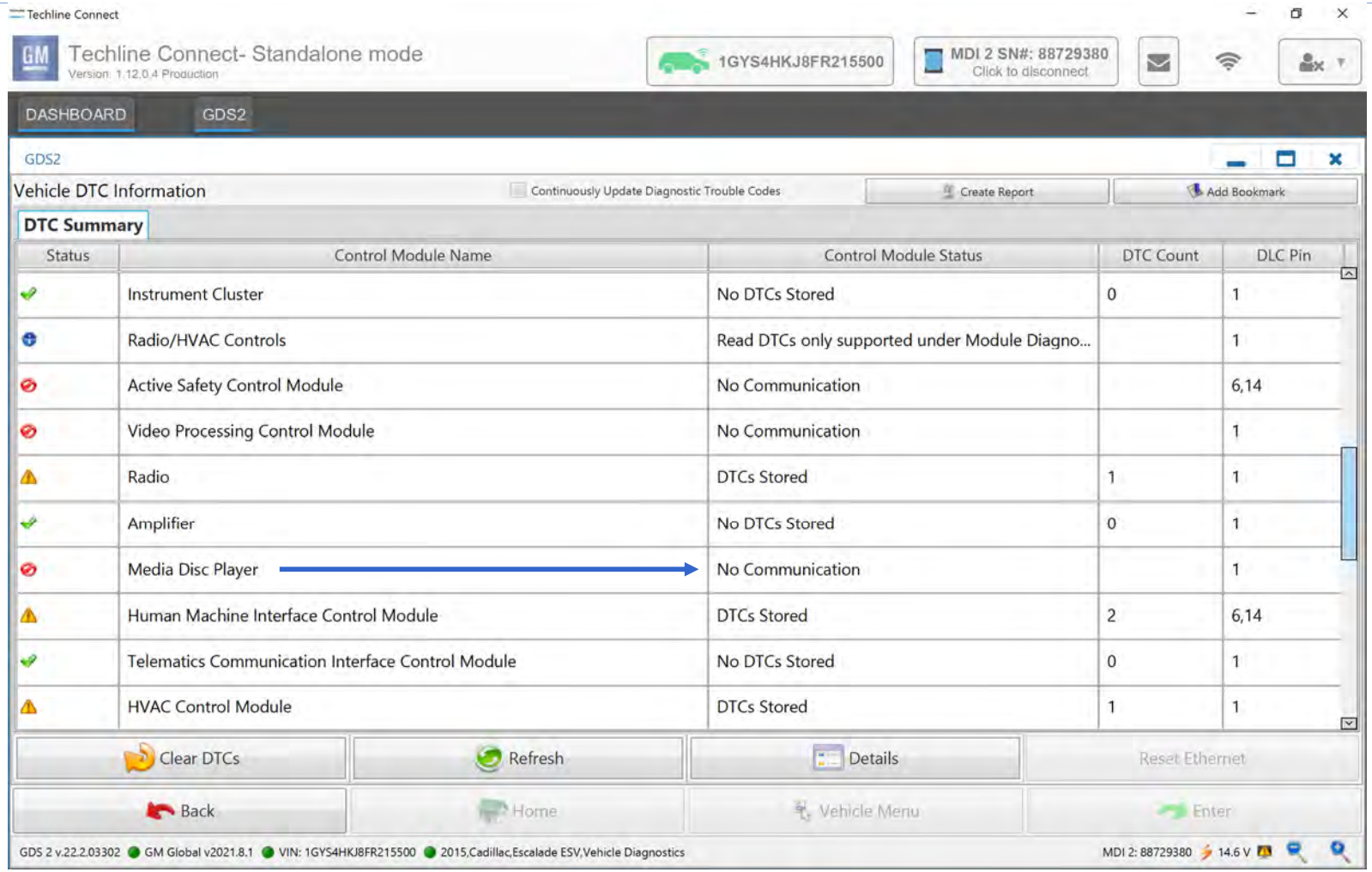
Background Info:

- the radio audio works with the steering wheel controls
- there is a Media Disc Player (A33) in the bottom of the stack
- the shop has replaced the Touch Screen with one from Amazon

shop installed replacement Touch Screen from Amazon in the Info Display Module (P17)

shop installed replacement Touch Screen from Amazon in the Info Display Module (P17)


Techline Connect
Techline Connect- Standalone mode
Version: 1.12.0.4 Production
1GYS4HKJ8FR215500
MDI 2 SN#: 88729380
Click to disconnect
DASHBOARD
GDS2
GDS2
Vehicle Selection
Device:
MDI 2: 88729380
Navigate Without Device
Press Enter To Continue.
Make
Cadillac
Model
Escalade ESV
Model Year
2015
VIN:
1GYS4HKJ8FR215500
Clear Vehicle Selection
Copy VIN
1G1PC5SHXC7130670 2012 Chevrolet Cruze Oct 5, 2021 11:08:05 AM
NOVIN211005104425 2012 Chevrolet Cruze Oct 5, 2021 10:58:35 AM
2GNALDEK3C6232964 2012 Chevrolet Equinox Oct 2, 2021 12:44:21 PM
1G1ZB5ST2GF176103 2016 Chevrolet Malibu Aug 20, 2021 1:44:30 PM
1G1JA5SH9E4127176 2014 Chevrolet Sonic Aug 9, 2021 11:28:18 AM
Back
Home
Vehicle Menu
Enter
GDS 2 v.22.2.03302
GM Global v2021.8.1
MDI 2: 88729380
14.7 V


Techline Connect
Techline Connect- Standalone mode
Version: 1.12.0.4 Production
1GYS4HKJ8FR215500
MDI 2 SN#: 88729380
Click to disconnect
DASHBOARD
GDS2
GDS2
Vehicle DTC Information
Continuously Update Diagnostic Trouble Codes
Create Report
Add Bookmark
DTC Summary
Status
Control Module Name
Control Module Status
DTC Count
DLC Pin
Instrument Cluster
No DTCs Stored
0
1
Radio/HVAC Controls
Read DTCs only supported under Module Diagno...
1
Active Safety Control Module
No Communication
6,14
Video Processing Control Module
No Communication
1
Radio
DTCs Stored
1
1
Amplifier
No DTCs Stored
0
1
Media Disc Player
No Communication
1
Human Machine Interface Control Module
DTCs Stored
2
6,14
Telematics Communication Interface Control Module
No DTCs Stored
0
1
HVAC Control Module
DTCs Stored
1
1
Clear DTCs
Refresh
Details
Reset Ethernet
Back
Home
Vehicle Menu
Enter
GDS 2 v.22.2.03302
GM Global v2021.8.1
VIN: 1GYS4HKJ8FR215500
2015,Cadillac,Escalade ESV,Vehicle Diagnostics
MDI 2: 88729380
14.6 V

module scan

Case Study

Module Scan:

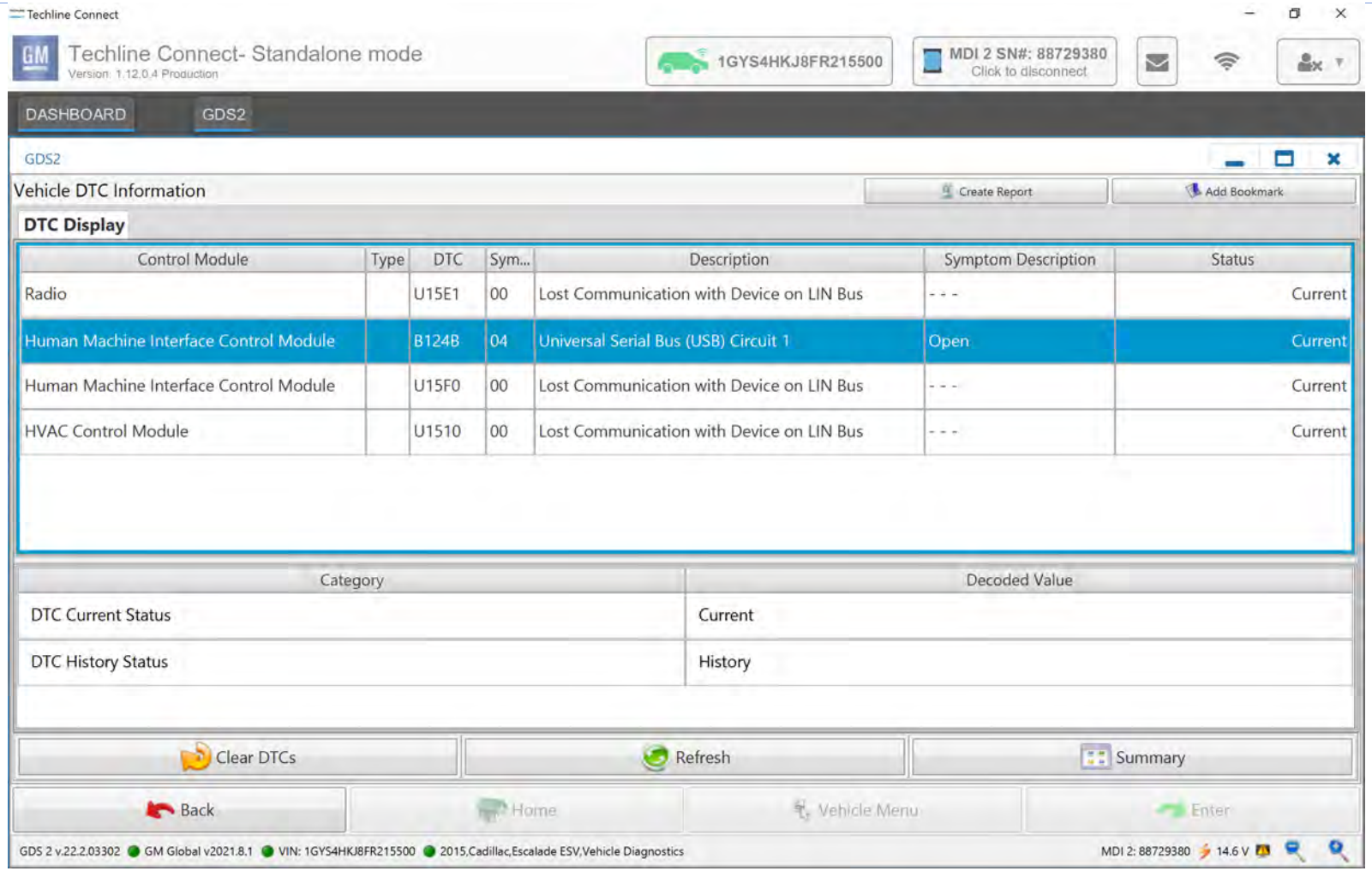
- the Media Disc Player (A33) shows no communication
- this is normal
- the Media Disc Player is only on the MOST Bus

Media Disc Player (A33)

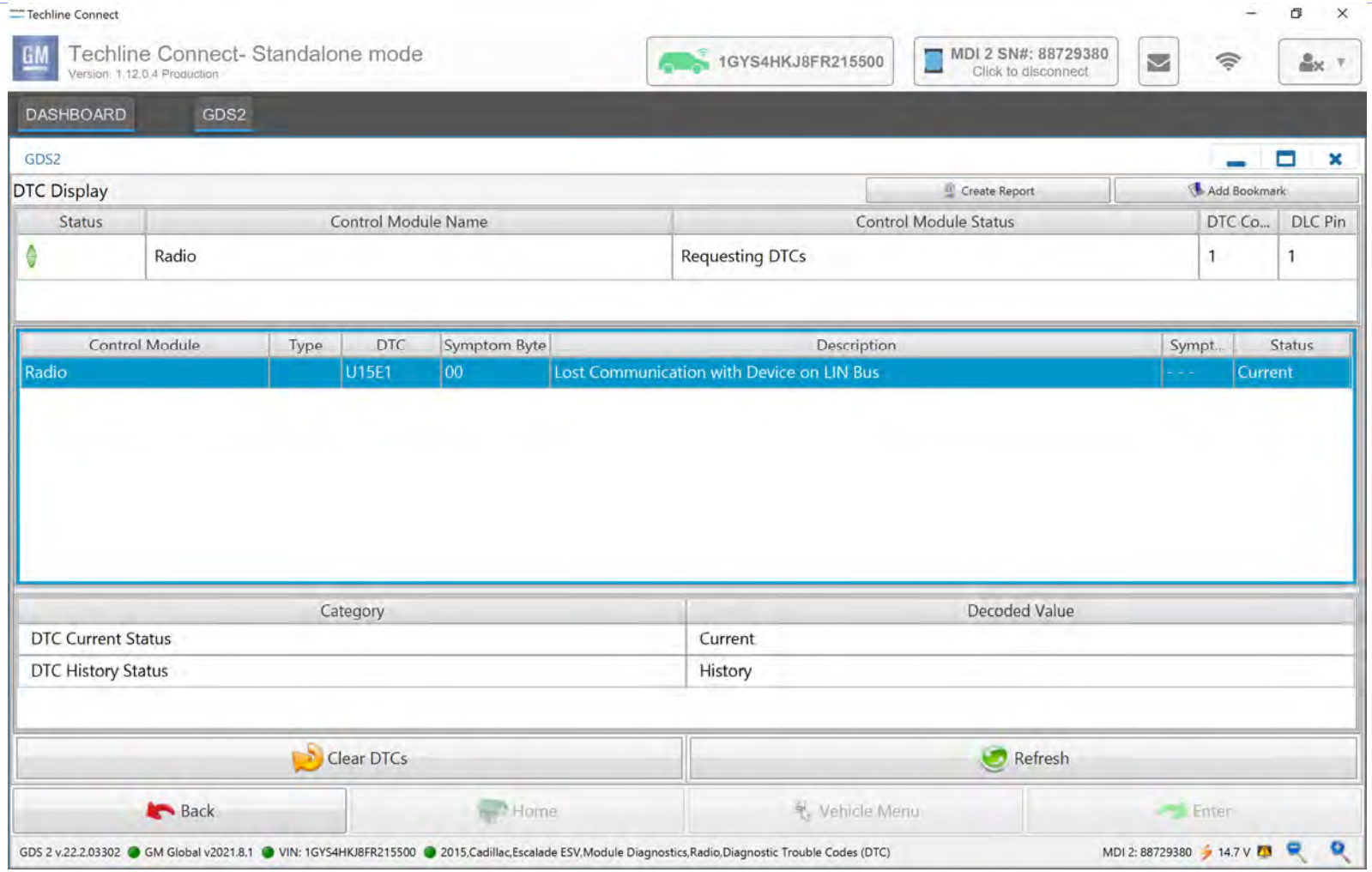
A33 Media Disc Player X1 (TG5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	0.35	WH/VT	3999	MOST Control	I	—
2	—	—	—	Not Occupied	—	—
3	0.5	WH/L-GN	3997	MOST Serial Data (-)	I	—
4	0.5	GY/VT	3998	MOST Serial Data (+)	I	—
5	0.5	WH/L-GN	3997	MOST Serial Data (-)	I	—
6	0.5	GY/VT	3998	MOST Serial Data (+)	I	—
7	—	—	—	Not Occupied	—	—
8	0.75	BK	2550	Ground	I	—
9	0.35	GY	4016	Remote Media Eject Signal	II	Z75
10	0.75	RD/VT	340	Battery Positive Voltage	I	—

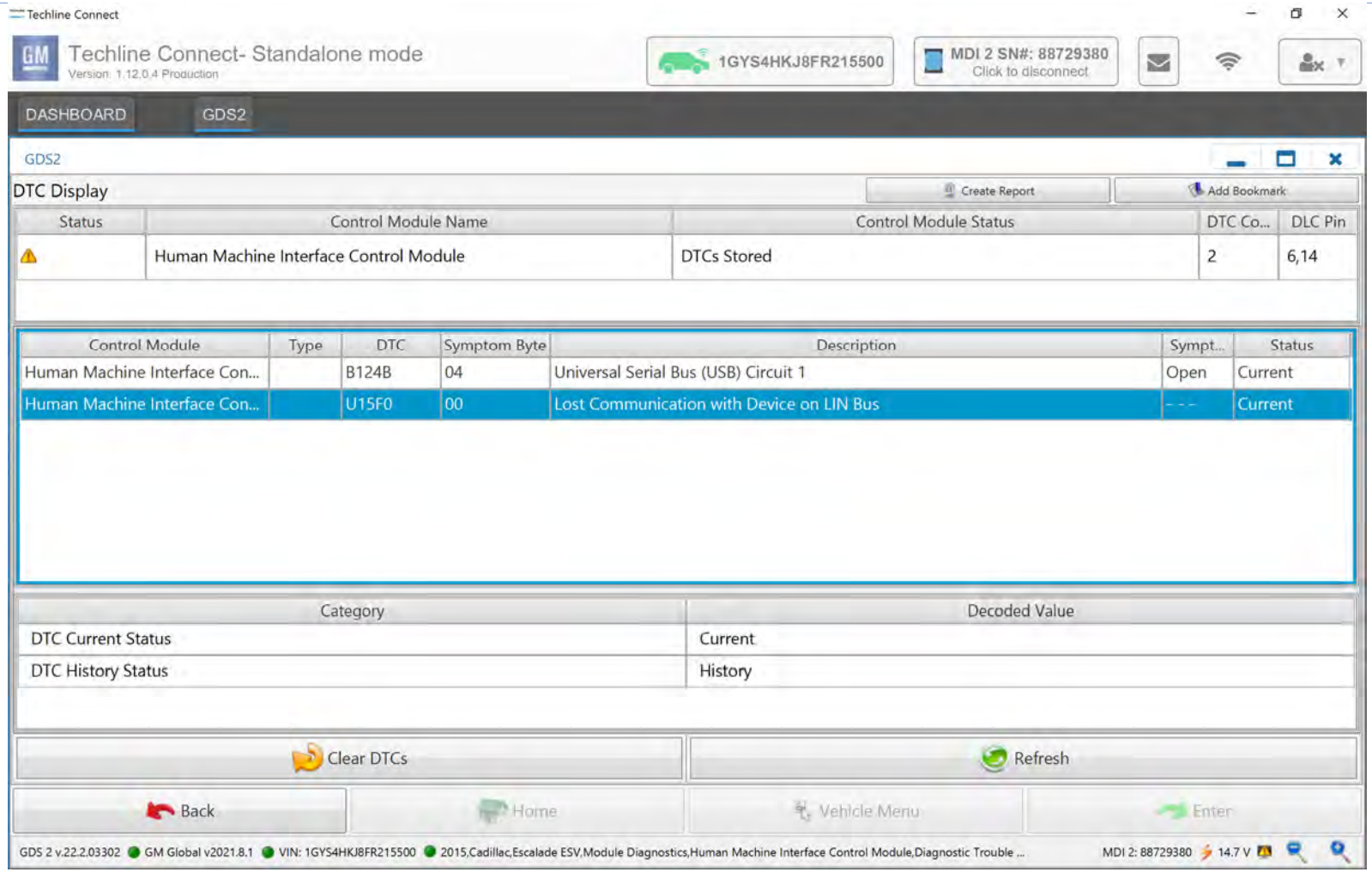
A33 (rpo T65) does not communicate on any bus except MOST



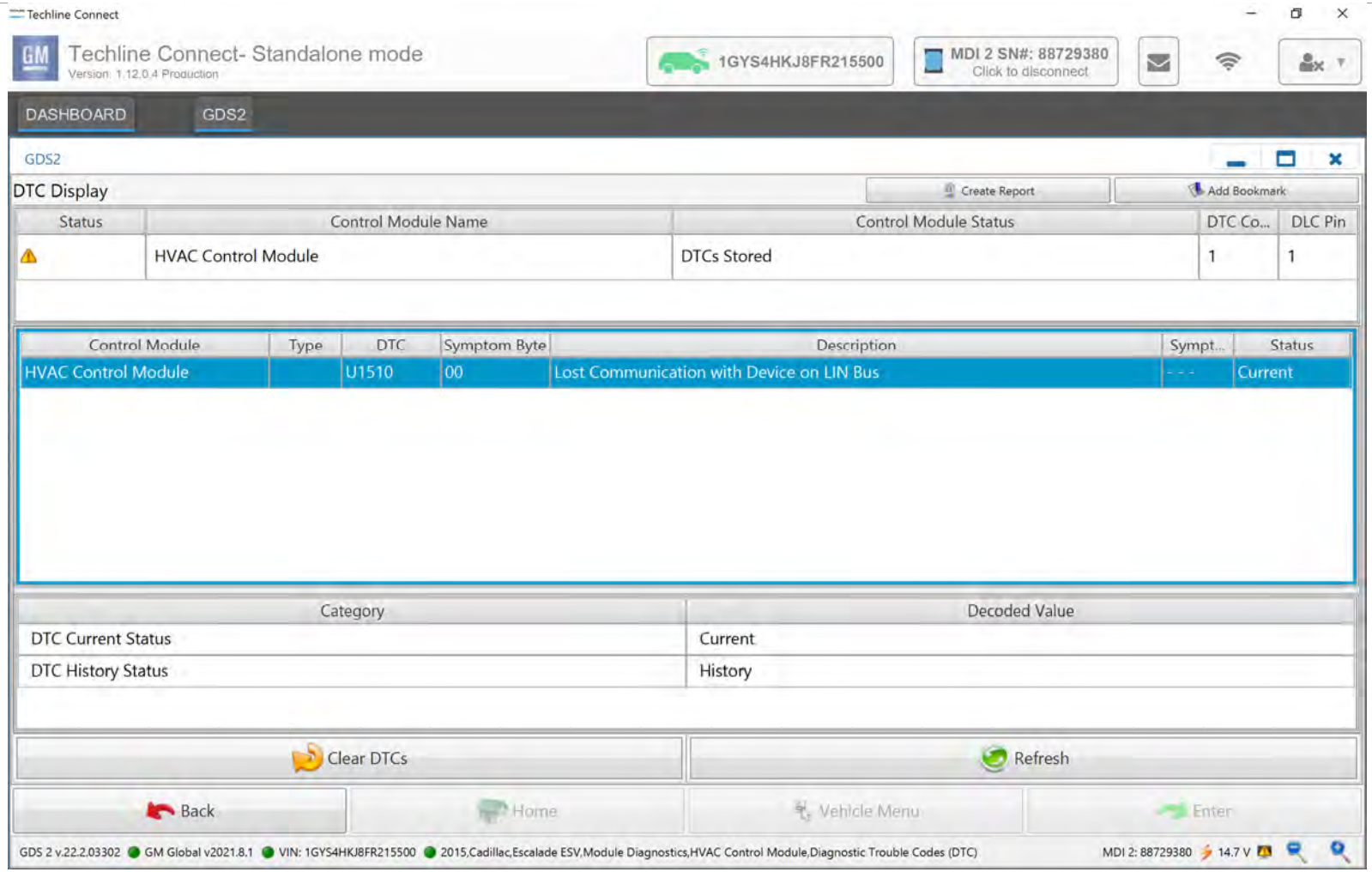
3 of the 4 codes relate to the LIN Bus



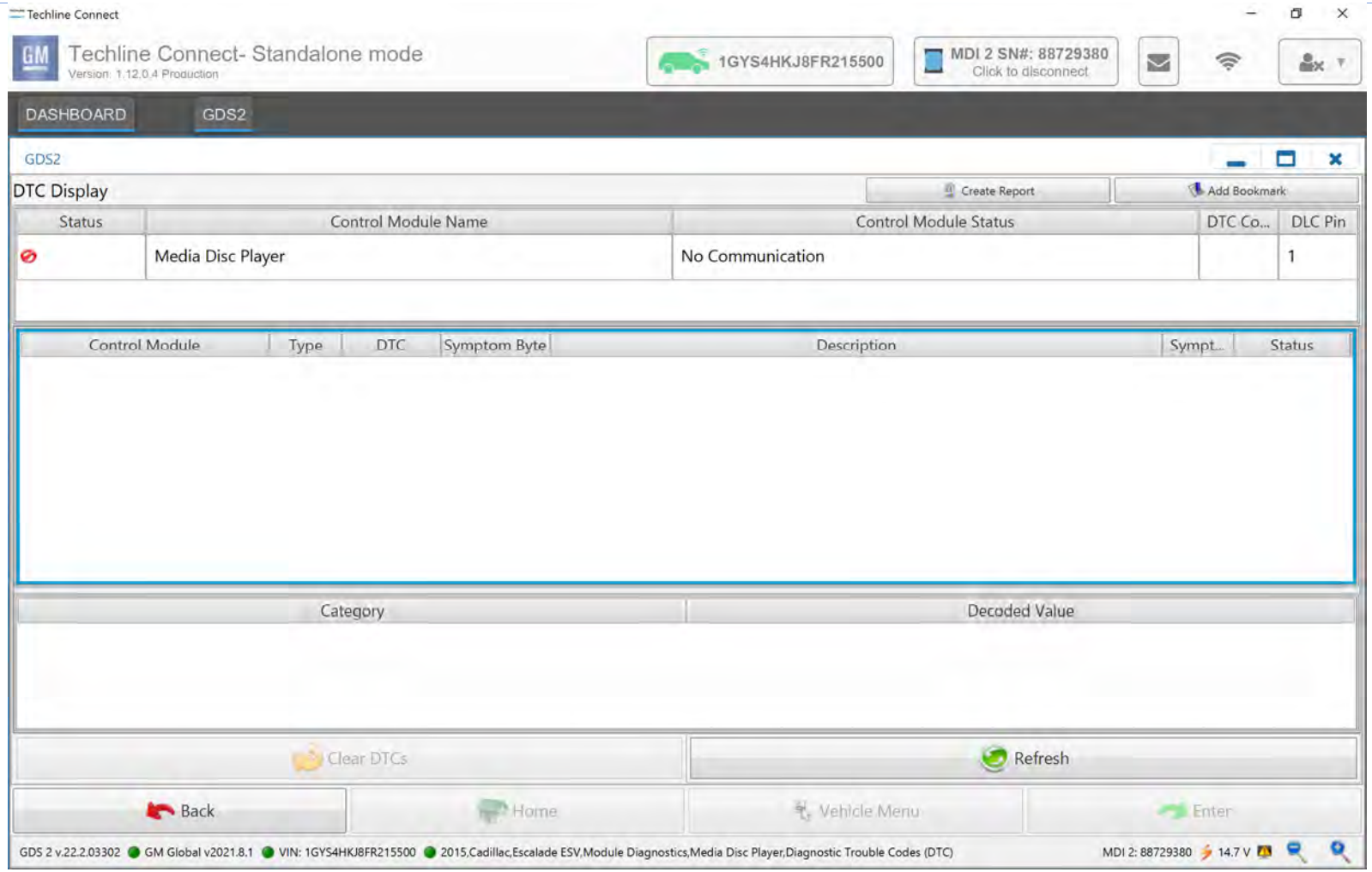
the Radio (A11) sets a U15E1



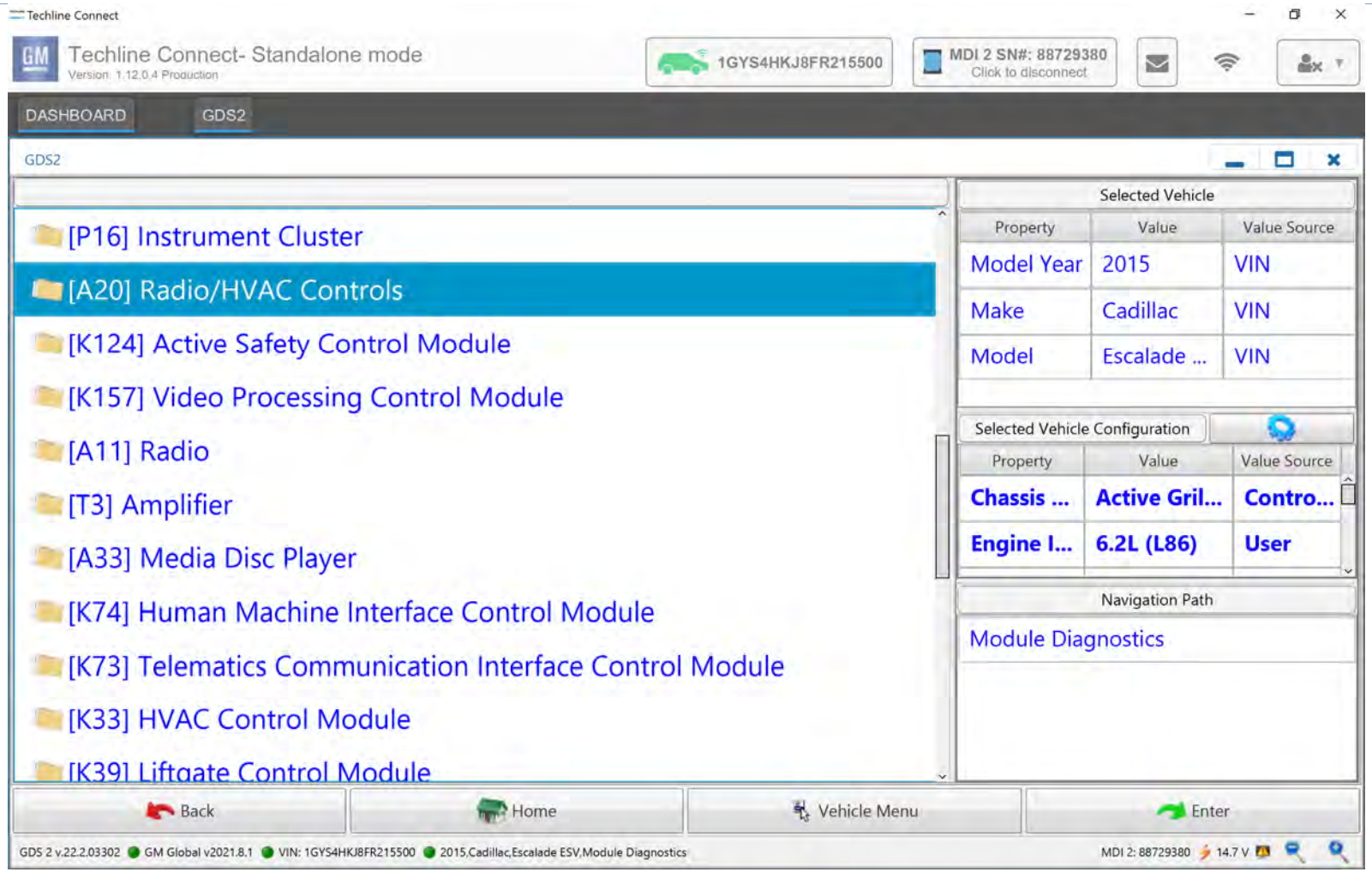
the HMI (K74) sets a U15F0

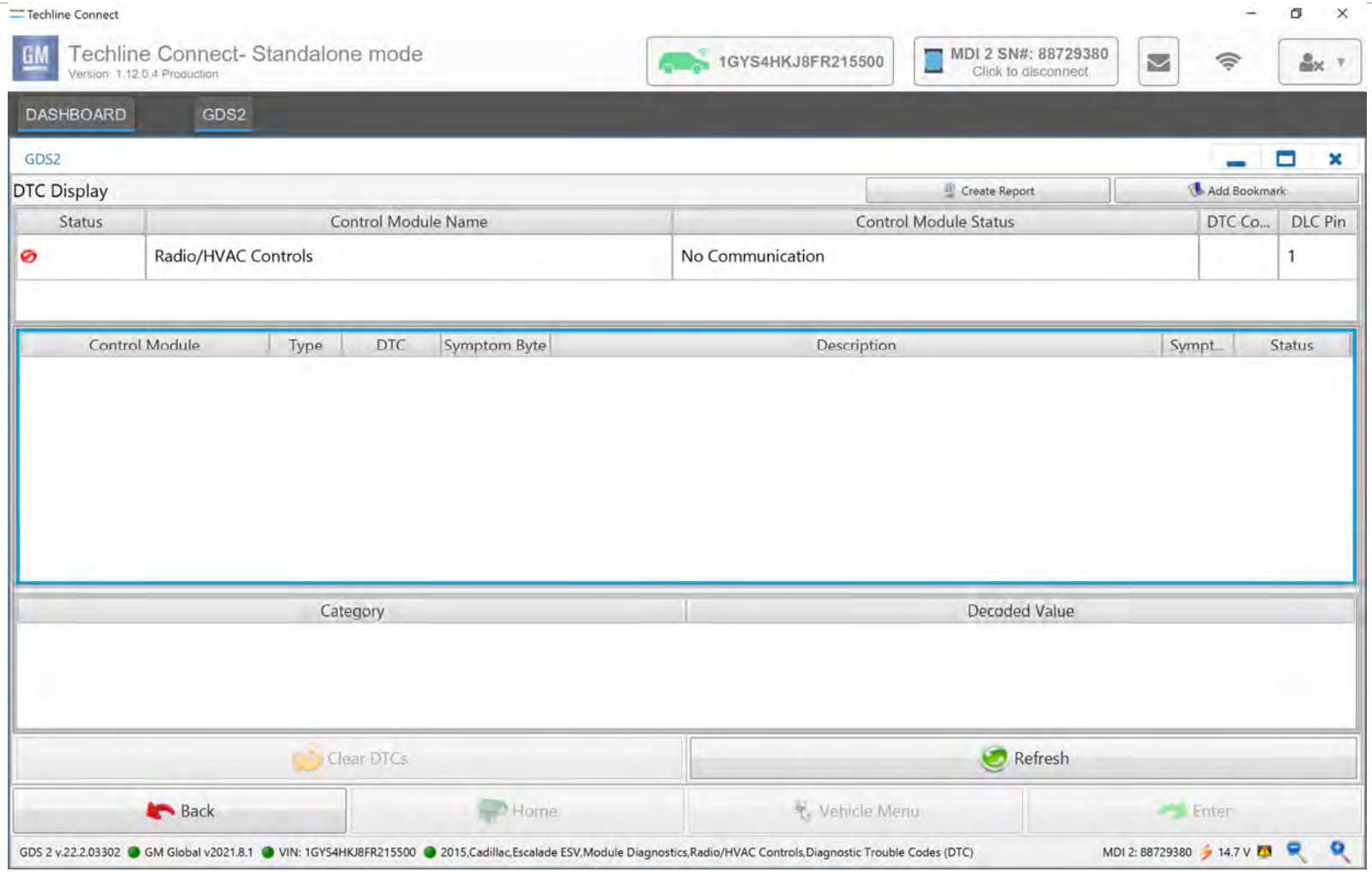


the HVAC (K33) sets a U1510



this is normal


Techline Connect
Techline Connect- Standalone mode
Version: 1.12.0.4 Production
1GYS4HKJ8FR215500
MDI 2 SN#: 88729380
Click to disconnect
DASHBOARD
GDS2
GDS2
[P16] Instrument Cluster
[A20] Radio/HVAC Controls
[K124] Active Safety Control Module
[K157] Video Processing Control Module
[A11] Radio
[T3] Amplifier
[A33] Media Disc Player
[K74] Human Machine Interface Control Module
[K73] Telematics Communication Interface Control Module
[K33] HVAC Control Module
[K39] Liftgate Control Module
Selected Vehicle
Property
Value
Value Source
Model Year
2015
VIN
Make
Cadillac
VIN
Model
Escalade ...
VIN
Selected Vehicle Configuration
Property
Value
Value Source
Chassis ...
Active Gril...
Contro...
Engine I...
6.2L (L86)
User
Navigation Path
Module Diagnostics
Back
Home
Vehicle Menu
Enter
GDS 2 v.22.2.03302
GM Global v2021.8.1
VIN: 1GYS4HKJ8FR215500
2015,Cadillac,Escalade ESV,Module Diagnostics
MDI 2: 88729380
14.7 V

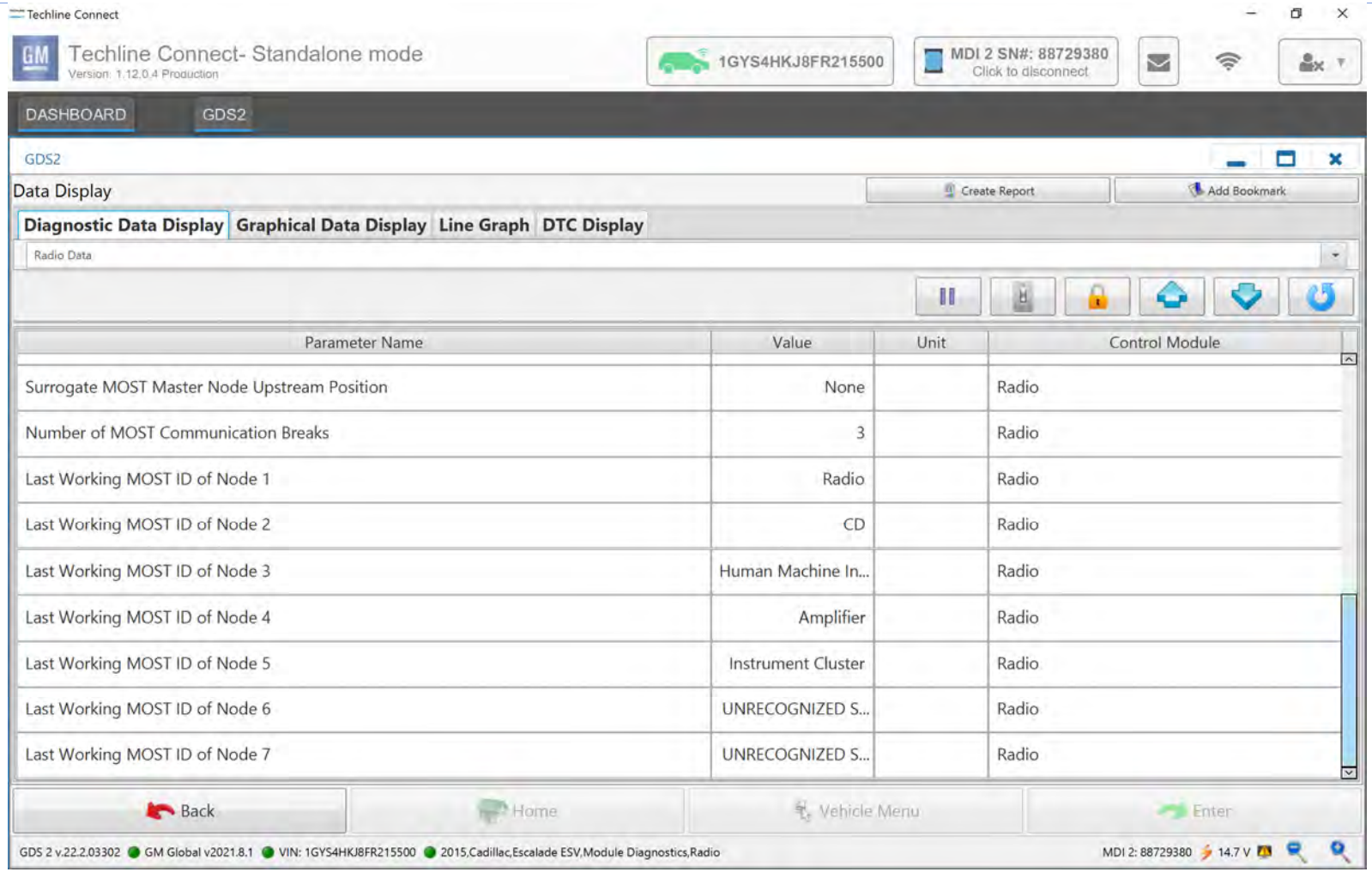


this is not normal

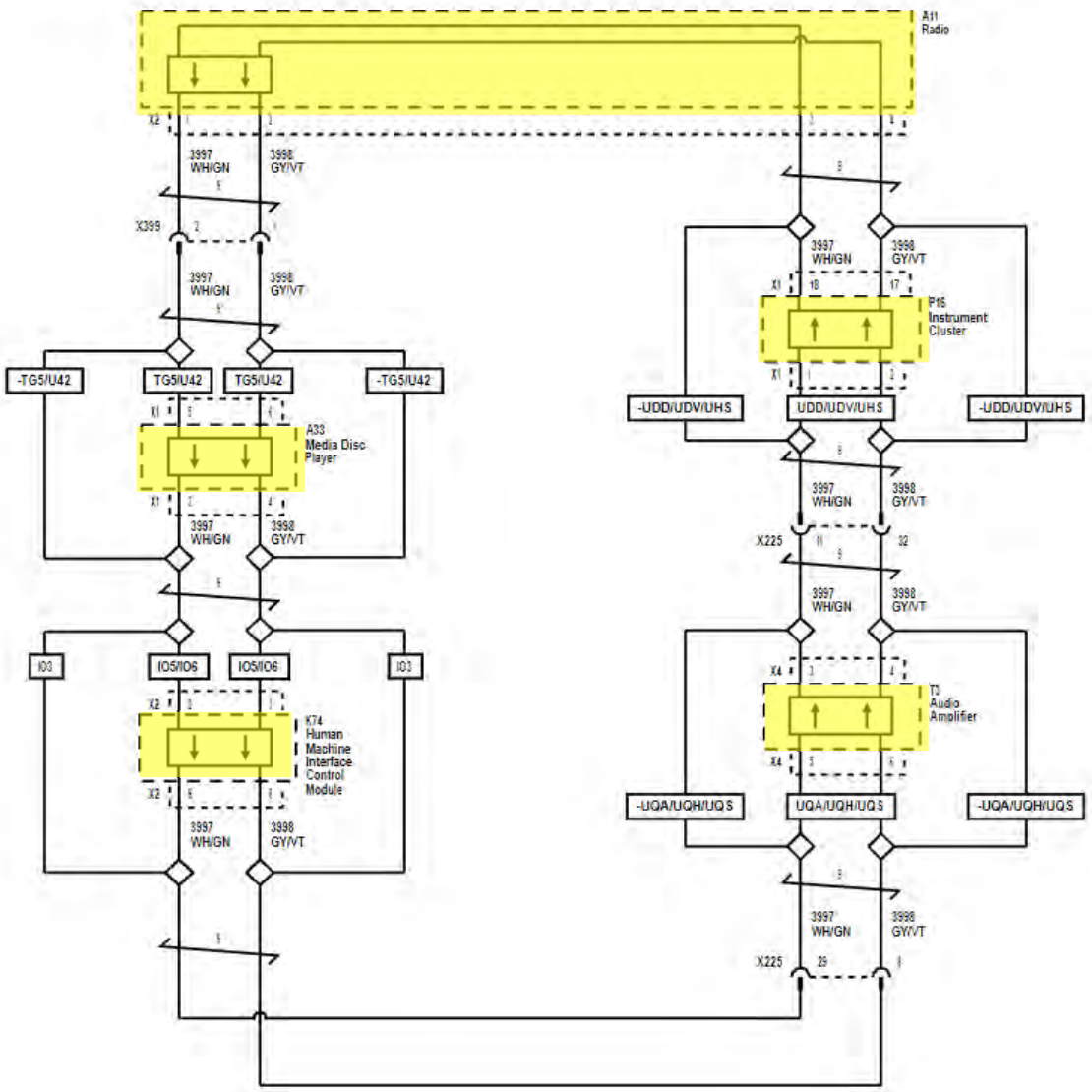
Case Study

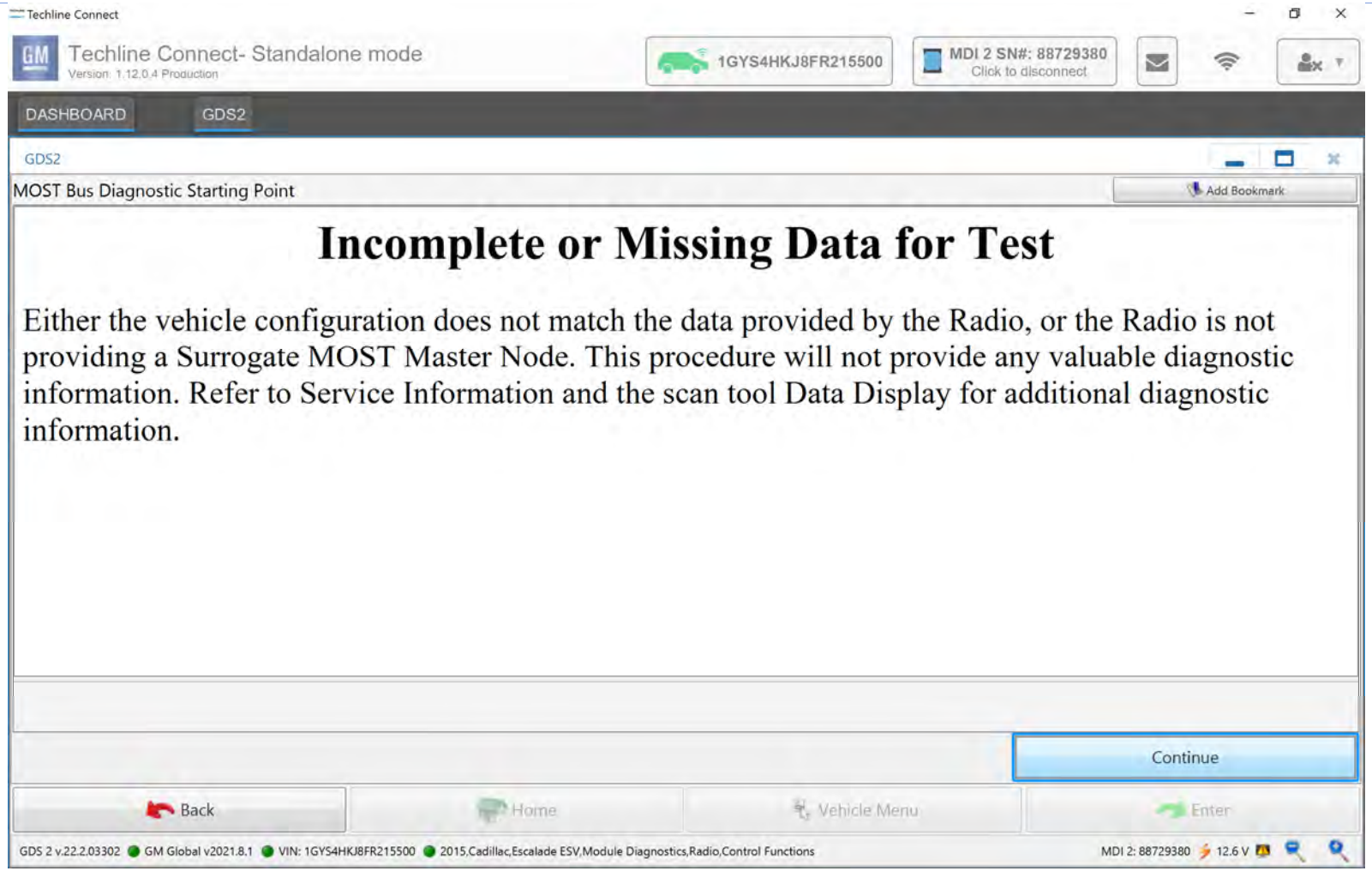
MOST Bus:

- there does not seem to be an issue with the MOST Bus
- there are no MOST Bus related codes



there are 5 modules on the MOST Bus

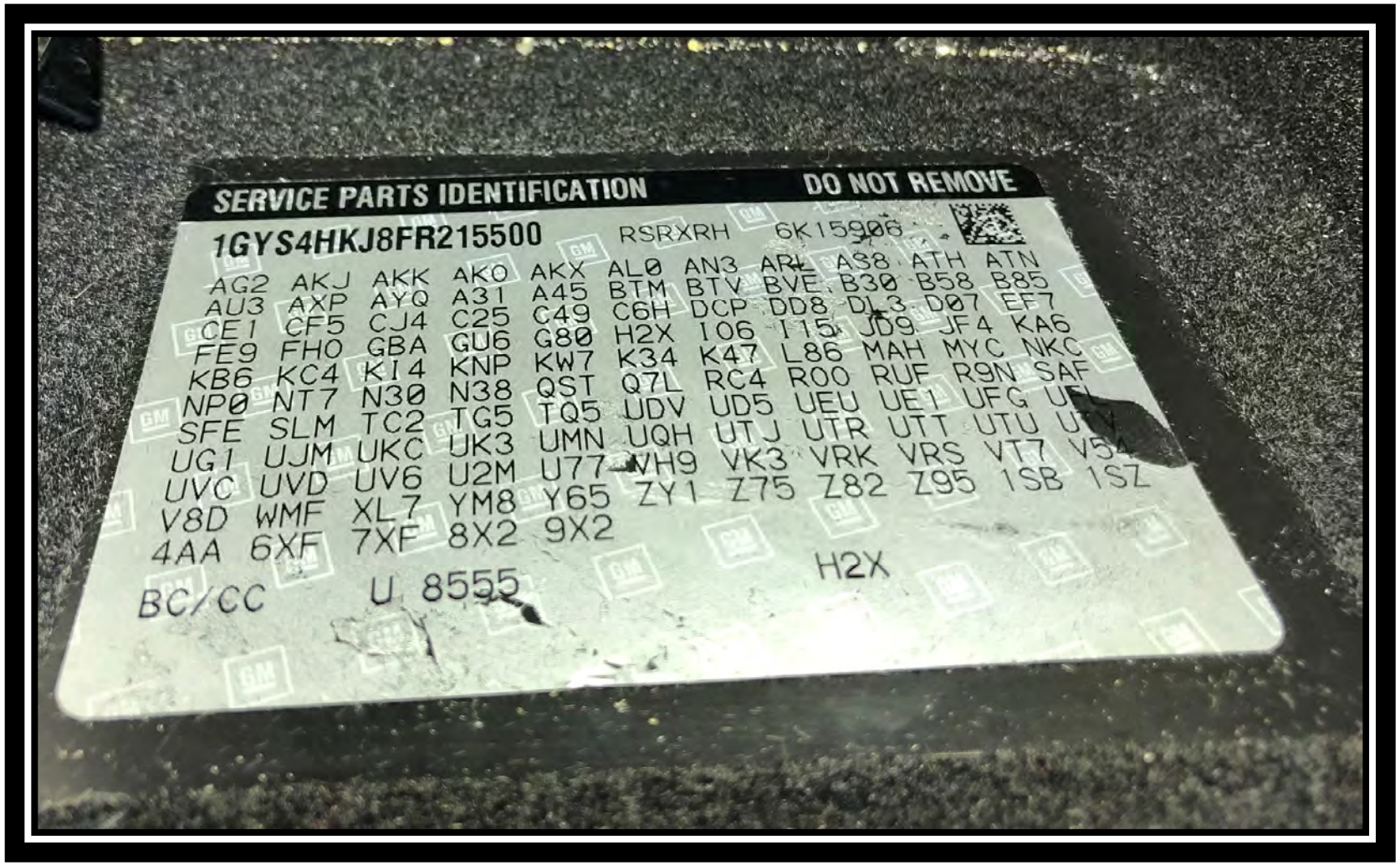

A11
Radio
X2
3997
WH/GN
3998
GY/VT
X399
-TG5/U42
TG5/U42
TG5/U42
-TG5/U42
X1
A33
Media Disc
Player
X1
3997
WH/GN
3998
GY/VT
I03
IO5/IO6
IO5/IO6
I03
X2
K74
Human
Machine
Interface
Control
Module
X2
3997
WH/GN
3998
GY/VT
X1
P16
Instrument
Cluster
X1
-UDD/UDV/UHS
UDD/UDV/UHS
-UDD/UDV/UHS
3997
WH/GN
3998
GY/VT
X225
3997
WH/GN
3998
GY/VT
X4
T3
Audio
Amplifier
X4
-UQA/UQH/UQS
UQA/UQH/UQS
-UQA/UQH/UQS
3997
WH/GN
3998
GY/VT
X225

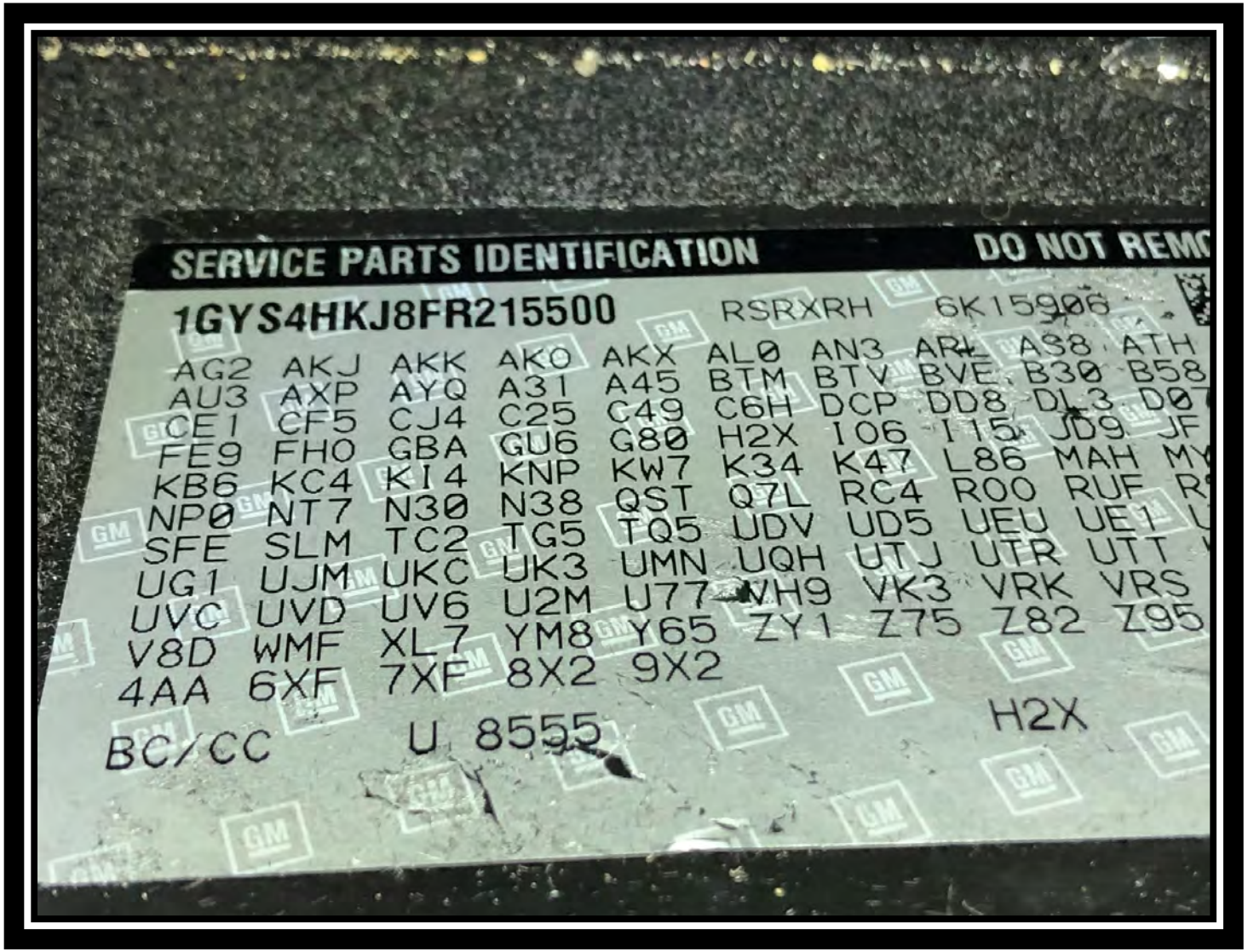

Techline Connect
Techline Connect- Standalone mode
Version: 1.12.0.4 Production
1GYS4HKJ8FR215500
MDI 2 SN#: 88729380
Click to disconnect
DASHBOARD
GDS2
GDS2
MOST Bus Diagnostic Starting Point
Add Bookmark
Incomplete or Missing Data for Test
Either the vehicle configuration does not match the data provided by the Radio, or the Radio is not providing a Surrogate MOST Master Node. This procedure will not provide any valuable diagnostic information. Refer to Service Information and the scan tool Data Display for additional diagnostic information.
Continue
Back
Home
Vehicle Menu
Enter
GDS 2 v.22.2.03302
GM Global v2021.8.1
VIN: 1GYS4HKJ8FR215500
2015,Cadillac,Escalade ESV,Module Diagnostics,Radio,Control Functions
MDI 2: 88729380
12.6 V

Case Study

The Issues:

- no display
- no com to Radio/HVAC Controls A20
- Radio A11 sets a LIN bus code
- HMI K74 sets a LIN bus code
- HVAC K33 sets a LIN bus code

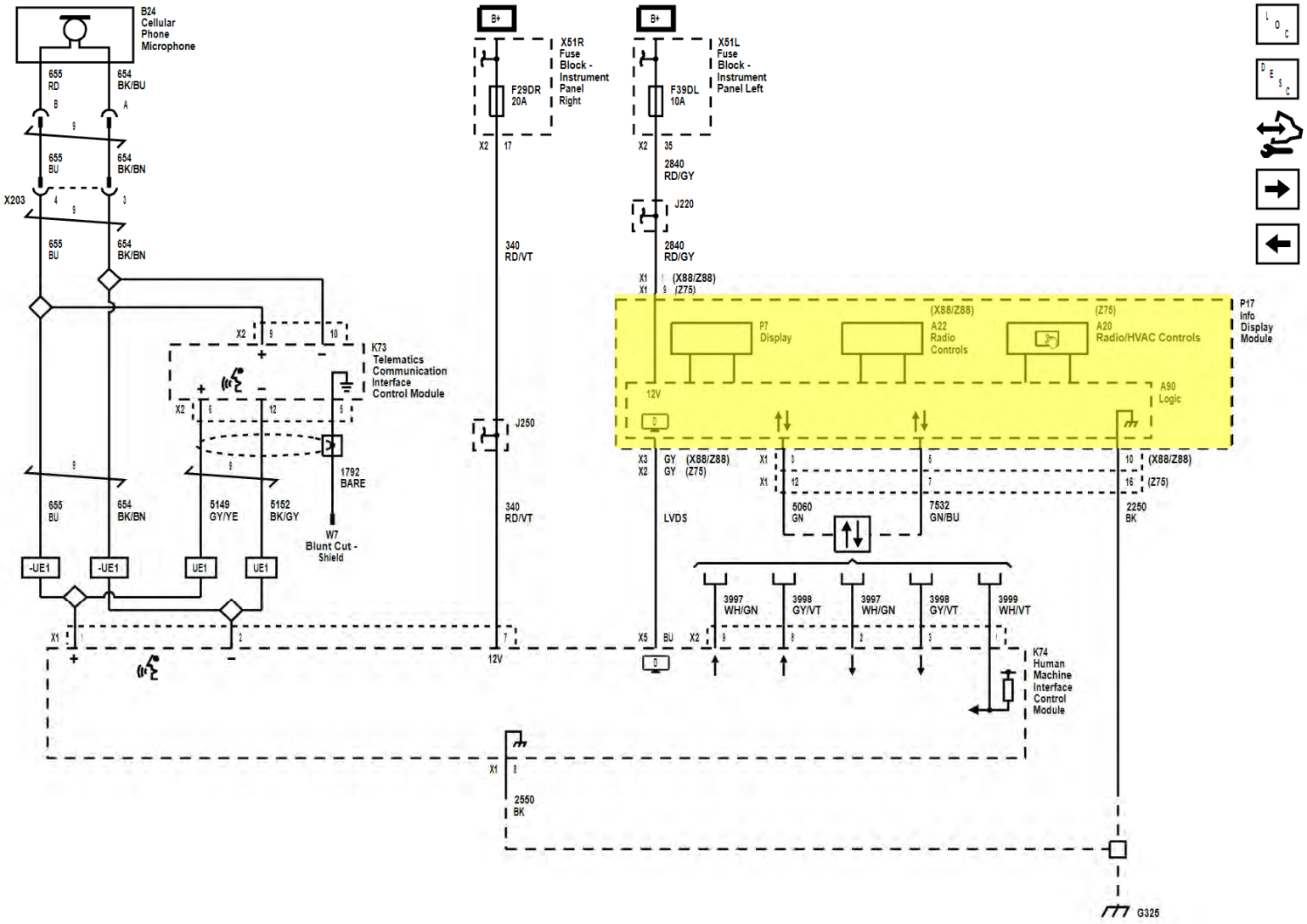

SERVICE PARTS IDENTIFICATION
DO NOT REMOVE
1GYS4HKJ8FR215500
RSRXRH
6K15906
AG2 AKJ AKK AKO AKX AL0 AN3 ARL AS8 ATH ATN
AU3 AXP AYQ A31 A45 BTM BTV BVE B30 B58 B85
CE1 CF5 CJ4 C25 C49 C6H DCP DD8 DL3 D07 EF7
FE9 FH0 GBA GU6 G80 H2X I06 I15 JD9 JF4 KA6
KB6 KC4 KI4 KNP KW7 K34 K47 L86 MAH MYC NKC
NP0 NT7 N30 N38 QST Q7L RC4 R00 RUF R9N SAF
SFE SLM TC2 TG5 TQ5 UDV UD5 UEU UE1 UFG U
UG1 UJM UKC UK3 UMN UQH UTJ UTR UTT UTU U
UVC UVD UV6 U2M U77 VH9 VK3 VRK VRS VT7 V5
V8D WMF XL7 YM8 Y65 ZY1 Z75 Z82 Z95 1SB 1SZ
4AA 6XF 7XF 8X2 9X2
BC/CC
U 8555
H2X

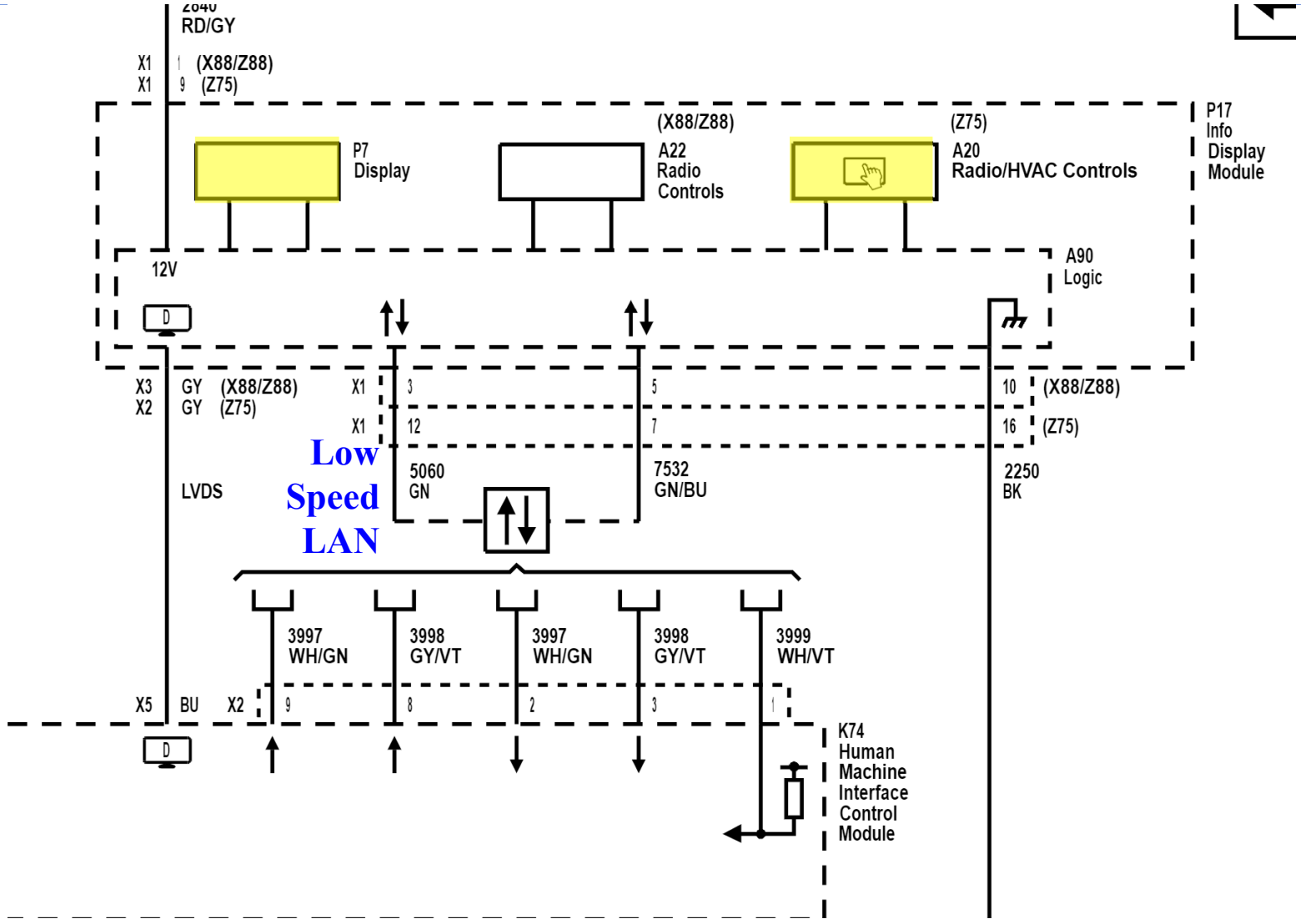

SERVICE PARTS IDENTIFICATION
DO NOT REMO
1GYS4HKJ8FR215500
RSRXRH
6K15906
AG2 AKJ AKK AKO AKX AL0 AN3 AR4 AS8 ATH
AU3 AXP AYQ A31 A45 BTM BTV BVE B30 B58
CE1 CF5 CJ4 C25 C49 C6H DCP DD8 DL3 D0
FE9 FH0 GBA GU6 G80 H2X I06 I15 JD9 JF
KB6 KC4 KI4 KNP KW7 K34 K47 L86 MAH MY
NP0 NT7 N30 N38 QST Q7L RC4 R00 RUF R
SFE SLM TC2 TG5 TQ5 UDV UD5 UEU UE1
UG1 UJM UKC UK3 UMN UQH UTJ UTR UTT
UVC UVD UV6 U2M U77 VH9 VK3 VRK VRS
V8D WMF XL7 YM8 Y65 ZY1 Z75 Z82 Z95
4AA 6XF 7XF 8X2 9X2
BC/CC
U 8555
H2X

Case Study

Critical RPO's:

- IO6
- TG5
- Z75


B24
Cellular
Phone
Microphone
655
RD
654
BK/BU
655
BU
654
BK/BN
X203
655
BU
654
BK/BN
K73
Telematics
Communication
Interface
Control Module
1792
BARE
W7
Blunt Cut -
Shield
655
BU
654
BK/BN
5149
GY/YE
5152
BK/GY
-UE1
-UE1
UE1
UE1
B+
X51R
Fuse
Block -
Instrument
Panel
Right
F29DR
20A
340
RD/VT
J250
340
RD/VT
12V
B+
X51L
Fuse
Block -
Instrument
Panel Left
F39DL
10A
2840
RD/GY
J220
2840
RD/GY
(X88/Z88)
(Z75)
P17
Info
Display
Module
P7
Display
A22
Radio
Controls
A20
Radio/HVAC Controls
A90
Logic
12V
GY
GY
(X88/Z88)
(Z75)
LVDS
5060
GN
7532
GN/BU
2250
BK
3997
WH/GN
3998
GY/VT
3997
WH/GN
3998
GY/VT
3999
WH/VT
BU
K74
Human
Machine
Interface
Control
Module
2550
BK
G325


RD/GY
X1 1 (X88/Z88)
X1 9 (Z75)
P7
Display
(X88/Z88)
A22
Radio
Controls
(Z75)
A20
Radio/HVAC Controls
P17
Info
Display
Module
12V
A90
Logic
X3 GY (X88/Z88)
X2 GY (Z75)
LVDS
X1 3
X1 12
5060
GN
7532
GN/BU
10 (X88/Z88)
16 (Z75)
2250
BK
Low
Speed
LAN
3997
WH/GN
3998
GY/VT
3997
WH/GN
3998
GY/VT
3999
WH/VT
X5 BU X2
9
8
2
3
1
K74
Human
Machine
Interface
Control
Module

Case Study

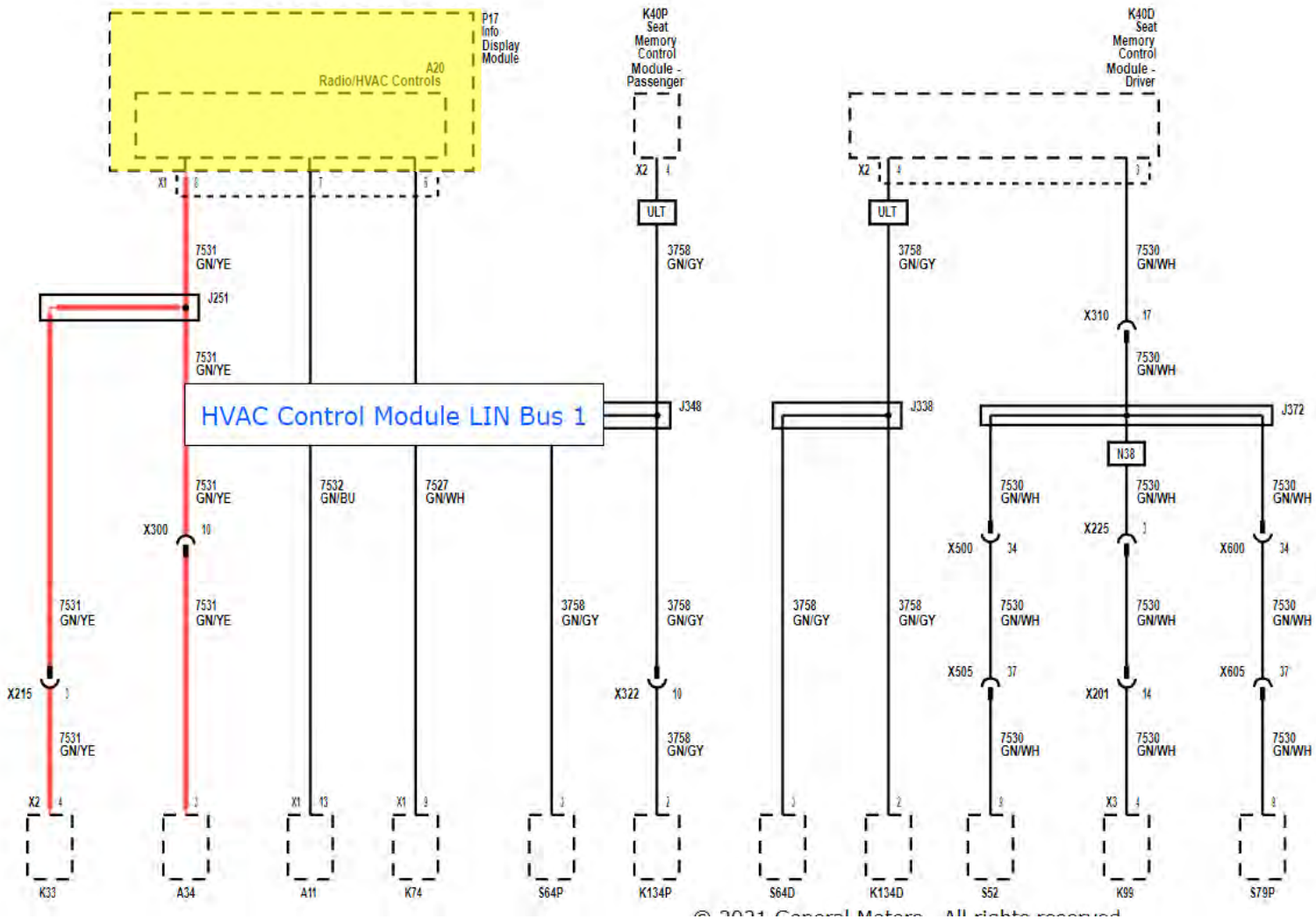
Info Display Module P17:

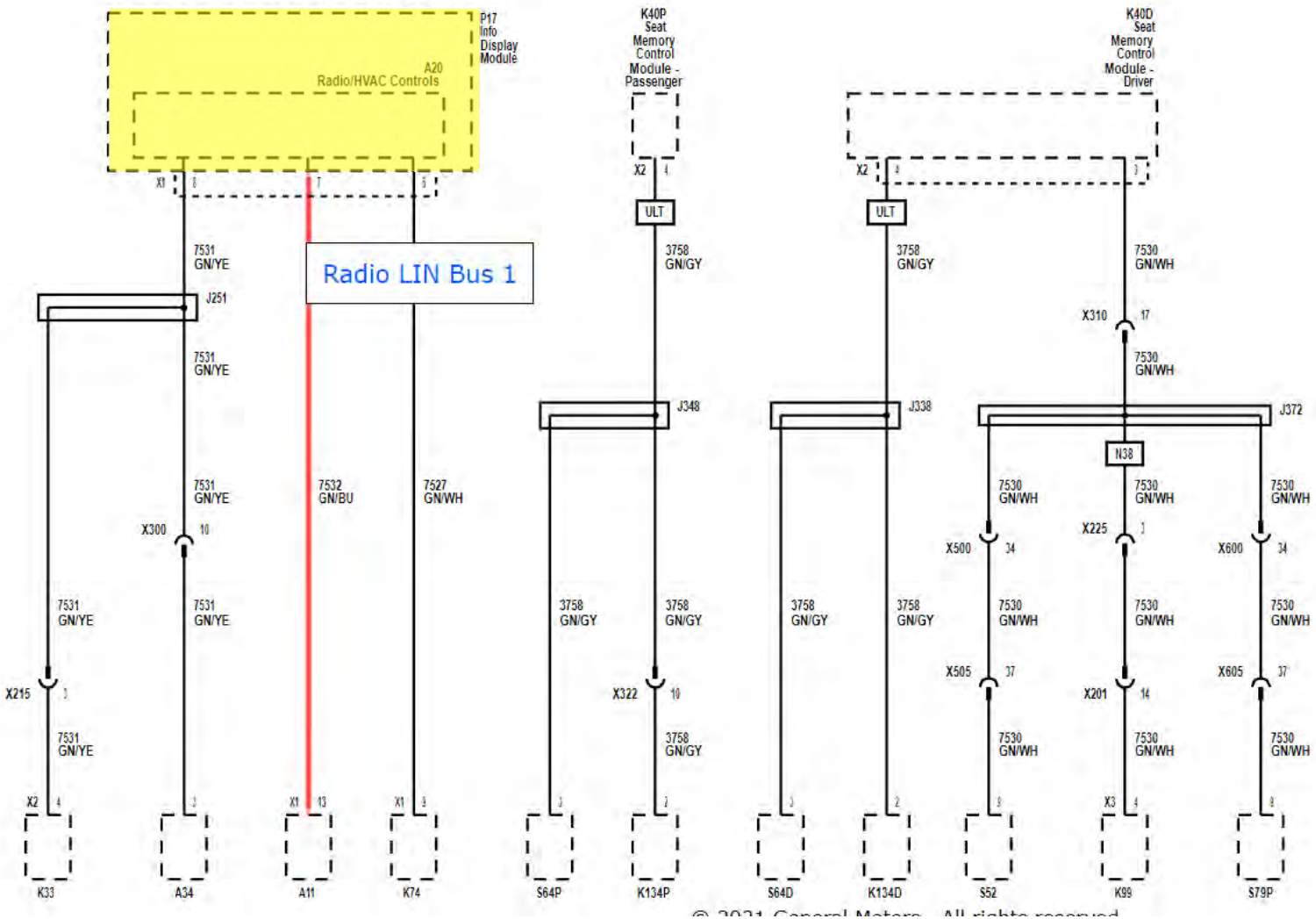
- P17 contains the Display P7
- P17 contains the Radio/HVAC Controls A20
- there is no communication to A20
- Low Speed LAN is circuit 5060 found at X1, pin #12

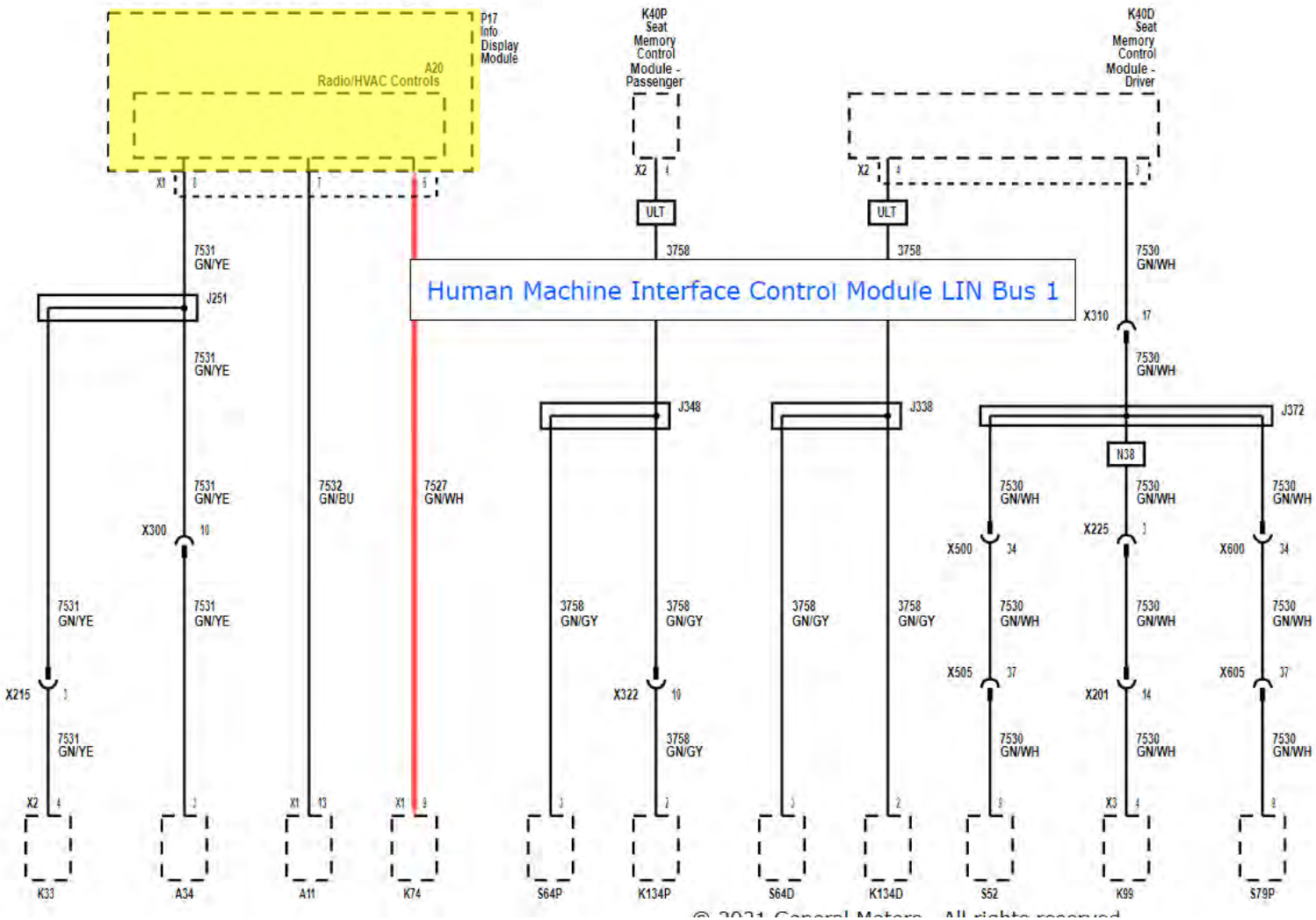
Case Study

Info Display Module P17:

- P17 is a **slave module** to 3 separate LIN Buses







P17 Info Display Module X1 (Z75)

Pin	Size	Color	Circuit	Function
1 - 5	—	—	—	Not Occupied
6	0.5	L-GN/WH	7527	Local Interconnect Network Serial Data Bus 5
7	0.5	L-GN/D-BU	7532	Local Interconnect Network Serial Data Bus 10
8	0.35	L-GN/YE	7531	Local Interconnect Network Serial Data Bus 9
9	0.5	RD/GY	2840	Battery Positive Voltage
10 - 11	—	—	—	Not Occupied
12	0.5	L-GN	5060	Low Speed GMLAN Serial Data
13 - 15	—	—	—	Not Occupied
16	0.35	BK	2550	Ground

Case Study

Info Display Module P17 Testing:

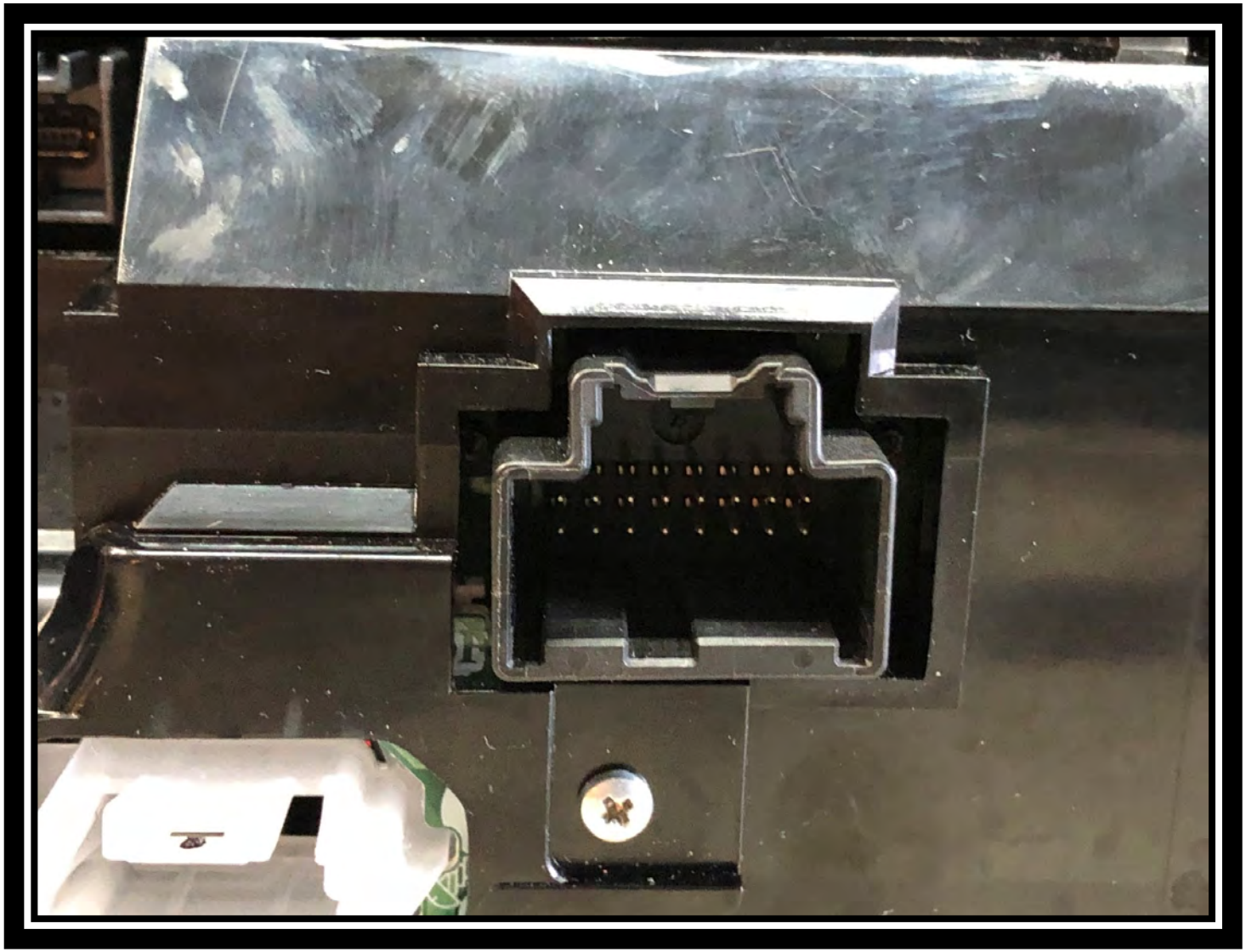
- check feed and ground
- check Low Speed LAN
- check all 3 LIN Buses

P17 Info Display Module X1 (Z75)

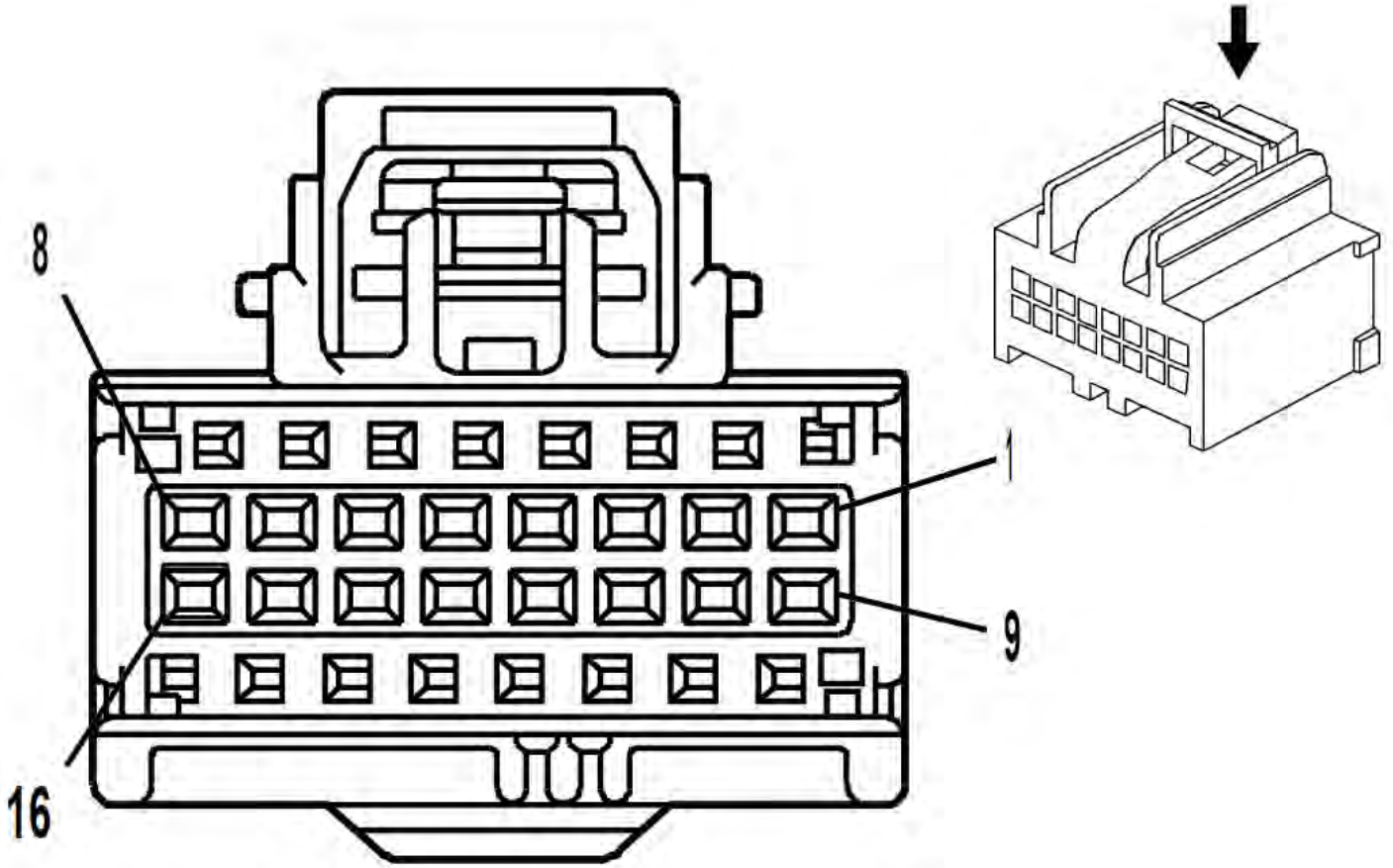
Pin	Size	Color	Circuit	Function
1 - 5	—	—	—	Not Occupied
6	0.5	L-GN/WH	7527	Local Interconnect Network Serial Data Bus 5
7	0.5	L-GN/D-BU	7532	Local Interconnect Network Serial Data Bus 10
8	0.35	L-GN/YE	7531	Local Interconnect Network Serial Data Bus 9
9	0.5	RD/GY	2840	Battery Positive Voltage
10 - 11	—	—	—	Not Occupied
12	0.5	L-GN	5060	Low Speed GMLAN Serial Data
13 - 15	—	—	—	Not Occupied
16	0.35	BK	2550	Ground

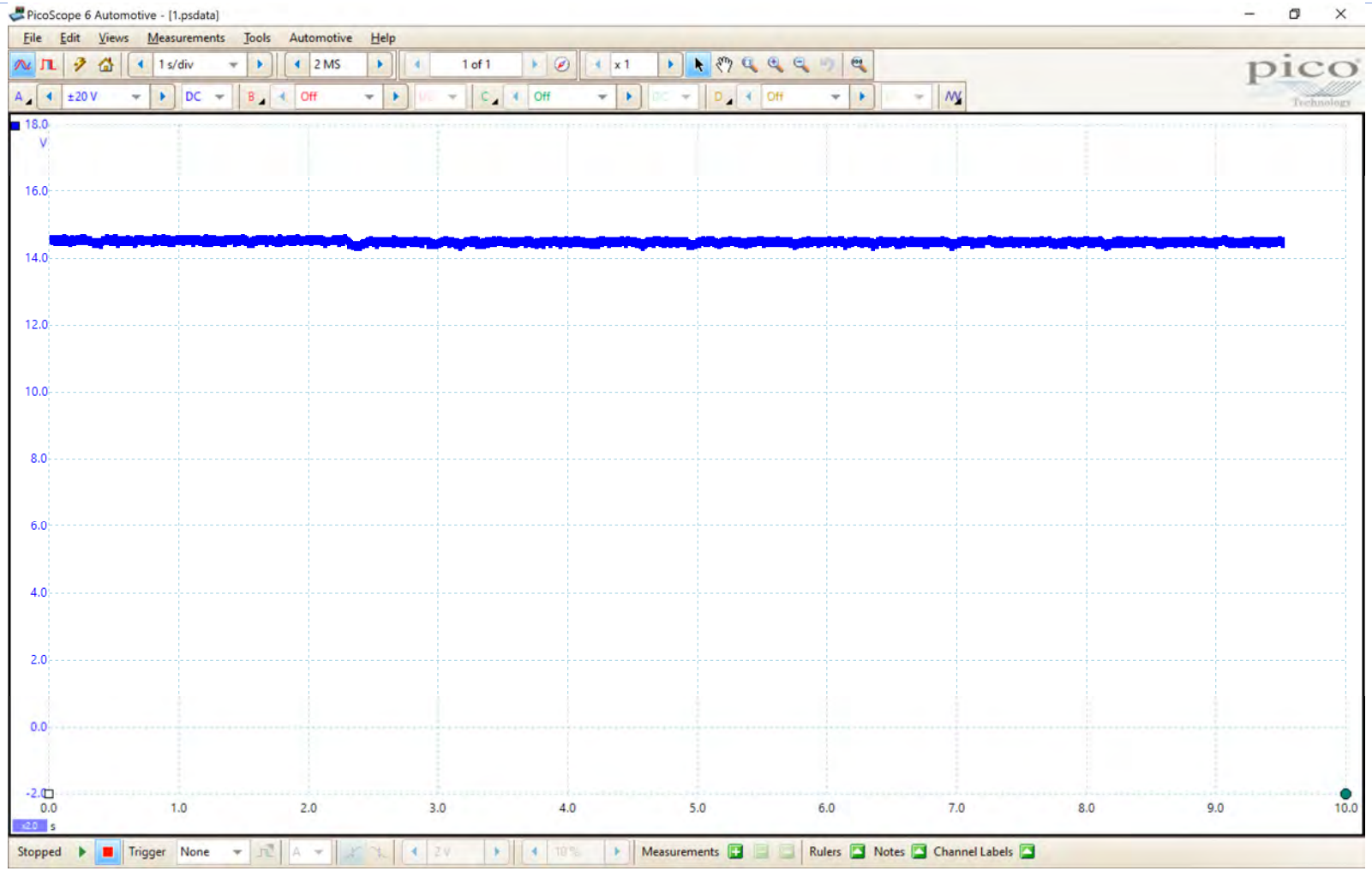

LIFETIME


ENGINE START/STOP

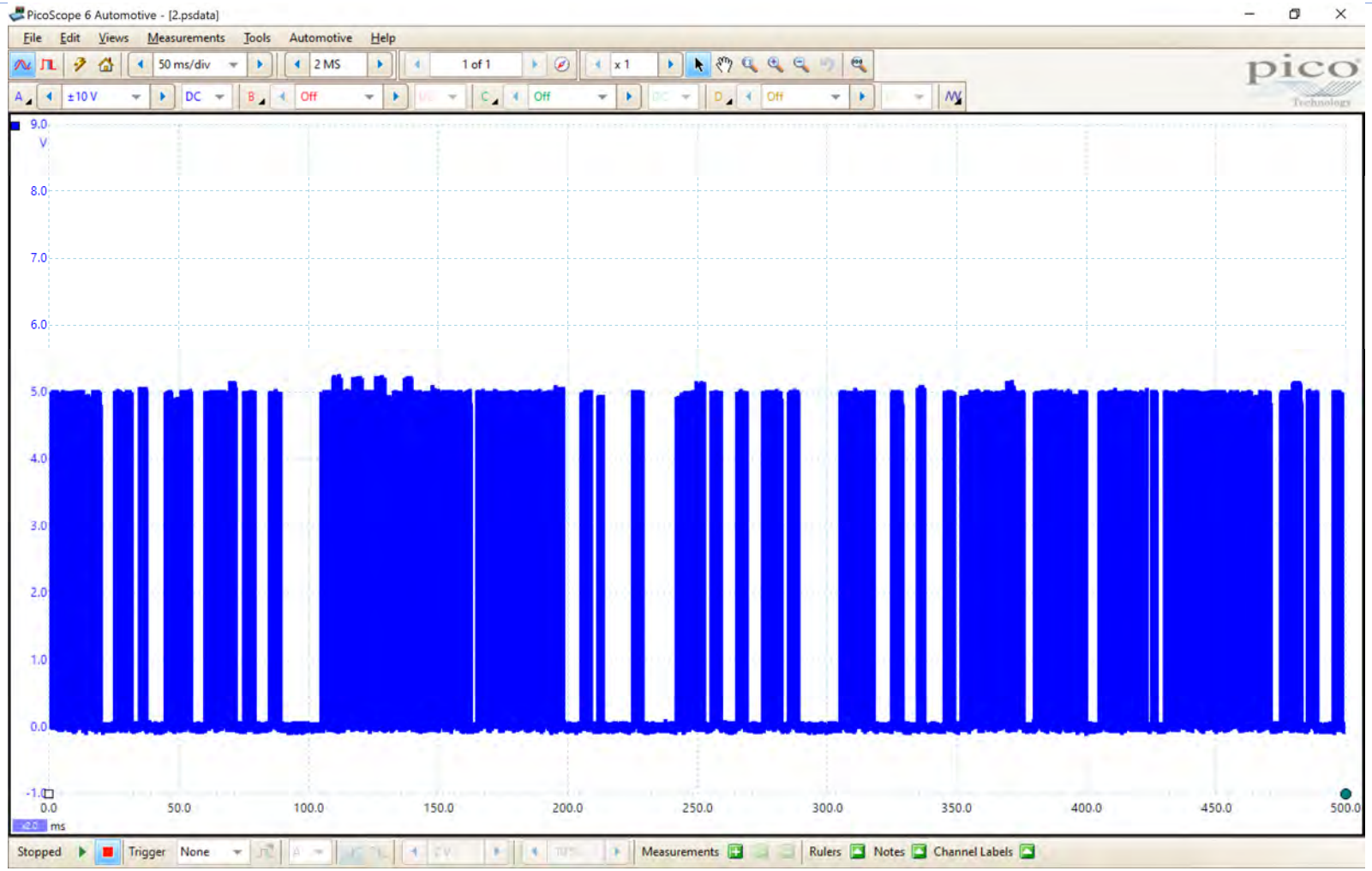


P17 Info Display Module X1 (Z75)

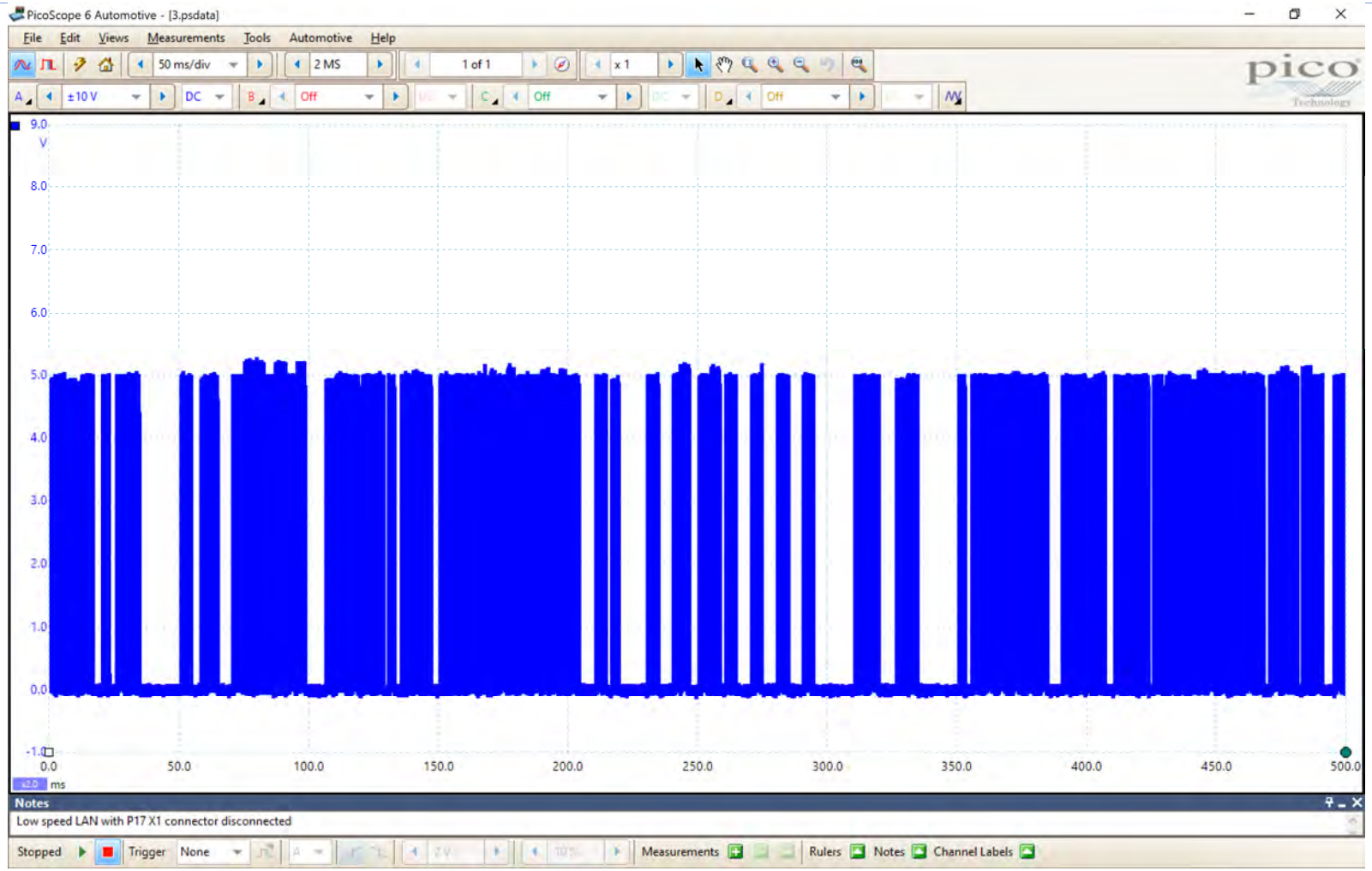




blue channel across battery feed and ground



Low Speed LAN

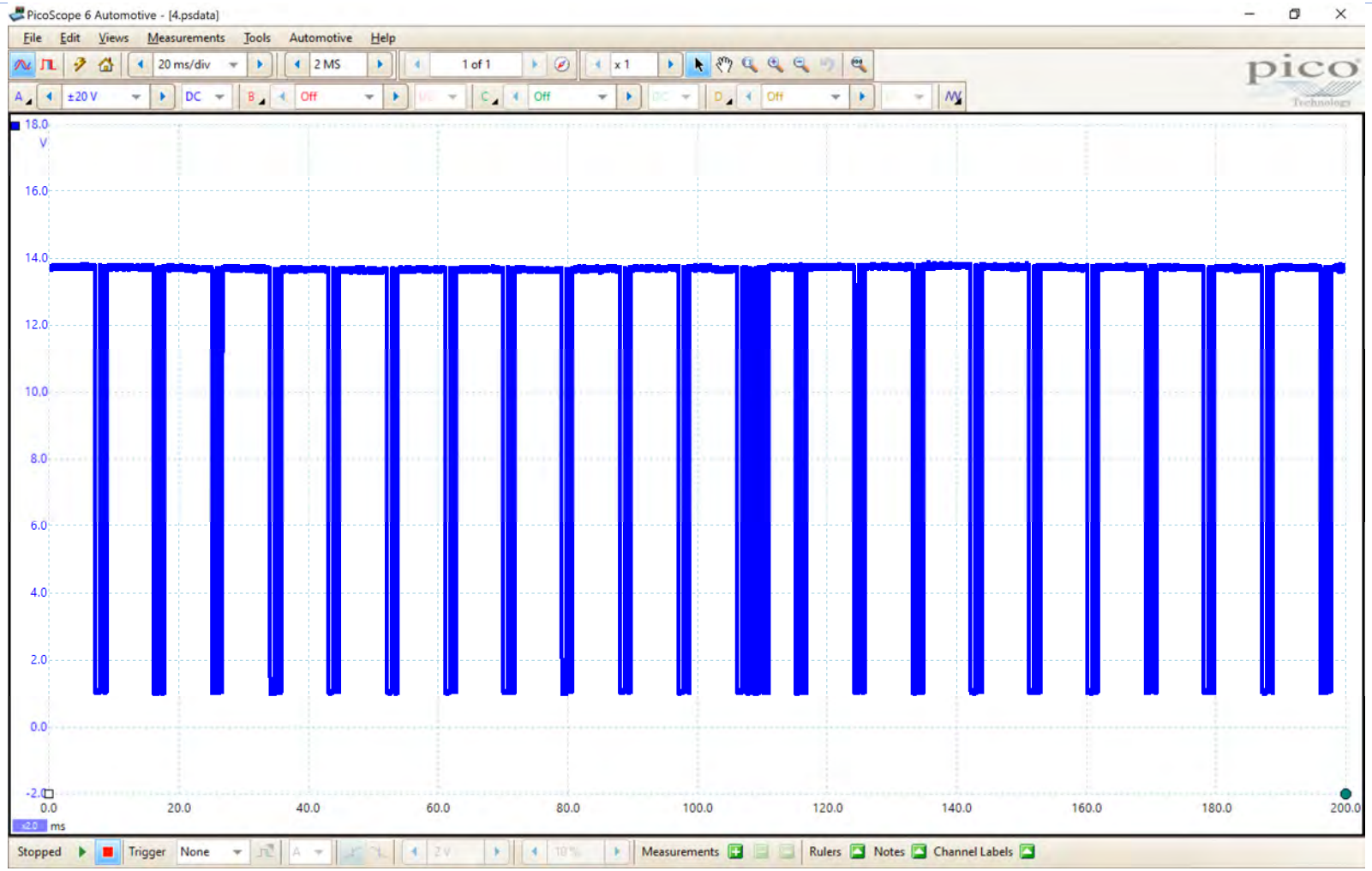


Low Speed LAN with P17 X1 connector disconnected

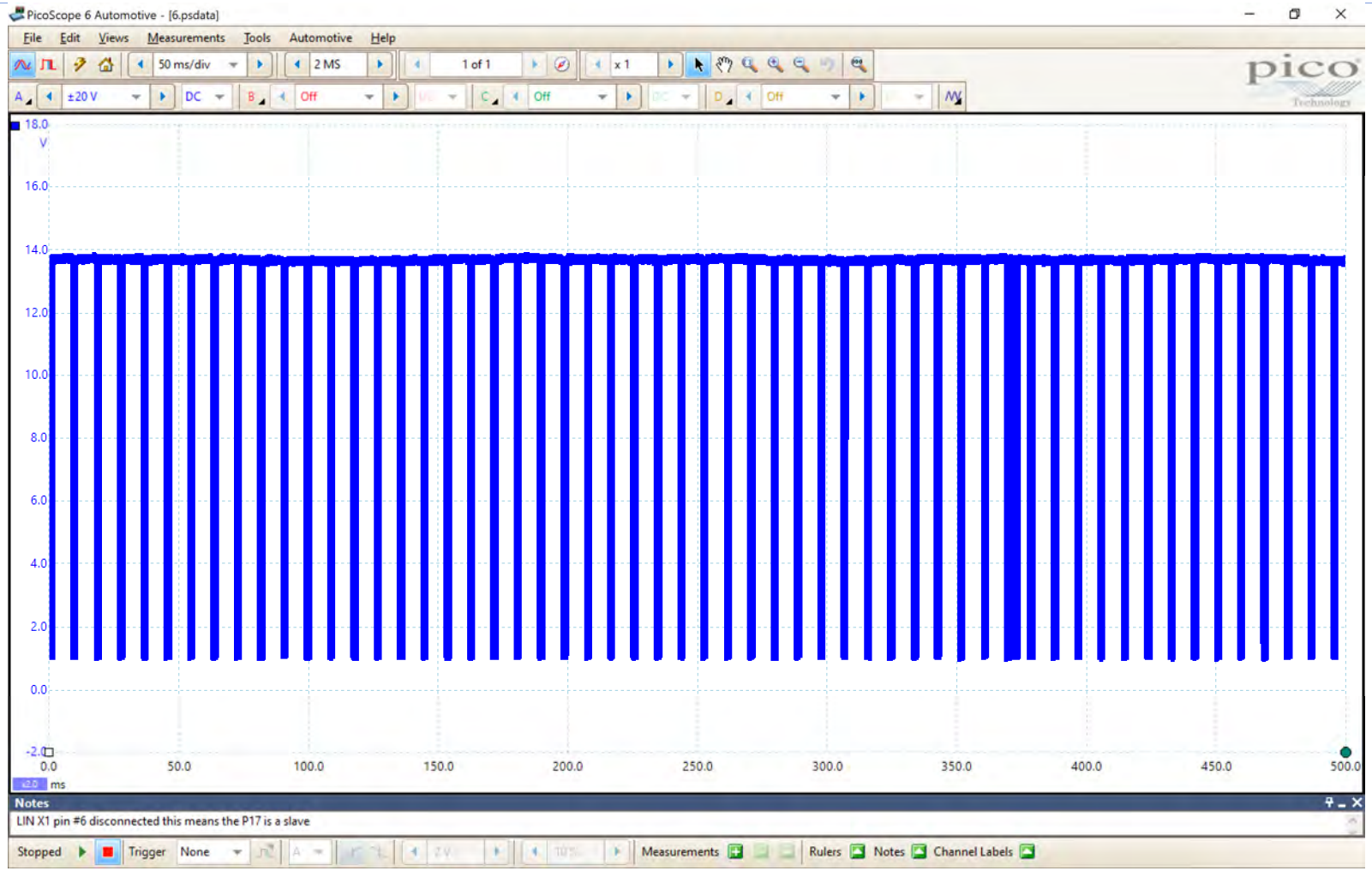
Case Study

Info Display Module P17 Testing:

- P17 has good feed and ground
- P17 has a good Low Speed LAN



X1 pin #6 LIN Bus from HMI

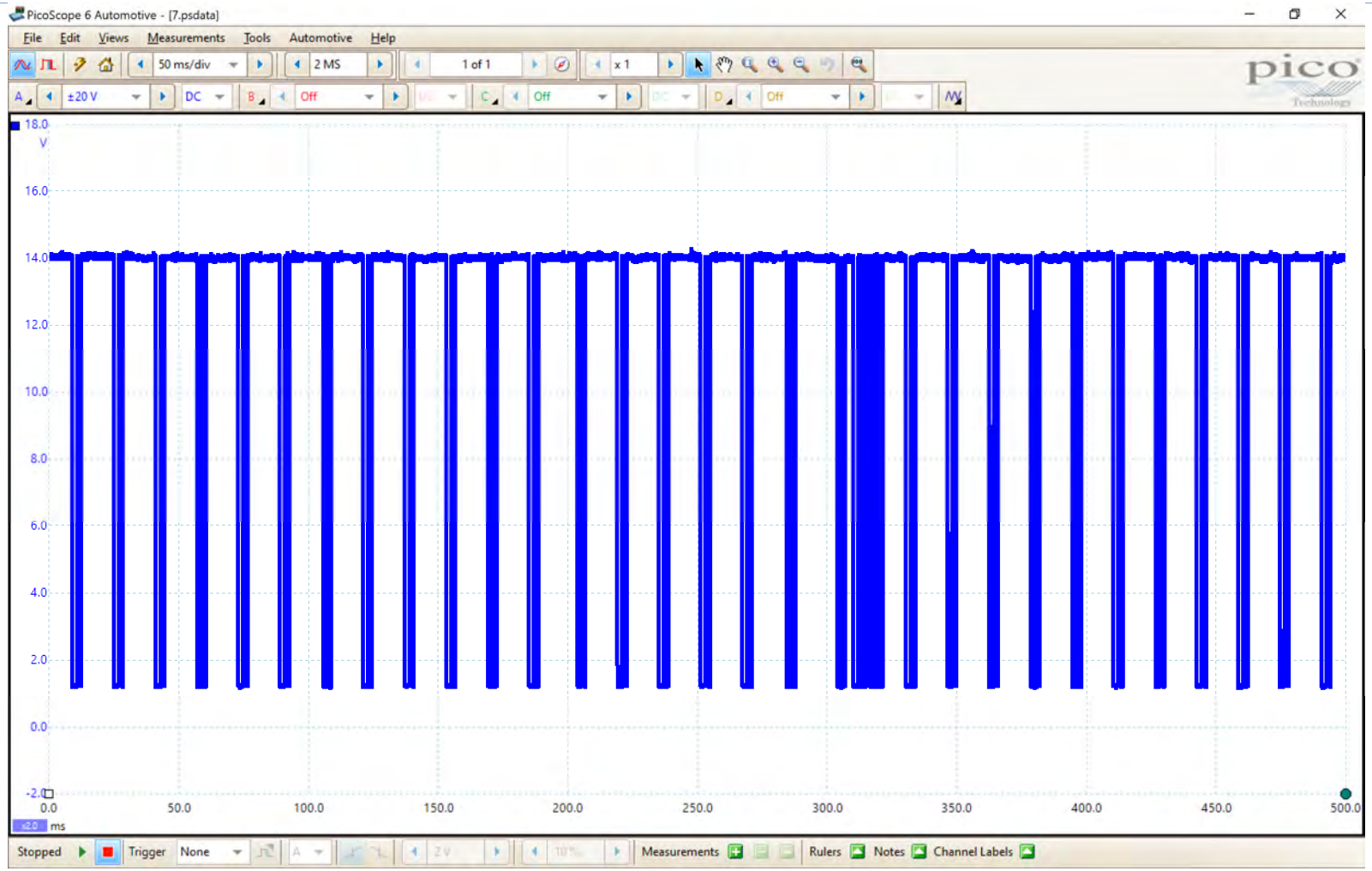


X1 pin #6 LIN Bus to HMI: X1 connector disconnected

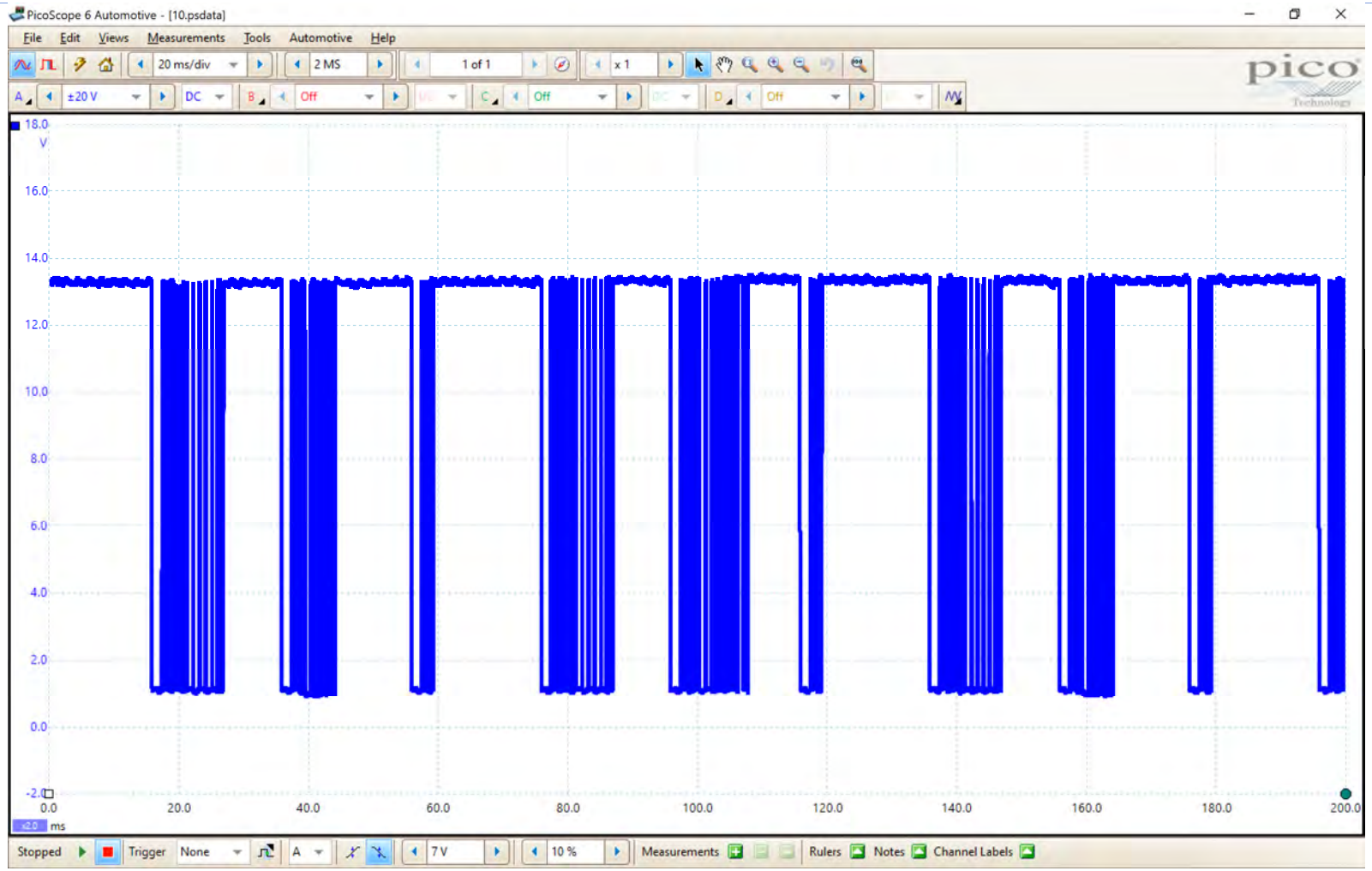
Case Study

Info Display Module P17 Testing:

- X1 pin #6 LIN Bus from HMI is good
- P17 is a slave on this LIN Bus
- P17 is also a slave module on the other 2 LIN Buses



X1 pin #7 LIN Bus from Radio



X1 pin #8 LIN Bus from HVAC

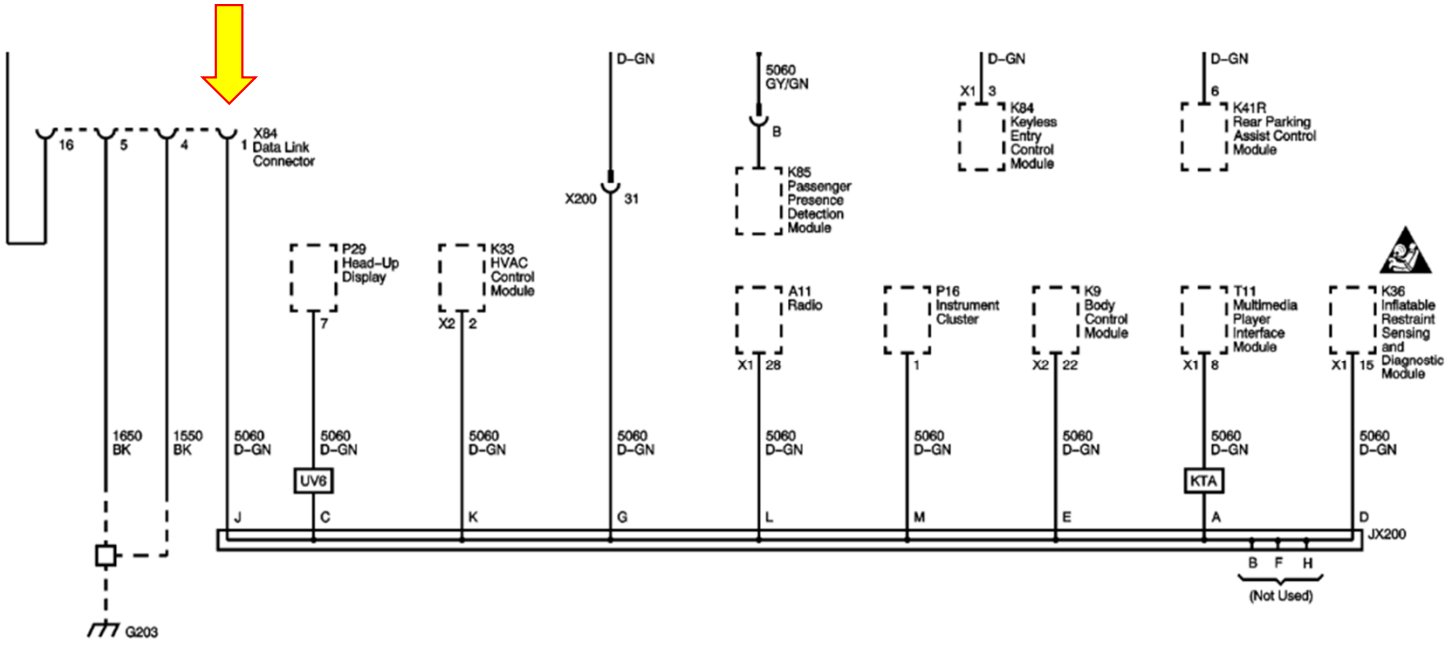
Case Study

Diagnosis:

- **the Info Display Module P17 has failed**
- **it has good feed and ground, but can't communicate on Low Speed LAN or any of its 3 LIN Buses**

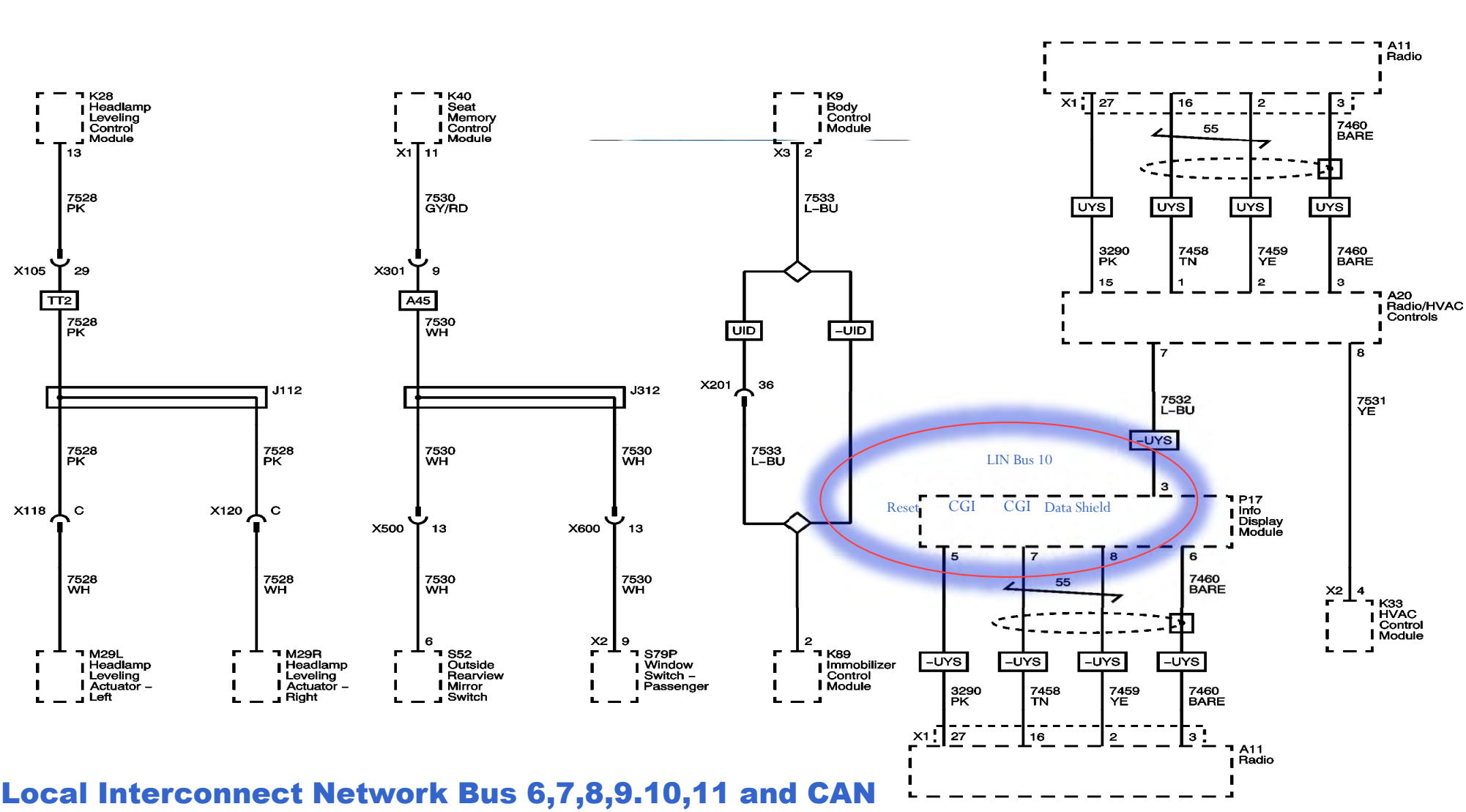
Low Speed GMLAN

Radio and HVAC Module



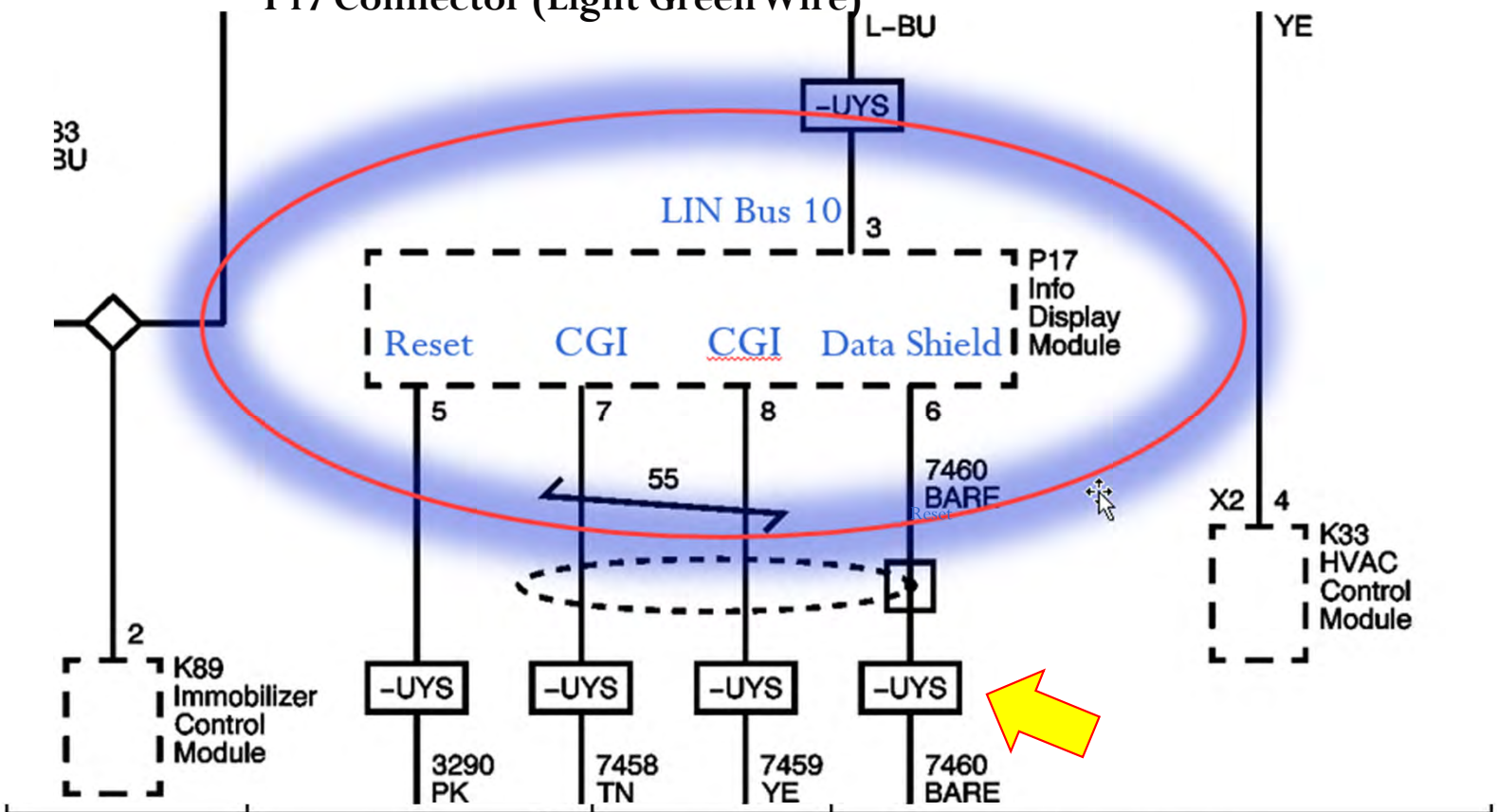
The radio and the HVAC Module can be communicated on low speed GMLAN

Information Display Module



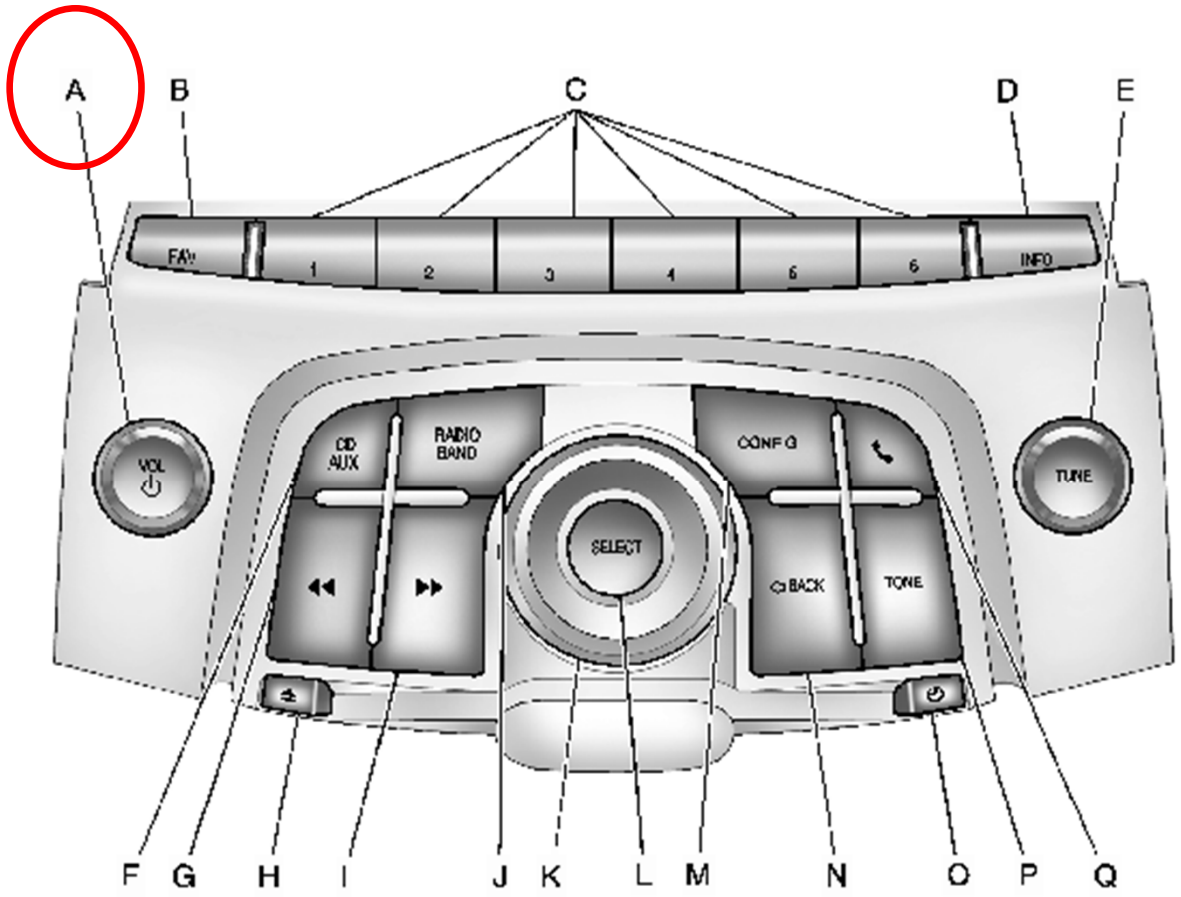
Local Interconnect Network Bus 6,7,8,9.10,11 and CAN Graphical Interface

Note: Wake Up Signal is located on Pin 4 of the P17 Connector (Light Green Wire)



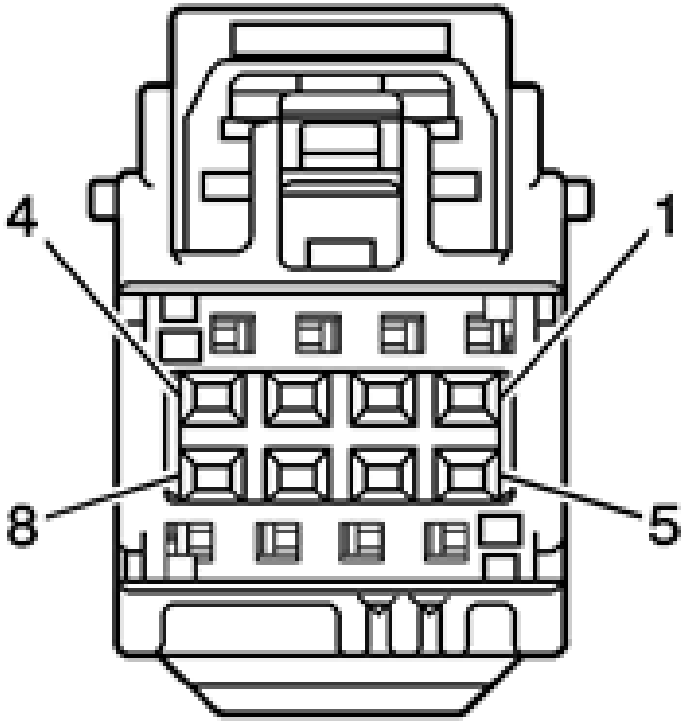
4	0.35 PK	3369	Touch Screen Display Signal (+) (UYS)
	0.35 L-GN	3291	Integrated Center Stack Wake Up Signal (without UYS)

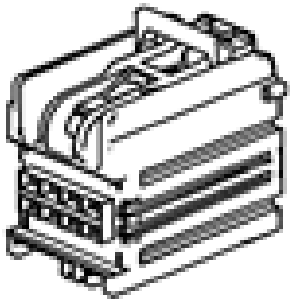
Frontal View of Center Stack




11:21
64°
78°F
Steve
All
102.7
FM
V-103 Steve Harvey Mor...
FAV 6
FAV
1
2
3
4
5
6
CD AUX
RADIO BAND
CONFIG
TUNE
VOL
SELECT
BACK
TONE
AUTO
TEMP

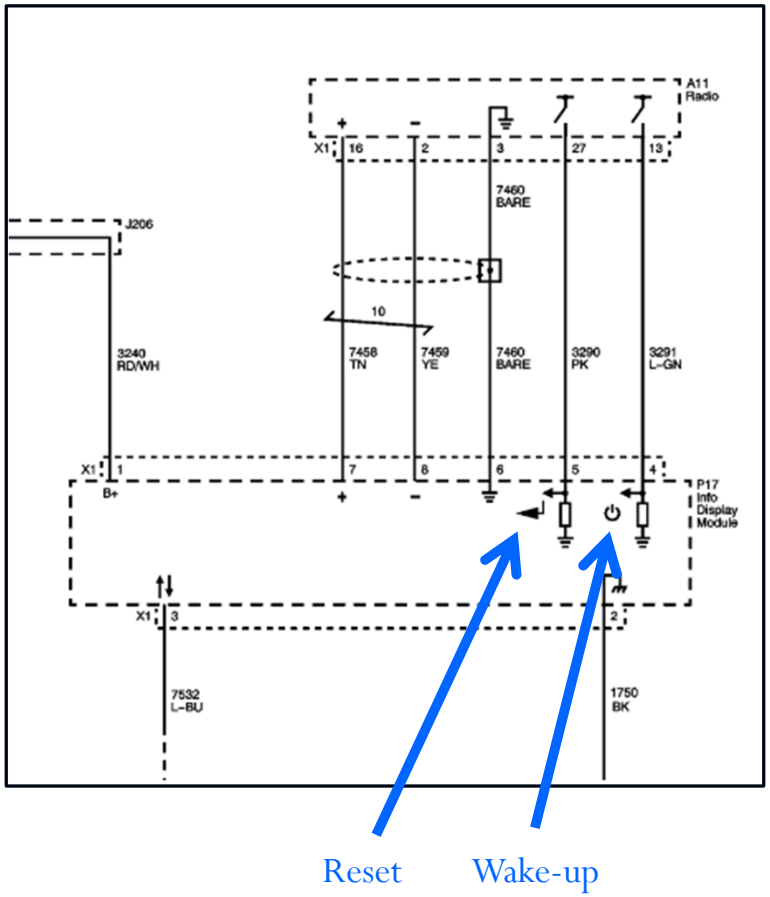
P17 Information Display Module X1



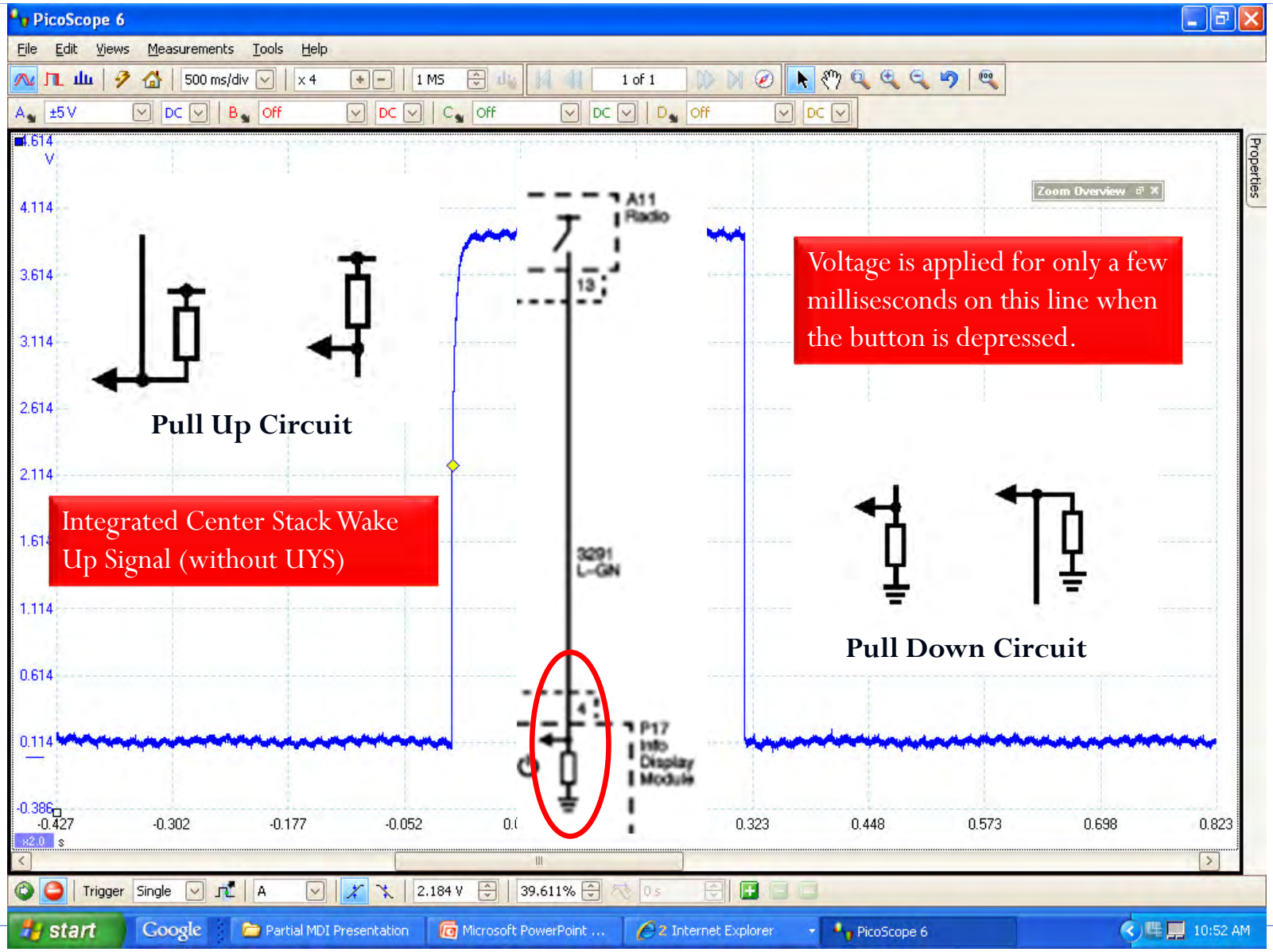


Wake-Up Circuit -2010 Buick Lacrosse

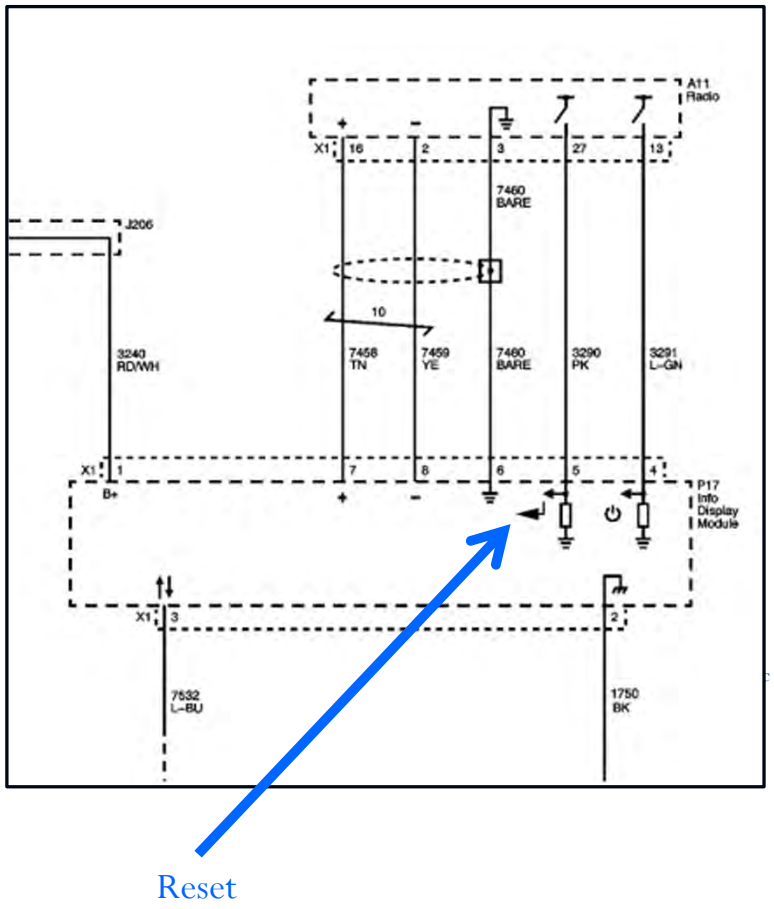
- A “wake-up” circuit is used to turn on a monochrome display or radio faceplate depending on the vehicle’s infotainment system



Integrated Center Stack Wake Up Signal (without UYS)

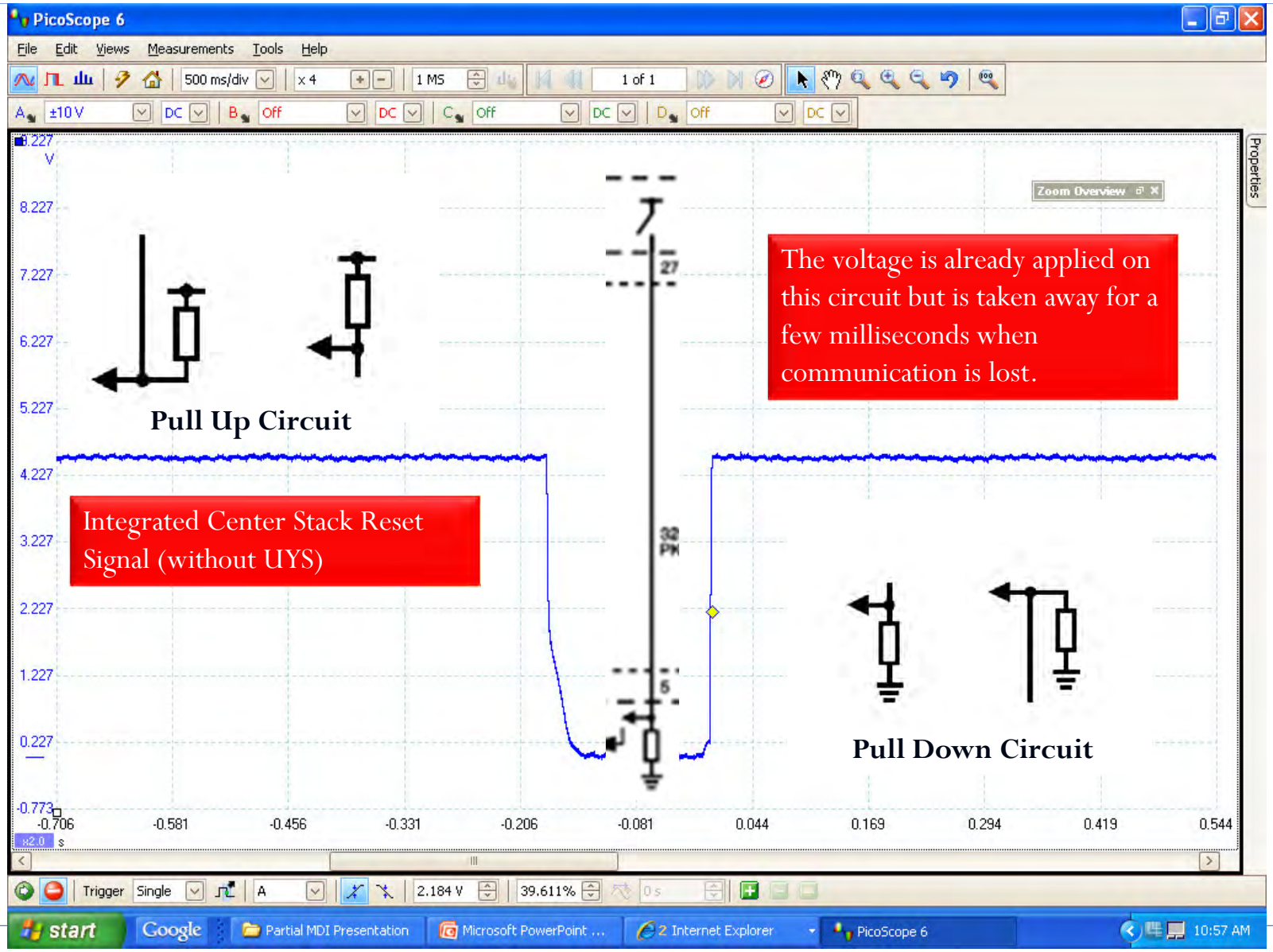

PicoScope 6
File Edit Views Measurements Tools Help
Zoom Overview
Properties
Pull Up Circuit
Integrated Center Stack Wake Up Signal (without UYS)
Voltage is applied for only a few millisesconds on this line when the button is depressed.
Pull Down Circuit
A11 Radio
13
3291 L-GN
4
P17 Info Display Module
4.114
3.614
3.114
2.614
2.114
1.114
0.614
0.114
-0.386
-0.427
-0.302
-0.177
-0.052
0.323
0.448
0.573
0.698
0.823
Trigger Single
2.184 V
39.611%
start
Google
Partial MDI Presentation
Microsoft PowerPoint ...
2 Internet Explorer
PicoScope 6
10:52 AM

Reset Circuit – 2010 Buick Lacrosse



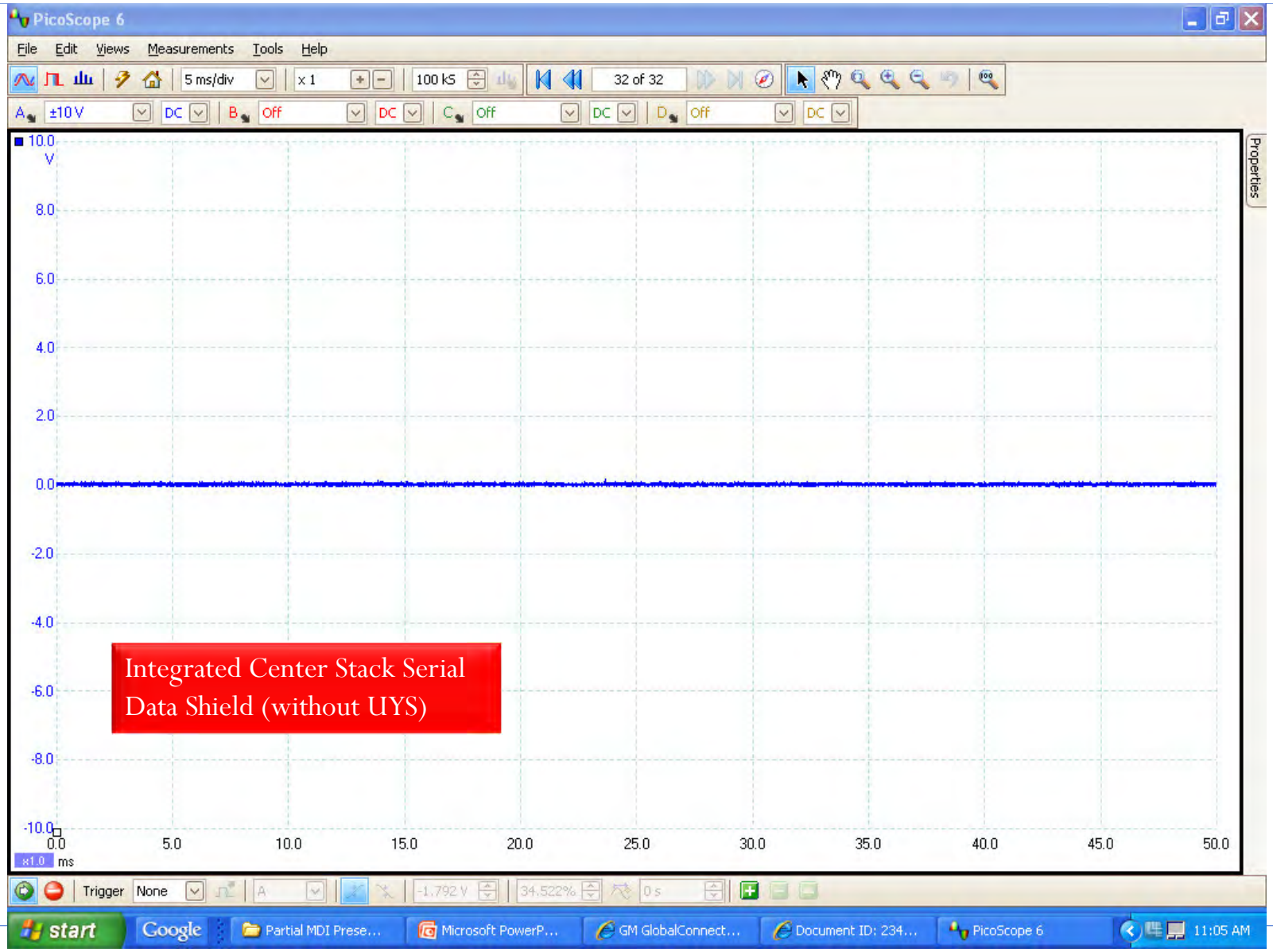
- If the radio recognizes that a device is not responding to the signal on the wake-up circuit, the radio briefly pulls the reset circuit low to try to “reboot” the controls.
- Only works if communication is established, then lost.

Integrated Center Stack Reset Signal (without UYS)


PicoScope 6
File Edit Views Measurements Tools Help
500 ms/div
x 4
1 MS
1 of 1
±10 V
DC
Off
Zoom Overview
Properties
8.227
7.227
6.227
5.227
4.227
3.227
2.227
1.227
0.227
-0.773
-0.706
-0.581
-0.456
-0.331
-0.206
-0.081
0.044
0.169
0.294
0.419
0.544
Pull Up Circuit
The voltage is already applied on this circuit but is taken away for a few milliseconds when communication is lost.
Integrated Center Stack Reset Signal (without UYS)
Pull Down Circuit
Trigger
Single
2.184 V
39.611%
start
Google
Partial MDI Presentation
Microsoft PowerPoint ...
2 Internet Explorer
PicoScope 6
10:57 AM

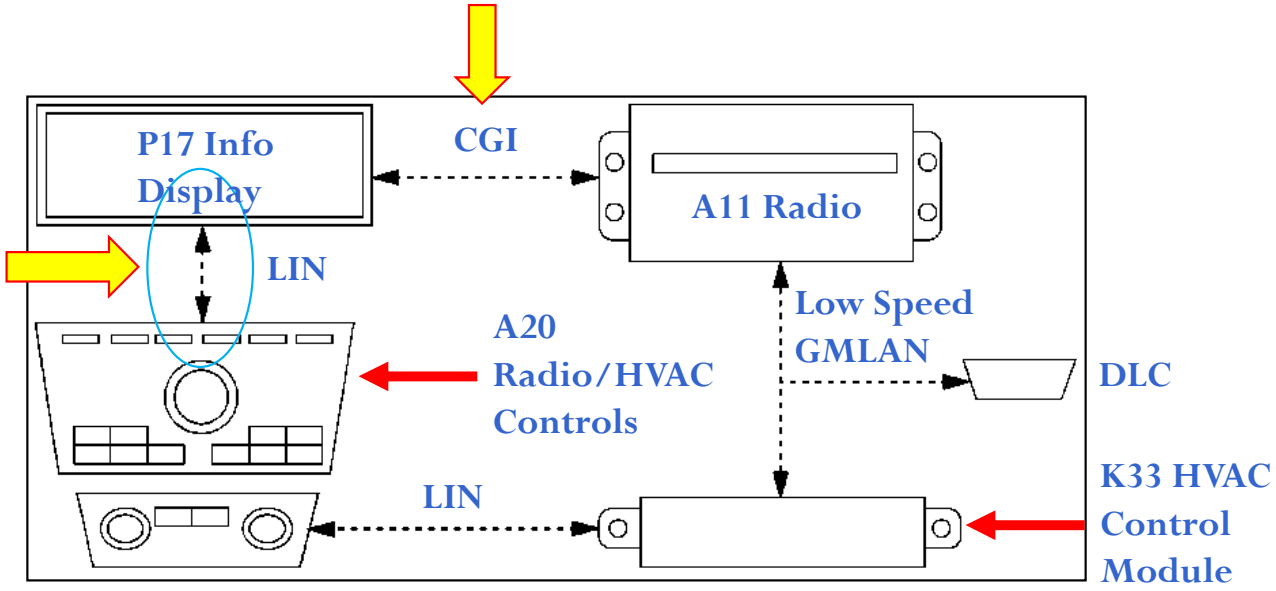
Bare Wire

Bare Wire


PicoScope 6
File Edit Views Measurements Tools Help
5 ms/div
x 1
100 kS
32 of 32
±10 V
DC
Off
10.0 V
8.0
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
-8.0
-10.0
0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0
x1.0 ms
Properties
Integrated Center Stack Serial Data Shield (without UYS)
Trigger None
start
Google
Partial MDI Prese...
Microsoft PowerP...
GM GlobalConnect...
Document ID: 234...
PicoScope 6
11:05 AM

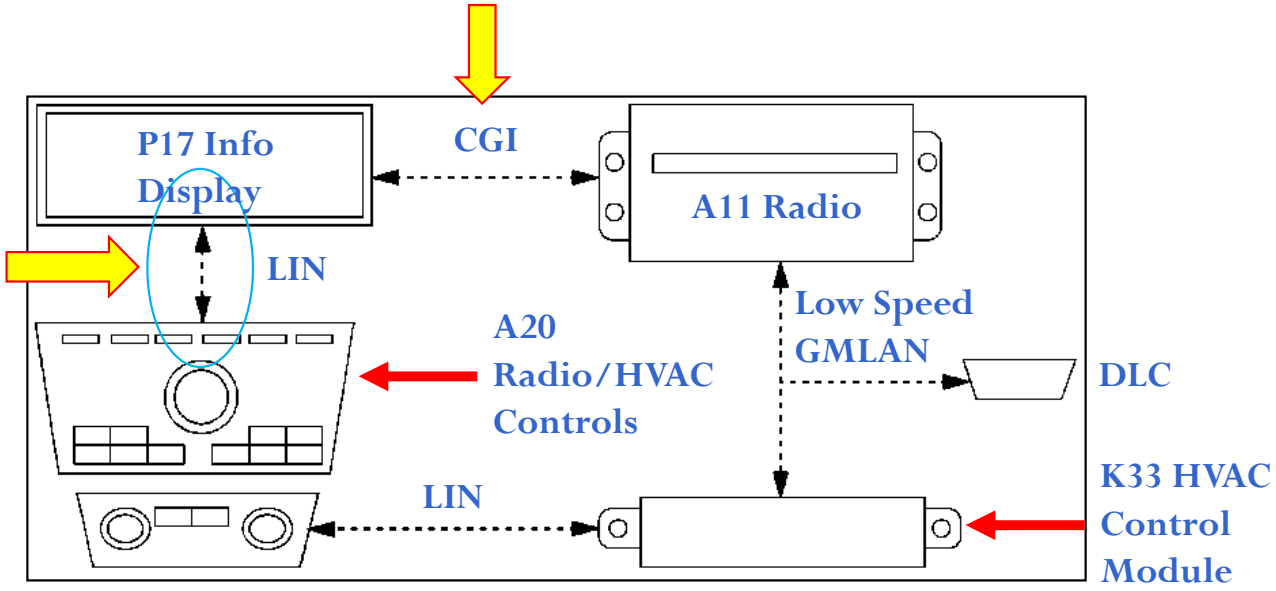
CAN Graphical Interface

CAN Graphical Interface

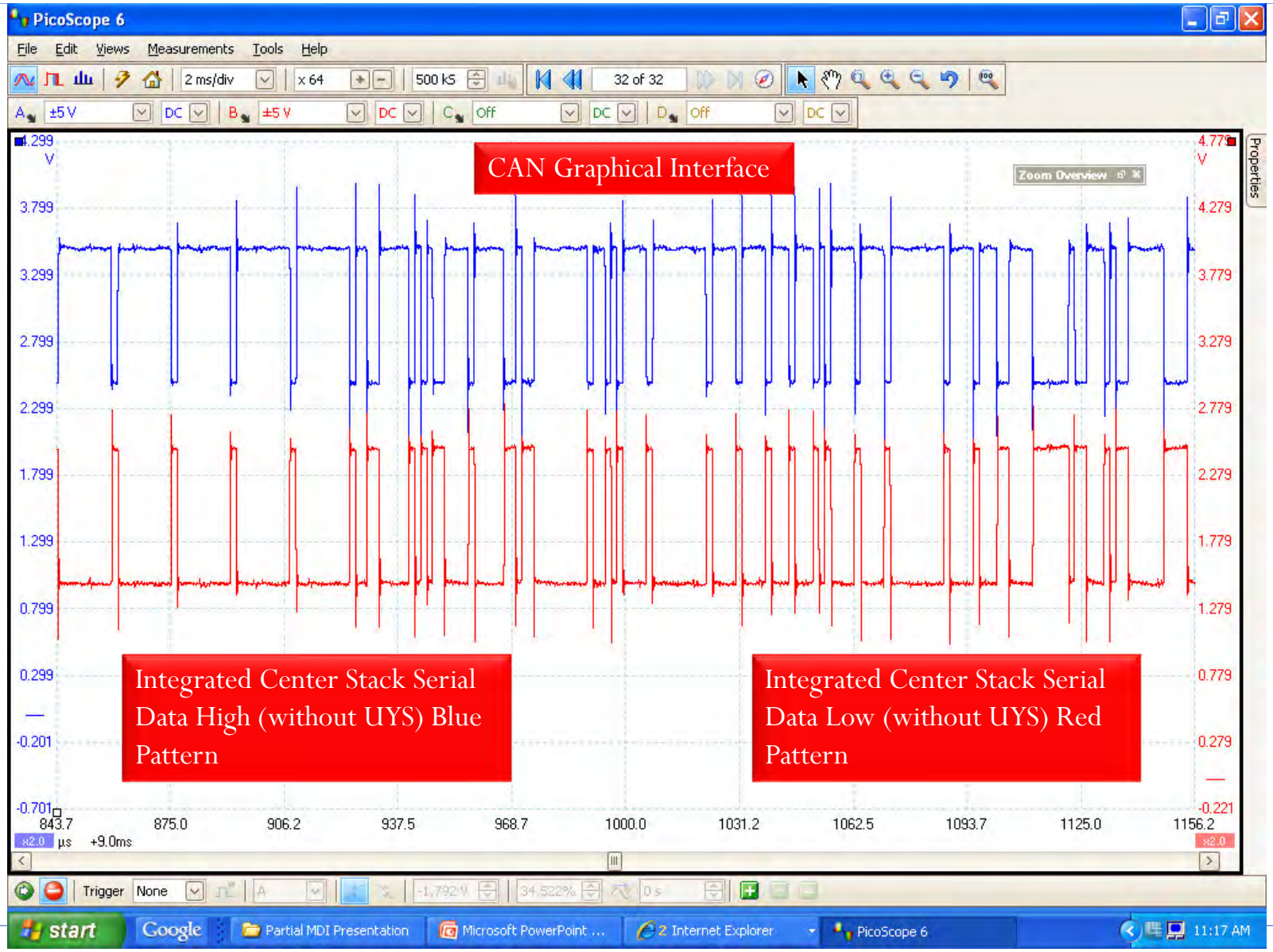


- High speed serial data interface with a two-wire design
  - Connects the information display or the faceplate

CAN Graphical Interface



- Used to connect the radio to a display (monochrome display) or radio controls (full color display)


PicoScope 6
File Edit Views Measurements Tools Help
CAN Graphical Interface
Integrated Center Stack Serial Data High (without UYS) Blue Pattern
Integrated Center Stack Serial Data Low (without UYS) Red Pattern
Zoom Overview
Properties
start
Google
Partial MDI Presentation
Microsoft PowerPoint ...
2 Internet Explorer
PicoScope 6
11:17 AM

MOST

MOST
Normal Operation

MOST

- Infotainment: an information and entertainment infrastructure.
- MOST is used to connect infotainment system components n many vehicles.
- GM first used MOST in the MY2013
- 2013 Cadillac XTS, ATS, and SRX

MOST

- 100 times faster than GMLAN
- Streams audio and video
- 16 turns of wire per foot
- Radio is the gateway of the bus
- Communication occurs in one direction around a ring configuration

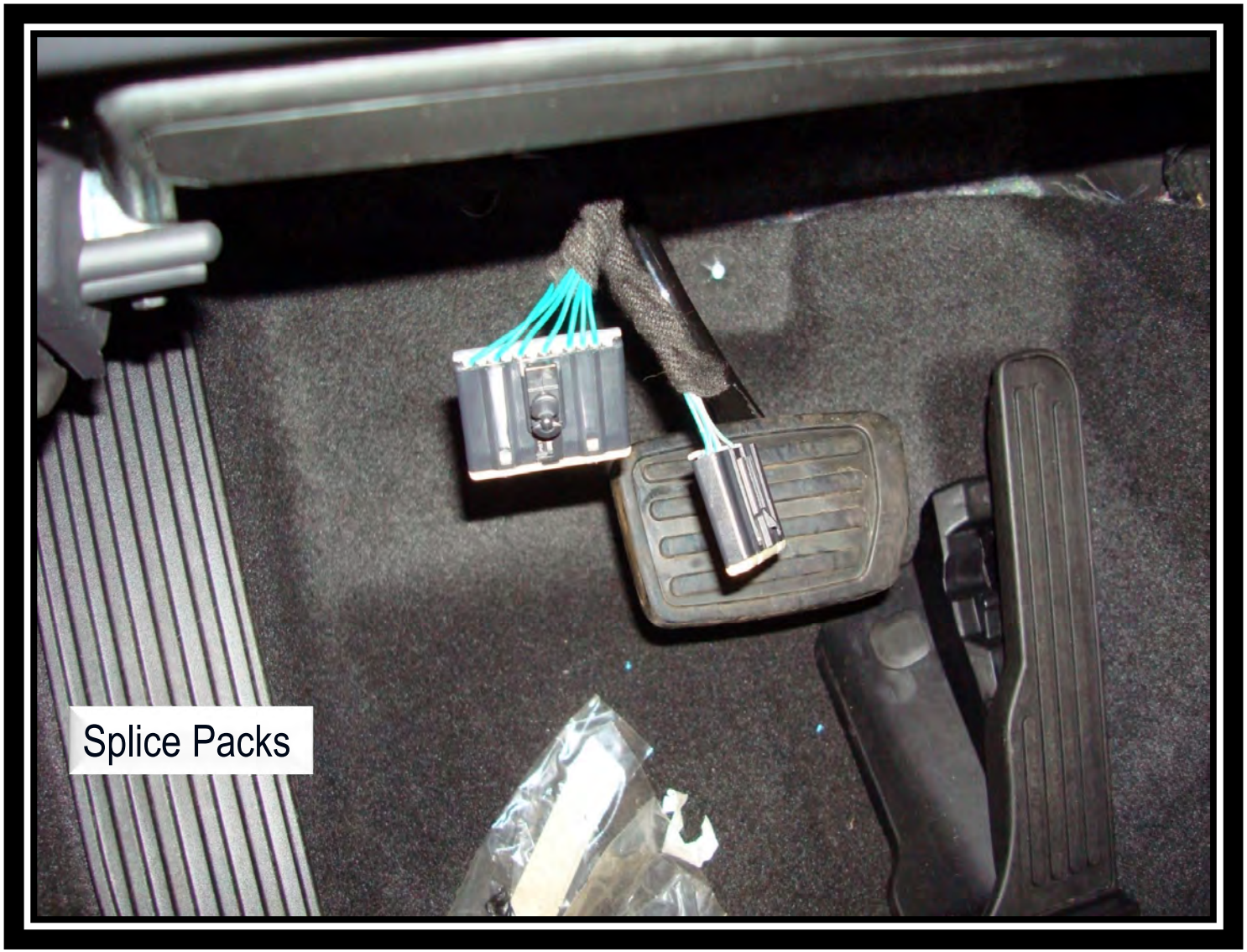
Point of Discussion

- Splice Packs
- Infotainment Component Codes
- MOST Diagnostic Tool

Splice Packs????

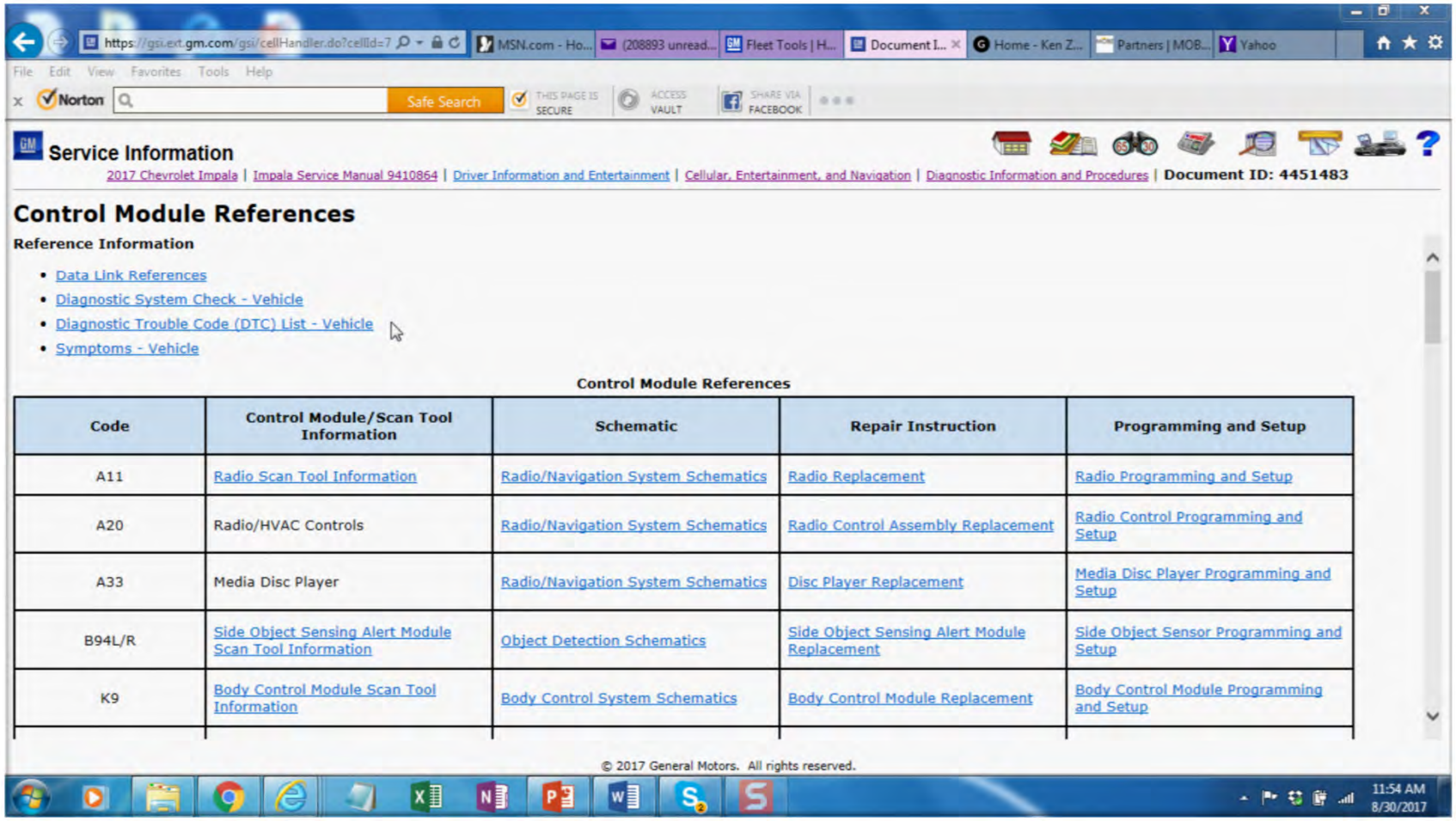

Do splice packs still exist on modern day GM Vehicles?
2019 Chevrolet Camaro


CAMARO


Splice Packs

Infotainment Component Codes

Control Module References



Service Information

2017 Chevrolet Impala | Impala Service Manual 9410864 | Driver Information and Entertainment | Cellular, Entertainment, and Navigation | Diagnostic Information and Procedures | Document ID: 4451483

Control Module References

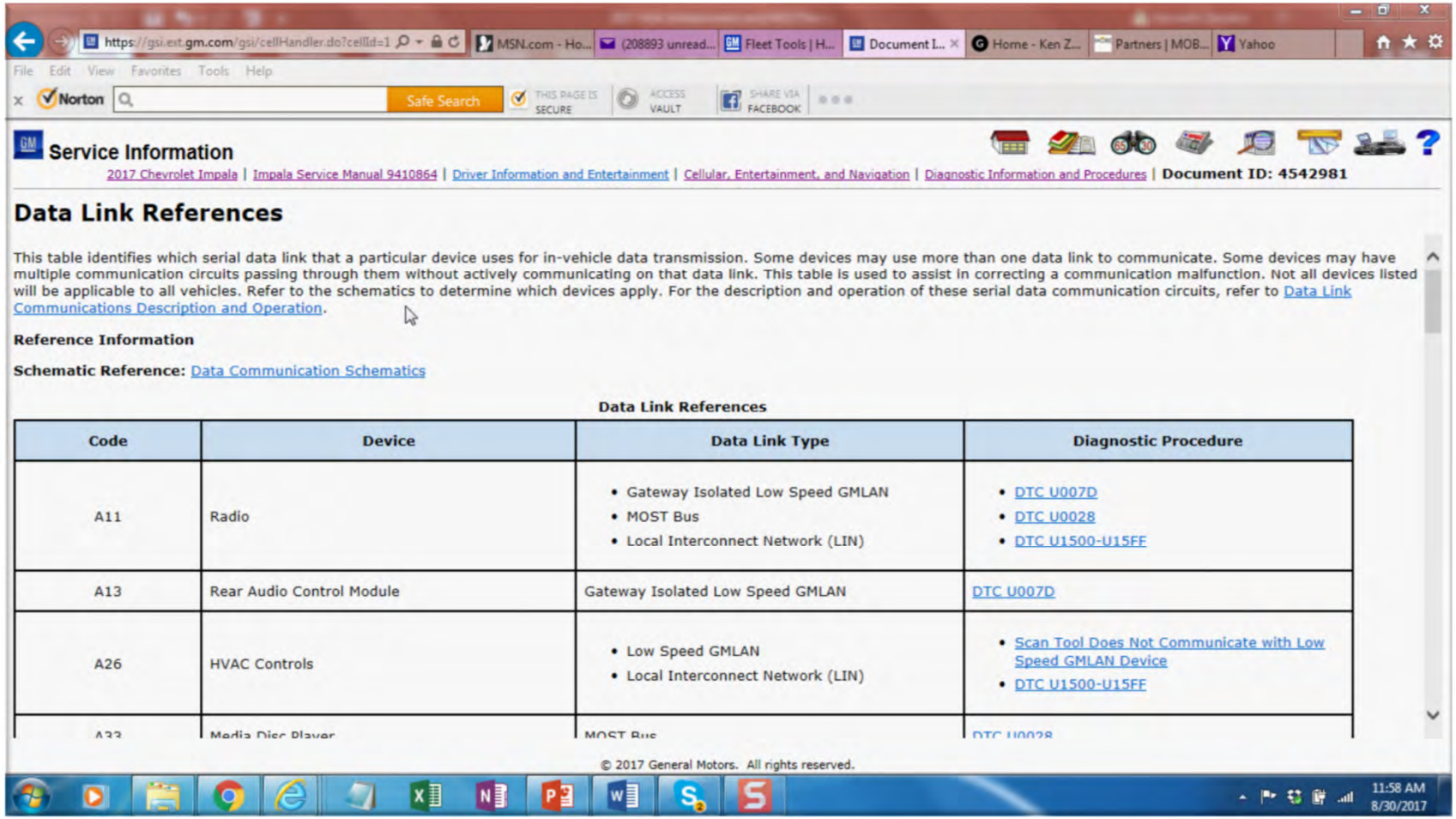
Reference Information

- Data Link References
- Diagnostic System Check - Vehicle
- Diagnostic Trouble Code (DTC) List - Vehicle
- Symptoms - Vehicle

Control Module References

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
A11	Radio Scan Tool Information	Radio/Navigation System Schematics	Radio Replacement	Radio Programming and Setup
A20	Radio/HVAC Controls	Radio/Navigation System Schematics	Radio Control Assembly Replacement	Radio Control Programming and Setup
A33	Media Disc Player	Radio/Navigation System Schematics	Disc Player Replacement	Media Disc Player Programming and Setup
B94L/R	Side Object Sensing Alert Module Scan Tool Information	Object Detection Schematics	Side Object Sensing Alert Module Replacement	Side Object Sensor Programming and Setup
K9	Body Control Module Scan Tool Information	Body Control System Schematics	Body Control Module Replacement	Body Control Module Programming and Setup

Data Link References



Service Information

2017 Chevrolet Impala | Impala Service Manual 9410864 | Driver Information and Entertainment | Cellular, Entertainment, and Navigation | Diagnostic Information and Procedures | **Document ID: 4542981**

Data Link References

This table identifies which serial data link that a particular device uses for in-vehicle data transmission. Some devices may use more than one data link to communicate. Some devices may have multiple communication circuits passing through them without actively communicating on that data link. This table is used to assist in correcting a communication malfunction. Not all devices listed will be applicable to all vehicles. Refer to the schematics to determine which devices apply. For the description and operation of these serial data communication circuits, refer to Data Link Communications Description and Operation.

Reference Information

Schematic Reference: Data Communication Schematics

Data Link References

Code	Device	Data Link Type	Diagnostic Procedure
A11	Radio	• Gateway Isolated Low Speed GMLAN • MOST Bus • Local Interconnect Network (LIN)	• DTC U007D • DTC U0028 • DTC U1500-U15FF
A13	Rear Audio Control Module	Gateway Isolated Low Speed GMLAN	DTC U007D
A26	HVAC Controls	• Low Speed GMLAN • Local Interconnect Network (LIN)	• Scan Tool Does Not Communicate with Low Speed GMLAN Device • DTC U1500-U15FF
A33	Media Disc Player	MOST Bus	DTC U0028

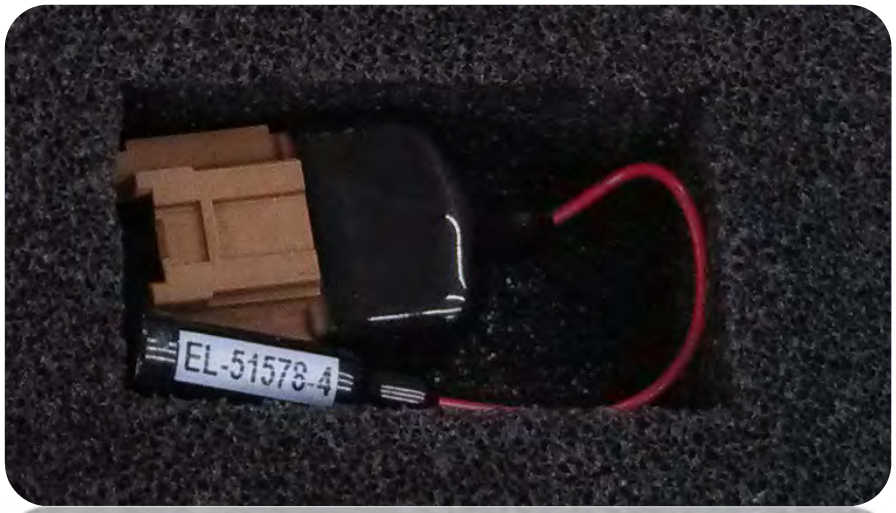
MOST Diagnostic Tool


2017 Chev
Malibu

EL-51578 MOST Bus Diagnostic Tool Kit

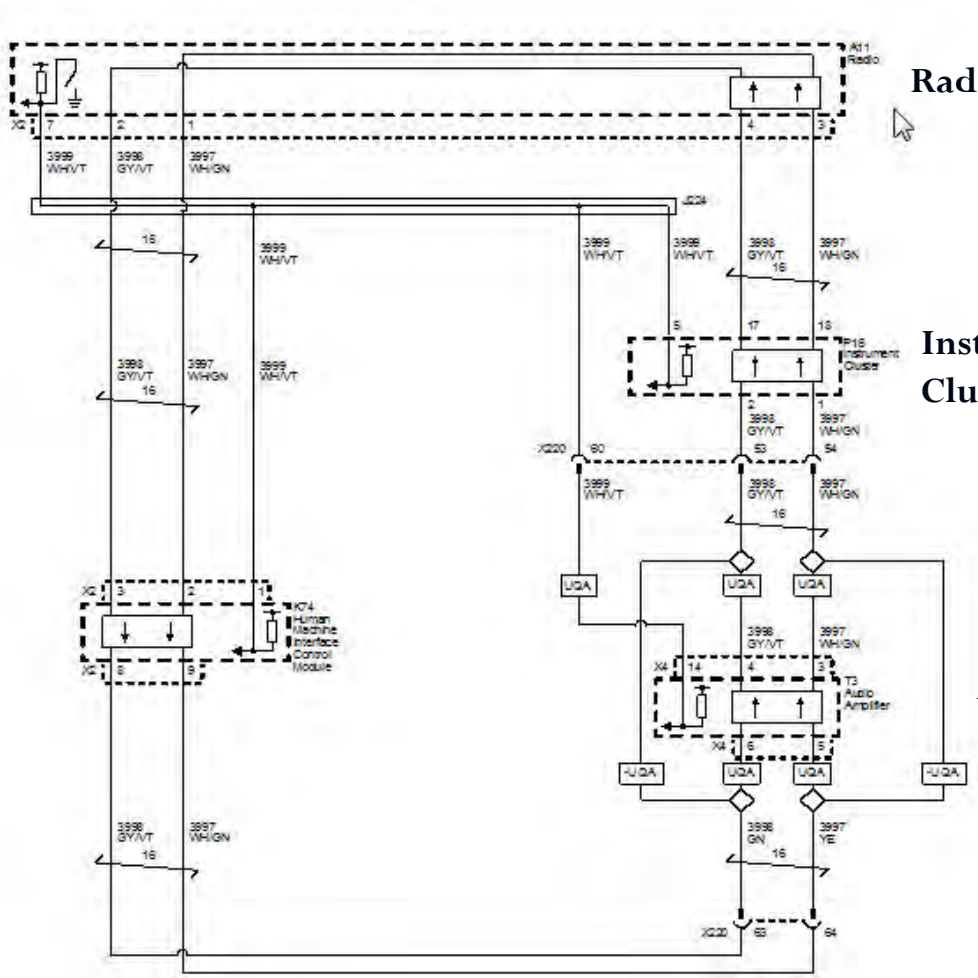
- The EL-51578 MOST Bus Diagnostic Test Kit will assist in the diagnosis of a MOST ring break, DTC U0028

EL-51578 MOST Bus Diagnostic Tool Kit



- The MOST Bus Diagnostic Tool Kit consists of several test connectors
- Each connector matches a connector on a MOST device
- Connectors jump the MOST bus wires to bypass MOST devices

2017 Chev Malibu



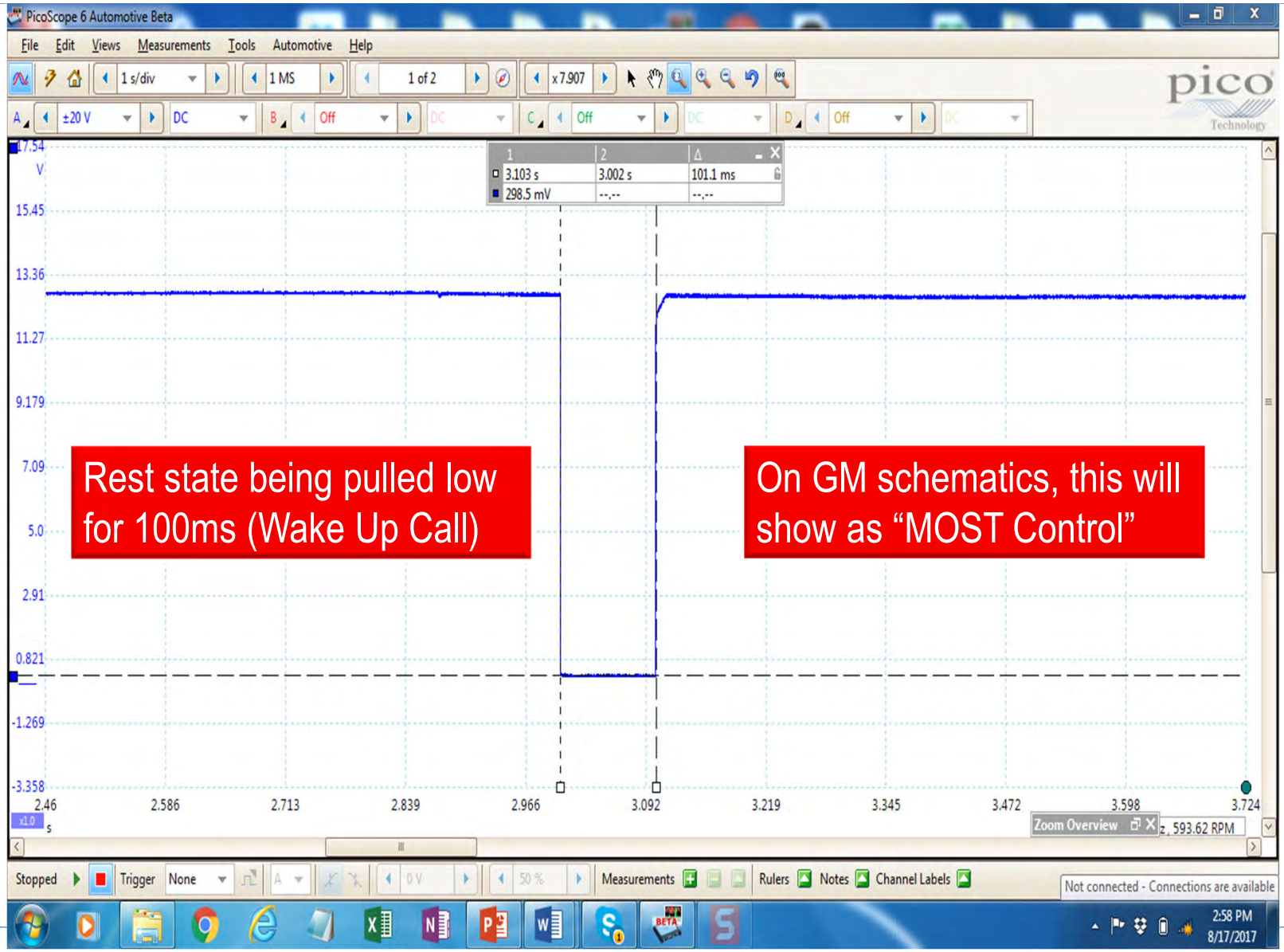
Radio

Instrument Cluster

Human Interface Module

Amplifier


Amplifier

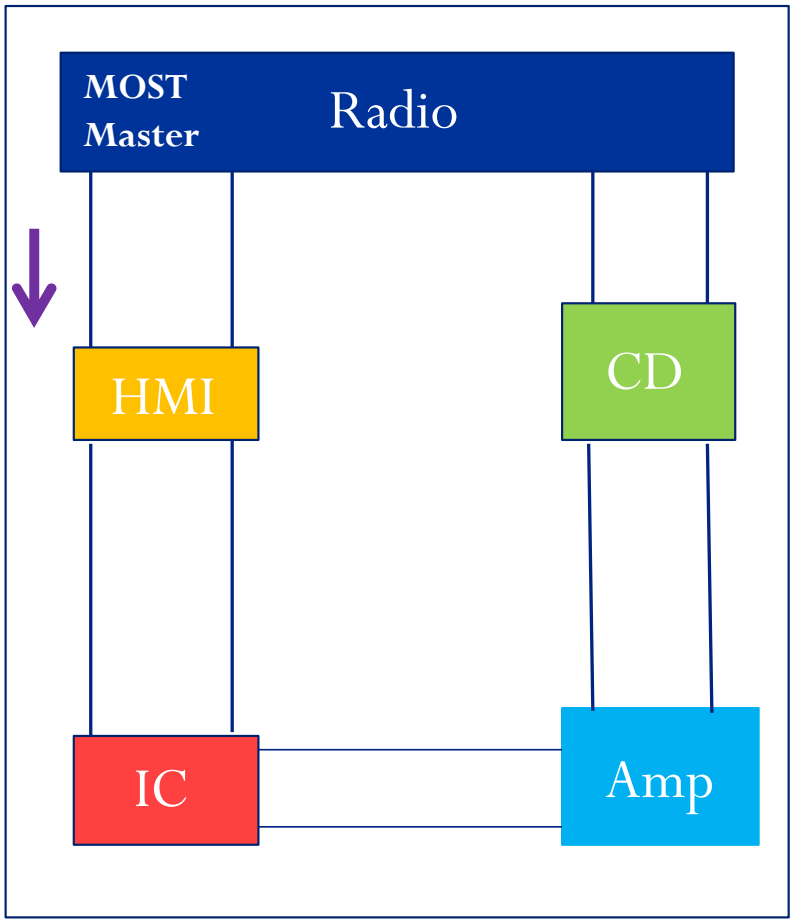

PicoScope 6 Automotive Beta
File Edit Views Measurements Tools Automotive Help
pico Technology
1 s/div
1 MS
1 of 2
x 7.907
±20 V
DC
Off
3.103 s
3.002 s
101.1 ms
298.5 mV
17.54 V
15.45
13.36
11.27
9.179
7.09
5.0
2.91
0.821
-1.269
-3.358
2.46
2.586
2.713
2.839
2.966
3.092
3.219
3.345
3.472
3.598
3.724
s
Rest state being pulled low for 100ms (Wake Up Call)
On GM schematics, this will show as “MOST Control”
Zoom Overview
593.62 RPM
Stopped
Trigger
None
Measurements
Rulers
Notes
Channel Labels
Not connected - Connections are available
2:58 PM
8/17/2017

MOST
Normal Operation
(3 Steps)

Media Oriented Systems Transport – Normal Operation

Step 1

- MOST is 100 times Faster than GMLAN
- Modules are connected together with a two-wire twisted pair in a ring format.
- The radio is the MOST master
  - Data will travel in one direction through the MOST protocol.
  - Data direction is indicated by the arrow placed in the pictorial.

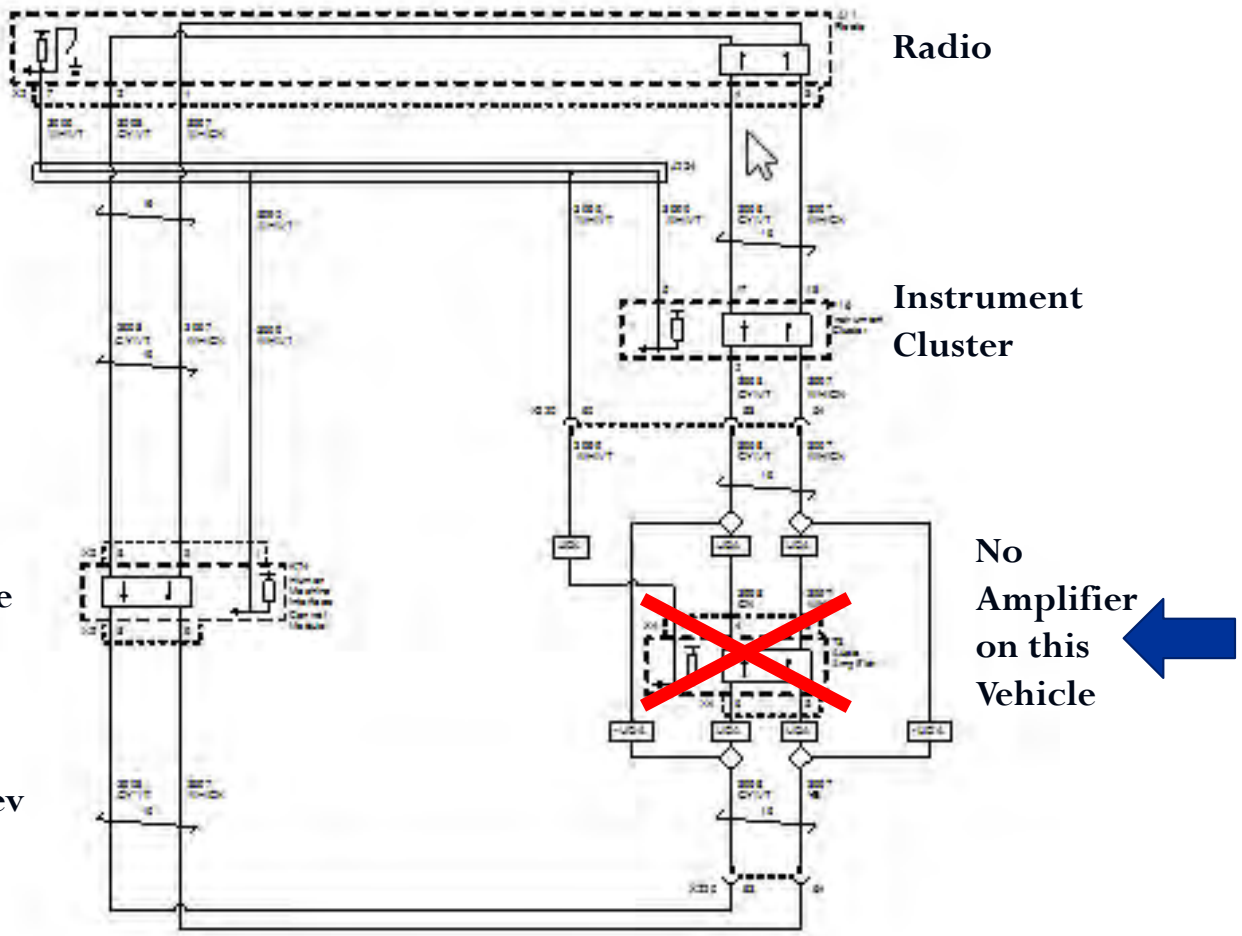


Normal Operation
2018 Chev Malibu

2018 Chev Malibu

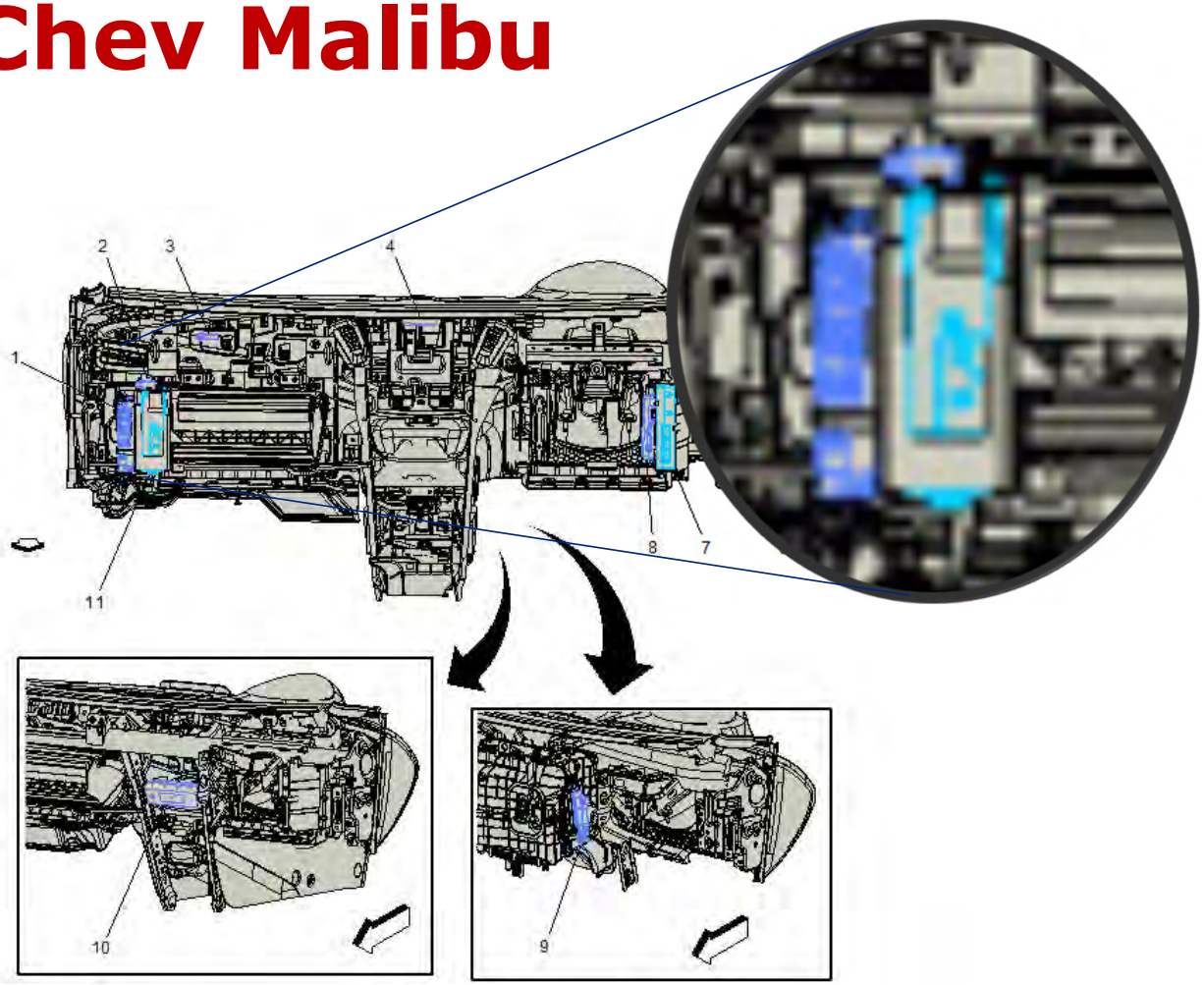
2018 Chev Malibu

2018 Chev Malibu

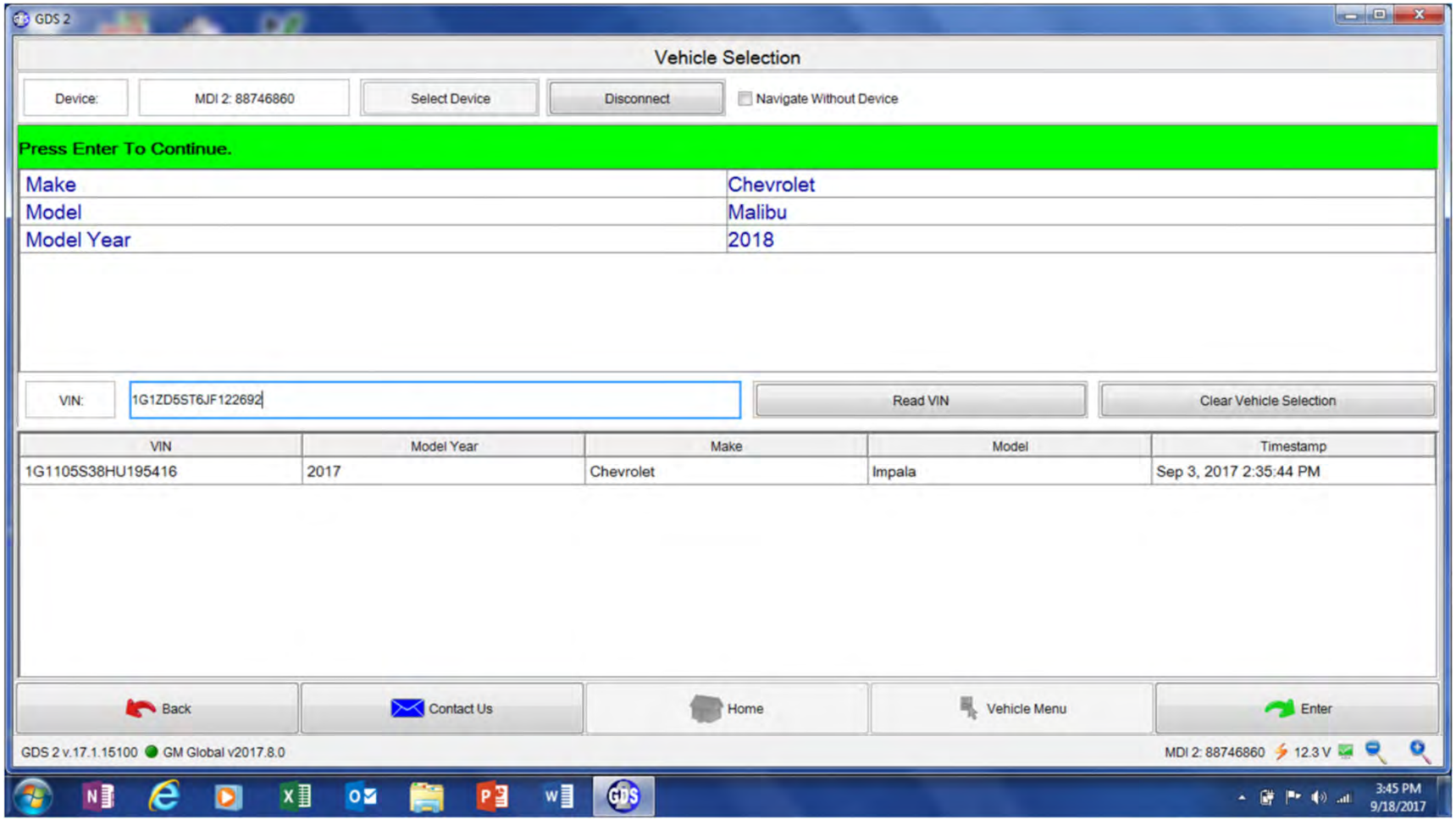


2018 Chev Malibu

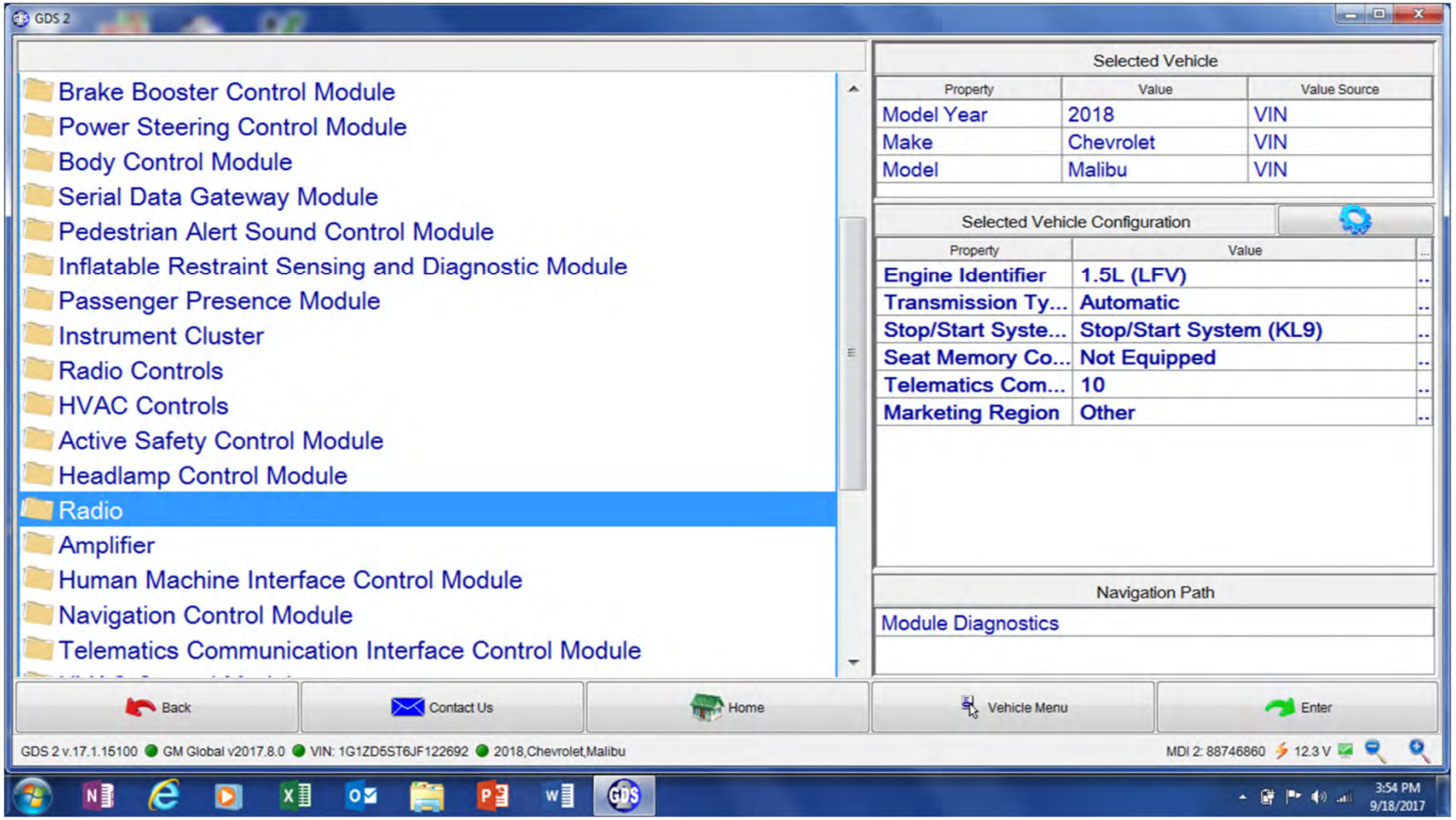
HMI and Radio Locations



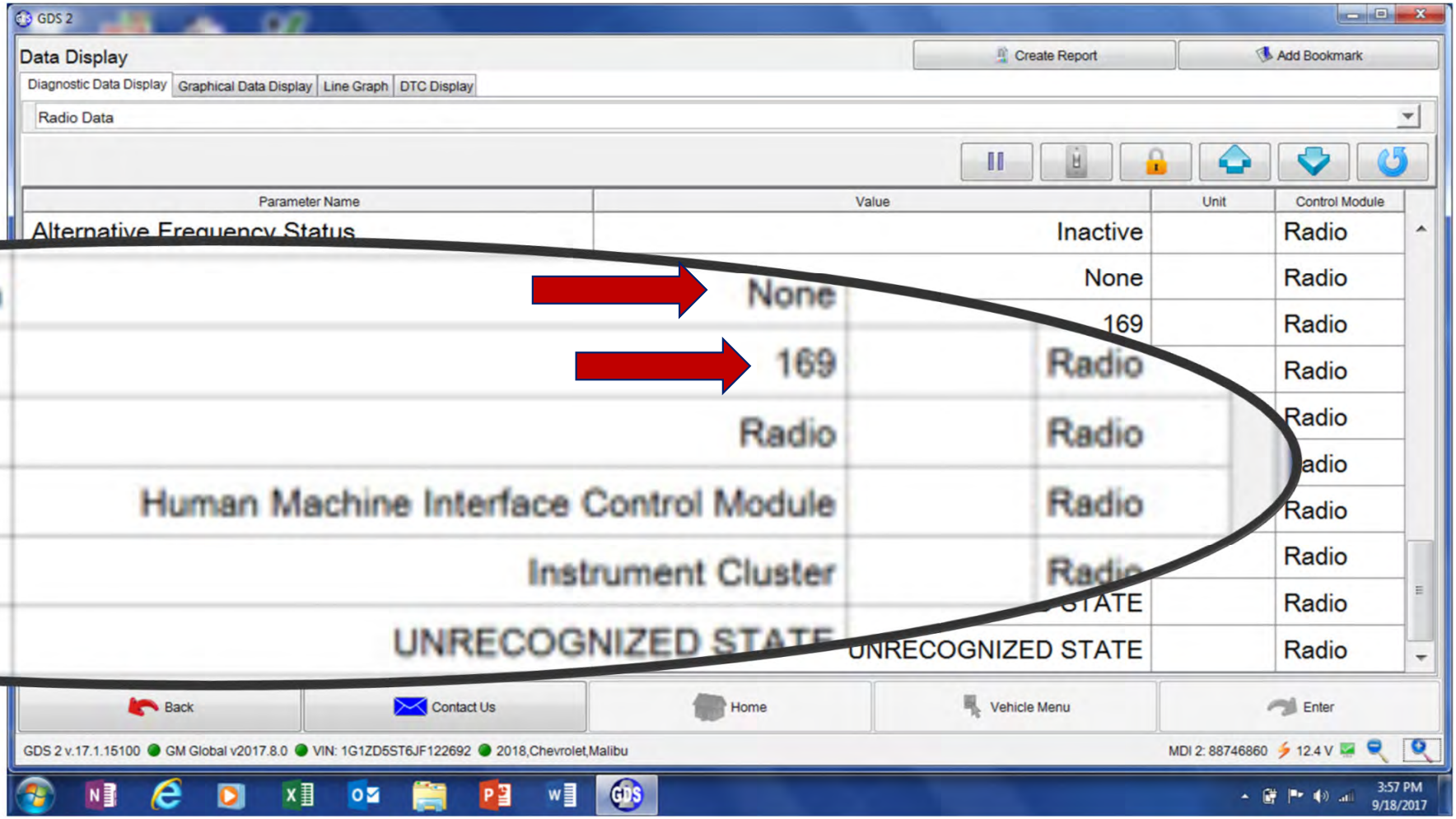
2018 Chev Malibu



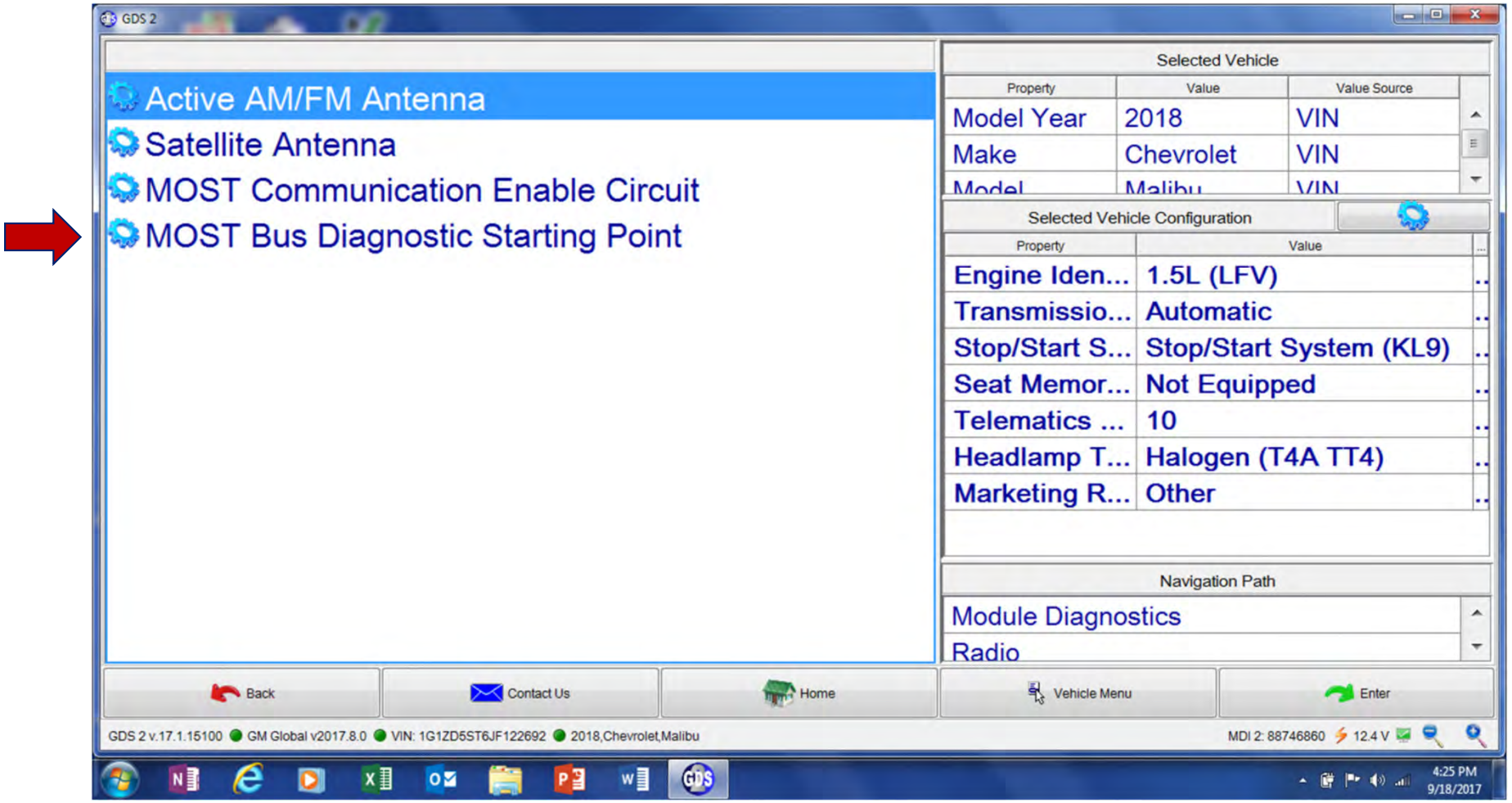
2018 Chev Malibu



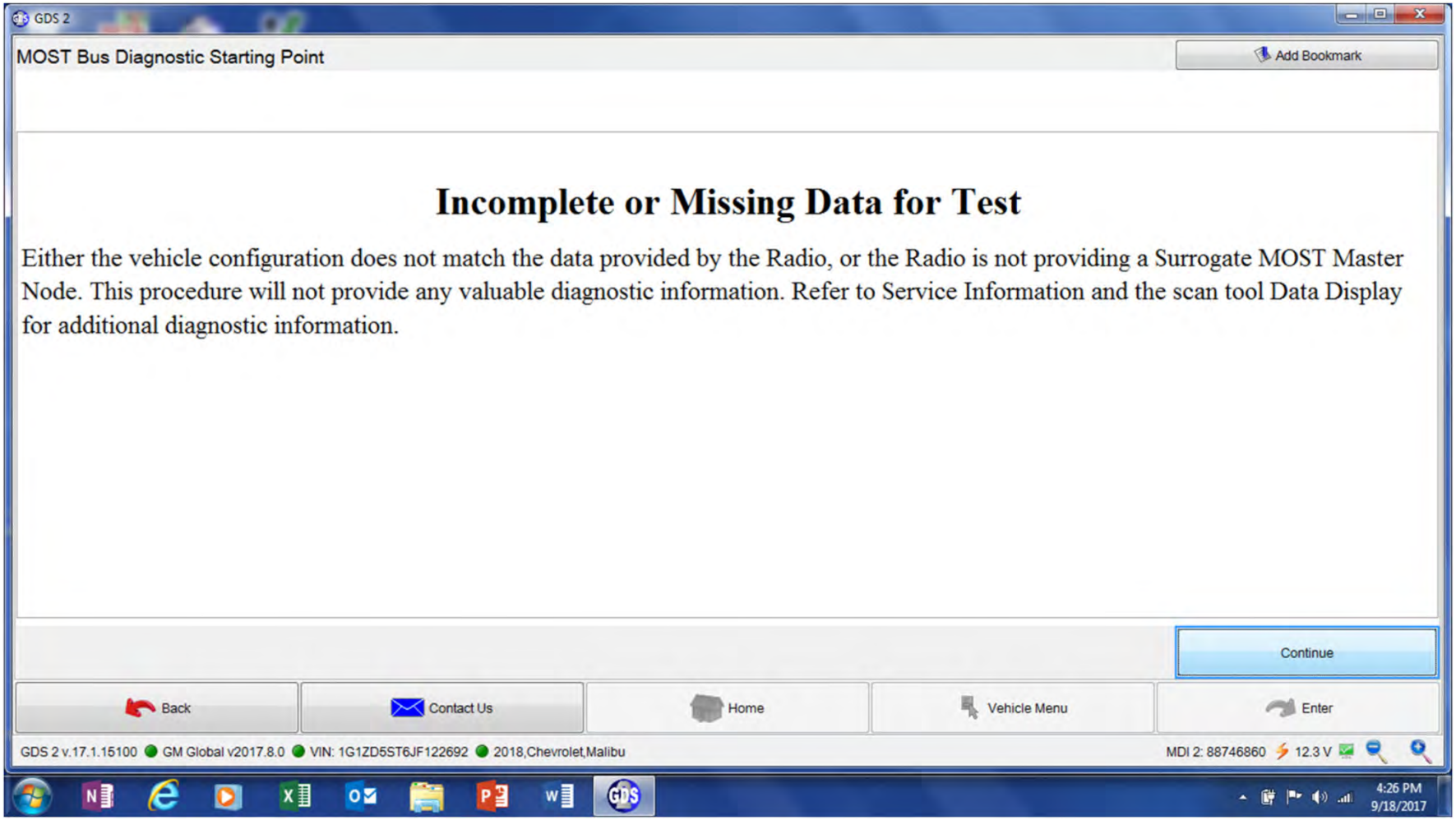
2018 Chev Malibu



2018 Chev Malibu



2018 Chev Malibu

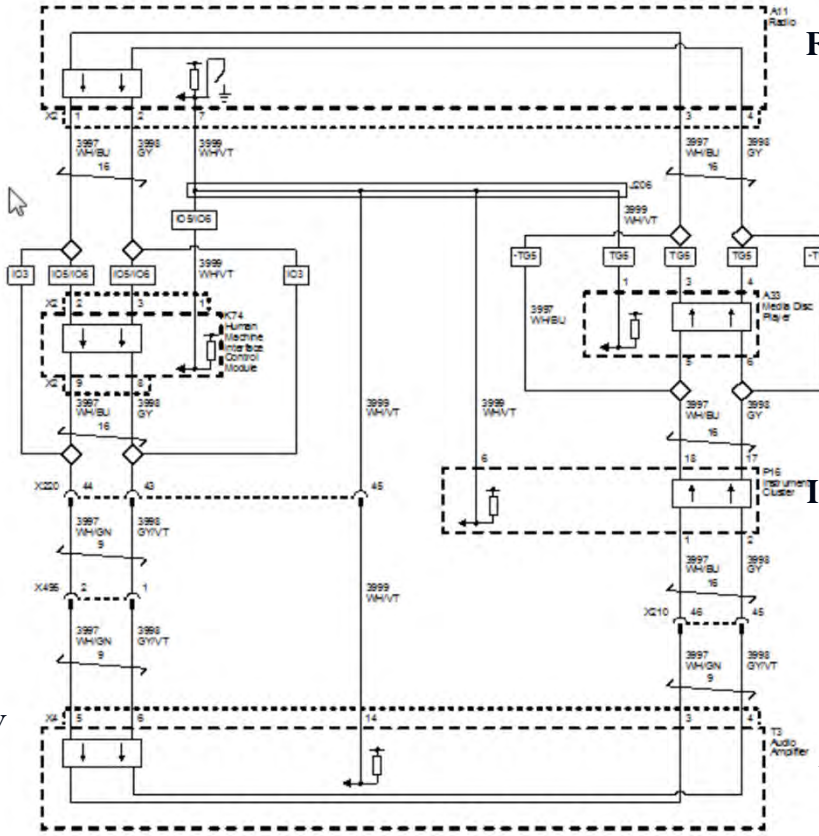


MOST
Normal Operation-Cont'd

2017 Chev Impala

Center Stack

MOST Schematics



Radio

No Media Player on this Vehicle

Human Machine Interface Module

Instrument Cluster

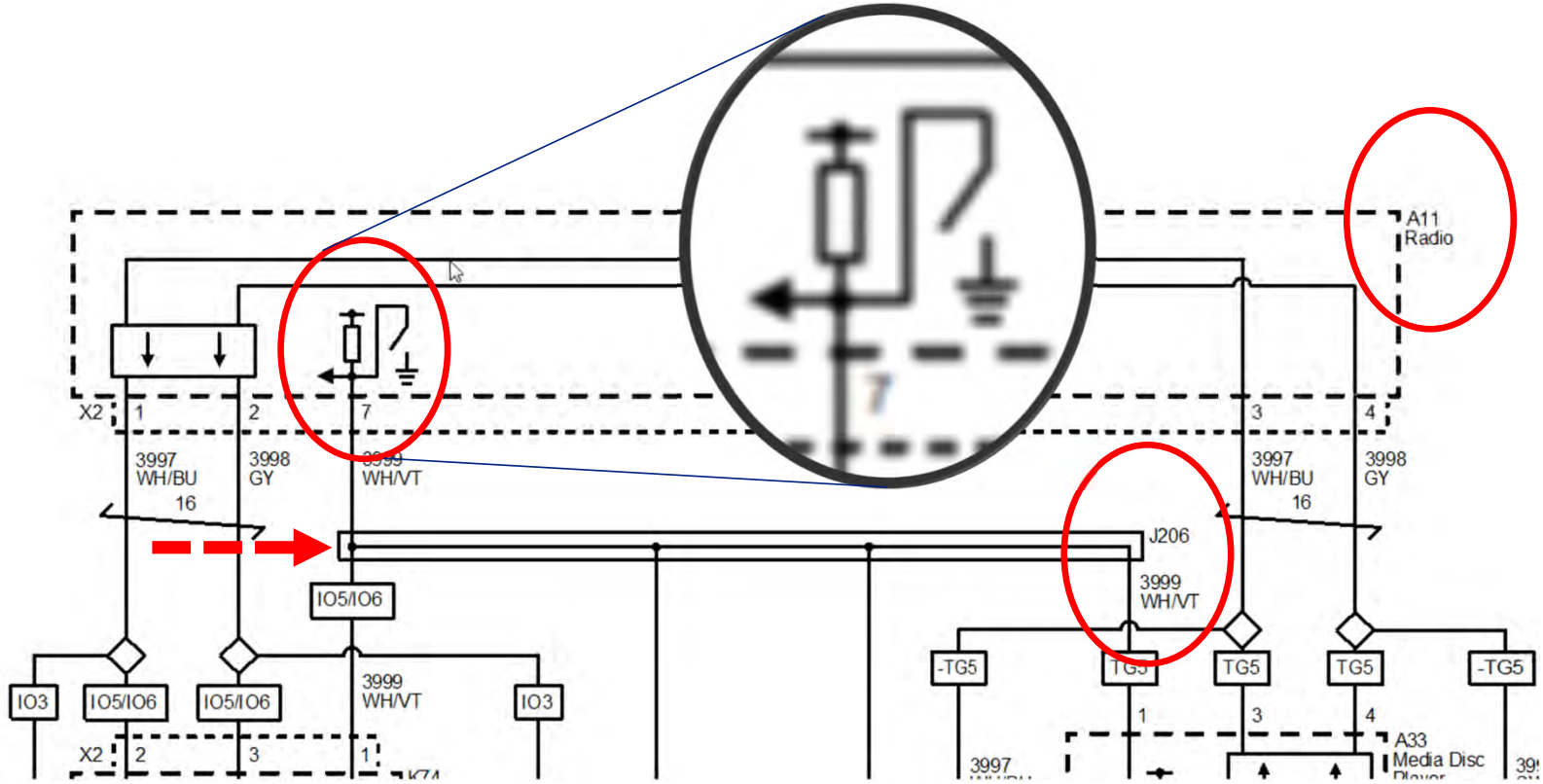
2017 Chev Impala

Amplifier

MOST Questions

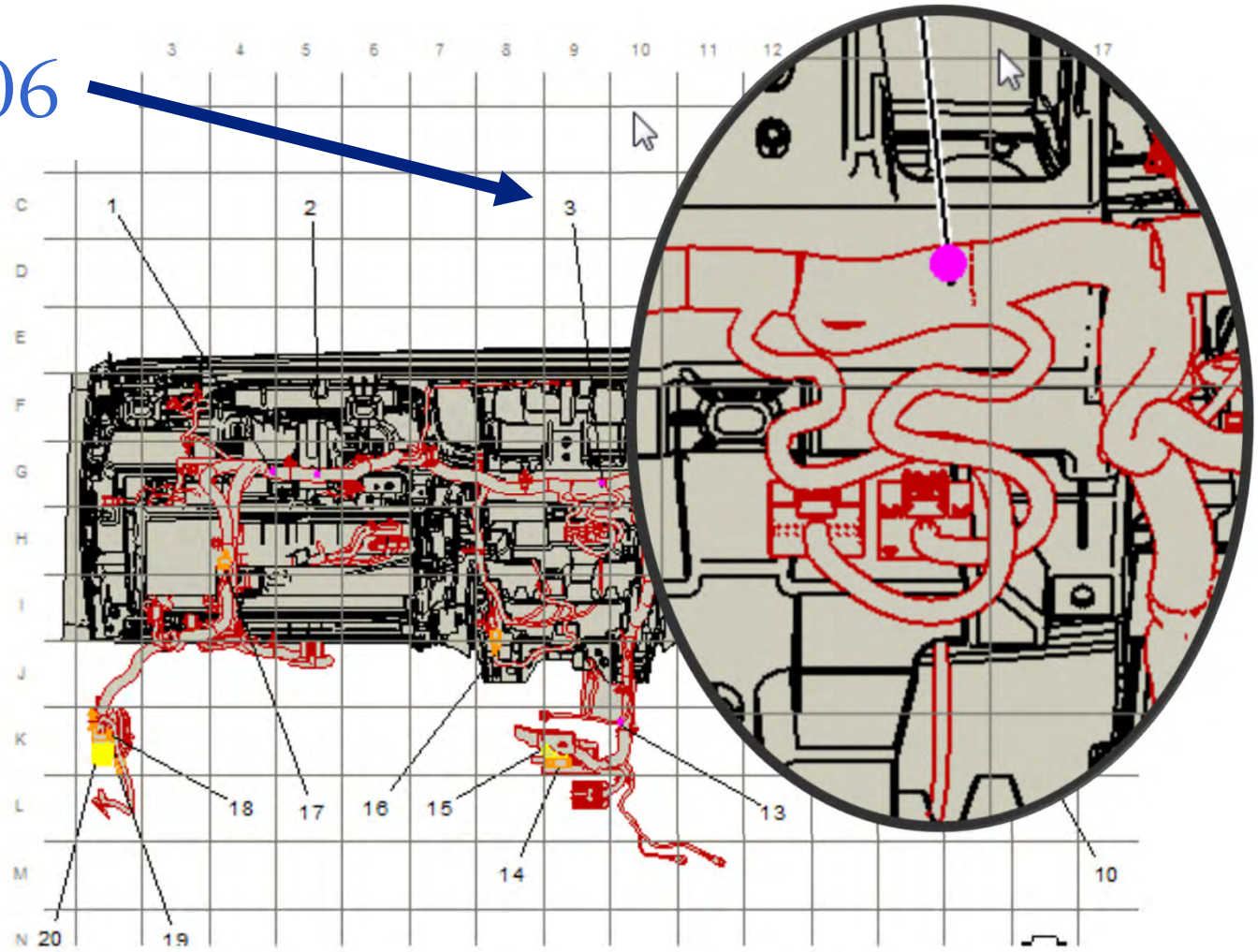
- Does each module generate its own 12 volt signal?
- Answer: It appears the radio alone provides the rest voltage (12 volts) and also pulls it low to promote communication.
- The schematics imply that there are pull up circuits in each module.
- Further investigation is needed to confirm this.

MOST Schematics – A11 Radio

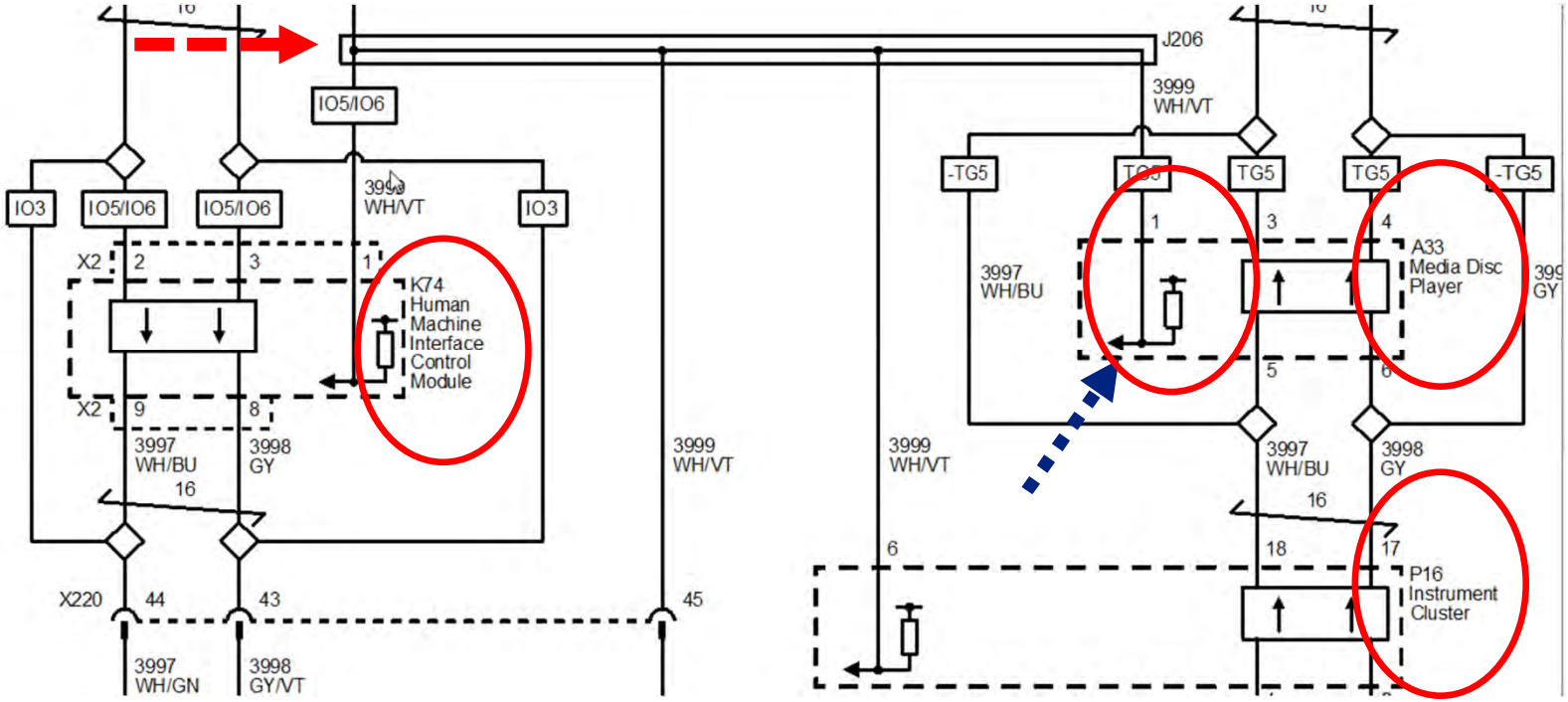


Rest state of 12 volts is provided by Radio/Radio also pulls the rest state of 12 volts low to awaken modules

J206

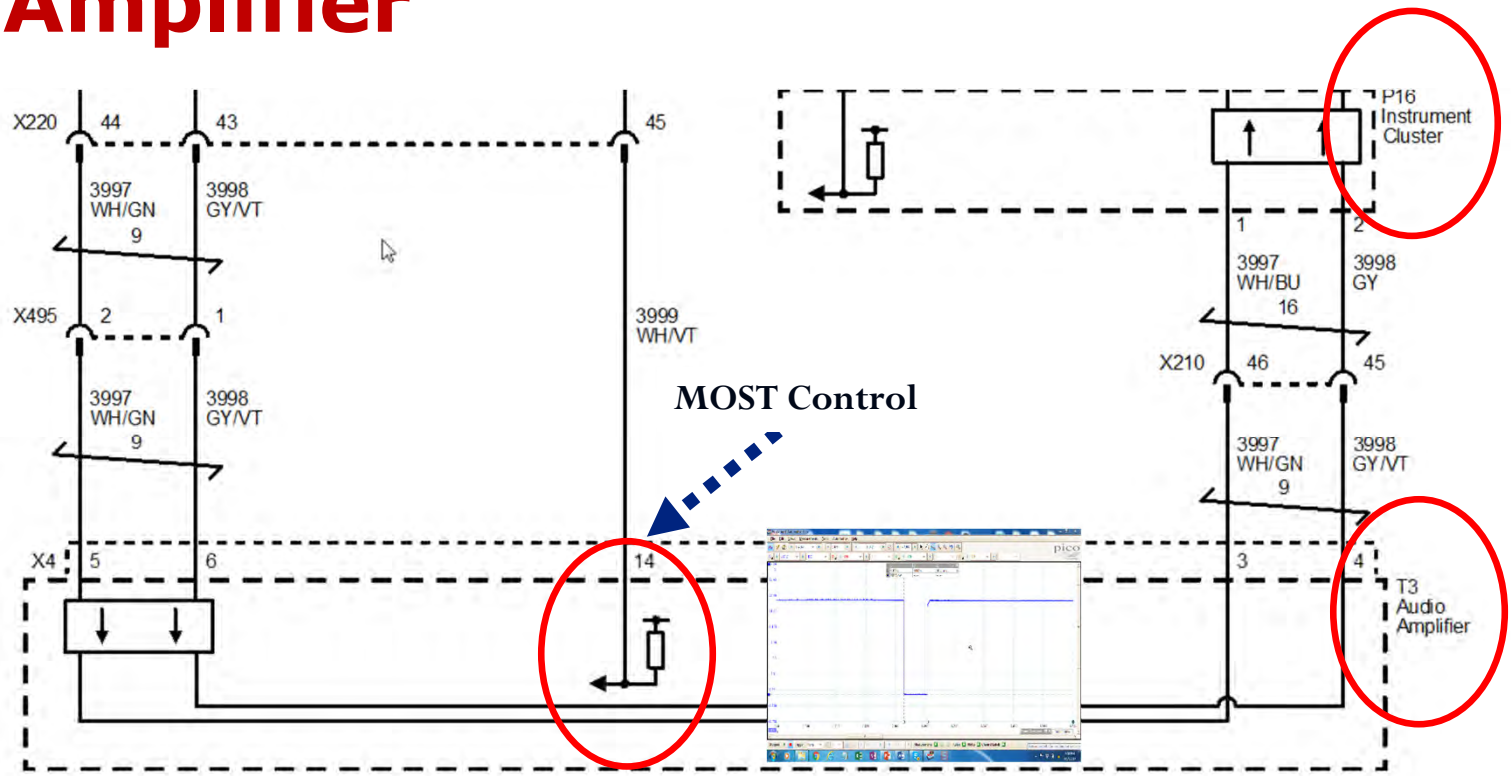


MOST Schematics – K74 HMI and A33 Media Disc Player



A instrument panel harness will provide a path for the 12 volts to be routed to each module. (J206)

Instrument Cluster and T3 Amplifier

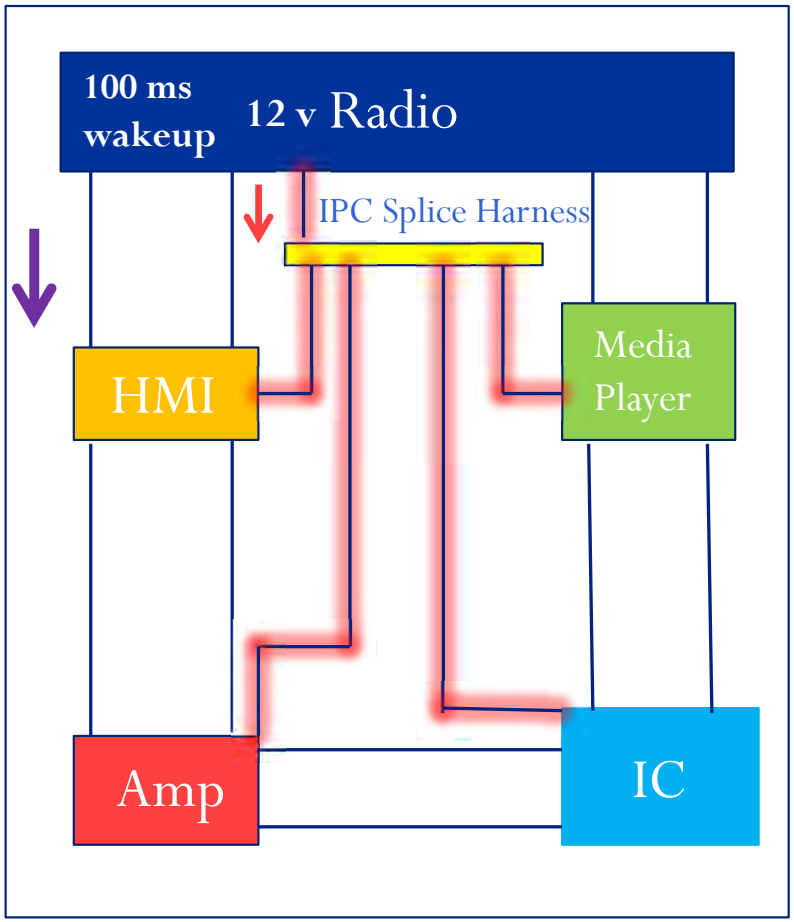


The 12 volt rest state is called "MOST Control" on GM schematics. (This is the "Wake Up Call")

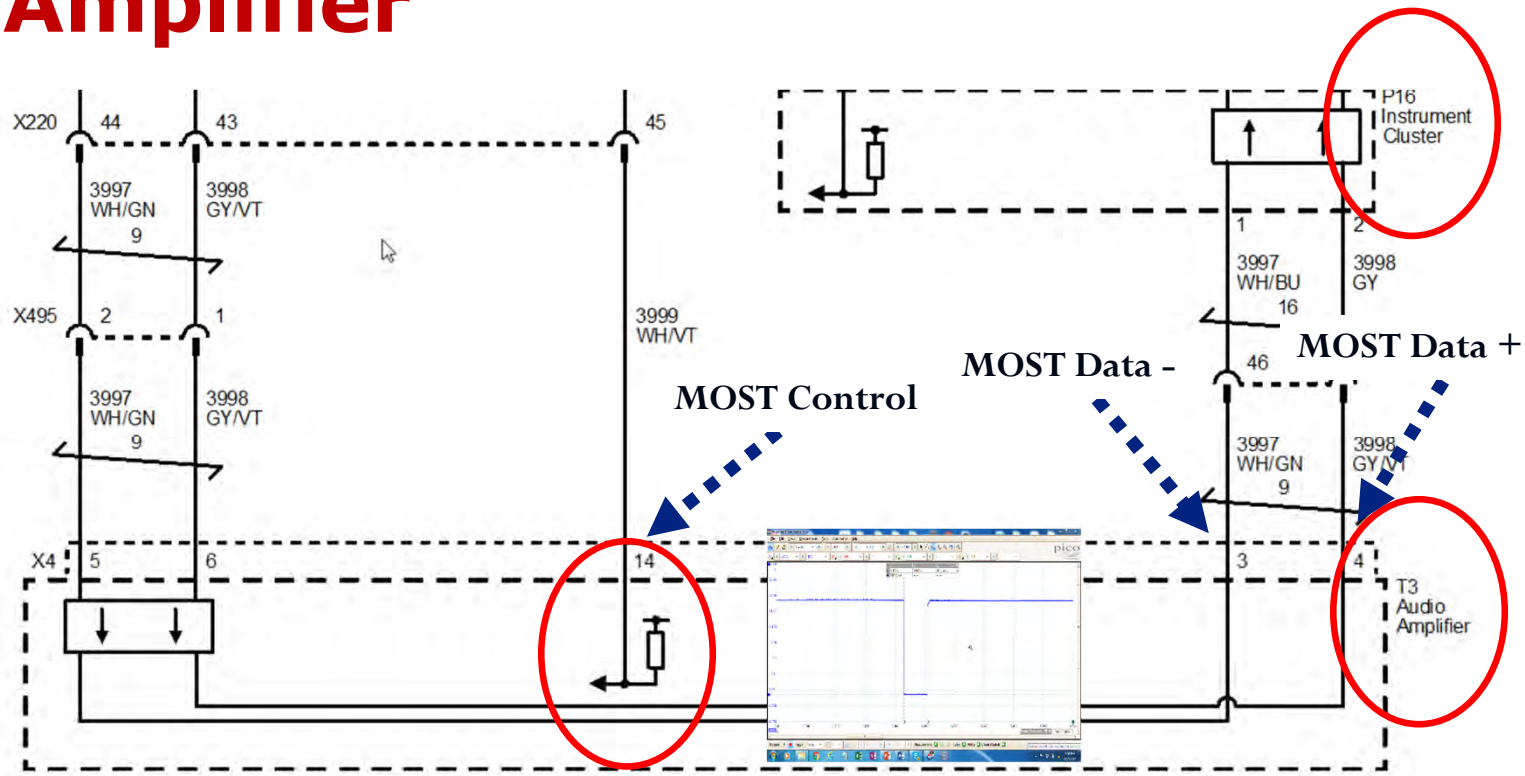
Media Oriented Systems Transport – Normal Operation

Step 2

- The rest state for these modules is 12 volts, the MOST Master will pull this value low for **100ms to activate these modules**.
- Once **activated**, the modules will initiate communication over the MOST Protocol in a CCW direction. (Downstream)
- An **IPC harness** is used to distribute the 12 volts to each module

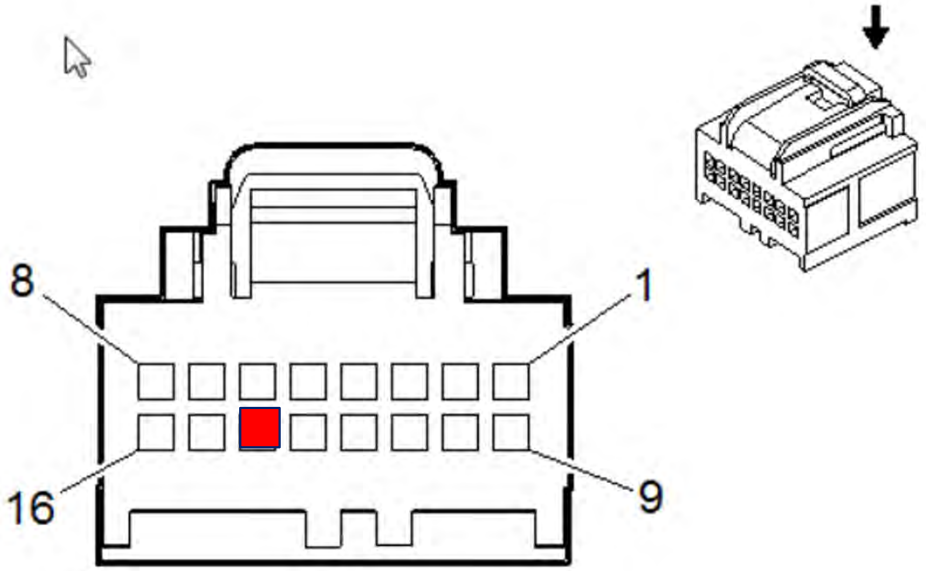


Instrument Cluster and T3 Amplifier



The 12 volt rest state is called "MOST Control" on GM schematics. (This is the "Wake Up Call")

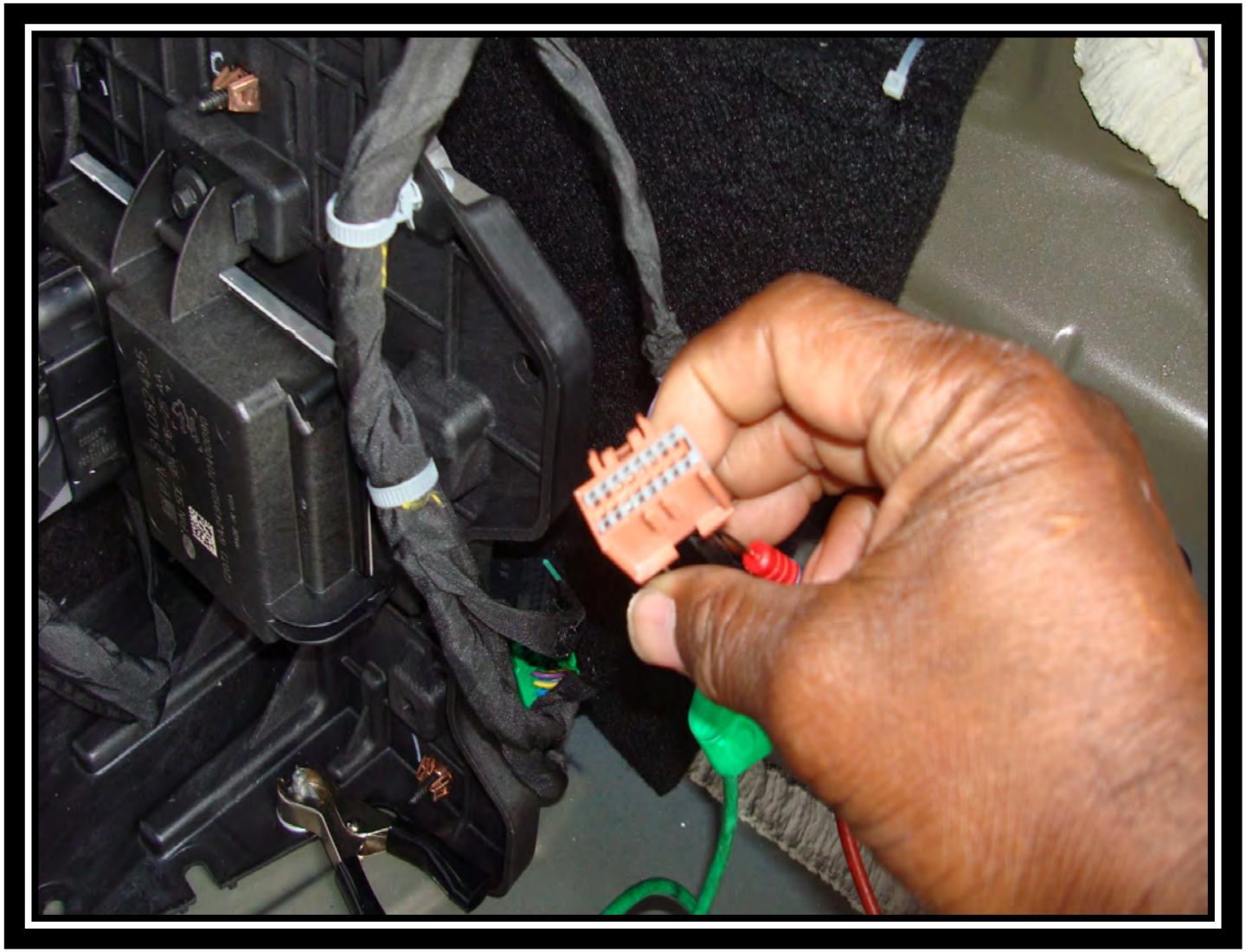
Amplifier Connector X4



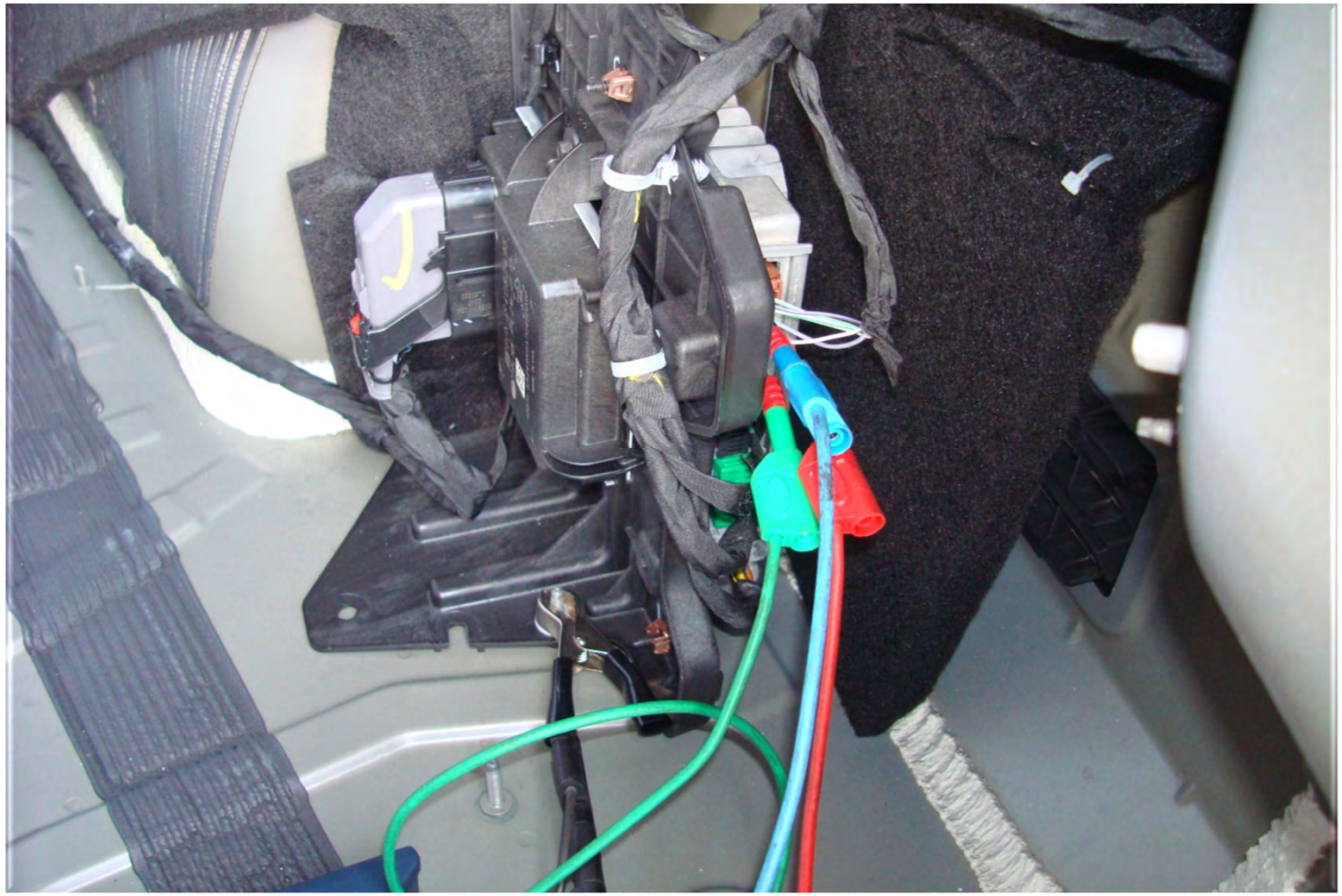
Brown Colored Connector

Amplifier Location

Amplifier Location



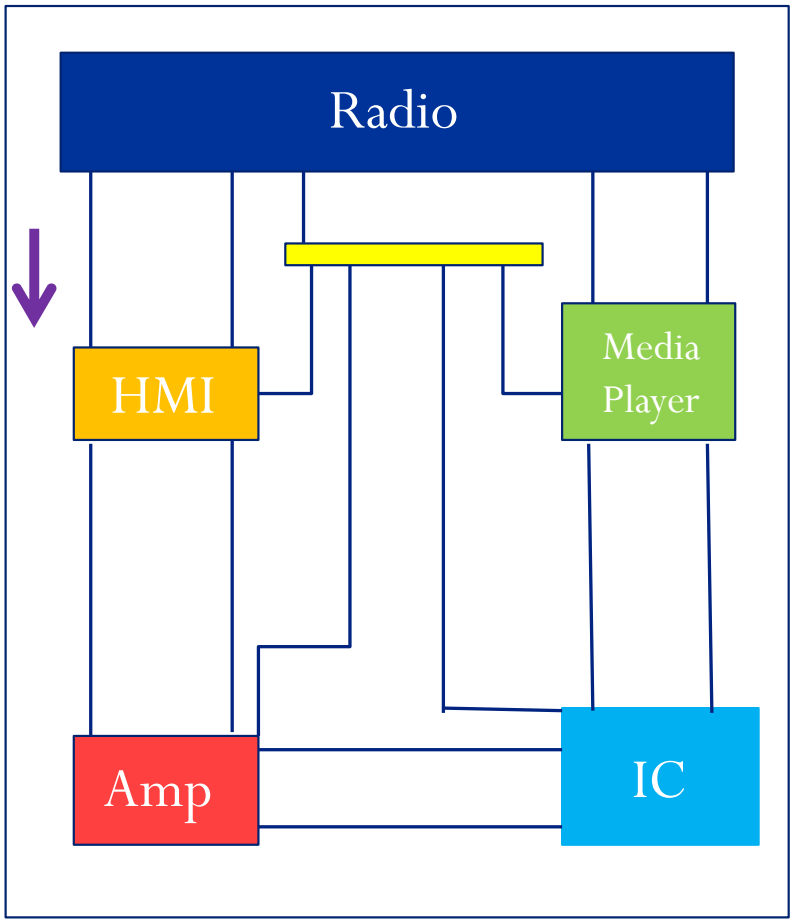
Amplifier Location



Media Oriented Systems Transport – Normal Operation

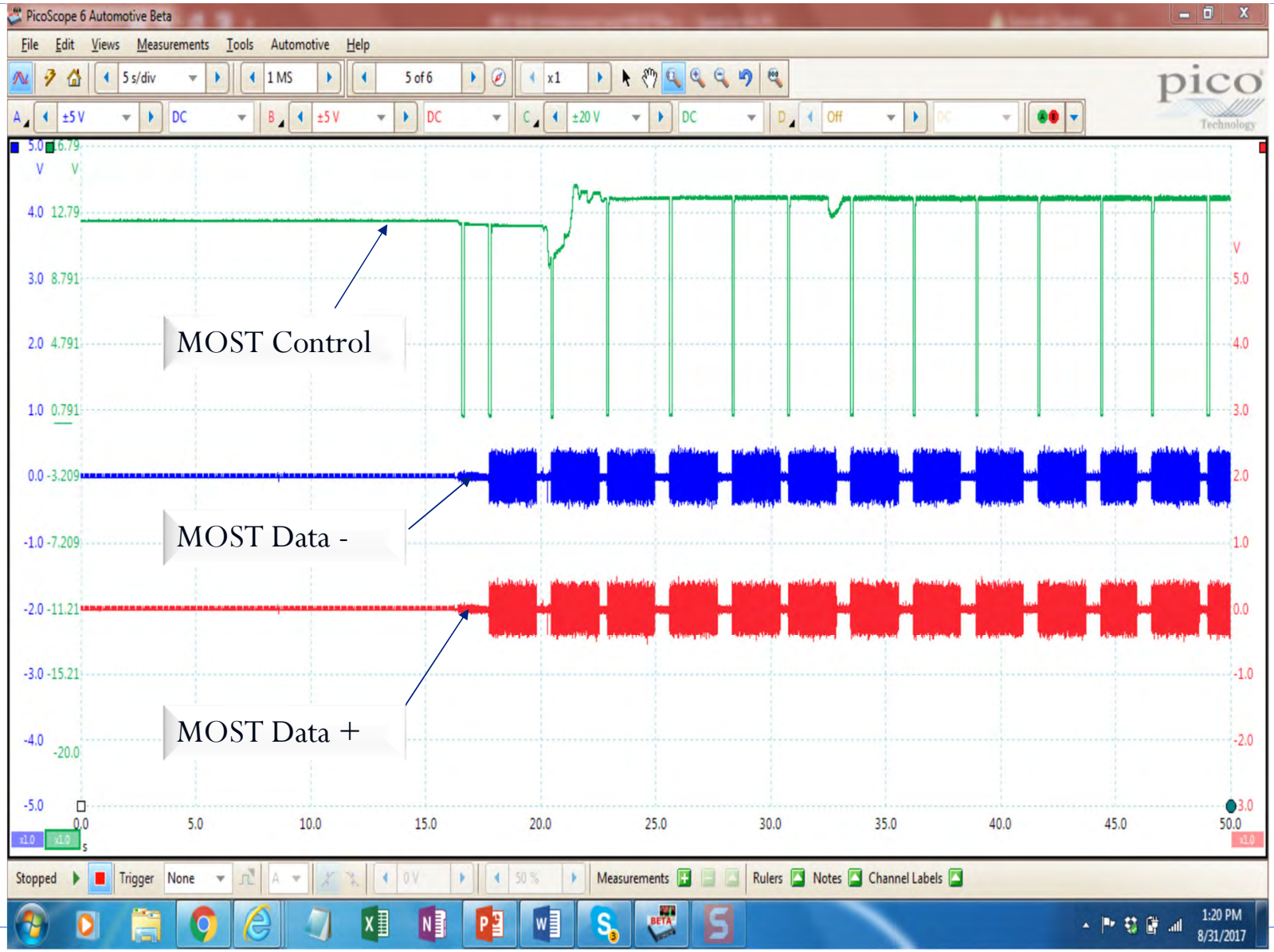
Step 3

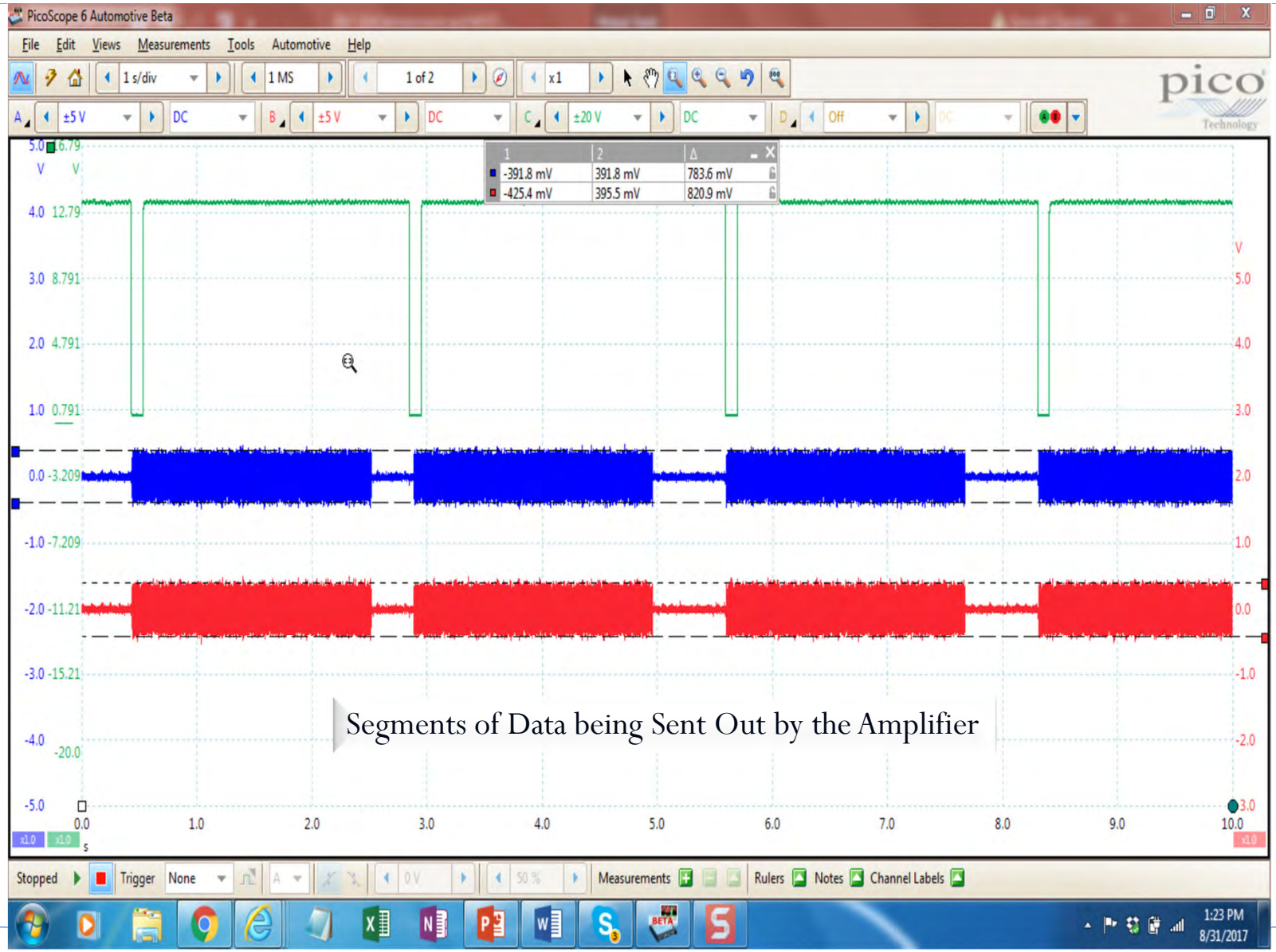
- Once activated, each module sends segments of data in a CCW motion, this is a continuous loop
- Data will flow from one module to the next.
- Data flow will always begin at the radio, each module is considered downstream (CCW) from the previous one before it.



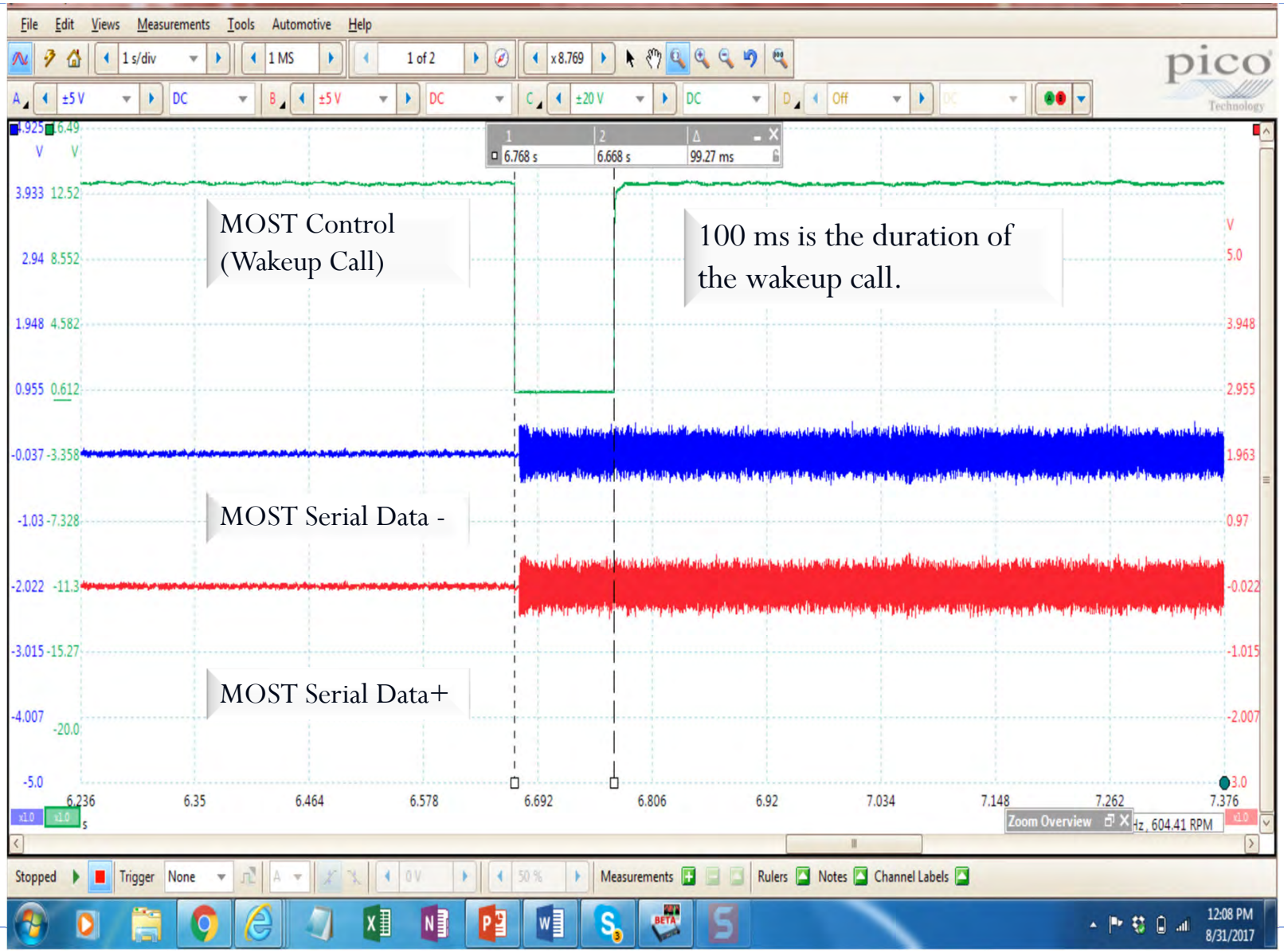
MOST Question

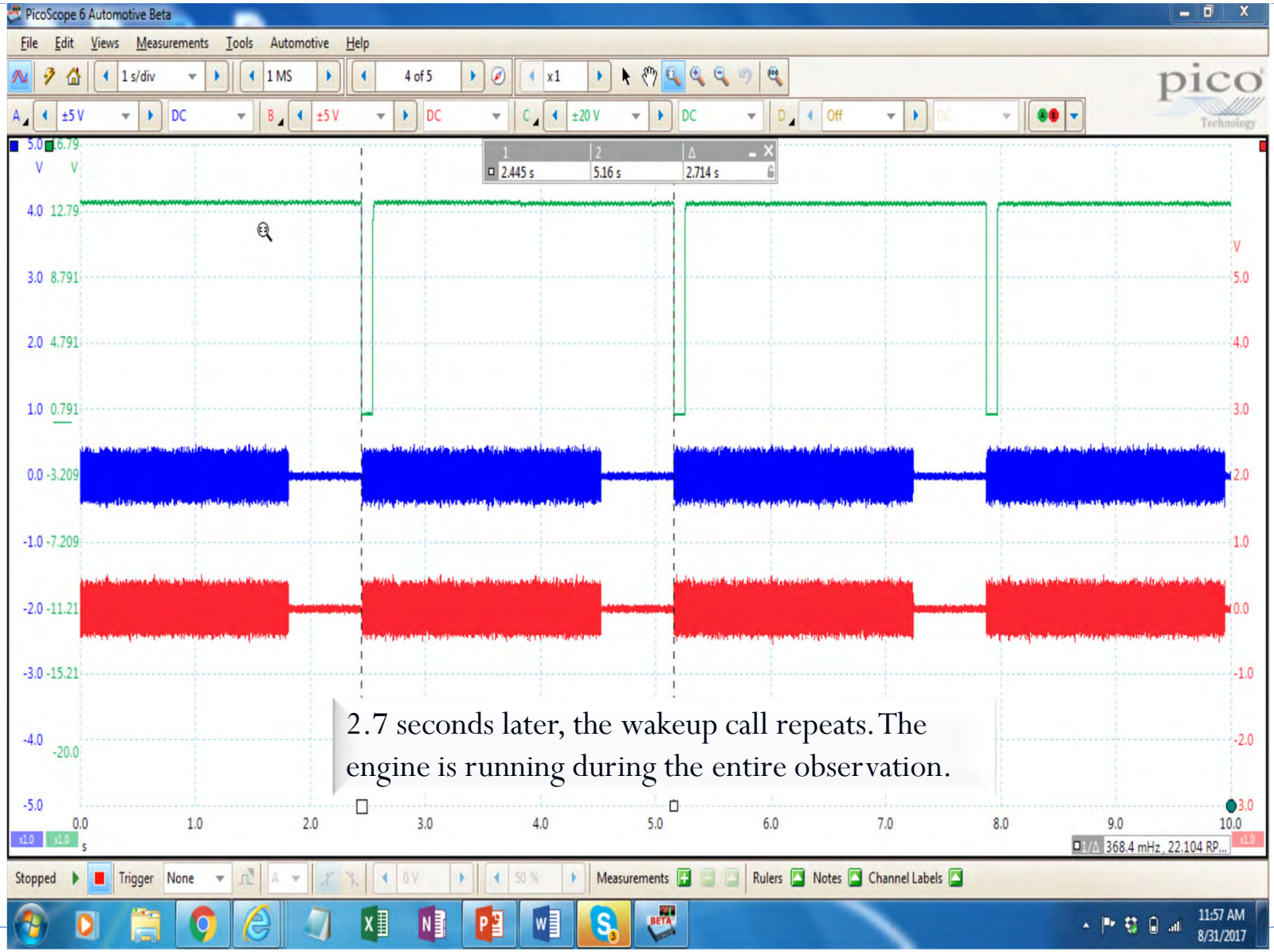
- Do the modules respond in some way to the wake up call to verify its receipt of this message?
- Answer: Yes, they send out segments of data that verify communication is taking place.

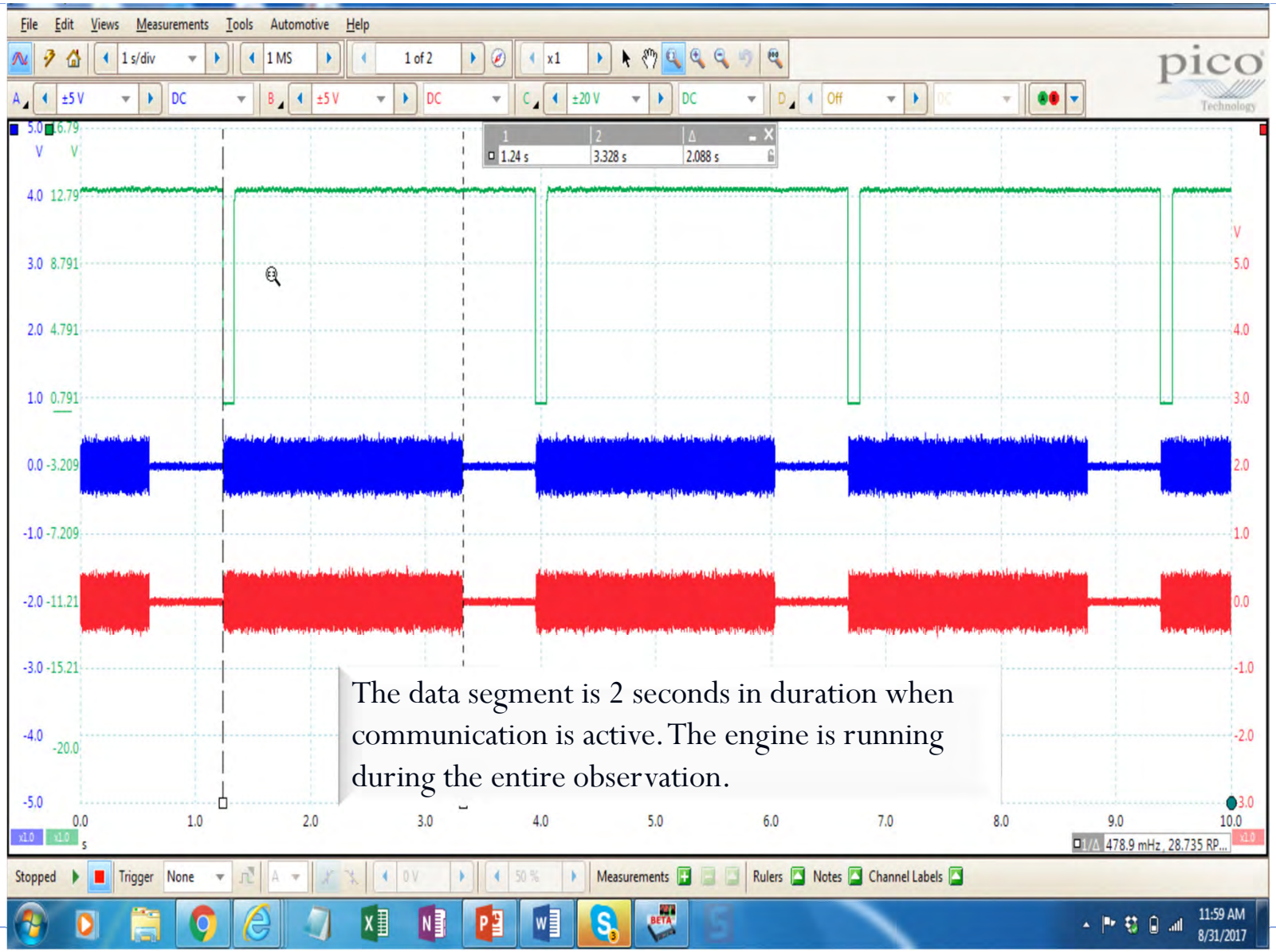

PicoScope 6 Automotive Beta
File Edit Views Measurements Tools Automotive Help
pico Technology
MOST Control
MOST Data -
MOST Data +
Stopped Trigger None Measurements Rulers Notes Channel Labels
1:20 PM
8/31/2017



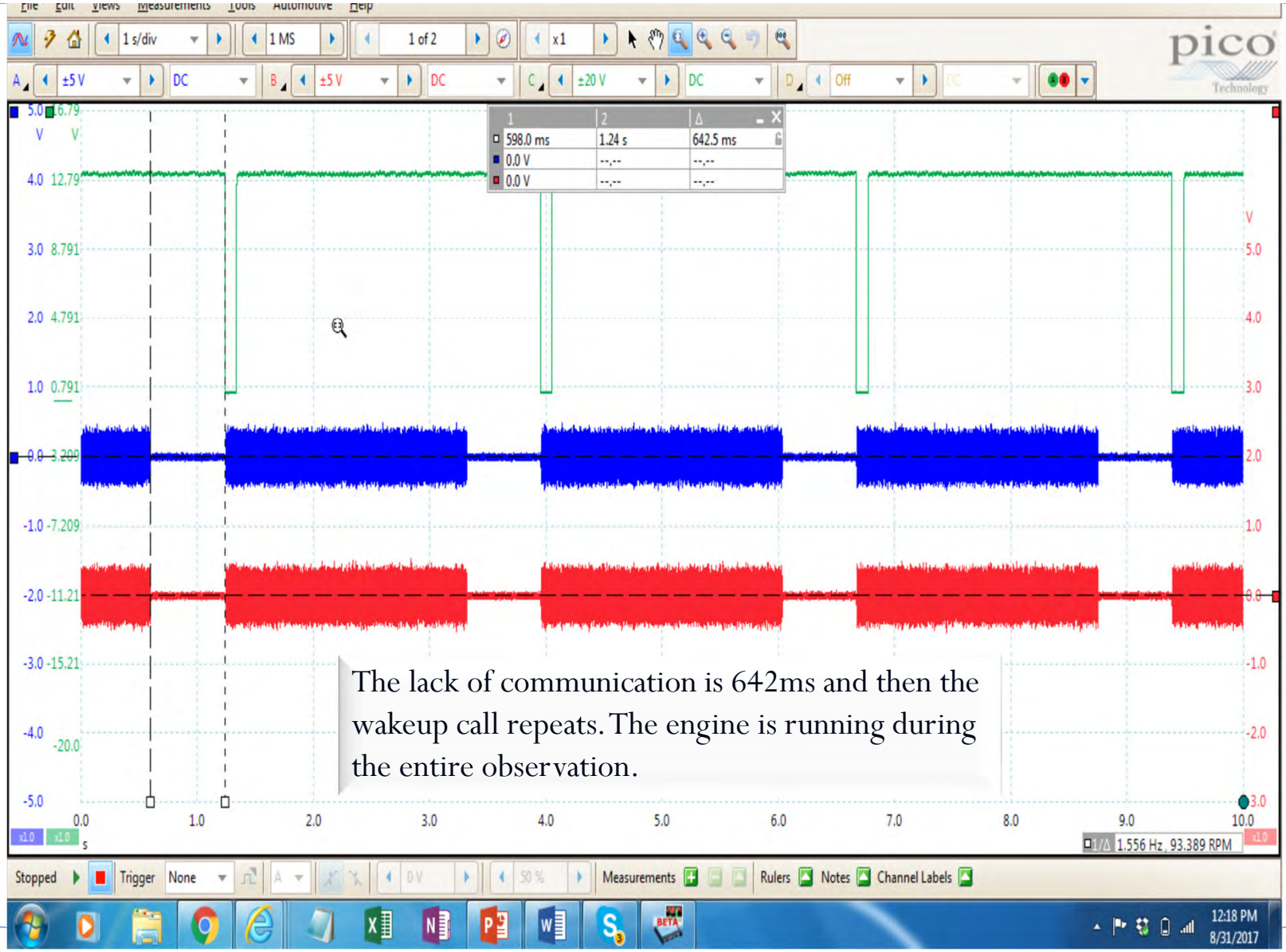
Segments of Data being Sent Out by the Amplifier


MOST Control
(Wakeup Call)
100 ms is the duration of
the wakeup call.
MOST Serial Data -
MOST Serial Data+

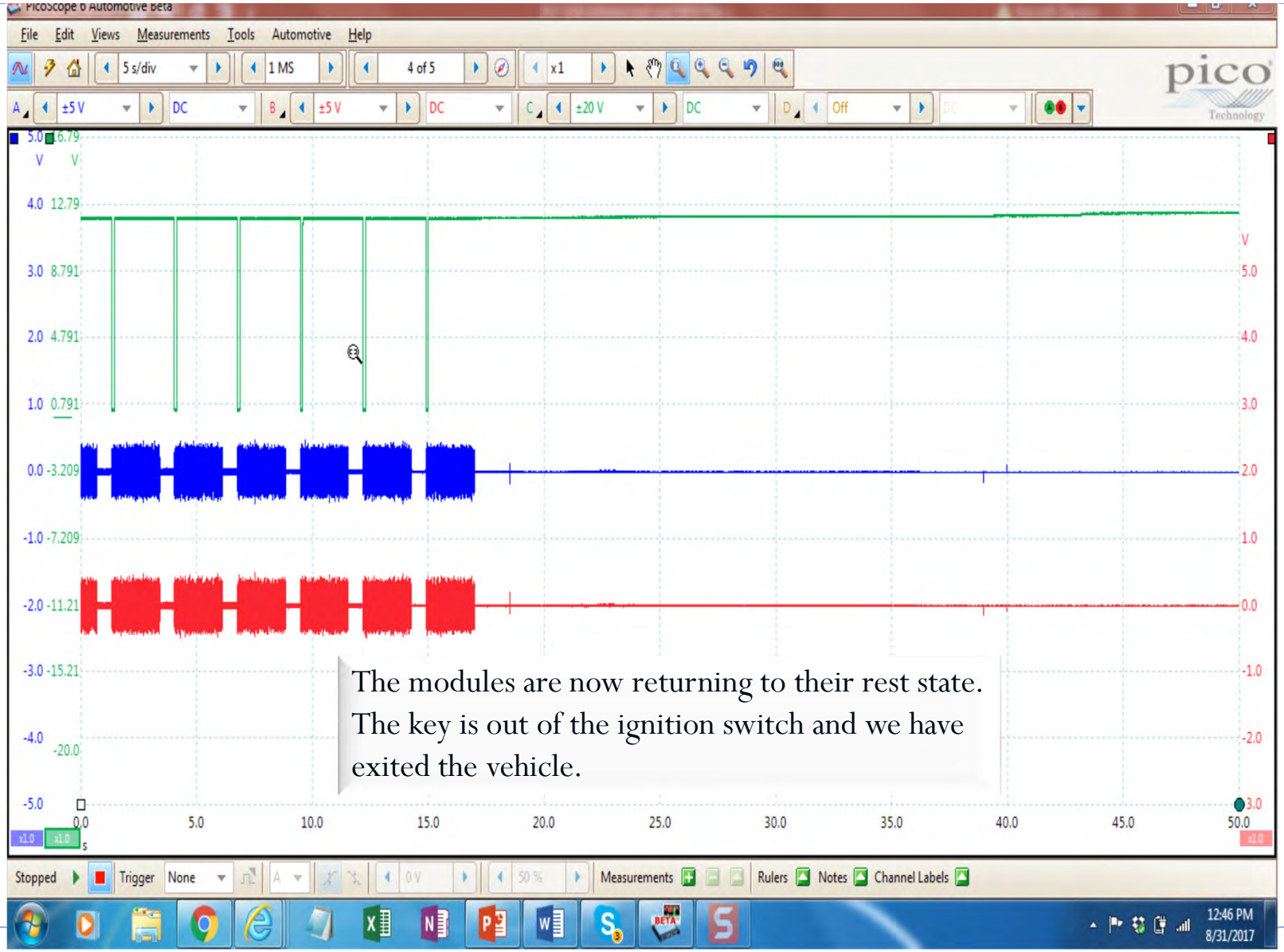

PicoScope 6 Automotive Beta
File Edit Views Measurements Tools Automotive Help
1 s/div
1 MS
4 of 5
x1
pico Technology
2.445 s
5.16 s
2.714 s
2.7 seconds later, the wakeup call repeats. The engine is running during the entire observation.
Stopped
Trigger
None
Measurements
Rulers
Notes
Channel Labels
11:57 AM
8/31/2017



The data segment is 2 seconds in duration when communication is active. The engine is running during the entire observation.



The lack of communication is 642ms and then the wakeup call repeats. The engine is running during the entire observation.



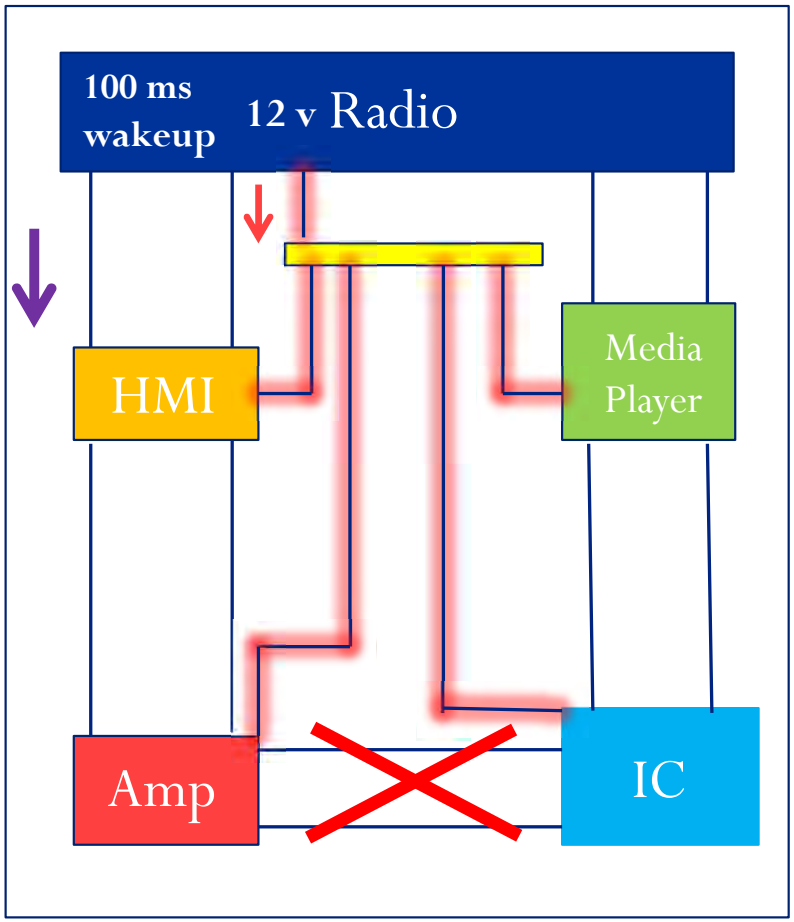
The modules are now returning to their rest state. The key is out of the ignition switch and we have exited the vehicle.

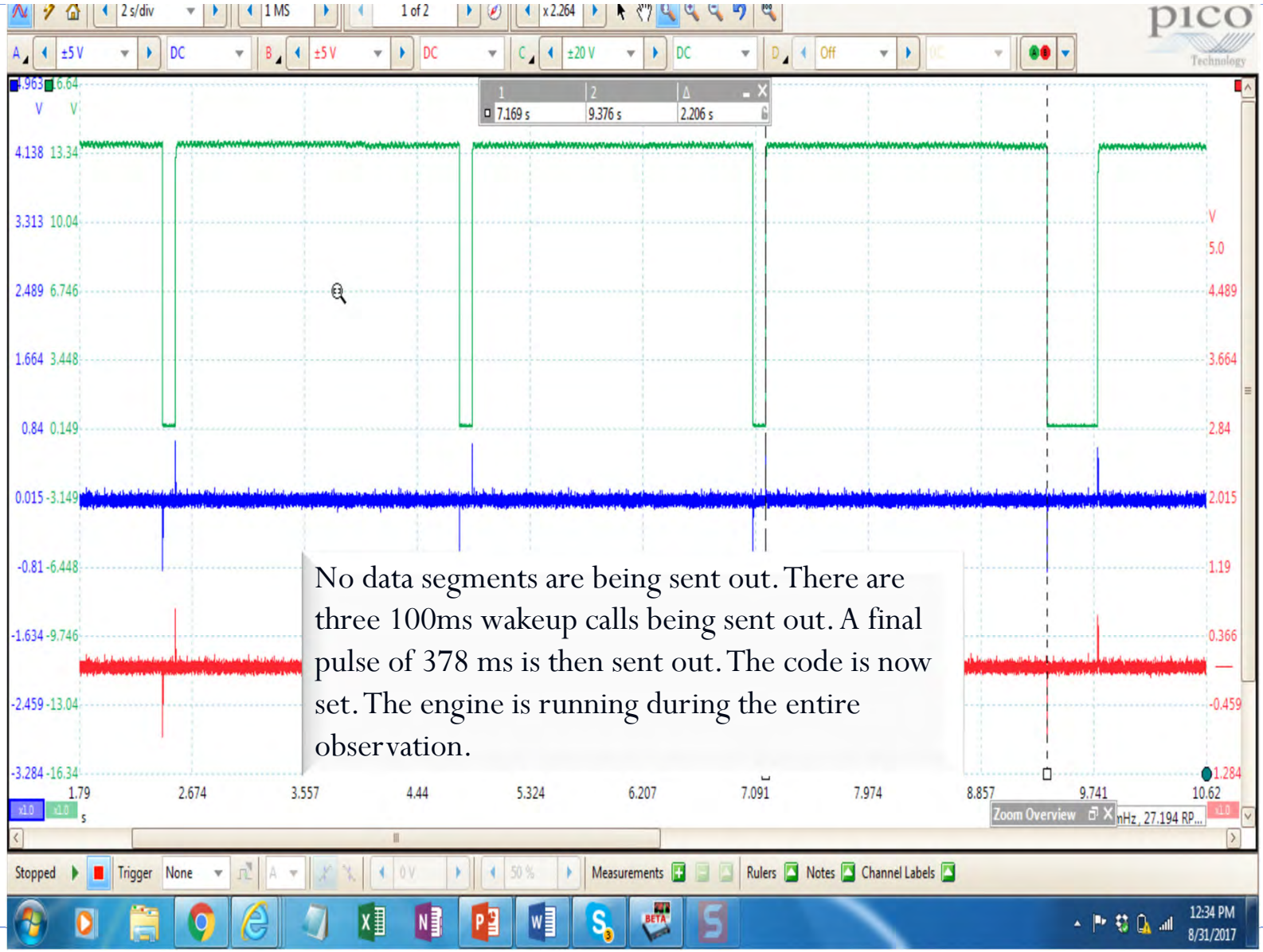
MOST
Abnormal Operation

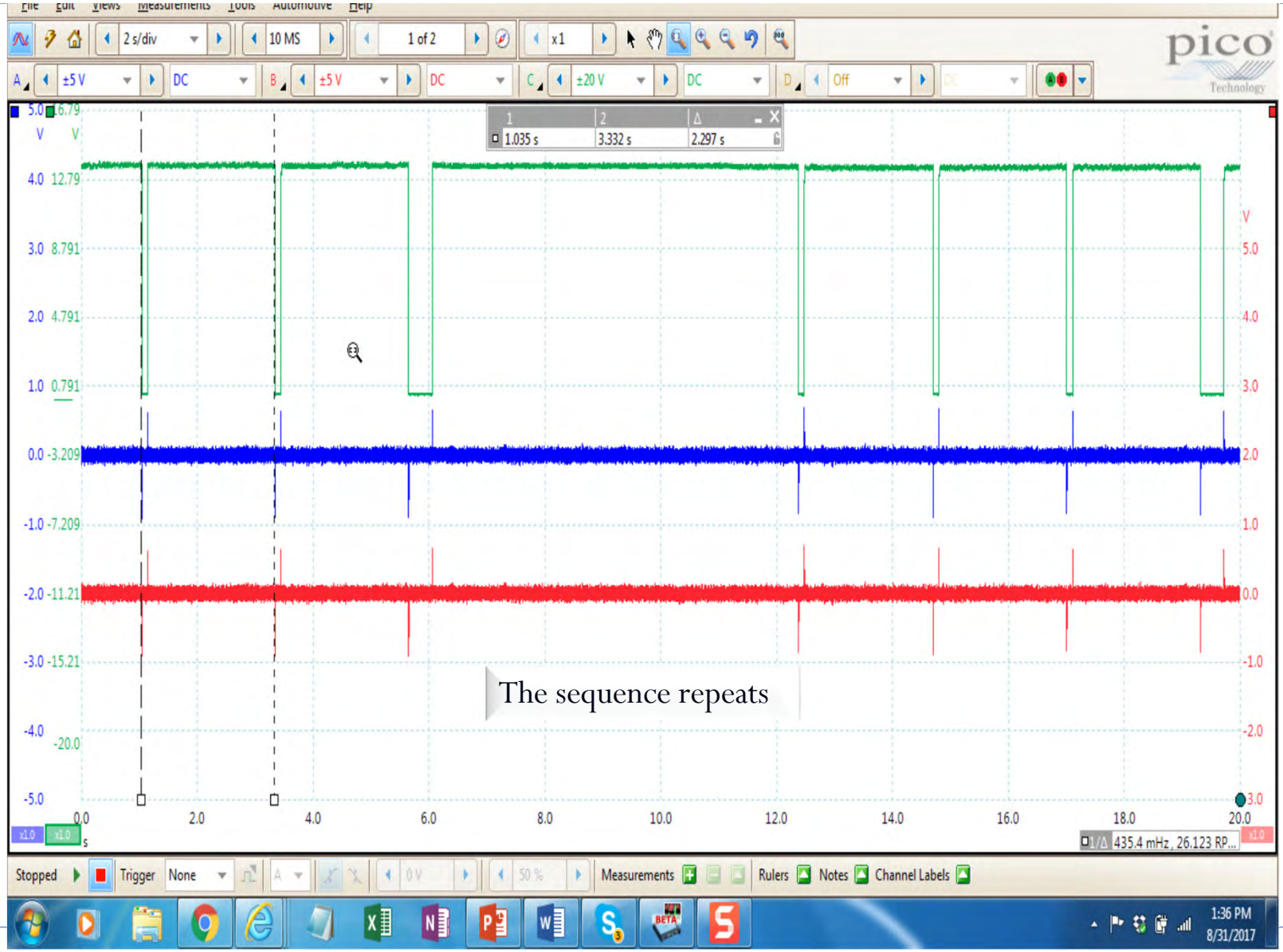
Media Oriented Systems Transport – Abnormal Operation

Step 1

- If any of the modules do not respond to the 100ms wake-up call, the radio will resend the signal up to 3 times with a 2 second delay between each one of the attempts.
- If an abnormal response is received after three attempts, the radio sets a DTC for the MOST Bus



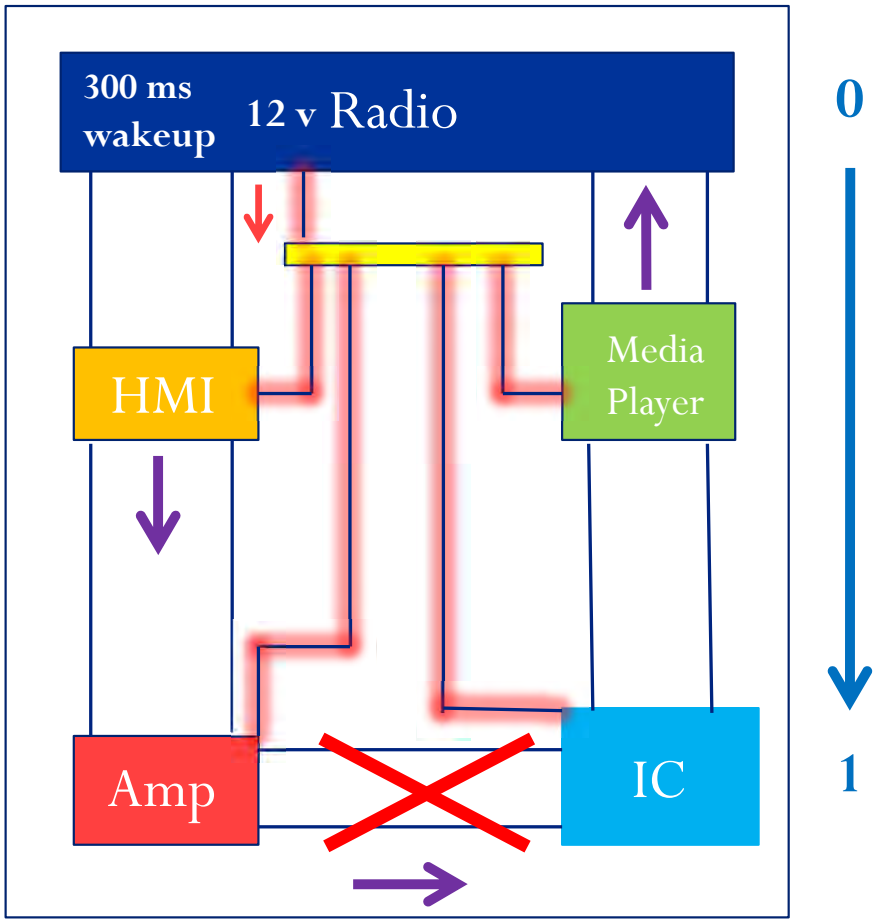

No data segments are being sent out. There are three 100ms wakeup calls being sent out. A final pulse of 378 ms is then sent out. The code is now set. The engine is running during the entire observation.


File Edit Views Measurements Tools Automotive Help
2 s/div
10 MS
1 of 2
x1
pico Technology
±5 V
DC
±5 V
DC
±20 V
DC
Off
1
1.035 s
2
3.332 s
Δ
2.297 s
5.0 6.79
V V
4.0 12.79
3.0 8.791
2.0 4.791
1.0 0.791
0.0 -3.209
-1.0 -7.209
-2.0 -11.21
-3.0 -15.21
-4.0 -20.0
-5.0
V
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
0.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 20.0
s
1/Δ 435.4 mHz, 26.123 RP...
The sequence repeats
Stopped
Trigger
None
Measurements
Rulers
Notes
Channel Labels
1:36 PM
8/31/2017

Media Oriented Systems Transport – Abnormal Operation

Step 2

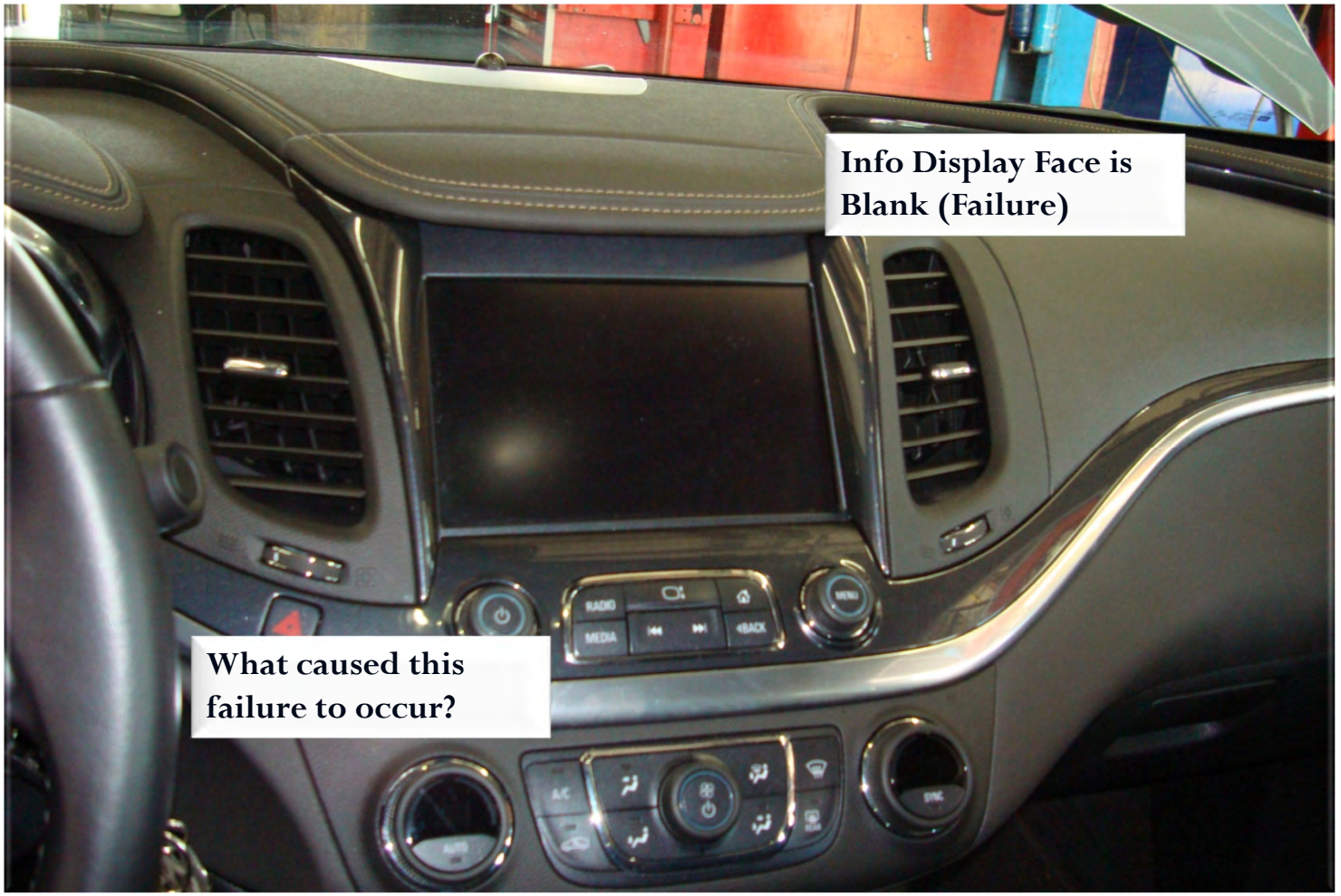
- Once a DTC is set, diagnostics upstream (CW) begins and a 300ms low signal is sent over the MOST protocol.
- All modules will try to respond by transmitting data over the MOST protocol.
- The responding module prior to the break upstream of the radio becomes the Surrogate MOST master
- The entire process takes up to 10 seconds to complete.



Case Study #1

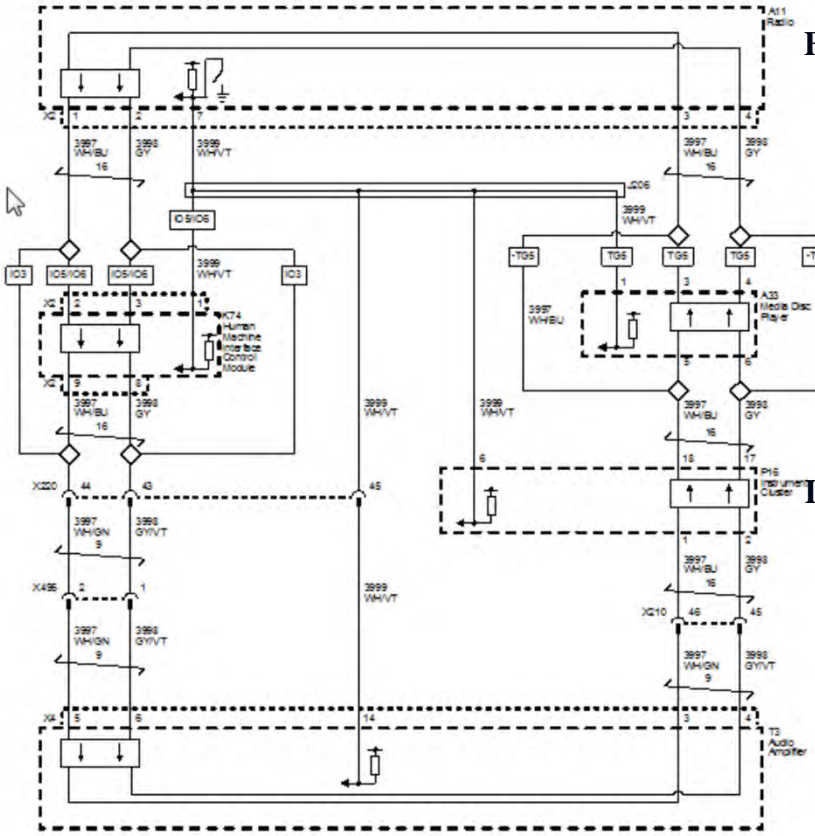
2017 Chev Impala

Center Stack



MOST Schematics

Human Interface Module



Radio

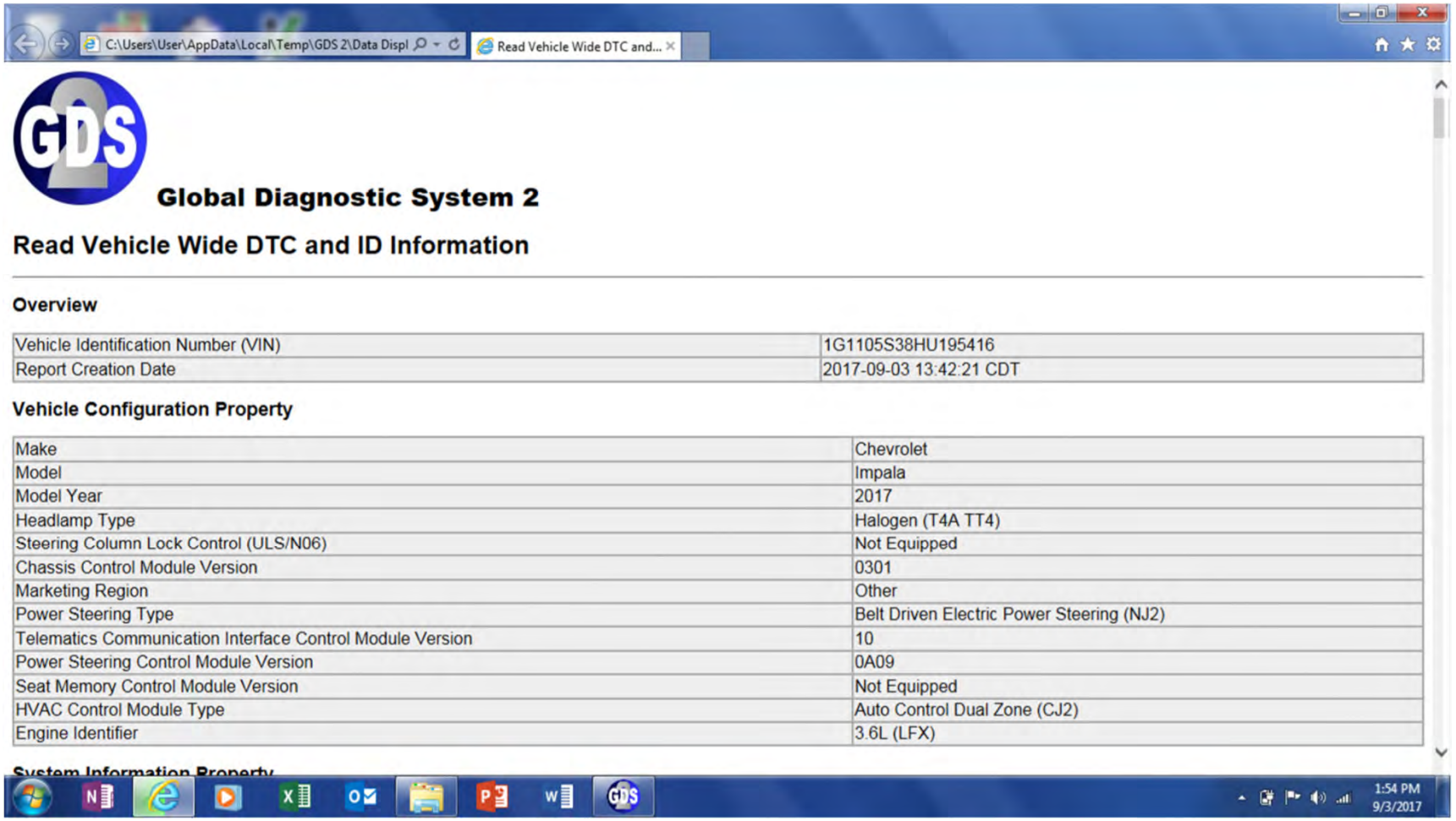
No Media Player on this Vehicle

Instrument Cluster

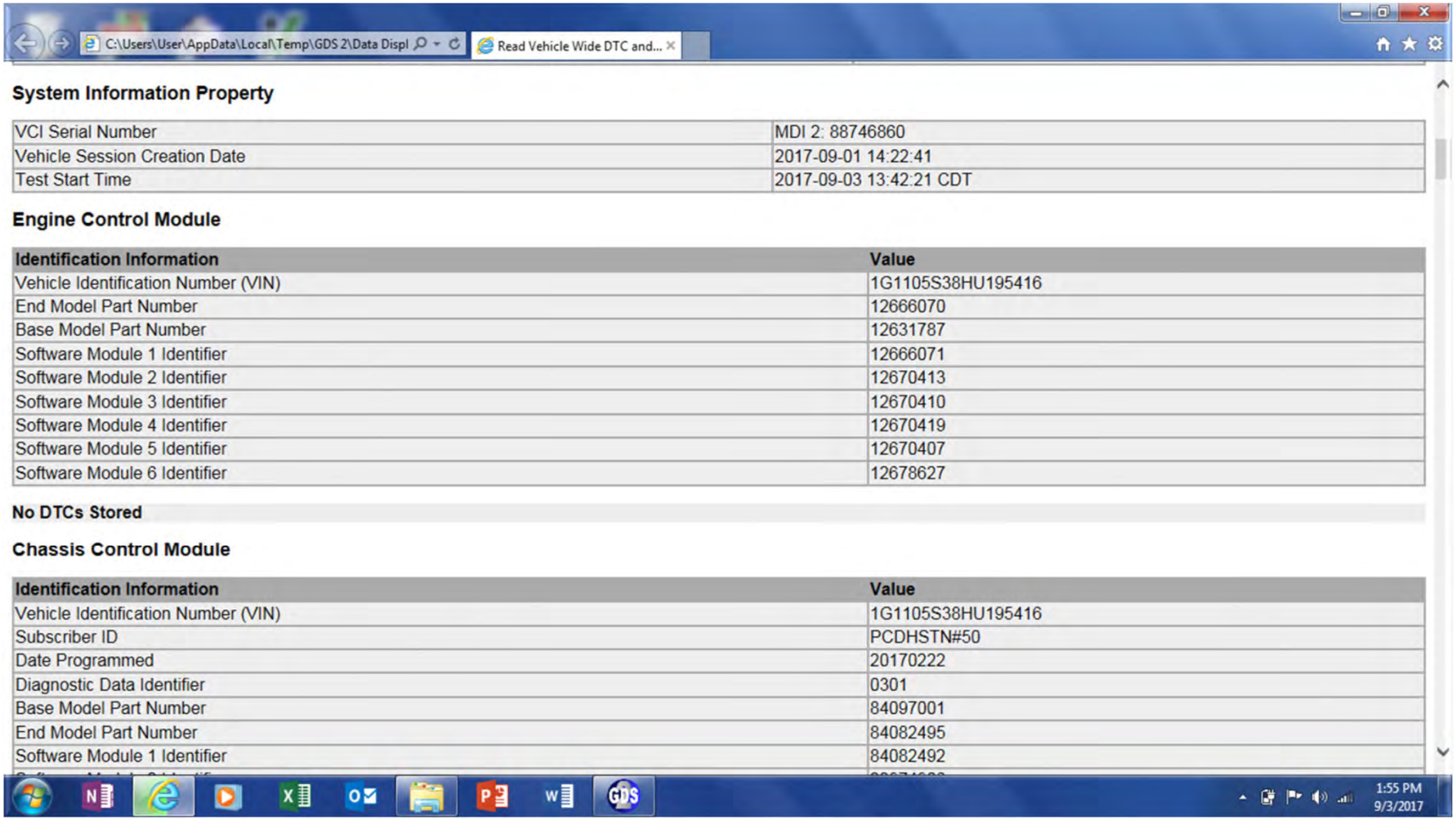
Amplifier

MOST
Scan Data

Scan Data


C:\Users\User\AppData\Local\Temp\GDS 2\Data Displ
Read Vehicle Wide DTC and...
Global Diagnostic System 2
Read Vehicle Wide DTC and ID Information
Overview
Vehicle Identification Number (VIN) 1G1105S38HU195416
Report Creation Date 2017-09-03 13:42:21 CDT
Vehicle Configuration Property
Make Chevrolet
Model Impala
Model Year 2017
Headlamp Type Halogen (T4A TT4)
Steering Column Lock Control (ULS/N06) Not Equipped
Chassis Control Module Version 0301
Marketing Region Other
Power Steering Type Belt Driven Electric Power Steering (NJ2)
Telematics Communication Interface Control Module Version 10
Power Steering Control Module Version 0A09
Seat Memory Control Module Version Not Equipped
HVAC Control Module Type Auto Control Dual Zone (CJ2)
Engine Identifier 3.6L (LFX)
1:54 PM
9/3/2017

Scan Data



System Information Property

VCI Serial Number	MDI 2: 88746860
Vehicle Session Creation Date	2017-09-01 14:22:41
Test Start Time	2017-09-03 13:42:21 CDT

Engine Control Module

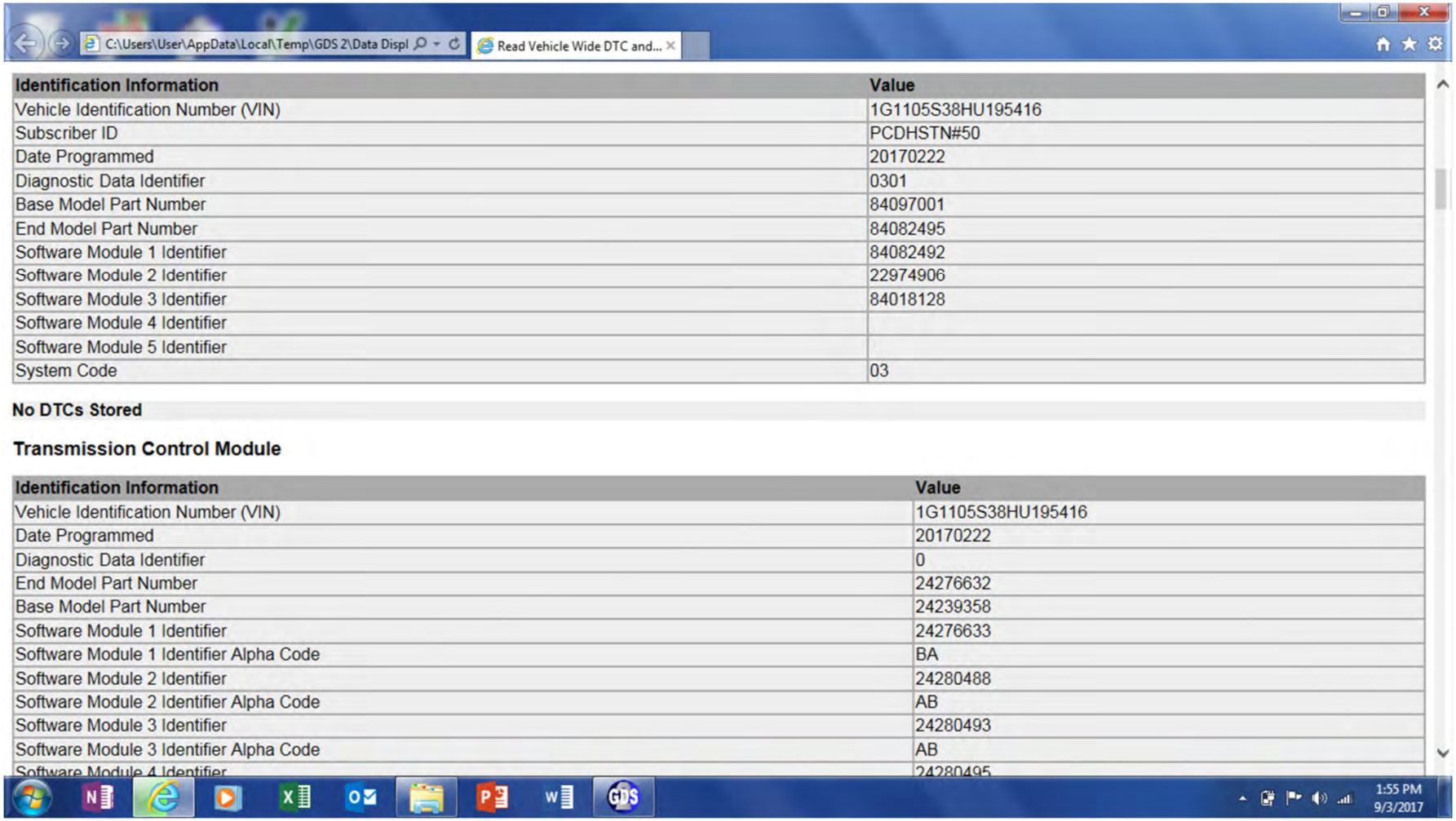
Identification Information	Value
Vehicle Identification Number (VIN)	1G1105S38HU195416
End Model Part Number	12666070
Base Model Part Number	12631787
Software Module 1 Identifier	12666071
Software Module 2 Identifier	12670413
Software Module 3 Identifier	12670410
Software Module 4 Identifier	12670419
Software Module 5 Identifier	12670407
Software Module 6 Identifier	12678627

No DTCs Stored

Chassis Control Module

Identification Information	Value
Vehicle Identification Number (VIN)	1G1105S38HU195416
Subscriber ID	PCDHSTN#50
Date Programmed	20170222
Diagnostic Data Identifier	0301
Base Model Part Number	84097001
End Model Part Number	84082495
Software Module 1 Identifier	84082492

Scan Data



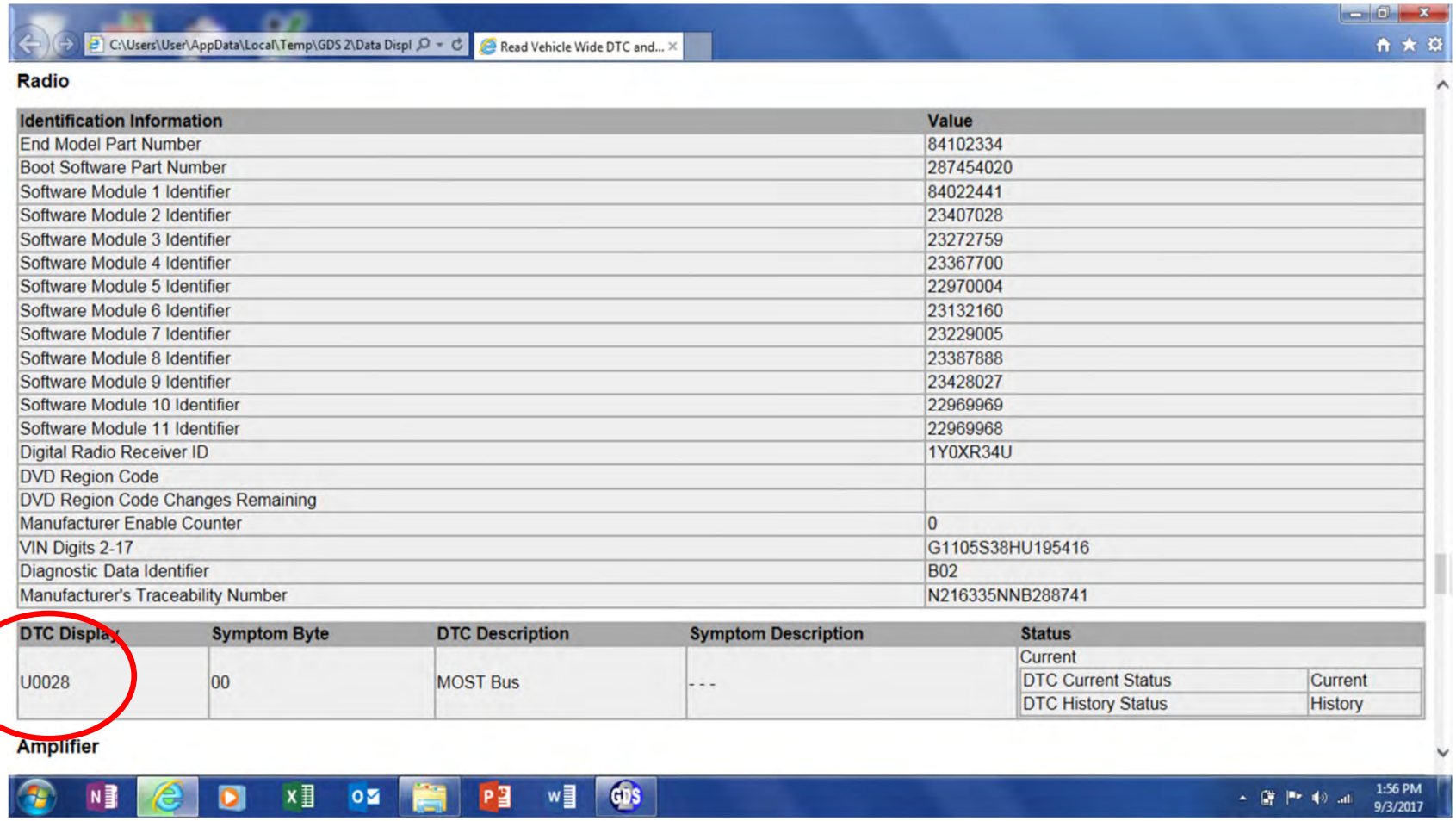
Identification Information	Value
Vehicle Identification Number (VIN)	1G1105S38HU195416
Subscriber ID	PCDHSTN#50
Date Programmed	20170222
Diagnostic Data Identifier	0301
Base Model Part Number	84097001
End Model Part Number	84082495
Software Module 1 Identifier	84082492
Software Module 2 Identifier	22974906
Software Module 3 Identifier	84018128
Software Module 4 Identifier	
Software Module 5 Identifier	
System Code	03

No DTCs Stored

Transmission Control Module

Identification Information	Value
Vehicle Identification Number (VIN)	1G1105S38HU195416
Date Programmed	20170222
Diagnostic Data Identifier	0
End Model Part Number	24276632
Base Model Part Number	24239358
Software Module 1 Identifier	24276633
Software Module 1 Identifier Alpha Code	BA
Software Module 2 Identifier	24280488
Software Module 2 Identifier Alpha Code	AB
Software Module 3 Identifier	24280493
Software Module 3 Identifier Alpha Code	AB
Software Module 4 Identifier	24280495

Scan Data U0028 stored in Radio



C:\Users\User\AppData\Local\Temp\GDS 2\Data Displ

Read Vehicle Wide DTC and...

Radio

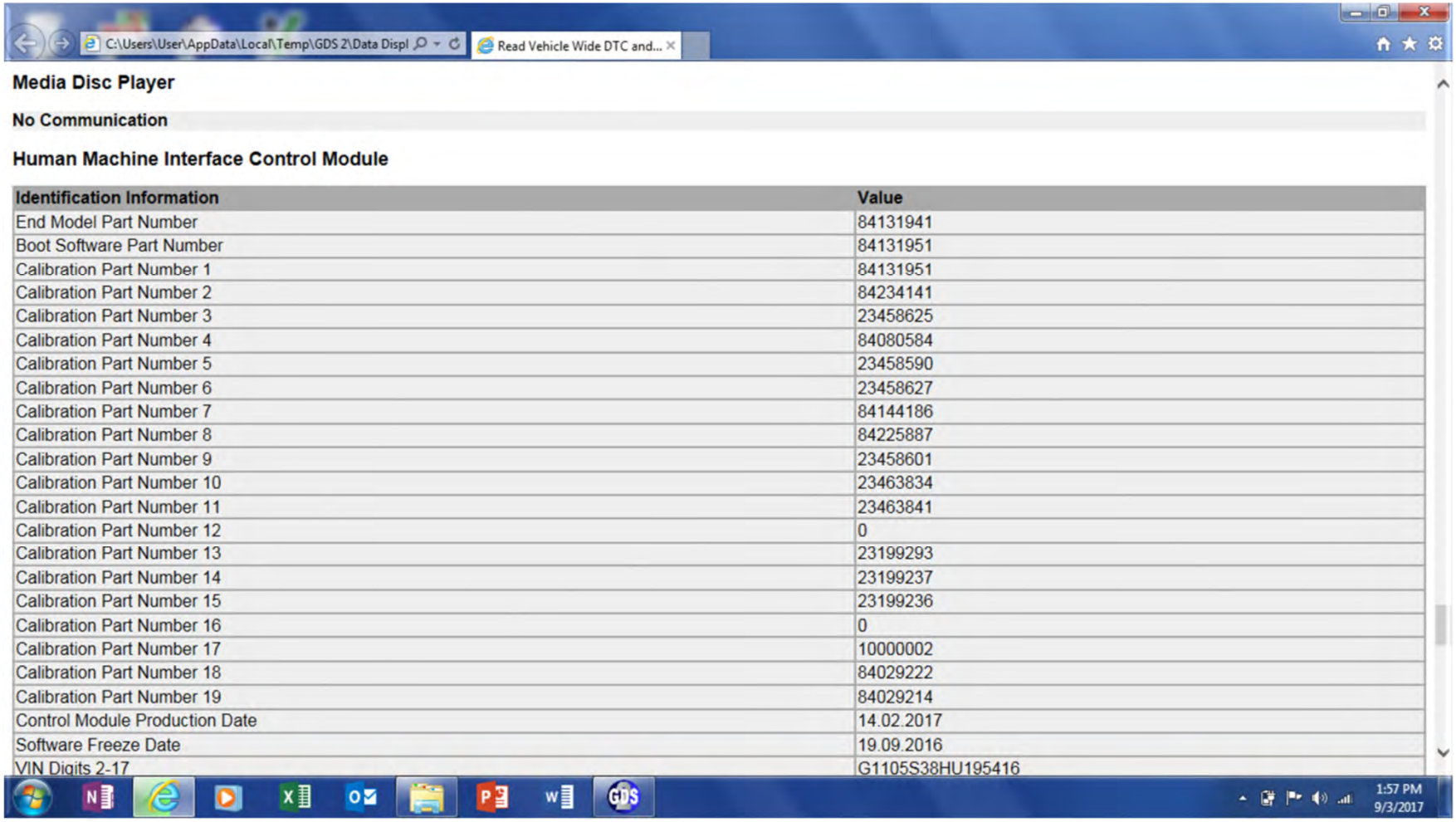
Identification Information	Value
End Model Part Number	84102334
Boot Software Part Number	287454020
Software Module 1 Identifier	84022441
Software Module 2 Identifier	23407028
Software Module 3 Identifier	23272759
Software Module 4 Identifier	23367700
Software Module 5 Identifier	22970004
Software Module 6 Identifier	23132160
Software Module 7 Identifier	23229005
Software Module 8 Identifier	23387888
Software Module 9 Identifier	23428027
Software Module 10 Identifier	22969969
Software Module 11 Identifier	22969968
Digital Radio Receiver ID	1Y0XR34U
DVD Region Code	
DVD Region Code Changes Remaining	
Manufacturer Enable Counter	0
VIN Digits 2-17	G1105S38HU195416
Diagnostic Data Identifier	B02
Manufacturer's Traceability Number	N216335NNB288741

DTC Display	Symptom Byte	DTC Description	Symptom Description	Status	
U0028	00	MOST Bus	- - -	Current	
				DTC Current Status	Current
				DTC History Status	History

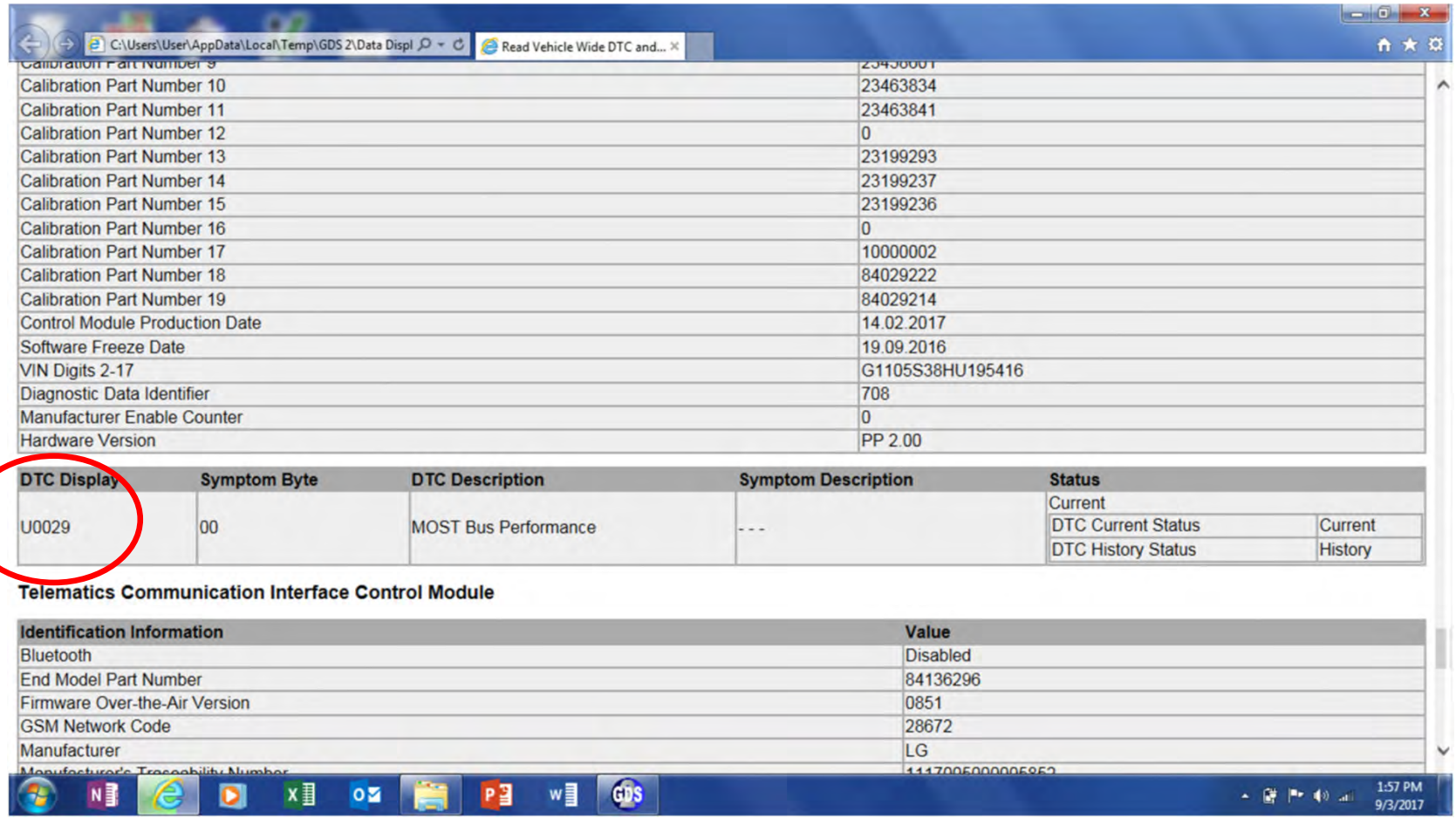
Amplifier

1:56 PM
9/3/2017

Scan Data


C:\Users\User\AppData\Local\Temp\GDS 2\Data Displ
Read Vehicle Wide DTC and...
Media Disc Player
No Communication
Human Machine Interface Control Module
Identification Information
Value
End Model Part Number
84131941
Boot Software Part Number
84131951
Calibration Part Number 1
84131951
Calibration Part Number 2
84234141
Calibration Part Number 3
23458625
Calibration Part Number 4
84080584
Calibration Part Number 5
23458590
Calibration Part Number 6
23458627
Calibration Part Number 7
84144186
Calibration Part Number 8
84225887
Calibration Part Number 9
23458601
Calibration Part Number 10
23463834
Calibration Part Number 11
23463841
Calibration Part Number 12
0
Calibration Part Number 13
23199293
Calibration Part Number 14
23199237
Calibration Part Number 15
23199236
Calibration Part Number 16
0
Calibration Part Number 17
10000002
Calibration Part Number 18
84029222
Calibration Part Number 19
84029214
Control Module Production Date
14.02.2017
Software Freeze Date
19.09.2016
VIN Digits 2-17
G1105S38HU195416
1:57 PM
9/3/2017

Scan Data-U0029 stored in HMI Module



C:\Users\User\AppData\Local\Temp\GDS 2\Data Displ

Read Vehicle Wide DTC and...

Calibration Part Number 9	23456661
Calibration Part Number 10	23463834
Calibration Part Number 11	23463841
Calibration Part Number 12	0
Calibration Part Number 13	23199293
Calibration Part Number 14	23199237
Calibration Part Number 15	23199236
Calibration Part Number 16	0
Calibration Part Number 17	10000002
Calibration Part Number 18	84029222
Calibration Part Number 19	84029214
Control Module Production Date	14.02.2017
Software Freeze Date	19.09.2016
VIN Digits 2-17	G1105S38HU195416
Diagnostic Data Identifier	708
Manufacturer Enable Counter	0
Hardware Version	PP 2.00

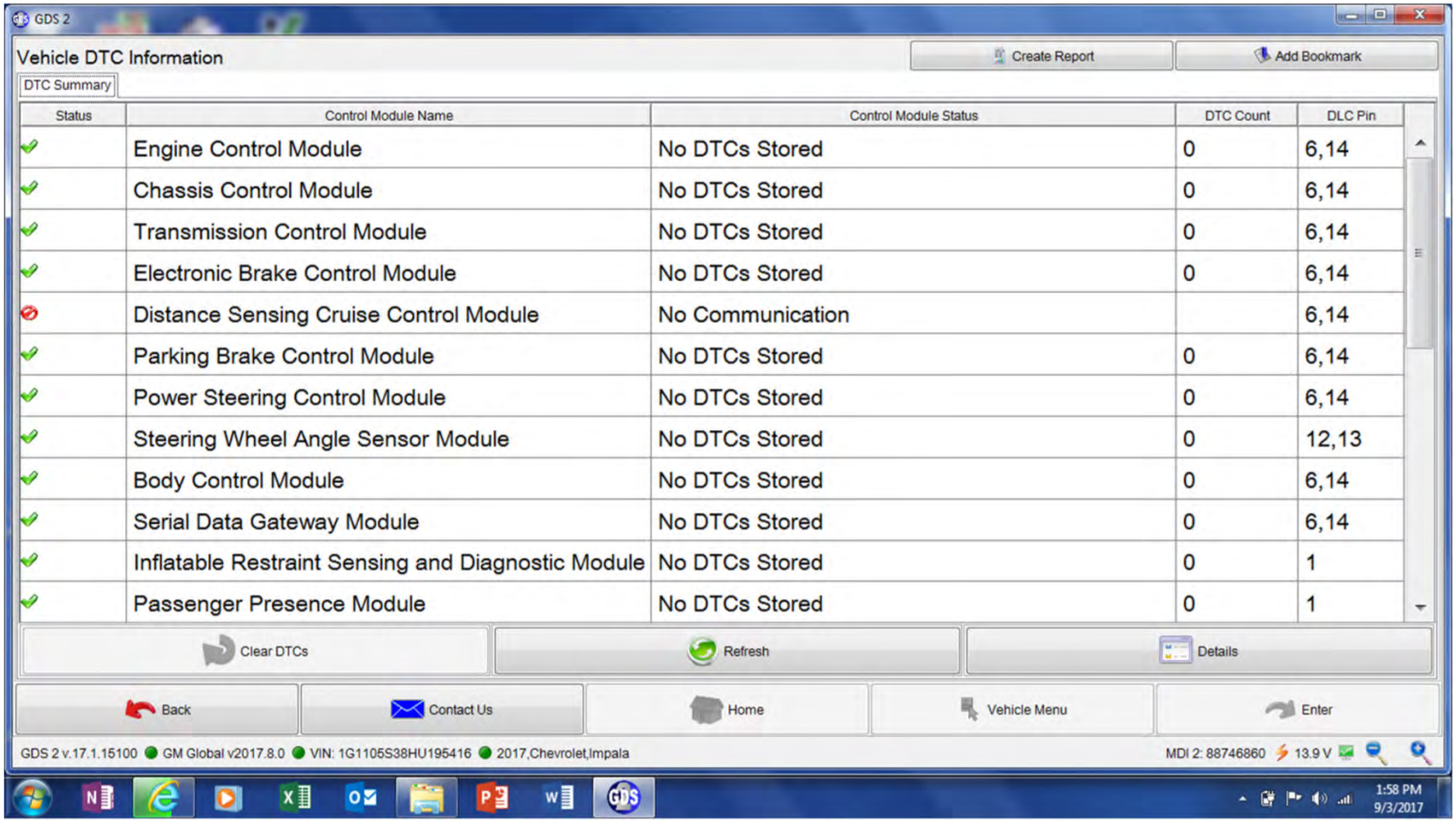
DTC Display	Symptom Byte	DTC Description	Symptom Description	Status	
U0029	00	MOST Bus Performance	- - -	Current	
				DTC Current Status	Current
				DTC History Status	History

Telematics Communication Interface Control Module

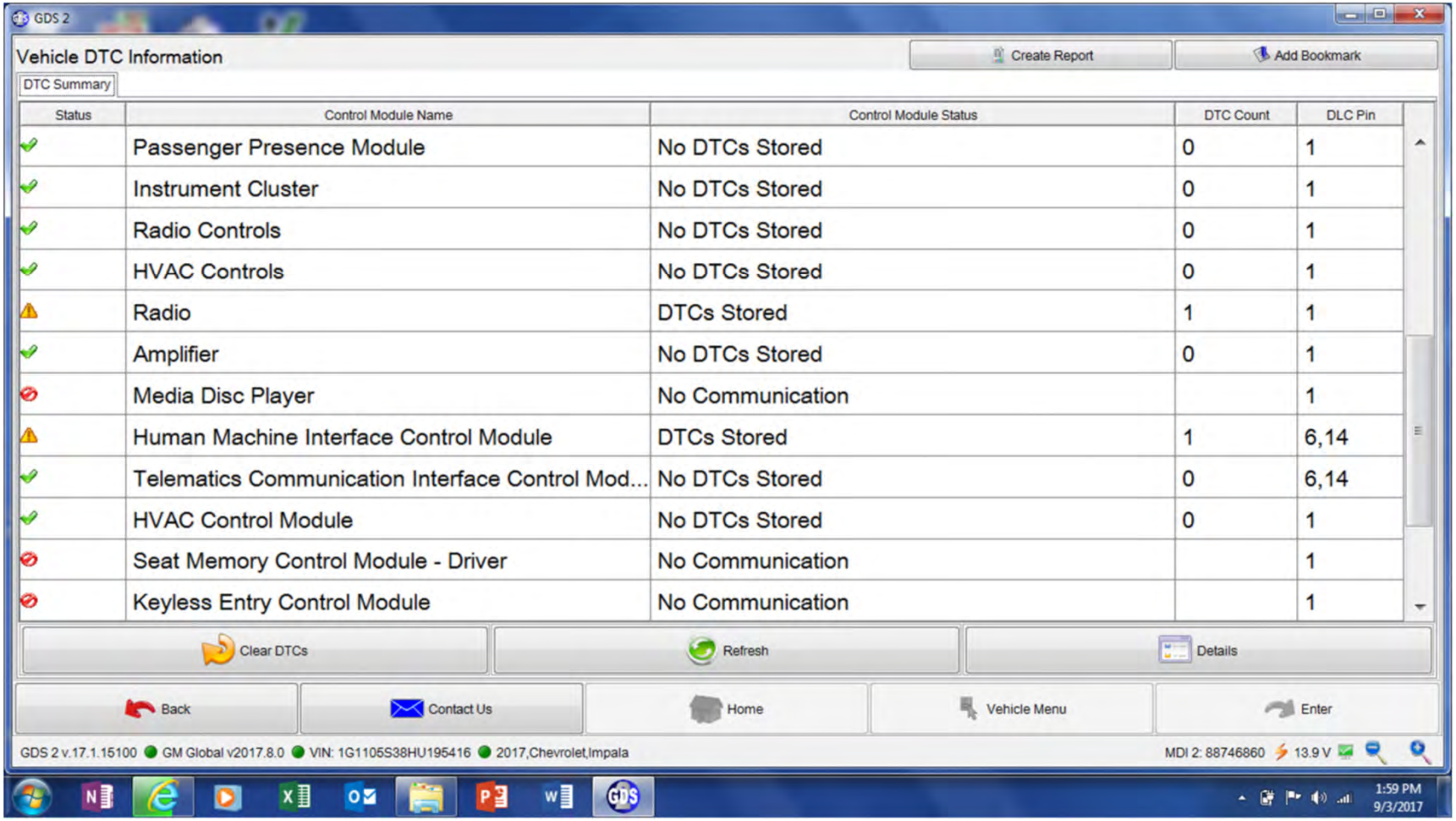
Identification Information	Value
Bluetooth	Disabled
End Model Part Number	84136296
Firmware Over-the-Air Version	0851
GSM Network Code	28672
Manufacturer	LG
Manufacturer's Traceability Number	1117005000005852

1:57 PM
9/3/2017

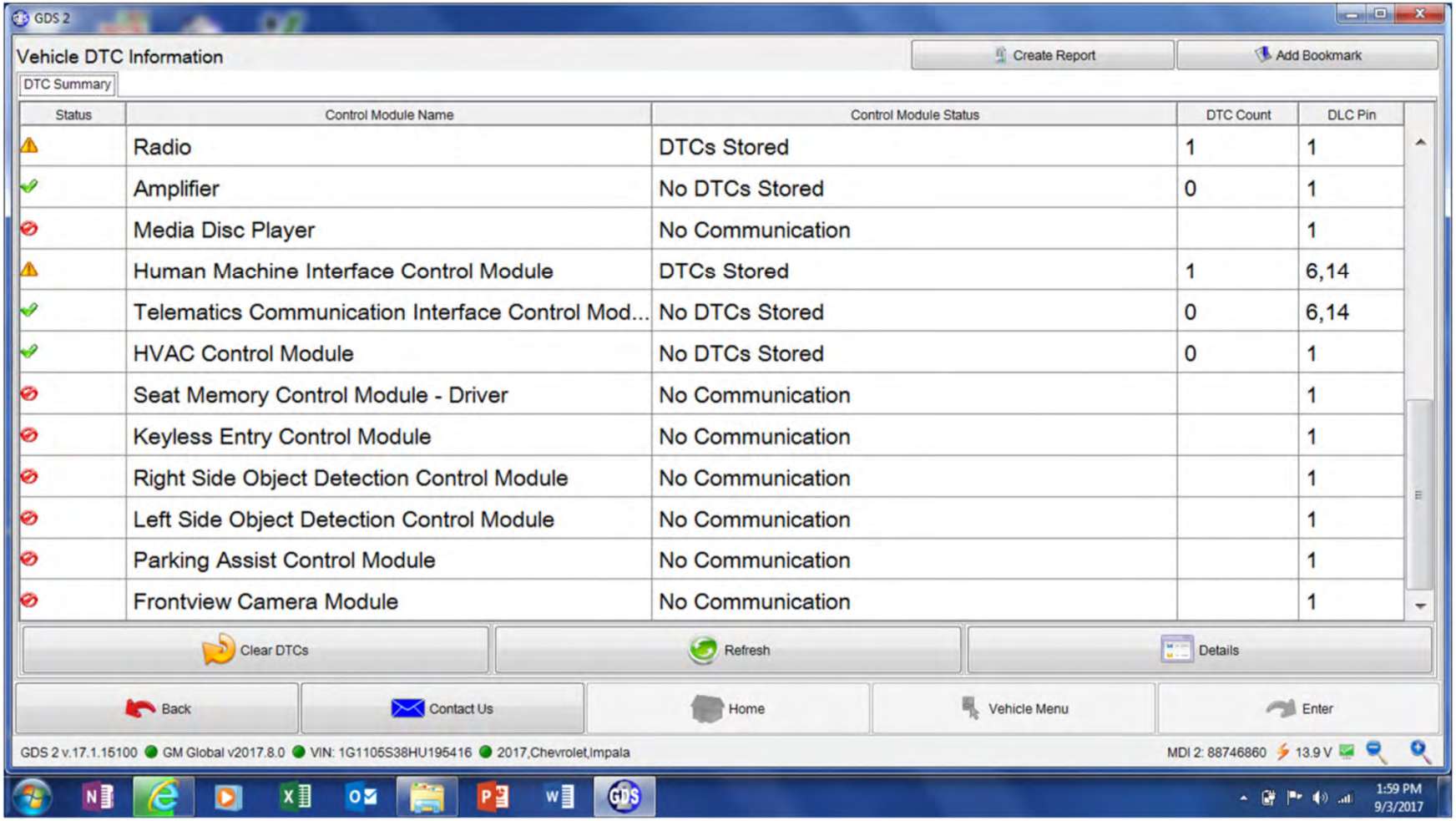
Scan Data


GDS 2
Vehicle DTC Information
Create Report
Add Bookmark
DTC Summary
Status
Control Module Name
Control Module Status
DTC Count
DLC Pin
Engine Control Module
No DTCs Stored
0
6,14
Chassis Control Module
No DTCs Stored
0
6,14
Transmission Control Module
No DTCs Stored
0
6,14
Electronic Brake Control Module
No DTCs Stored
0
6,14
Distance Sensing Cruise Control Module
No Communication
6,14
Parking Brake Control Module
No DTCs Stored
0
6,14
Power Steering Control Module
No DTCs Stored
0
6,14
Steering Wheel Angle Sensor Module
No DTCs Stored
0
12,13
Body Control Module
No DTCs Stored
0
6,14
Serial Data Gateway Module
No DTCs Stored
0
6,14
Inflatable Restraint Sensing and Diagnostic Module
No DTCs Stored
0
1
Passenger Presence Module
No DTCs Stored
0
1
Clear DTCs
Refresh
Details
Back
Contact Us
Home
Vehicle Menu
Enter
GDS 2 v.17.1.15100
GM Global v2017.8.0
VIN: 1G1105S38HU195416
2017,Chevrolet,Impala
MDI 2: 88746860
13.9 V
1:58 PM
9/3/2017

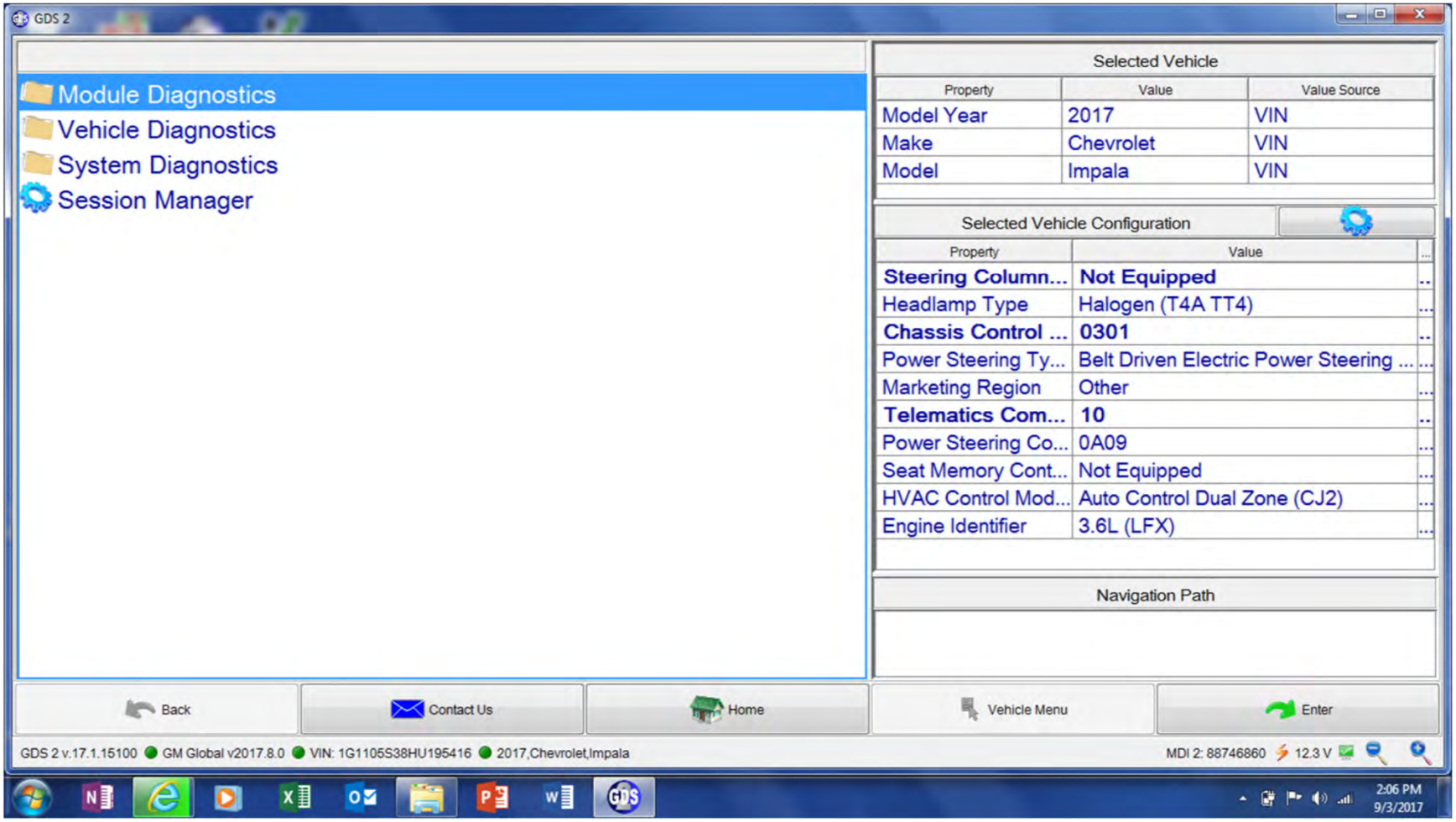
Scan Data


GDS 2
Vehicle DTC Information
Create Report
Add Bookmark
DTC Summary
Status
Control Module Name
Control Module Status
DTC Count
DLC Pin
Passenger Presence Module
No DTCs Stored
0
1
Instrument Cluster
No DTCs Stored
0
1
Radio Controls
No DTCs Stored
0
1
HVAC Controls
No DTCs Stored
0
1
Radio
DTCs Stored
1
1
Amplifier
No DTCs Stored
0
1
Media Disc Player
No Communication
1
Human Machine Interface Control Module
DTCs Stored
1
6,14
Telematics Communication Interface Control Mod...
No DTCs Stored
0
6,14
HVAC Control Module
No DTCs Stored
0
1
Seat Memory Control Module - Driver
No Communication
1
Keyless Entry Control Module
No Communication
1
Clear DTCs
Refresh
Details
Back
Contact Us
Home
Vehicle Menu
Enter
GDS 2 v.17.1.15100
GM Global v2017.8.0
VIN: 1G1105S38HU195416
2017,Chevrolet,Impala
MDI 2: 88746860
13.9 V
1:59 PM
9/3/2017

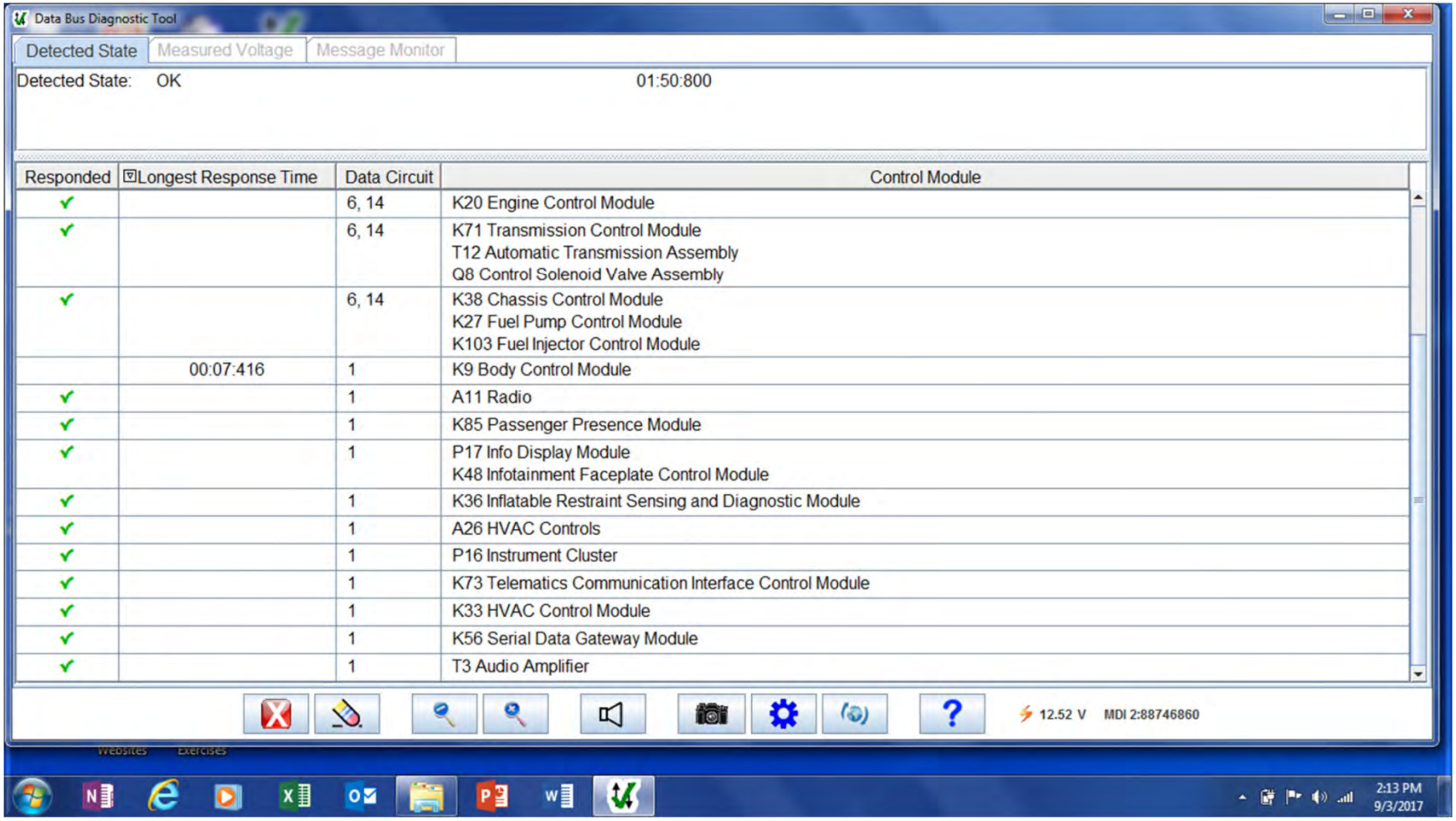
Scan Data


GDS 2
Vehicle DTC Information
Create Report
Add Bookmark
DTC Summary
Status
Control Module Name
Control Module Status
DTC Count
DLC Pin
Radio
DTCs Stored
1
1
Amplifier
No DTCs Stored
0
1
Media Disc Player
No Communication
1
Human Machine Interface Control Module
DTCs Stored
1
6,14
Telematics Communication Interface Control Mod...
No DTCs Stored
0
6,14
HVAC Control Module
No DTCs Stored
0
1
Seat Memory Control Module - Driver
No Communication
1
Keyless Entry Control Module
No Communication
1
Right Side Object Detection Control Module
No Communication
1
Left Side Object Detection Control Module
No Communication
1
Parking Assist Control Module
No Communication
1
Frontview Camera Module
No Communication
1
Clear DTCs
Refresh
Details
Back
Contact Us
Home
Vehicle Menu
Enter
GDS 2 v.17.1.15100
GM Global v2017.8.0
VIN: 1G1105S38HU195416
2017,Chevrolet,Impala
MDI 2: 88746860
13.9 V
1:59 PM
9/3/2017

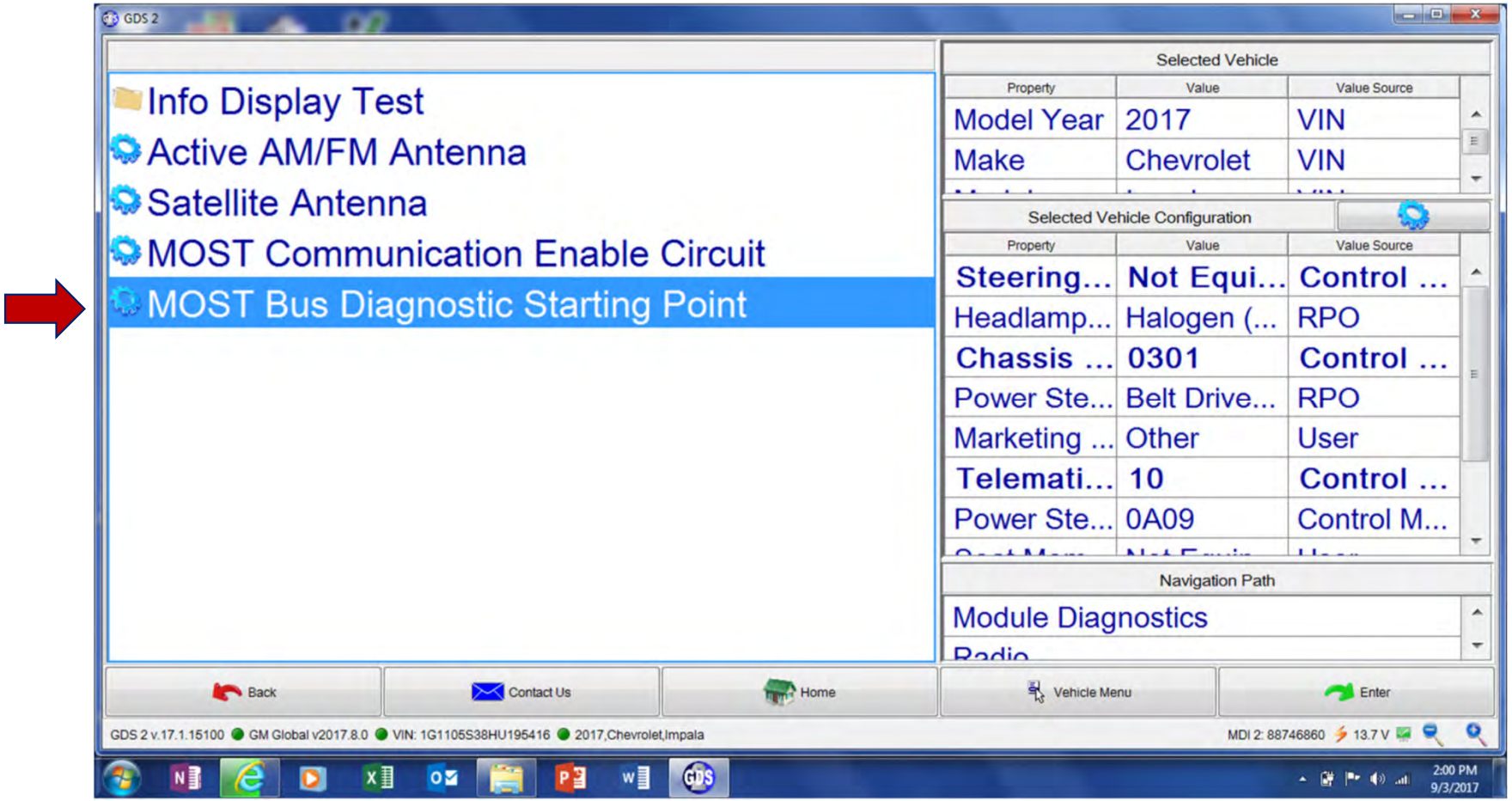
Scan Data


GDS 2
Module Diagnostics
Vehicle Diagnostics
System Diagnostics
Session Manager
Selected Vehicle
Property
Value
Value Source
Model Year
2017
VIN
Make
Chevrolet
VIN
Model
Impala
VIN
Selected Vehicle Configuration
Property
Value
Steering Column...
Not Equipped
Headlamp Type
Halogen (T4A TT4)
Chassis Control ...
0301
Power Steering Ty...
Belt Driven Electric Power Steering ...
Marketing Region
Other
Telematics Com...
10
Power Steering Co...
0A09
Seat Memory Cont...
Not Equipped
HVAC Control Mod...
Auto Control Dual Zone (CJ2)
Engine Identifier
3.6L (LFX)
Navigation Path
Back
Contact Us
Home
Vehicle Menu
Enter
GDS 2 v.17.1.15100
GM Global v2017.8.0
VIN: 1G1105S38HU195416
2017,Chevrolet,Impala
MDI 2: 88746860
12.3 V
2:06 PM
9/3/2017

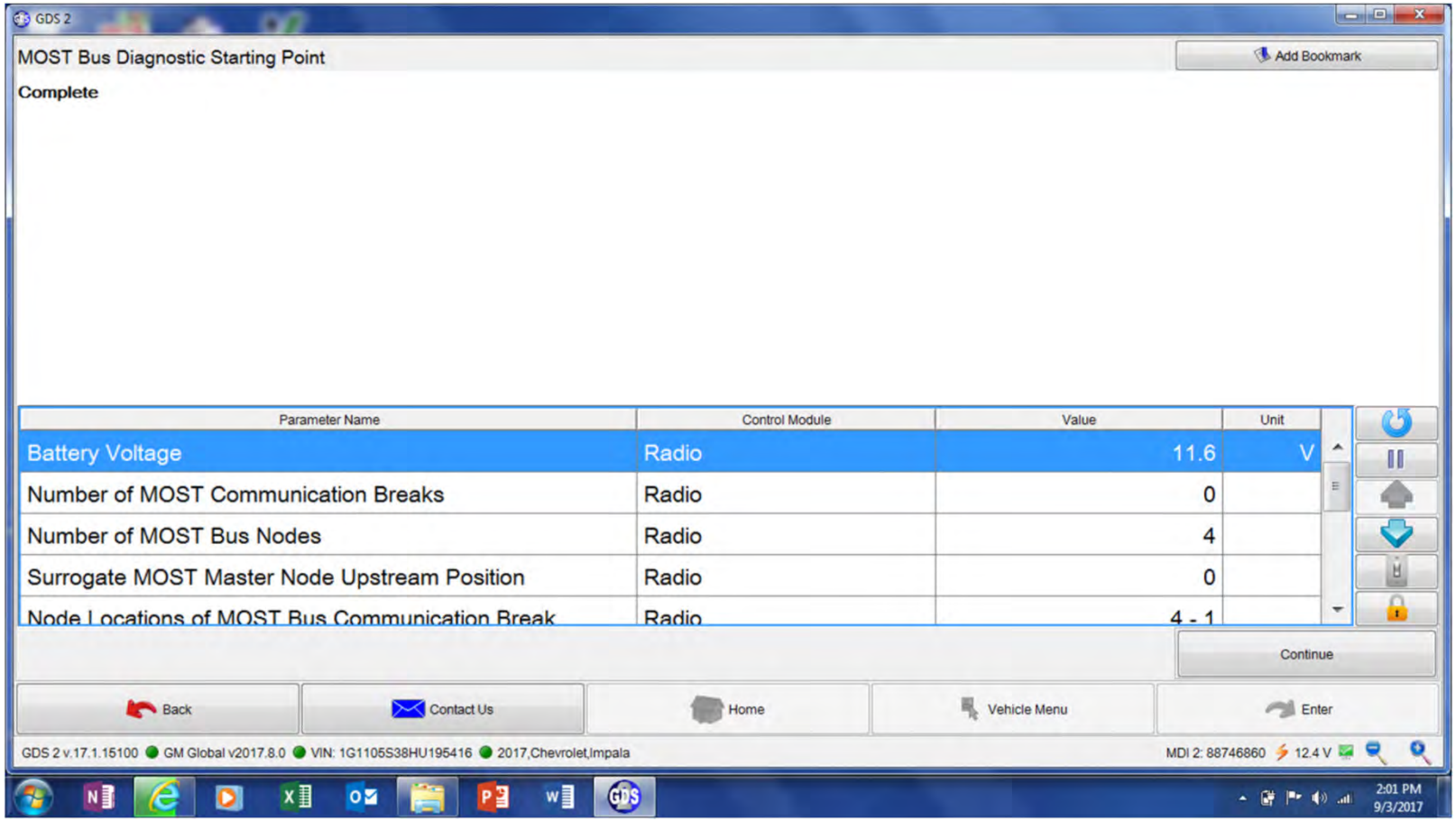
Scan Data


Data Bus Diagnostic Tool
Detected State
Measured Voltage
Message Monitor
Detected State: OK
01:50:800
Responded
Longest Response Time
Data Circuit
Control Module
6, 14
K20 Engine Control Module
6, 14
K71 Transmission Control Module
T12 Automatic Transmission Assembly
Q8 Control Solenoid Valve Assembly
6, 14
K38 Chassis Control Module
K27 Fuel Pump Control Module
K103 Fuel Injector Control Module
00:07:416
1
K9 Body Control Module
1
A11 Radio
1
K85 Passenger Presence Module
1
P17 Info Display Module
K48 Infotainment Faceplate Control Module
1
K36 Inflatable Restraint Sensing and Diagnostic Module
1
A26 HVAC Controls
1
P16 Instrument Cluster
1
K73 Telematics Communication Interface Control Module
1
K33 HVAC Control Module
1
K56 Serial Data Gateway Module
1
T3 Audio Amplifier
12.52 V
MDI 2:88746860
2:13 PM
9/3/2017

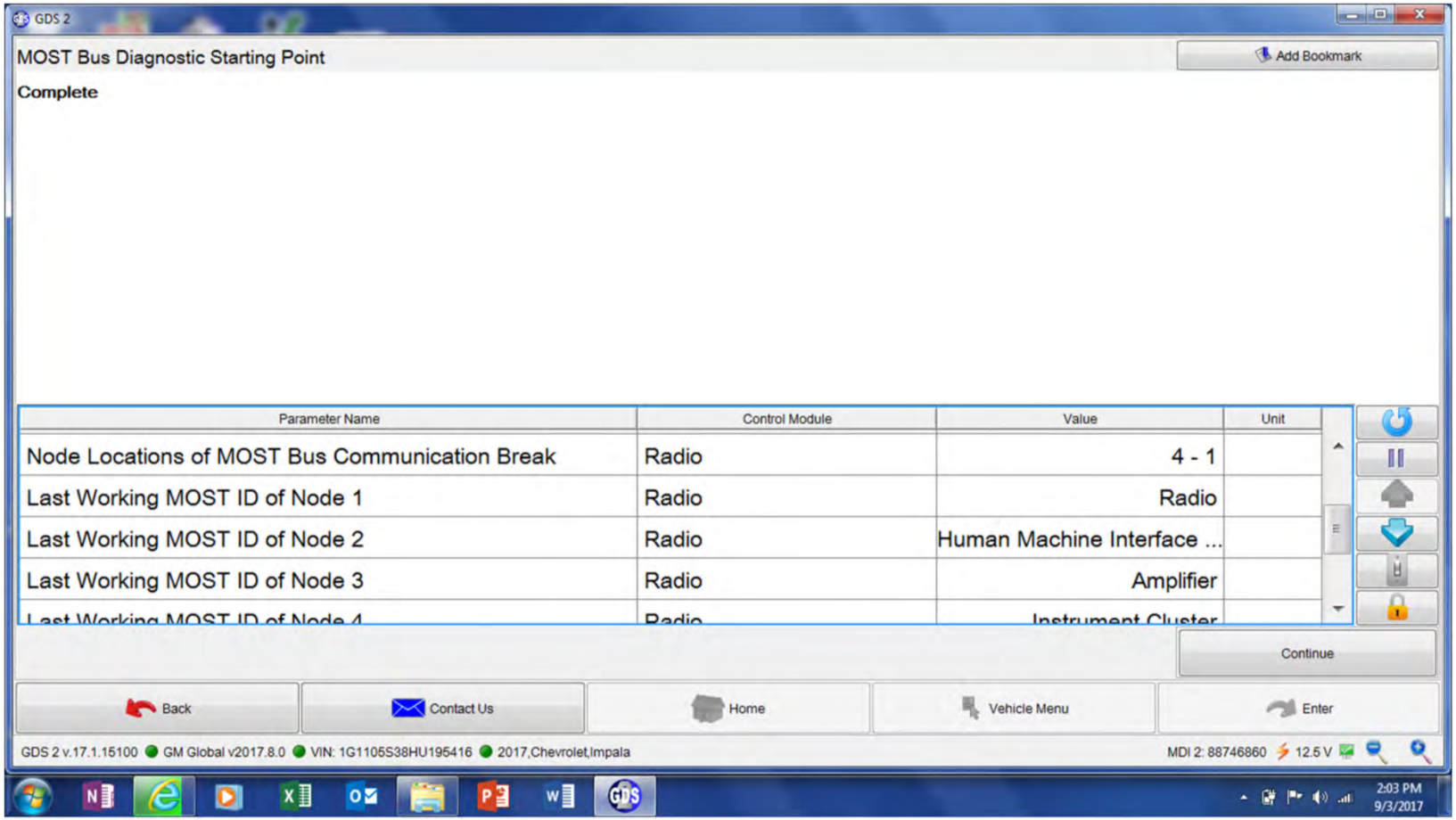
MOST – BUS Diagnostic Starting Point



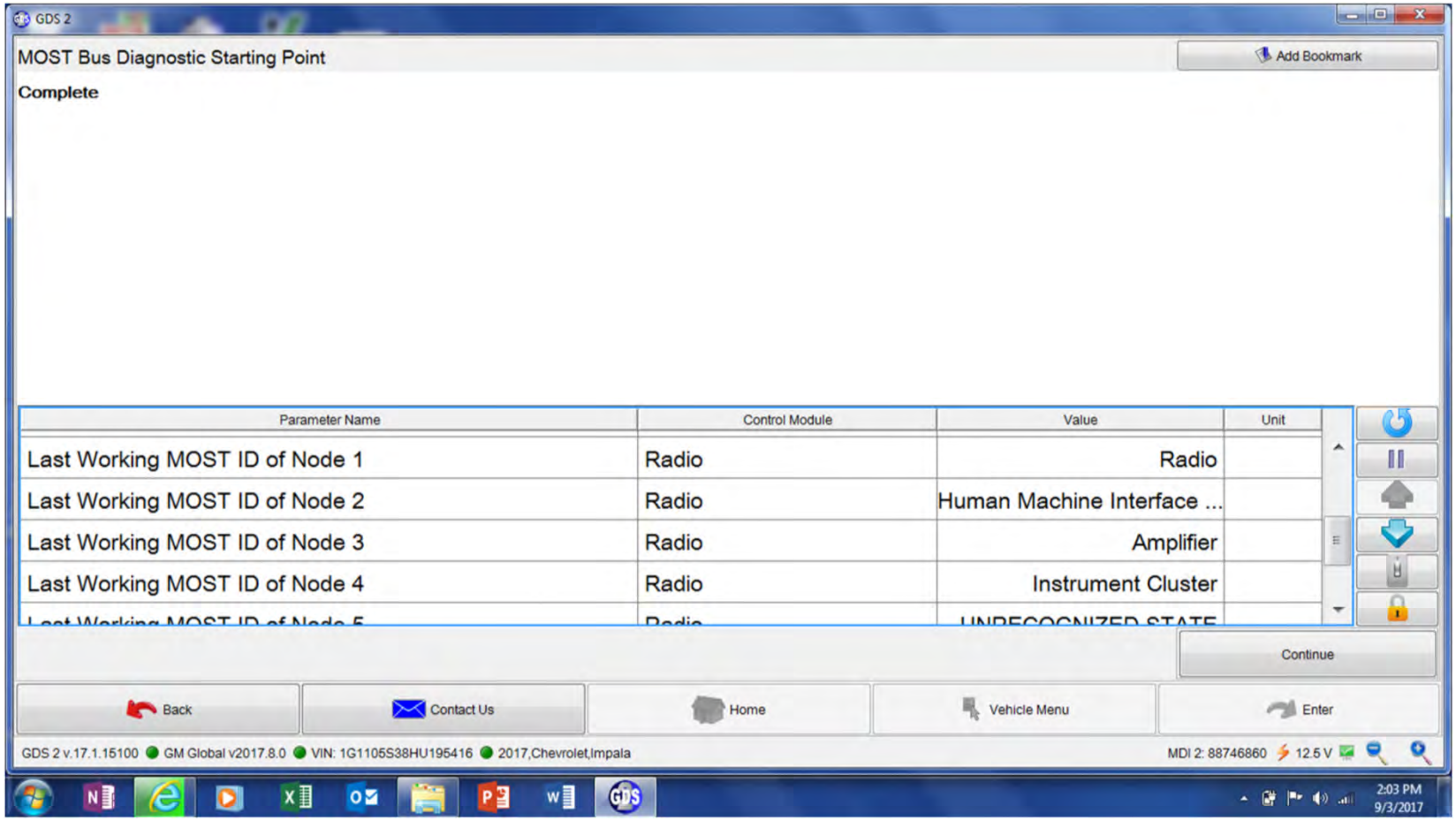
MOST – BUS Diagnostic Starting Point



MOST – BUS Diagnostic Starting Point

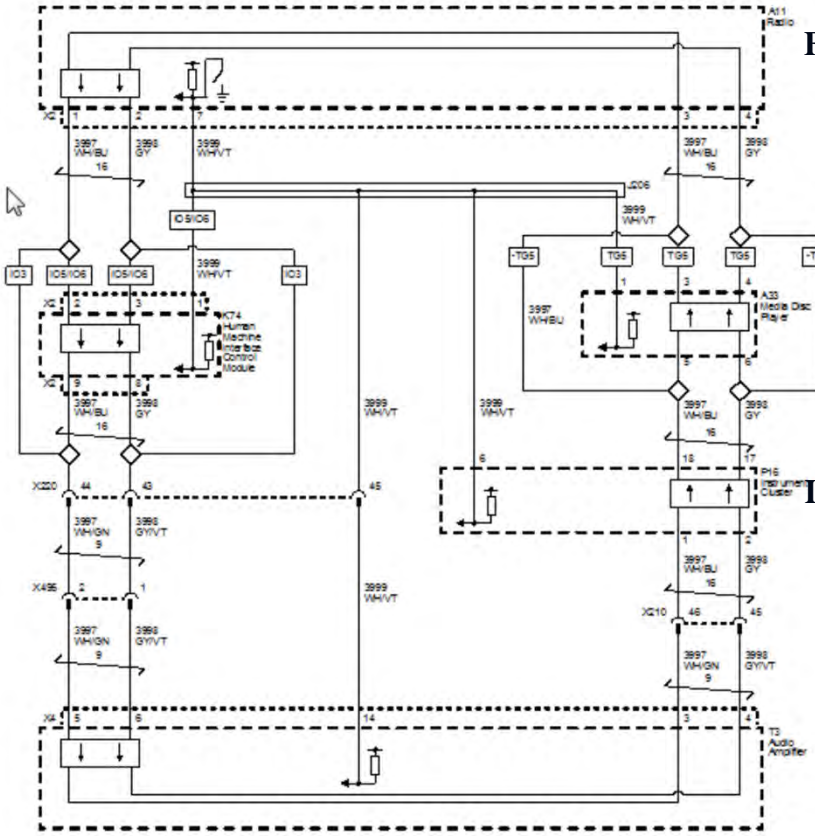


MOST – BUS Diagnostic Starting Point



MOST Schematics

Human Interface Module



Radio

No Media Player on this Vehicle

Instrument Cluster

Amplifier

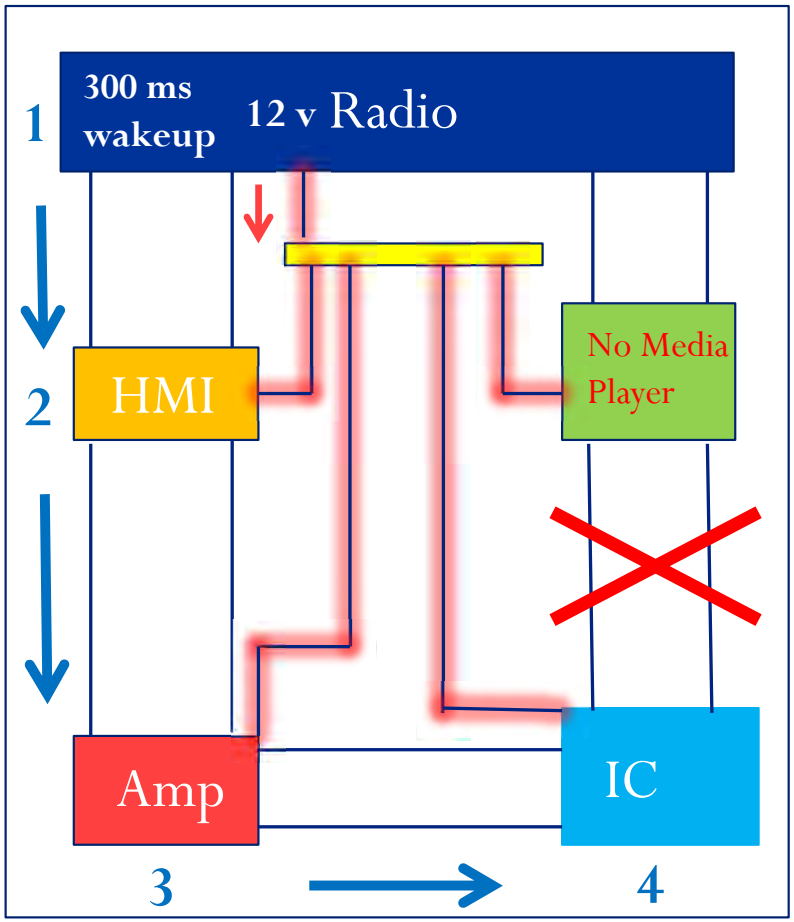
MOST – Numbers Assigned for normal operation CCW

- Radio – 1
- HMI - 2
- Amp – 3
- IC- 4

Media Oriented Systems Transport – Normal Operation

- Here is an example of how the normal operation may be viewed per this example.

There is no Media Disc Player on this vehicle



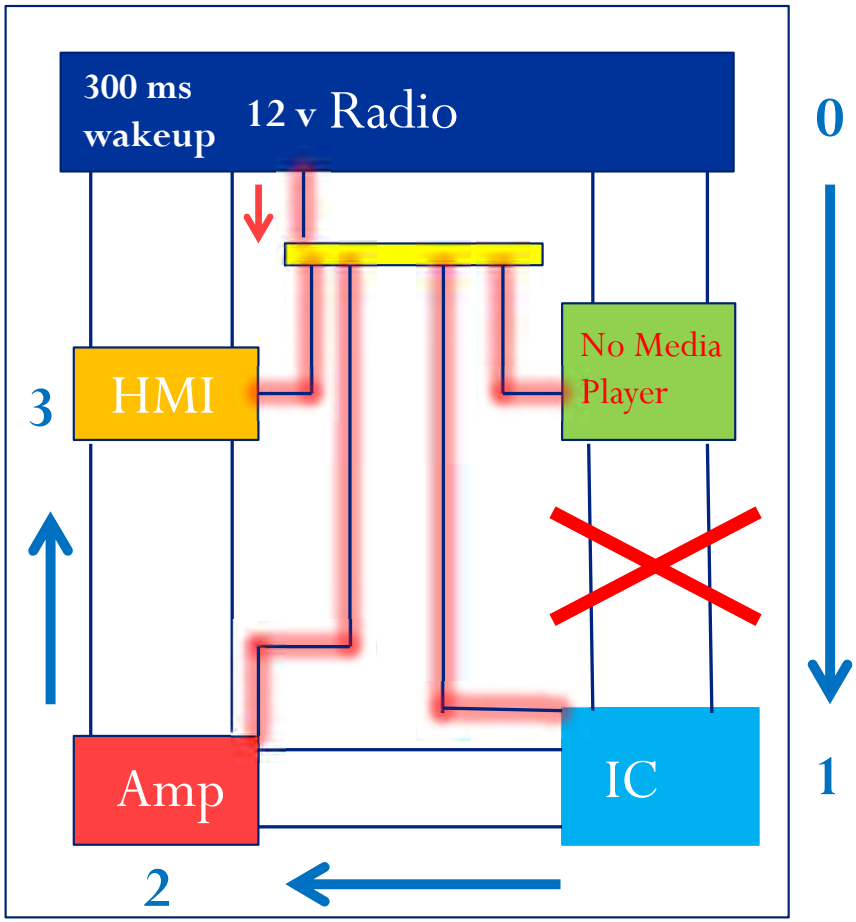
MOST – Numbers Assigned for diagnostics CW

- Radio – 0
- IC – 1
- Amp- 2
- HMI – 3

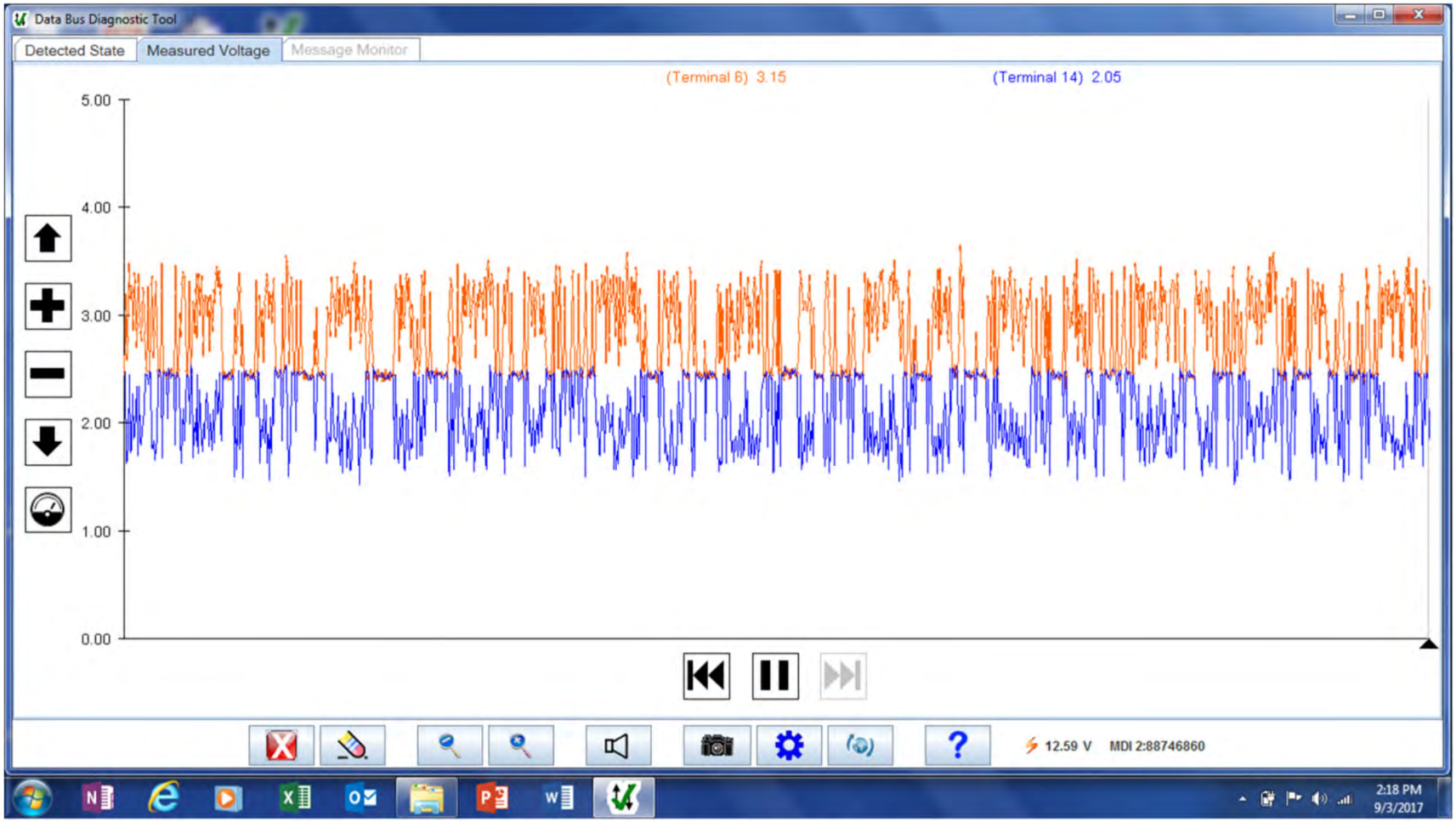
Media Oriented Systems Transport – Abnormal Operation

- Here is an example of how the diagnostics may be viewed per this example.

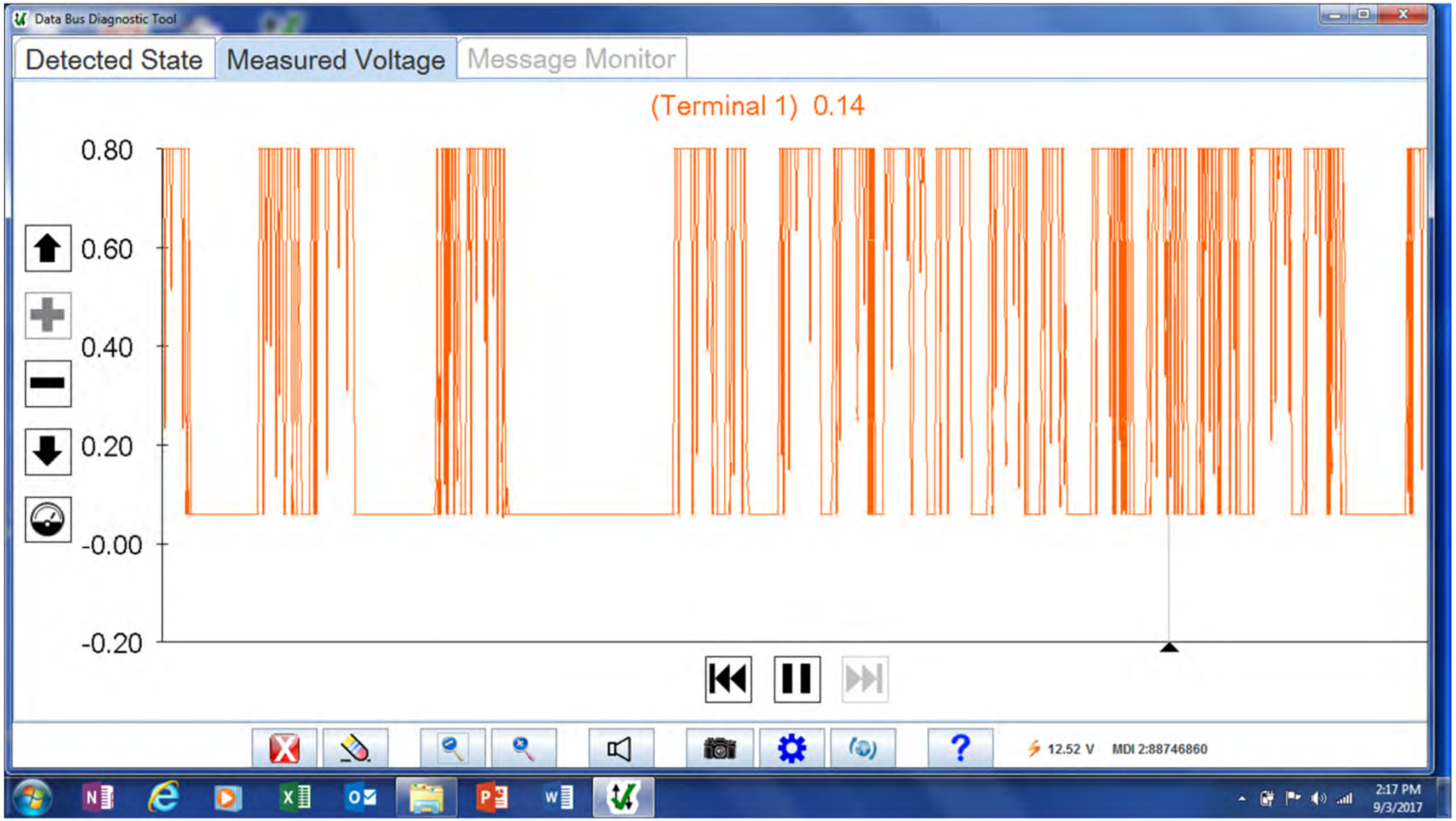
There is no Media Disc Player on this vehicle



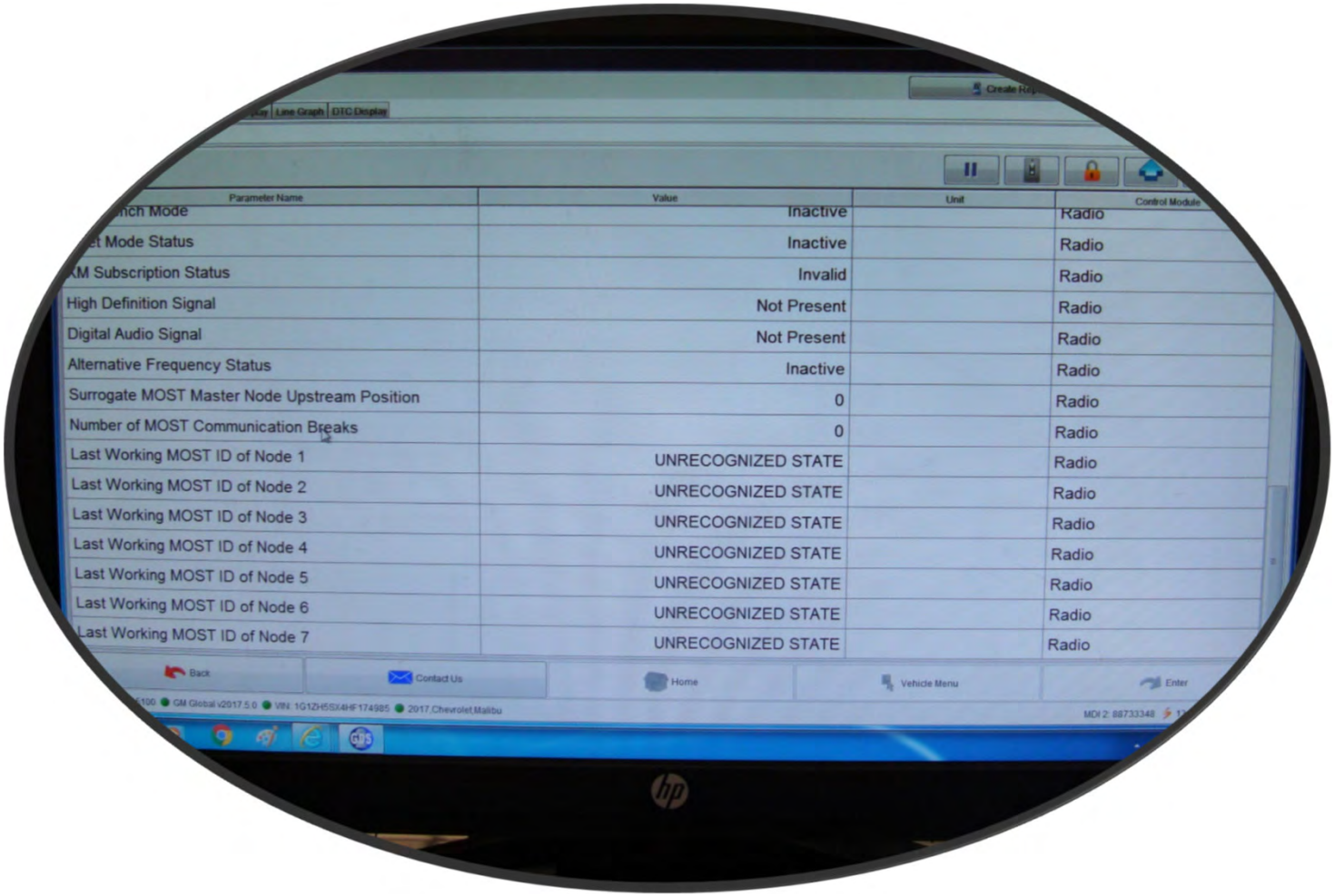
Data Bus Tool – Pins 6 and 14



Data Bus Tool – Pin 1



Radio Failure - Example



Bad Radio


GM P/N: 8410 2334
104/5/6&U2K
SATELLITE RADIO
FUJITSU TEN LIMITED
FAIRFAX SHIPPING MANIFEST
NAO - FAIRFAX
1ZF69 LT
1G1ZH5SX4HF174985

MOST
Data Parameters

Surrogate MOST Master

Scan Data

Surrogate MOST master node upstream position	Radio	1
Number of MOST communication breaks	Radio	24
Last working MOST ID of Node 1	Radio	Human Machine Interface Control Module
Last working MOST ID of Node 2	Radio	Instrument Cluster
Last working MOST ID of Node 3	Radio	Amplifier
Last working MOST ID of Node 4	Radio	CD

1

DownStream

Upstream

“Surrogate MOST master node upstream position” Parameter on Scan Tool

- When the radio assigns a node as the **“Surrogate MOST Master”**

- The radio is identifying the **last module** in the ring to **communicate with the radio**. Buss management functions are NOT transferred to the surrogate.

“Surrogate MOST master node upstream position” Parameter on Scan Tool

- The “Surrogate MOST Master Node Upstream Position” parameter is used to denote which module is the **Surrogate MOST Master.**

- The Radio will denote the “Surrogate MOST Master Node Upstream” Position value when codes such as **DTC U0028** are stored in the radio history

“Surrogate MOST master node upstream position” Parameter on Scan Tool

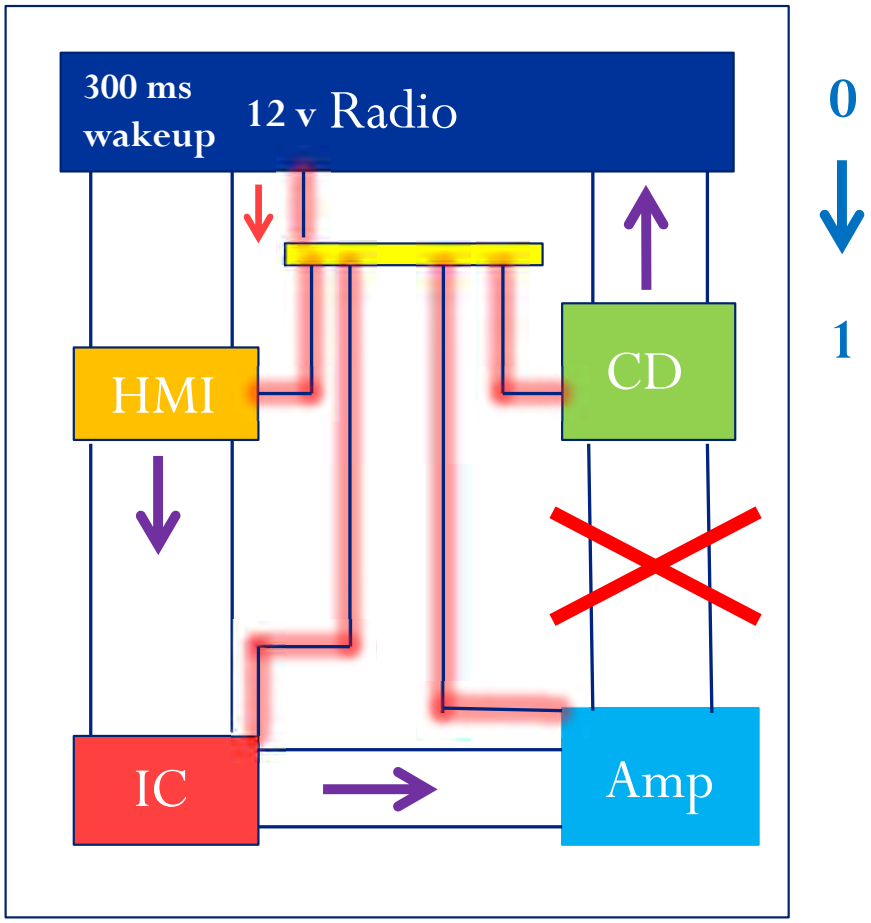
- The **Last Working MOST ID** of Node parameters tell you how modules are connected to the network and should match the same order outlined in the **Service Information MOST communications schematic**

"Surrogate MOST master node upstream position" Parameter on Scan Tool

- Use the Surrogate MOST Master Node Upstream Position parameter number to **count the nodes upstream of the radio**
  - For example: If the **Surrogate MOST Master Node Upstream Position parameter is 1**, you would count the last node on the list as the number 1. It will be shown as the last one on the list for **MOST ID of Node parameters list.**

Media Oriented Systems Transport – Example

- Once a DTC is set, diagnostics (CW) begins and a 300ms low signal is sent over the MOST protocol.
- All modules will try to respond by transmitting data over the MOST protocol.
- The responding module prior to the break upstream of the radio becomes the Surrogate MOST master
- The entire process takes up to 10 seconds to complete.



Scan Data

Surrogate MOST master node upstream position	Radio	1
Number of MOST communication breaks	Radio	24
Last working MOST ID of Node 1	Radio	Human Machine Interface Control Module
Last working MOST ID of Node 2	Radio	Instrument Cluster
Last working MOST ID of Node 3	Radio	Amplifier
Last working MOST ID of Node 4	Radio	CD

1

DownStream

Upstream

Number of MOST Communication Breaks

"Number of MOST Communication Breaks" Parameter on Scan Tool

- The "Number of MOST Communication Breaks" parameter displays the number of times MOST communication is interrupted
- A MOST Communication Break counter will increment each time the MOST communication ring successfully initializes and then goes down. In other words, when the U0028 sets current, this will be 1 count. When the U0028 goes to history and back to current again, this will equal 2 counts

"Number of MOST Communication Breaks" Parameter on Scan Tool

- The Number of MOST Communication Breaks parameter and the Surrogate MOST Master Upstream Position parameter can be used to identify possible causes of intermittent MOST network faults
- The Number of MOST Communication Breaks parameter begins at **0** and can count up to **65,535 breaks**

"Number of MOST Communication Breaks" Parameter on Scan Tool

- The Number of MOST Communication Breaks parameter and the Surrogate MOST Master Upstream Position parameter can be used to identify possible causes of intermittent MOST network faults
- The Number of MOST Communication Breaks parameter begins at **0** and can count up to **65,535 breaks**

Scan Data

Surrogate MOST master node upstream position	Radio	1
Number of MOST communication breaks	Radio	24
Last working MOST ID of Node 1	Radio	Human Machine Interface Control Module
Last working MOST ID of Node 2	Radio	Instrument Cluster
Last working MOST ID of Node 3	Radio	Amplifier
Last working MOST ID of Node 4	Radio	CD

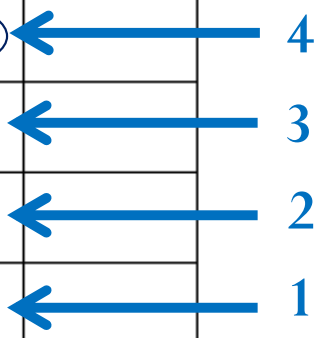
MOST Diagnosis: MOST Parameters

- The Surrogate MOST Master Node Upstream Position parameter is used to find the Surrogate MOST Master module
- With the latest software, the radio will report the Surrogate MOST Master Node Upstream Position value when DTC U0028 is stored in history
- The Last Working MOST ID of Node parameters tell you how modules are connected to the network and should match the same order outlined in the Service Information MOST communications schematic
- Use the Surrogate MOST Master Node Upstream Position parameter number to count the nodes upstream of the radio
  - For example: if the Surrogate MOST Master Node Upstream Position parameter is 3, you will count three modules up from the last node / module on the Last Working MOST ID of Node parameters list.

Surrogate MOST Master Excercises

Finding the Surrogate MOST Master

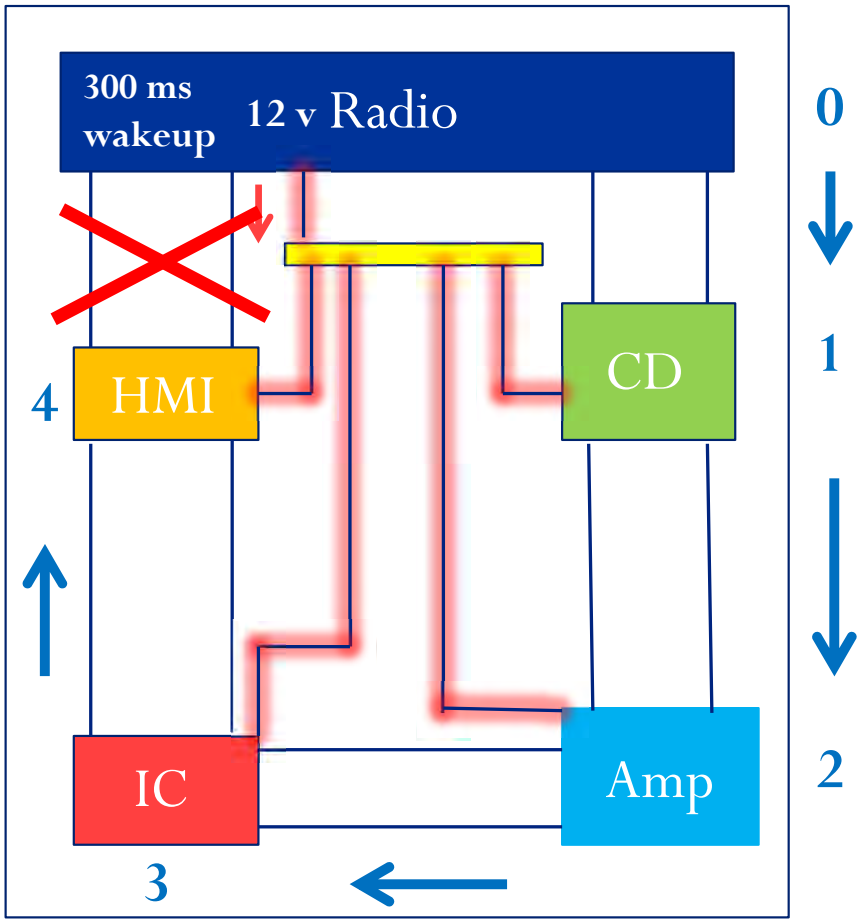
Data Display			
Radio Data			
Parameter Name	Control Module	Value	Unit
Surrogate MOST Master Node Upstream Position	Radio	4	
Last Working MOST ID of Node 1	Radio	Radio	
Last Working MOST ID of Node 2	Radio	HMI Module	
Last Working MOST ID of Node 3	Radio	Instrument Cluster	
Last Working MOST ID of Node 4	Radio	Amplifier	
Last Working MOST ID of Node 5	Radio	CD-Player	



- If the Surrogate MOST Master Node Upstream Position parameter is 4, the HMI module will be the Surrogate MOST Master

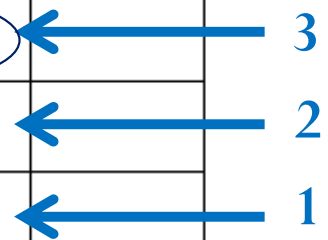
Media Oriented Systems Transport – Abnormal Operation

- If the HMI Module is the Surrogate MOST Master, the cause of the MOST fault will be between the HMI module and the radio or the radio may be at fault



Finding the Surrogate MOST Master

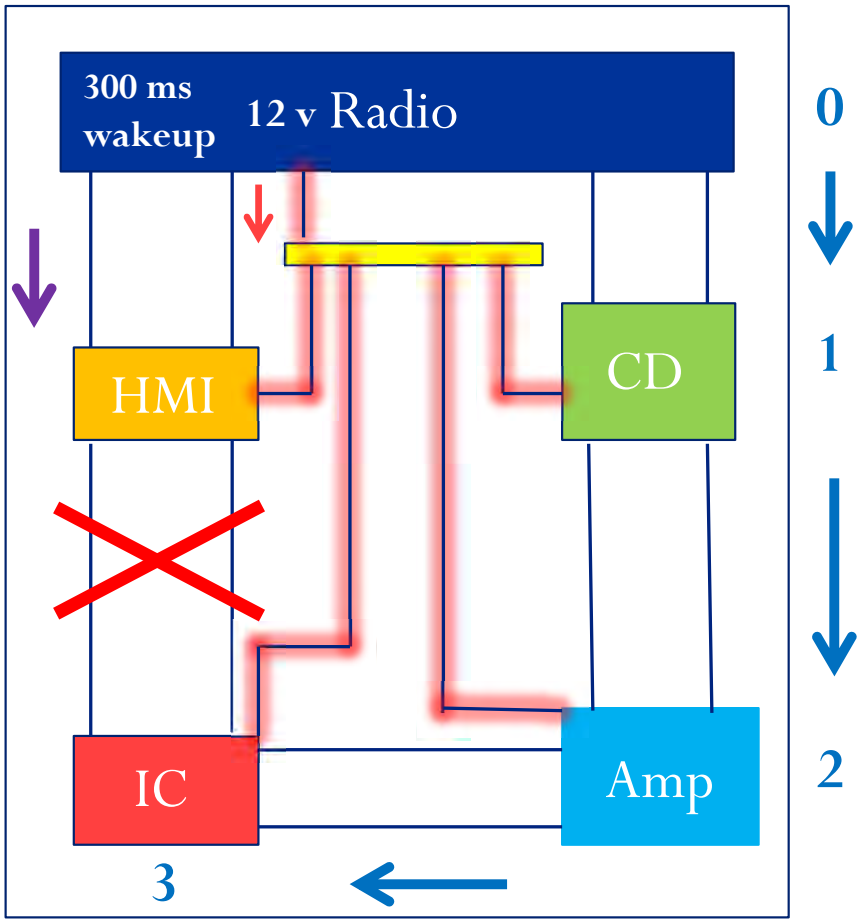
Data Display			
Radio Data			
Parameter Name	Control Module	Value	Unit
Surrogate MOST Master Node Upstream Position	Radio	3	
Last Working MOST ID of Node 1	Radio	Radio	
Last Working MOST ID of Node 2	Radio	HMI Module	
Last Working MOST ID of Node 3	Radio	Instrument Cluster	
Last Working MOST ID of Node 4	Radio	Amplifier	
Last Working MOST ID of Node 5	Radio	CD-Player	



- If the Surrogate MOST Master Node Upstream Position parameter is 3, the instrument cluster will be the Surrogate MOST Master

Media Oriented Systems Transport – Abnormal Operation

- If the instrument cluster is the Surrogate MOST Master, the cause of the MOST fault will be between the instrument cluster and the HMI module, or the HMI module may be at fault



Finding the Surrogate MOST Master

Data Display			
Radio Data			
Parameter Name	Control Module	Value	Unit
Surrogate MOST Master Node Upstream Position	Radio	2	
Last Working MOST ID of Node 1	Radio	Radio	
Last Working MOST ID of Node 2	Radio	HMI Module	
Last Working MOST ID of Node 3	Radio	Instrument Cluster	
Last Working MOST ID of Node 4	Radio	Amplifier	
Last Working MOST ID of Node 5	Radio	CD-Player	

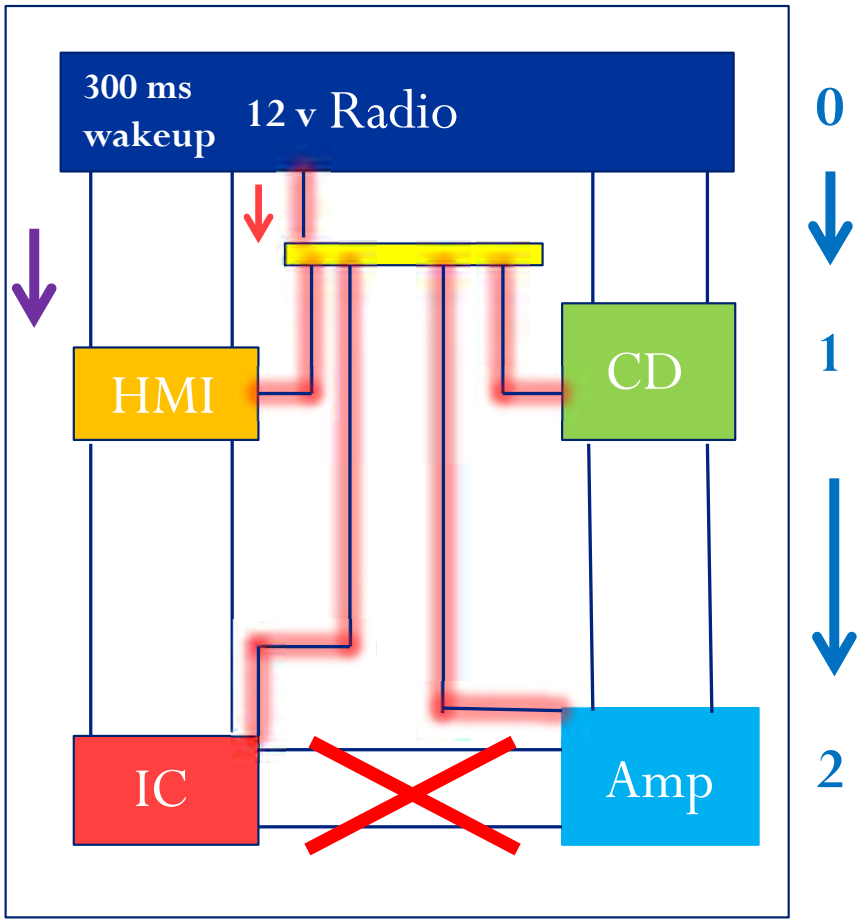
2

1

- If the Surrogate MOST Master Node Upstream Position parameter is 2, the amplifier will be the Surrogate MOST Master

Media Oriented Systems Transport – Abnormal Operation

- If the instrument cluster is the Surrogate MOST Master, the cause of the MOST fault will be between the Amplifier and the Instrument Cluster, or the Instrument Cluster may be at fault



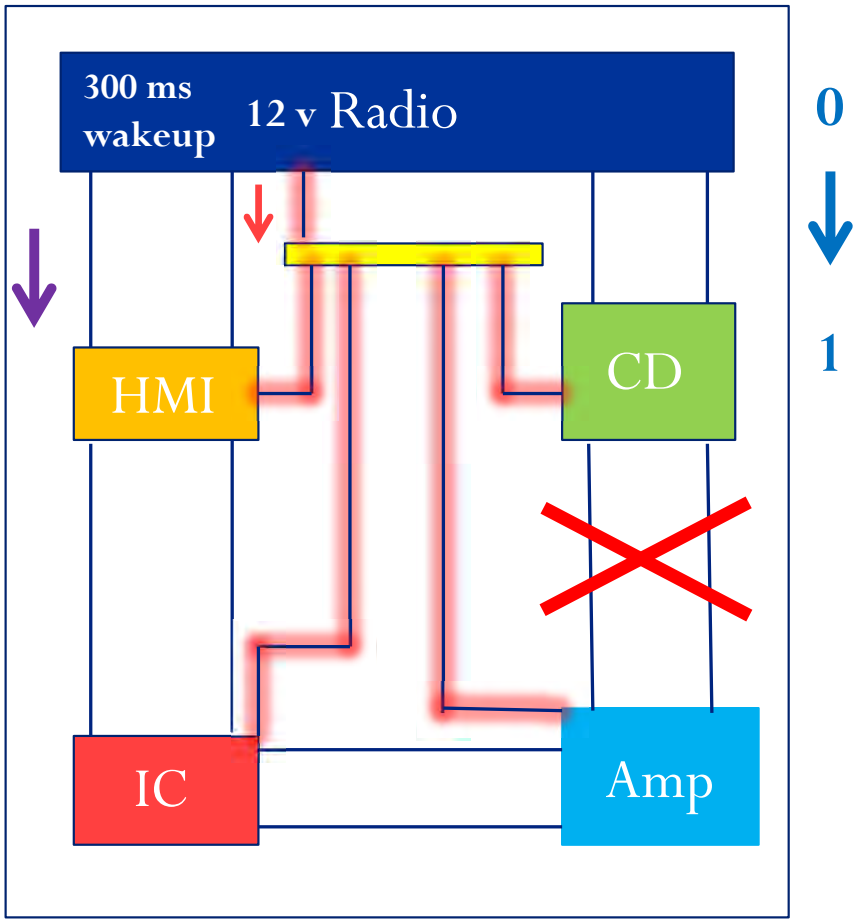
Finding the Surrogate MOST Master

Data Display			
Radio Data			
Parameter Name	Control Module	Value	Unit
Surrogate MOST Master Node Upstream Position	Radio	1	
Last Working MOST ID of Node 1	Radio	Radio	
Last Working MOST ID of Node 2	Radio	HMI Module	
Last Working MOST ID of Node 3	Radio	Instrument Cluster	
Last Working MOST ID of Node 4	Radio	Amplifier	
Last Working MOST ID of Node 5	Radio	CD-Player	

- If the Surrogate MOST Master Node Upstream Position parameter is 1, the CD Player will be the Surrogate MOST Master

Media Oriented Systems Transport – Abnormal Operation

- If the instrument cluster is the Surrogate MOST Master, the cause of the MOST fault will be between the CD and the Amplifier, or the Amplifier may be at fault



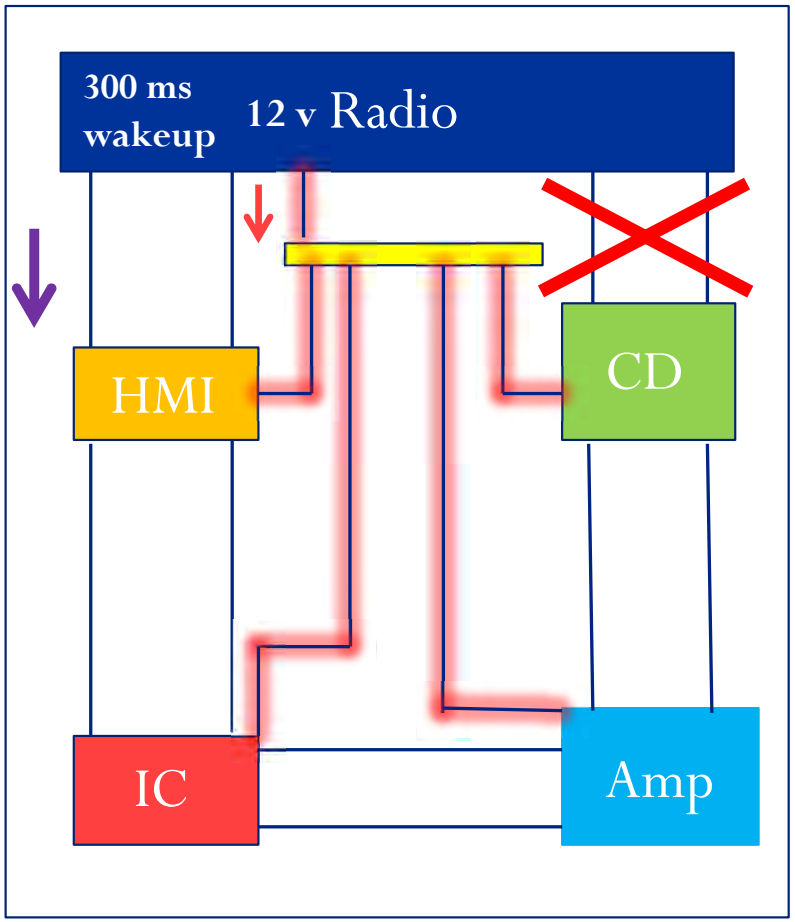
Finding the Surrogate MOST Master

Data Display			
Radio Data			
Parameter Name	Control Module	Value	Unit
Surrogate MOST Master Node Upstream Position	Radio	0	
Last Working MOST ID of Node 1	Radio	Radio	
Last Working MOST ID of Node 2	Radio	HMI Module	
Last Working MOST ID of Node 3	Radio	Instrument Cluster	
Last Working MOST ID of Node 4	Radio	Amplifier	
Last Working MOST ID of Node 5	Radio	CD-Player	

- If the Surrogate MOST Master Node Upstream Position parameter is 0, the Radio will be the Surrogate MOST Master

Media Oriented Systems Transport – Abnormal Operation

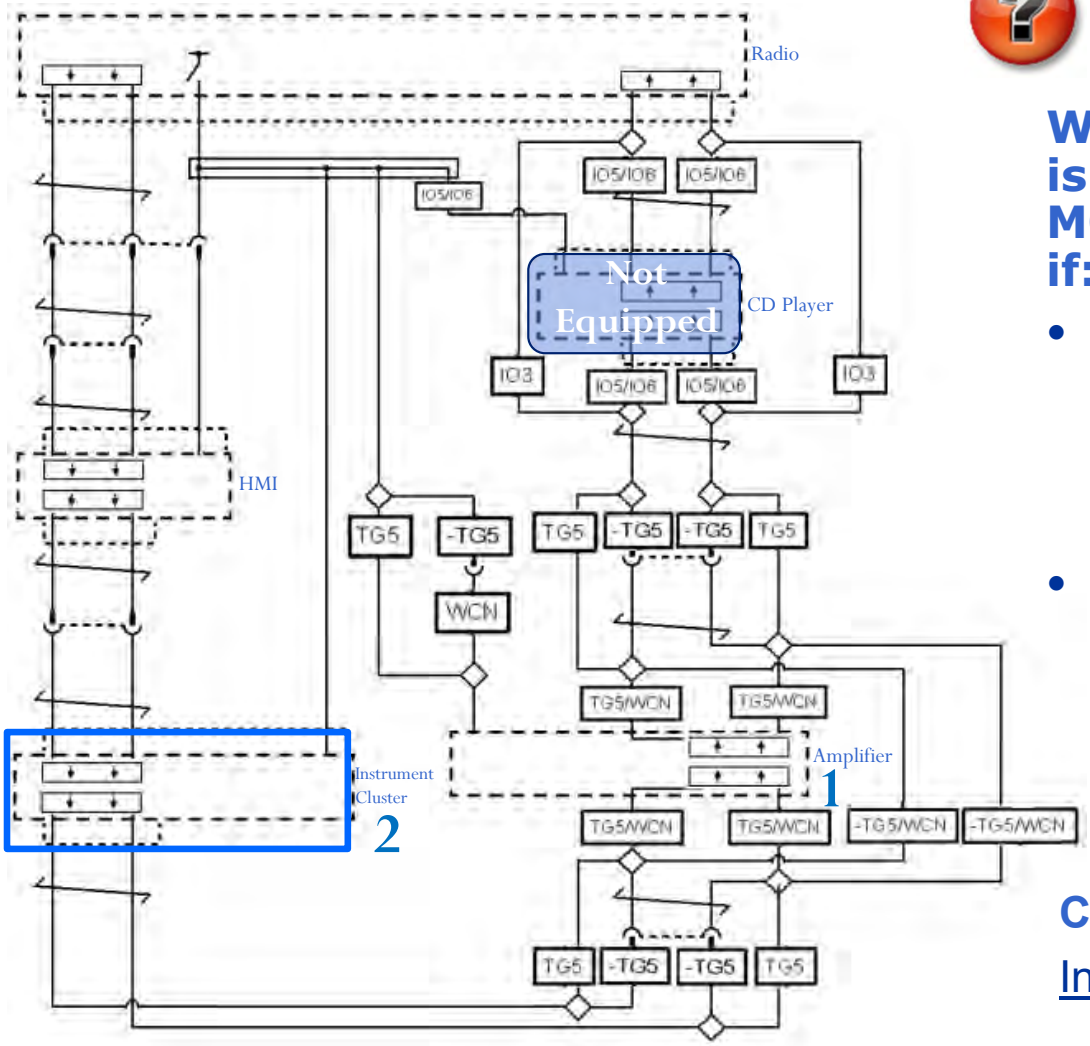
- If the radio is the Surrogate MOST Master, the cause of the MOST fault will be between radio and the CD player, or the CD player may be at fault



0

MOST Diagnosis

- The cause of the MOST ring break may be:
  - A MOST network circuit fault upstream of the Surrogate
  - An open in the MOST control circuit
  - Loss of power or ground to a module upstream of the Surrogate
  - Fault internal to a module upstream of the Surrogate
  - A fault internal to the Surrogate MOST Master module itself that prevents the module from receiving data



Which module is Surrogate MOST Master if:

- Surrogate MOST Master Node Upstream Position = 2
- Vehicle RPOs:
  - IO3
  - WCN

Correct Answer:

Instrument Cluster

MOST Wire Repair

- Replacement wire should be the same size as the wire being repaired
  - Refer to connector end views in SI for wire size
  - MOST wire size must be larger than 0.22mm (31 AWG)
- MOST communication wires should maintain a certain number of twists per length of wire when possible
  - One twist for every 45mm (1 45/64in) of wire
- Any untwisted sections of MOST wire (i.e., a wire leading up to a connector) must not exceed 10cm (3 15/16in) in length

After Repairing a MOST Fault

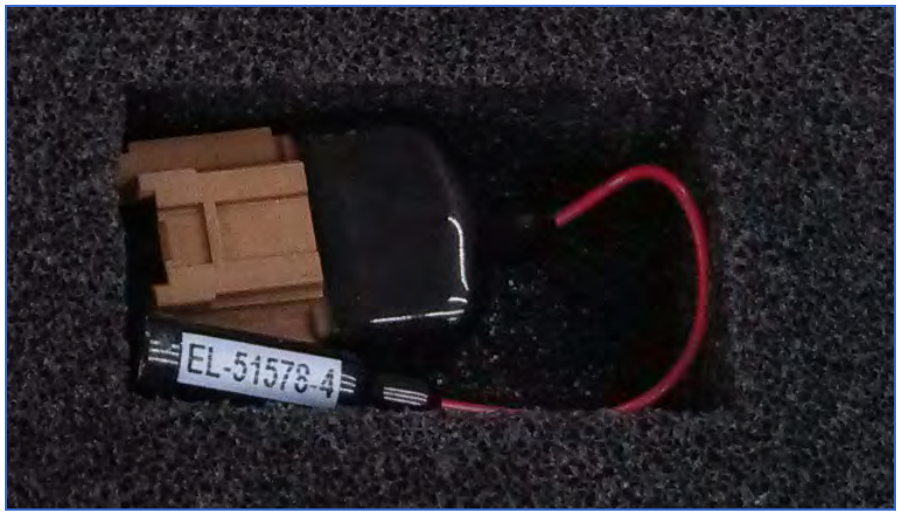
- After correcting a MOST fault:
  - Carry out the Diagnostic Repair Verification procedure
  - Remove power from the radio for one minute either by removing the radio fuse(s) or disconnecting the negative battery terminal. By doing this the following two items will be accomplished:
    - The Surrogate MOST Master Node Upstream Position value is reset to “None”
    - The Number of MOST Communication Breaks counter is reset to “0”

Diagnostic Tool to Assist with MOST Communication Breaks

EL-51578 MOST Bus Diagnostic Tool Kit

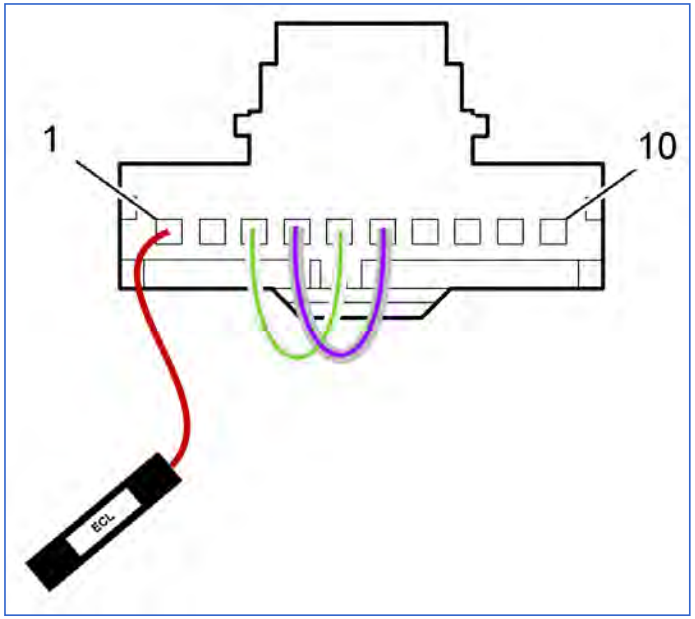
- The EL-51578 MOST Bus Diagnostic Test Kit will assist in the diagnosis of a MOST ring break, DTC U0028

EL-51578 MOST Bus Diagnostic Tool Kit



- The MOST Bus Diagnostic Tool Kit consists of several test connectors
- Each connector matches a connector on a MOST device
- Connectors jump the MOST bus wires to bypass MOST devices

EL-51578 MOST Bus Diagnostic Tool Kit



EL-51578-5 CD Player Test Connector		
Pin#	Circuit#	Function
1	3999	MOST ECL
3	3997	MOST (-) Transmit
4	3998	MOST (+) Transmit
5	3997	MOST (-) Receive
6	3998	MOST (+) Receive

- Two jumper wires on each test connector connect the MOST receive (RX) and MOST transmit (TX) circuits.
- A third wire is used to test the MOST Electronic Control Line (ECL). A standard banana socket allows for a DMM lead or Lab Scope to be connected to test the circuit.

EL-51578 MOST Bus Diagnostic Tool Kit

DTC Display					
Control Module	DTC	Symptom Byte	Description	Symptom Description	Status
Radio	U0028	00	MOST Bus	———	Current

DTC Display					
Control Module	DTC	Symptom Byte	Description	Symptom Description	Status
Radio	U0028	00	MOST Bus	———	History

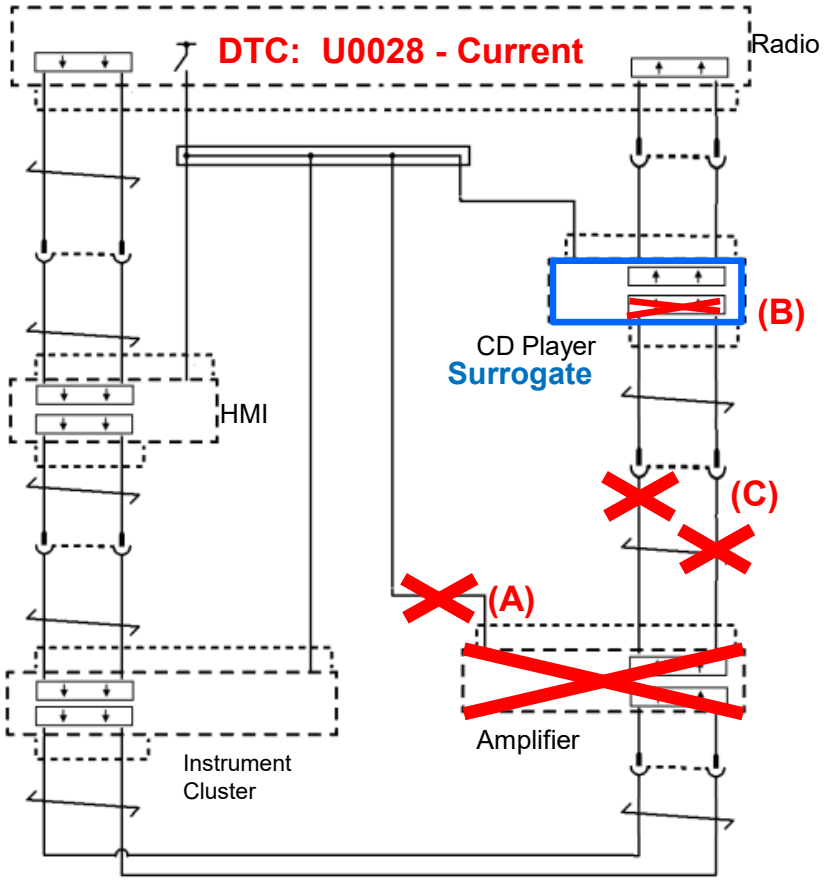
- The scan tool is used along with the MOST Bus Diagnostic Tool Kit
- When a test connector from the kit is used to bypass a MOST device, the status of DTC U0028 will be used to determine if there is still a break in the MOST ring
- If DTC U0028 status is “Current”, there is still a break in the MOST ring. If DTC U0028 status switches to “History”, the ring is complete.


EL-51578
MOST Bus
Diagnostic Tool Kit
EL-51578-1
8-PIN BLACK CONNECTOR
TOUCH PAD
EL-51578-2
12-PIN GRAY HEADER
HMI CONTROL
EL-51578-3
32-PIN GRAY HEADER
IPC

MOST Question

- If one of the 2 MOST communication lines are grounded(example), will it code and broadcast on the other MOST bus line that are not grounded?
- Answer: It would be recorded as a break in the system and a code would set indicating that there is an issue with the MOST bus.
- A surrogate would be assigned to assist with the diagnostics of the system.

EL-51578 MOST Bus Diagnostic Tool Kit



Ring Break Review:
Possible causes of a MOST ring break include:

A. A fault with the MOST device upstream of the Surrogate MOST Master
   1. internal fault
   2. power / ground
   3. ECL circuit fault

B. A fault internal to the RX circuit inside the Surrogate MOST Master

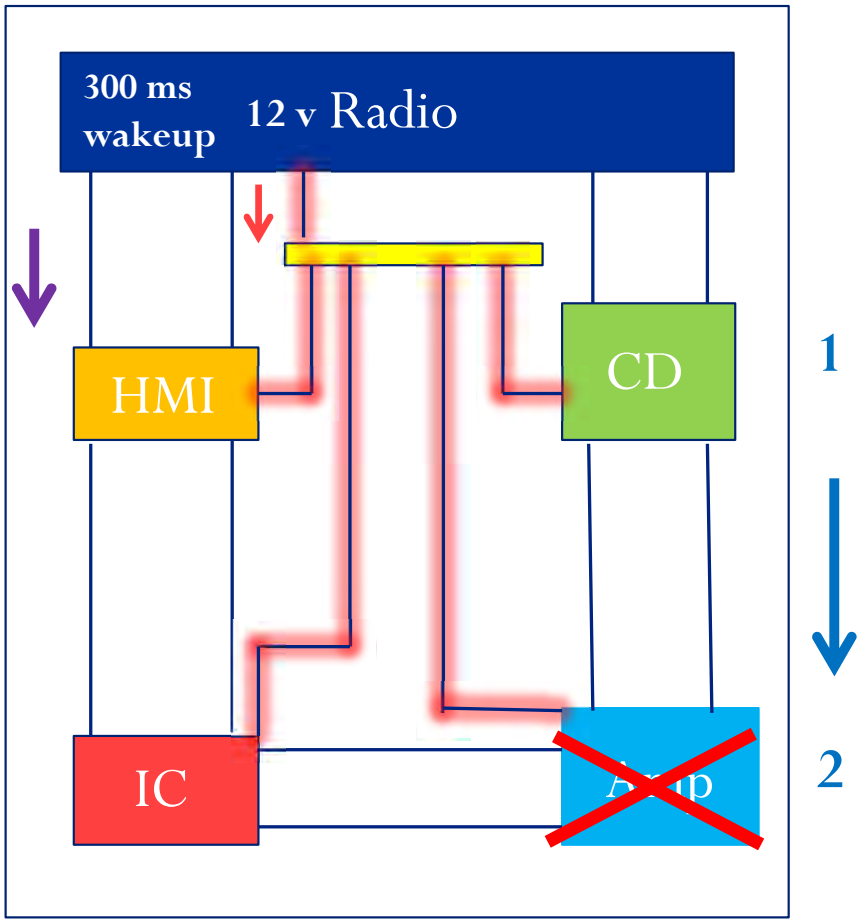
C. A fault in the MOST network wiring upstream of the Surrogate MOST Master

The MOST Bus Diagnostic Kit and the scan tool help to isolate the cause of a MOST ring break by connecting the MOST network around a device rather than through it.

Amplifier Fault

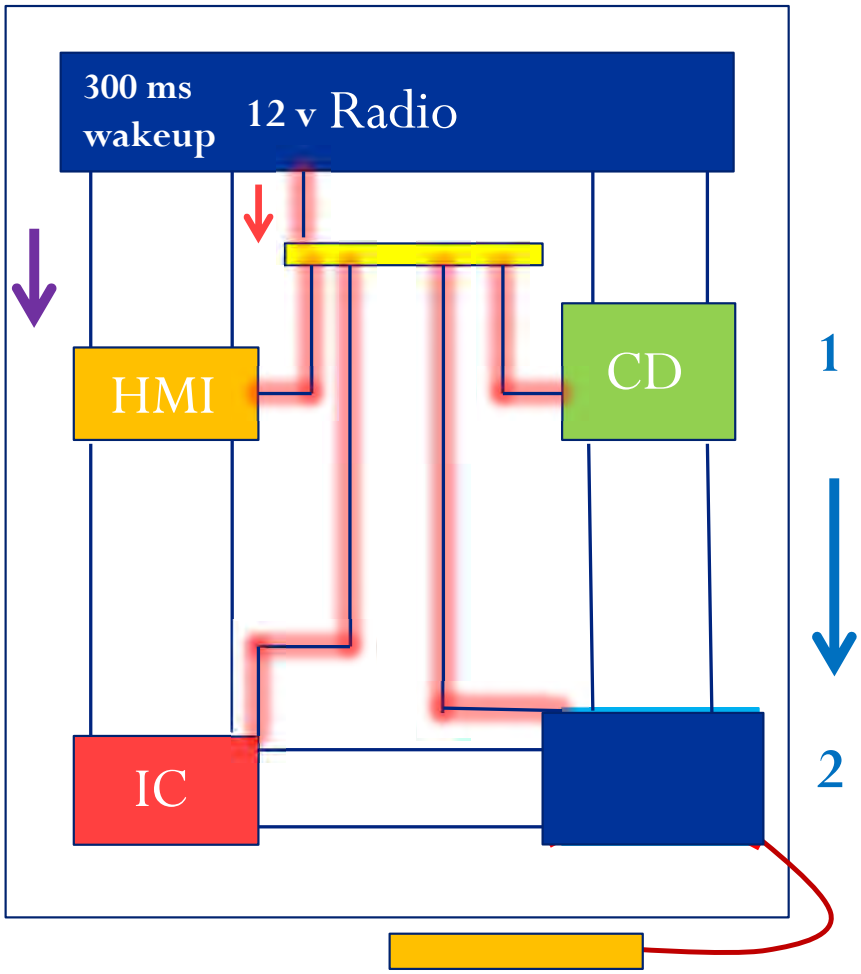
Media Oriented Systems Transport – Abnormal Operation

- In this example, an amplifier fault keeps the amplifier from communicating over the MOST bus
- DTC U0028 is set in the radio as a "current" DTC
- The CD Player is reported as the Surrogate MOST Master



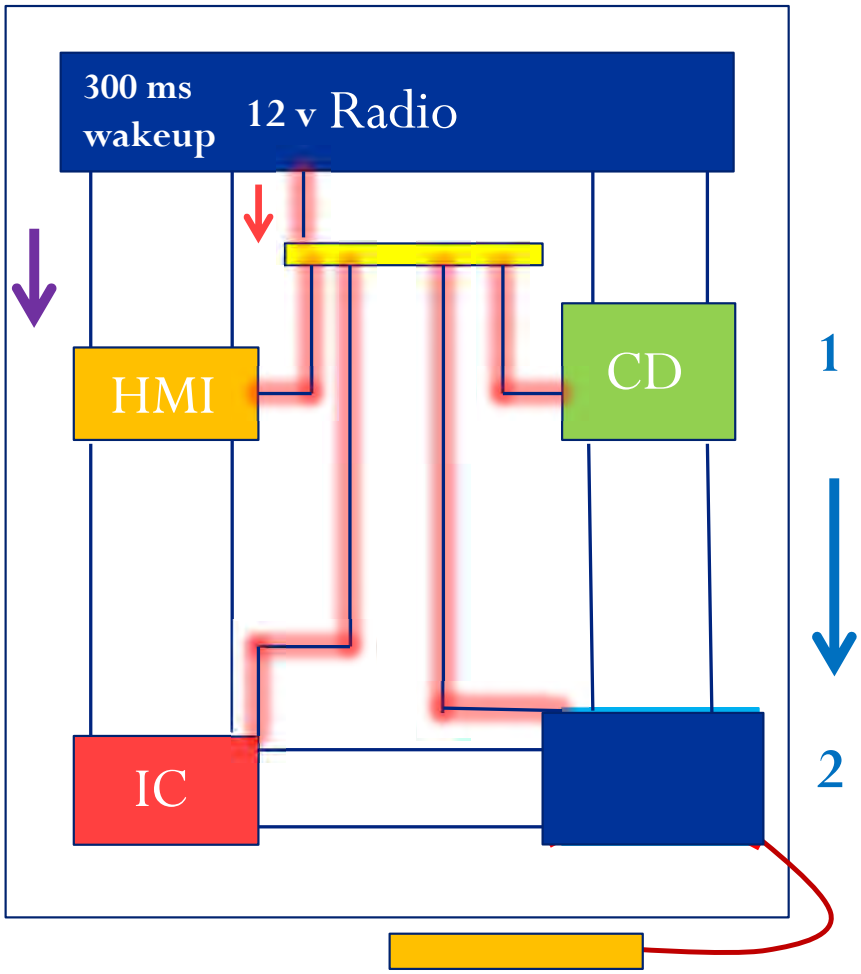
Media Oriented Systems Transport – Abnormal Operation

- The wiring harness is disconnected from the amplifier
- The appropriate test connector is connected to the harness in place of the amplifier



Media Oriented Systems Transport – Abnormal Operation

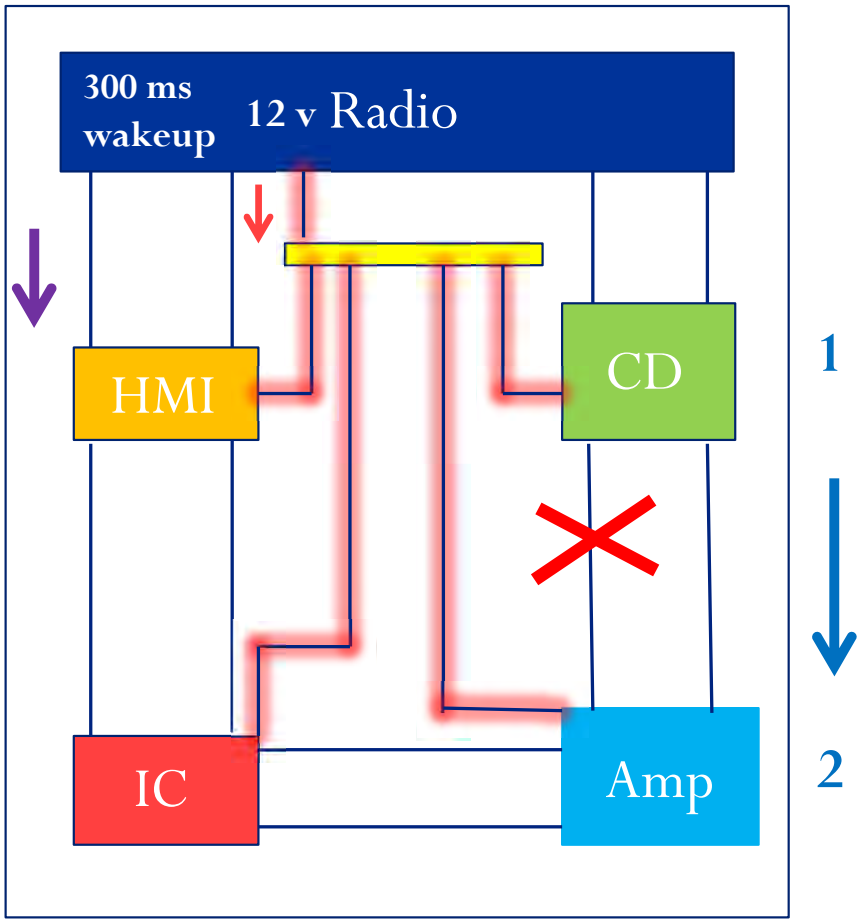
- The scan tool is used to view radio DTCs
- If the status of DTC U0028 changes from Current to History, the amplifier was the cause of the ring break
- If amp GMLAN communications is now present, replace the amplifier



MOST Wiring Fault

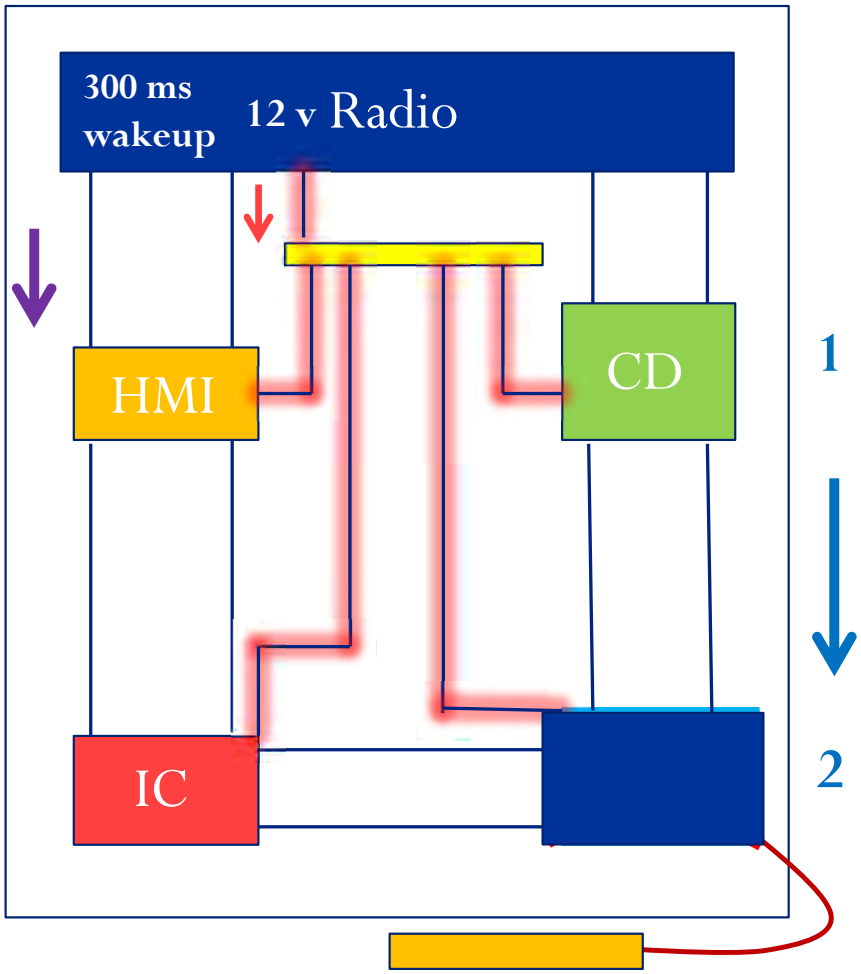
Media Oriented Systems Transport – Abnormal Operation

- In this example, an amplifier fault keeps the amplifier from communicating over the MOST bus
- DTC U0028 is set in the radio as a "current" DTC
- The CD Player is reported as the Surrogate MOST Master



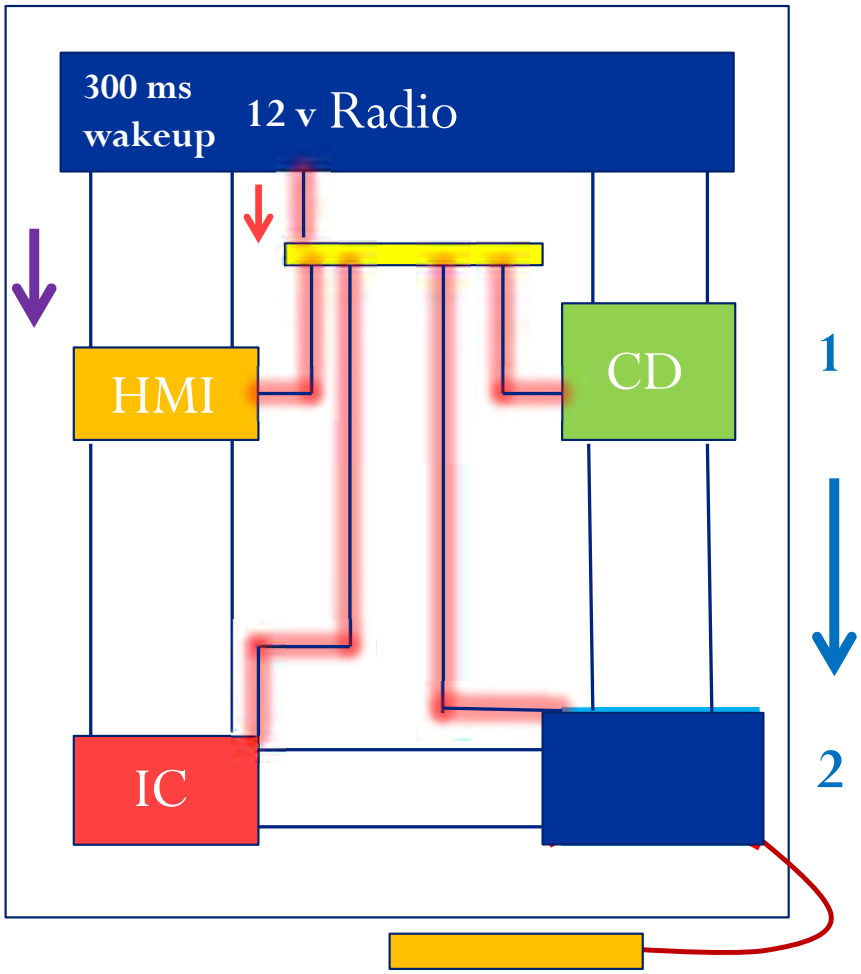
Media Oriented Systems Transport – Abnormal Operation

- The wiring harness is disconnected from the amplifier
- The appropriate test connector is connected to the harness in place of the amplifier



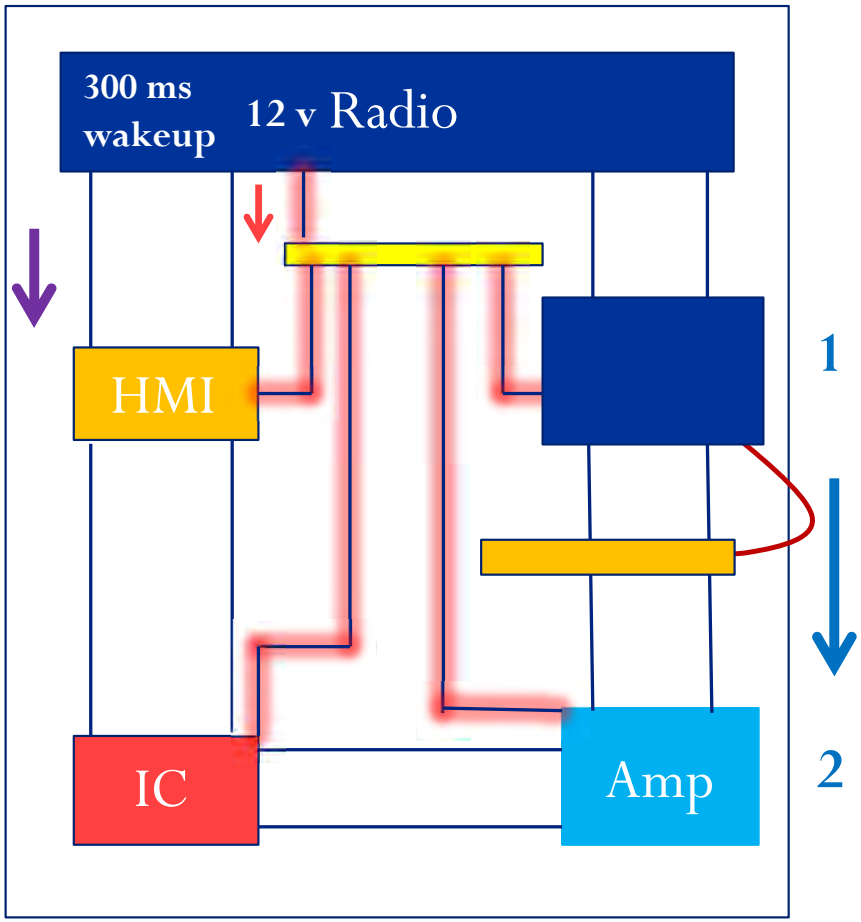
Media Oriented Systems Transport – Abnormal Operation

- The scan tool is used to view radio DTCs
- In this instance, the status of DTC U0028 remains Current
- The next step is to bypass the Surrogate (CD player) using the appropriate test connector



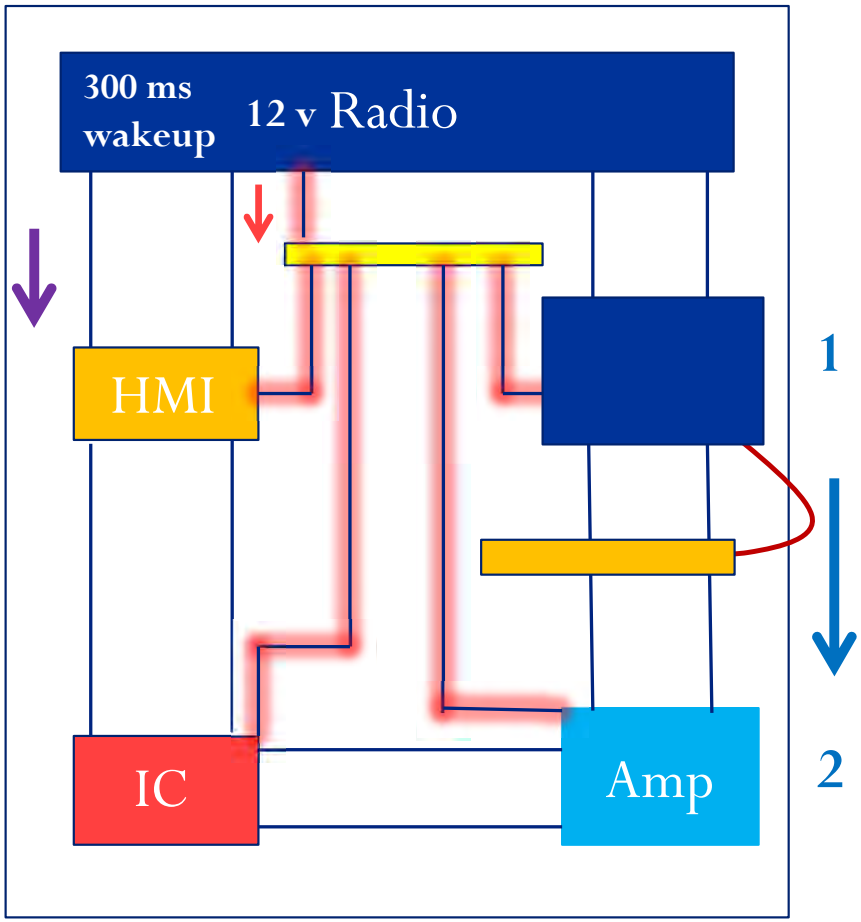
Media Oriented Systems Transport – Abnormal Operation

- The amplifier wiring harness is reconnected
- The wiring harness is disconnected from the CD player
- The appropriate test connector is connected to the harness in place of the CD player



Media Oriented Systems Transport – Abnormal Operation

- The scan tool is used to view radio DTCs
- In this instance the status of DTC U0028 remains "Current"
- The MOST serial data circuits are tested for short to voltage, short to ground, short together, and high resistance



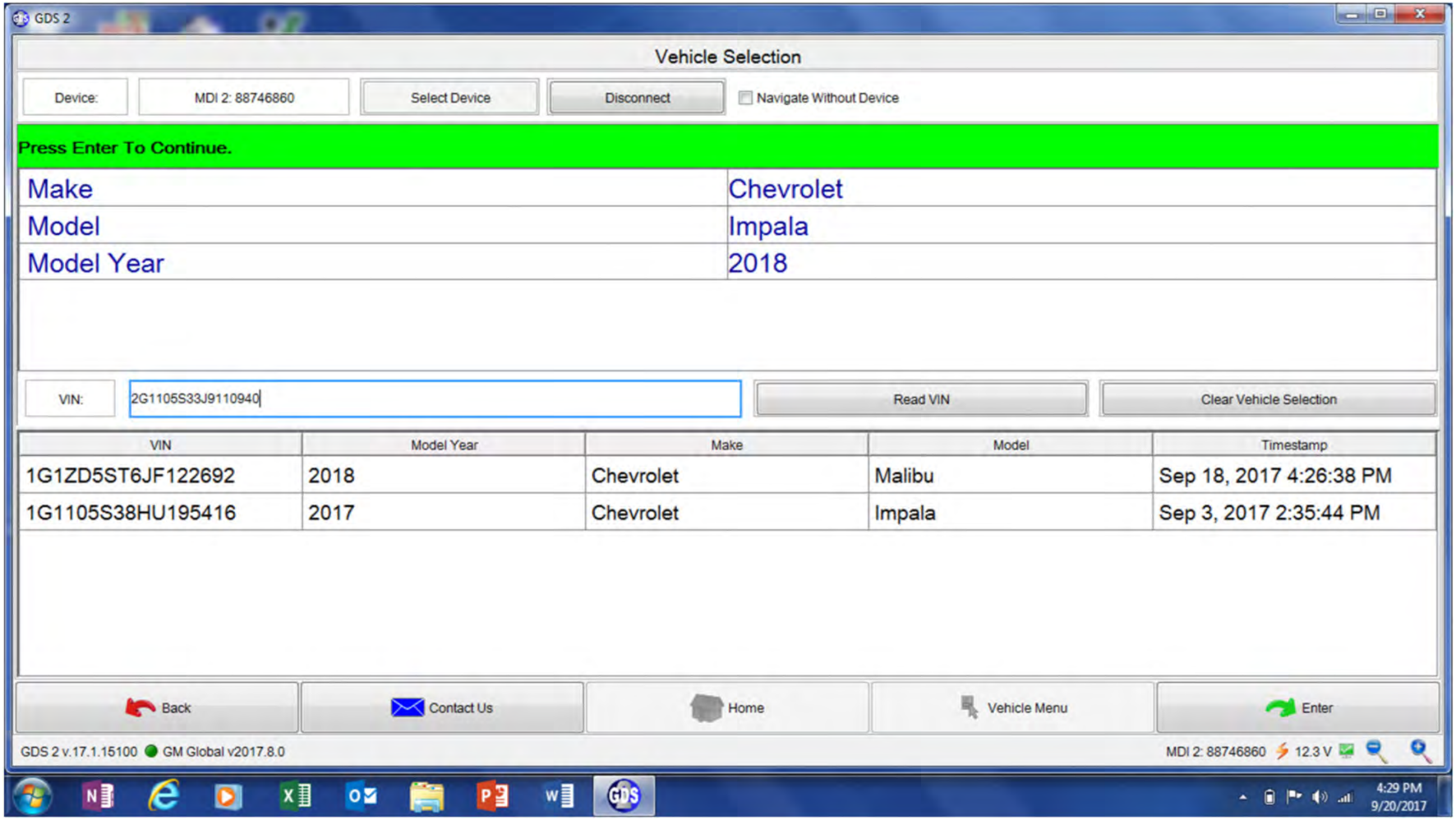
Normal Operation
2018 Chev Impala

2018 Chev Impala

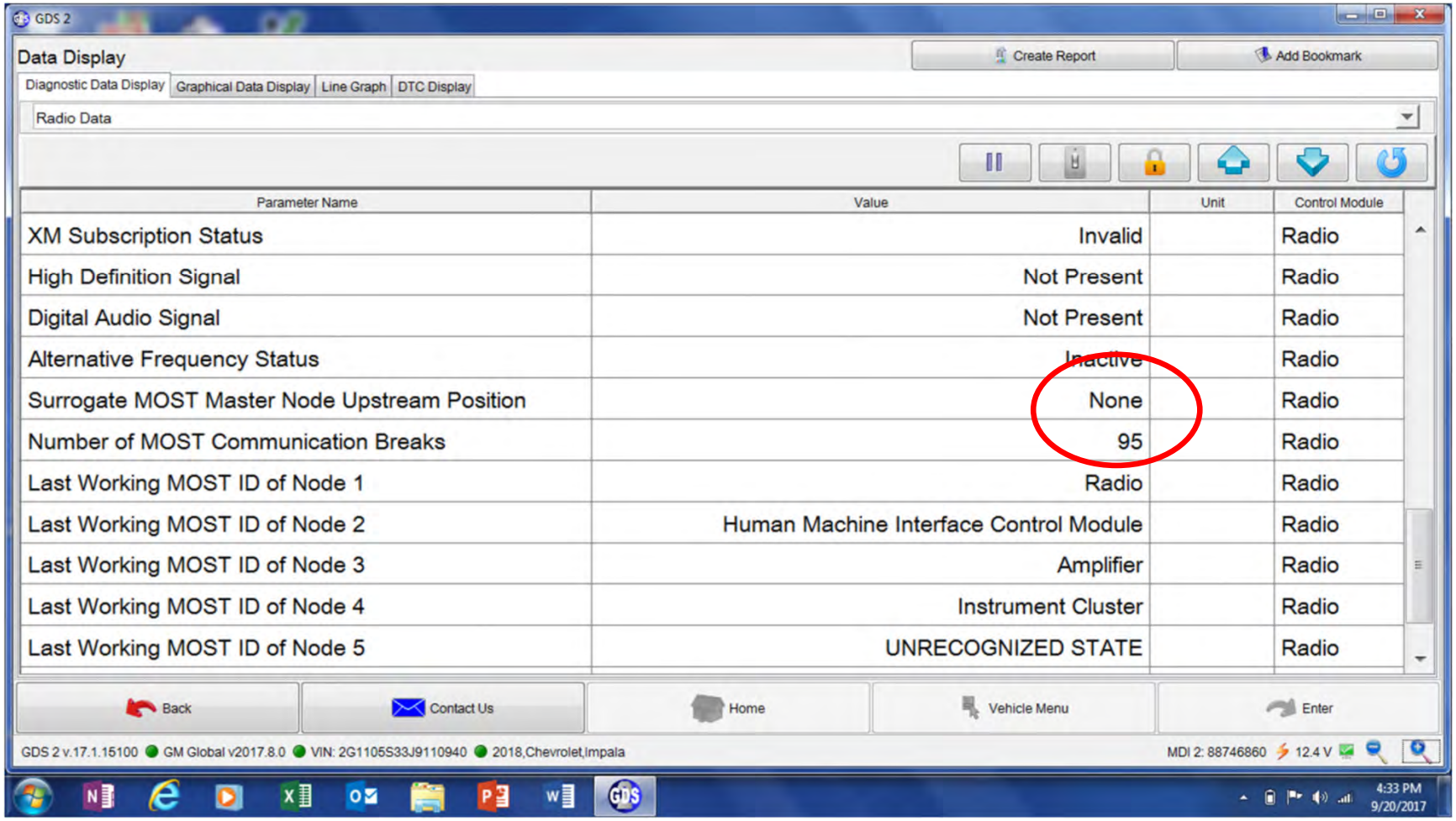
2018 Chev Impala

2018 Chev Impala

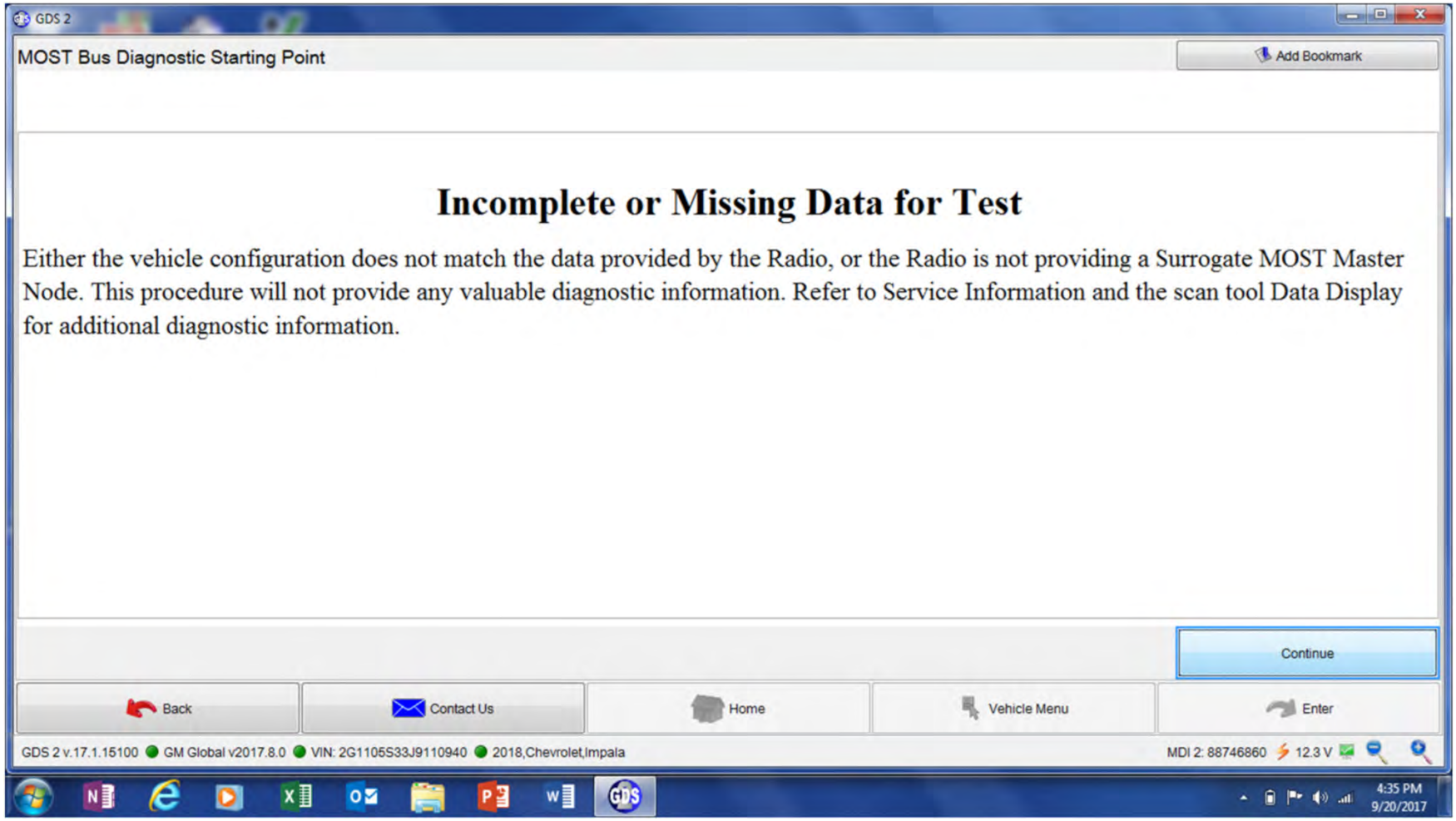
2018 Chev Impala



2018 Chev Impala



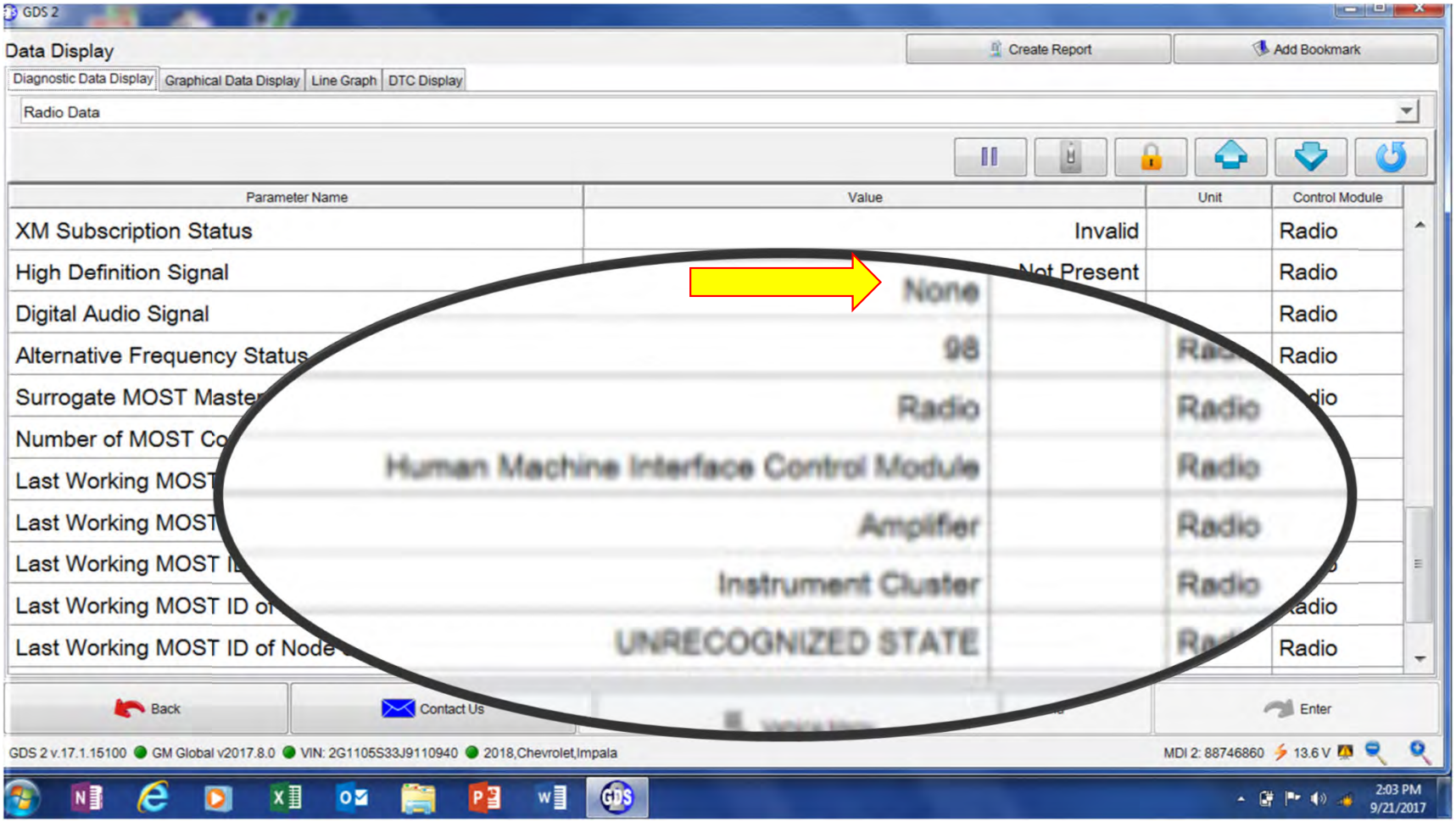
2018 Chev Impala



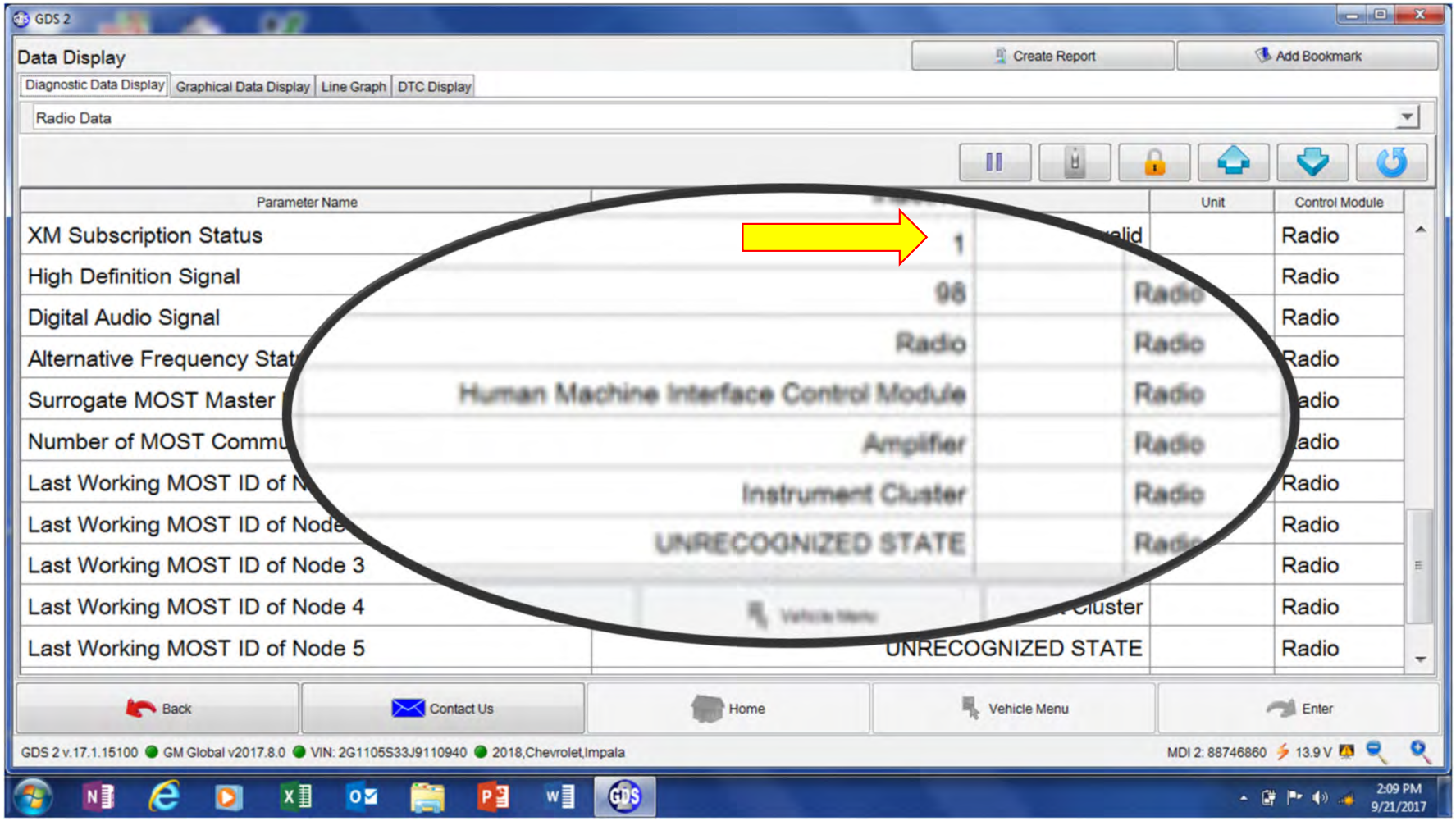
Abnormal Operation
2018 Chev Impala

2018 Chev Impala

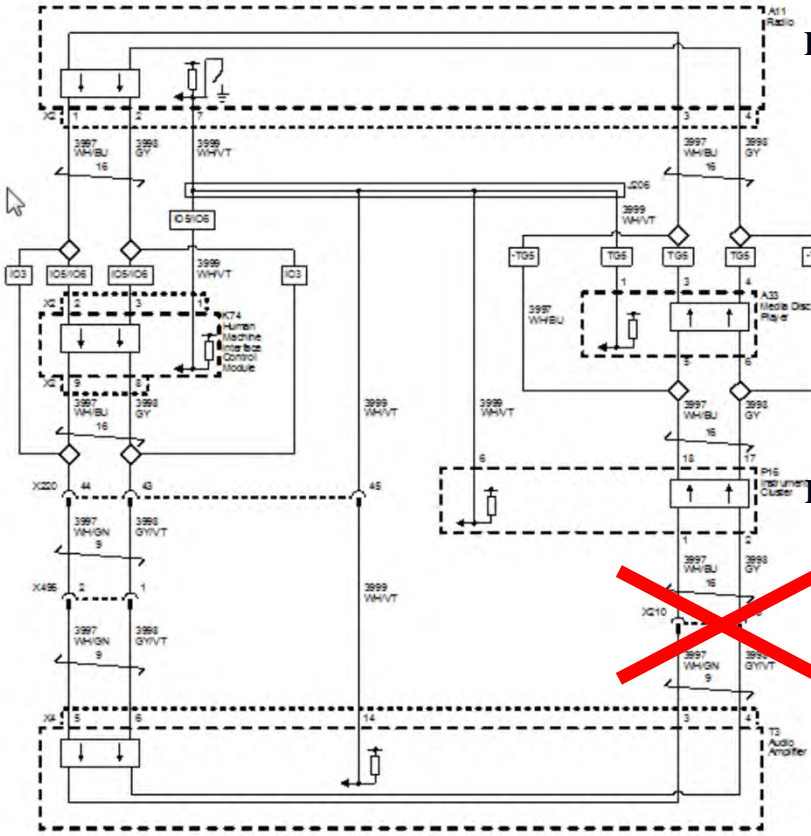
2018 Chev Impala – No Fault



2018 Chev Impala – Fault



MOST Schematic – 2018 Impala



Radio

0

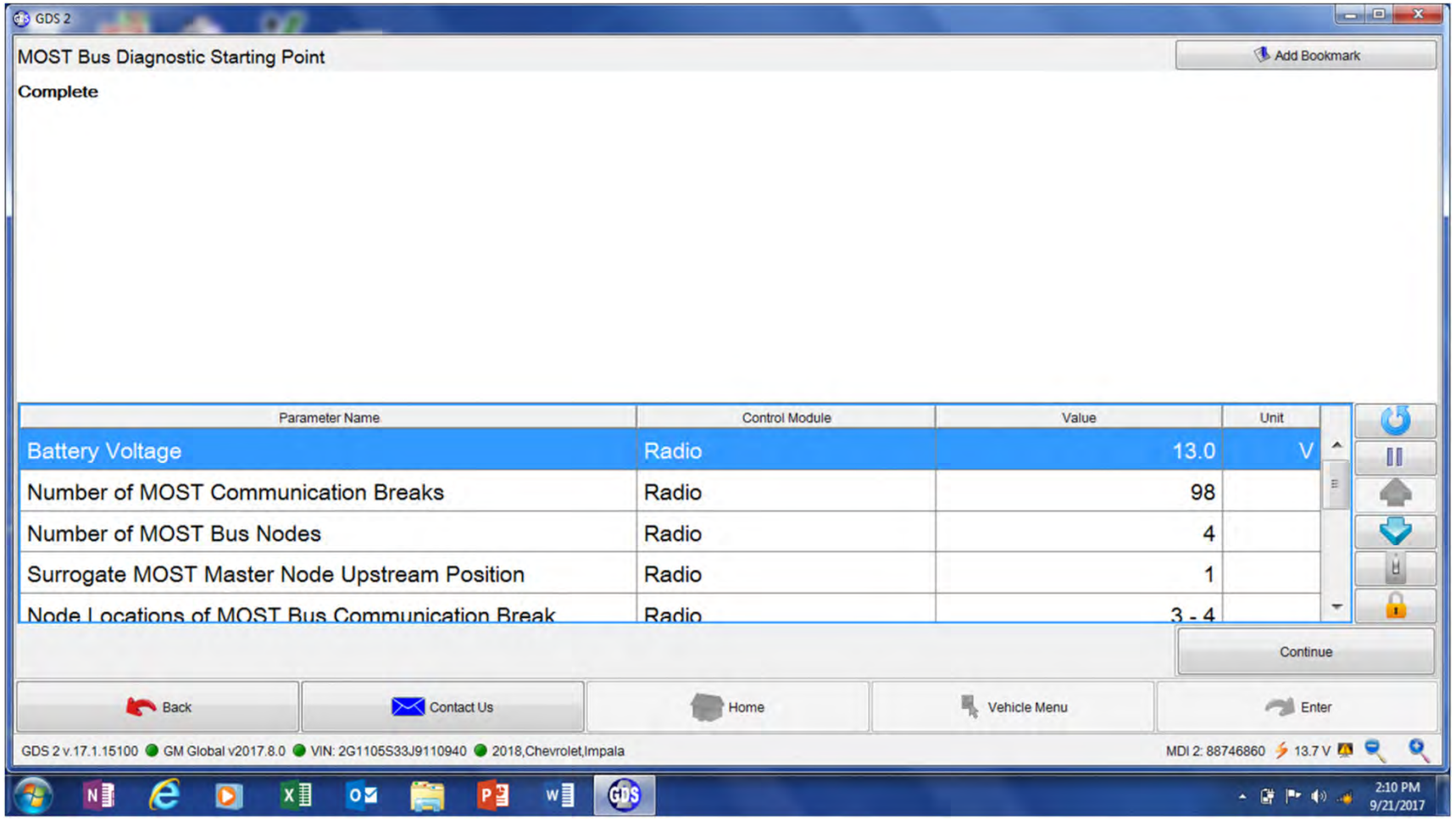
No Media Player on this Vehicle

Human Interface Module

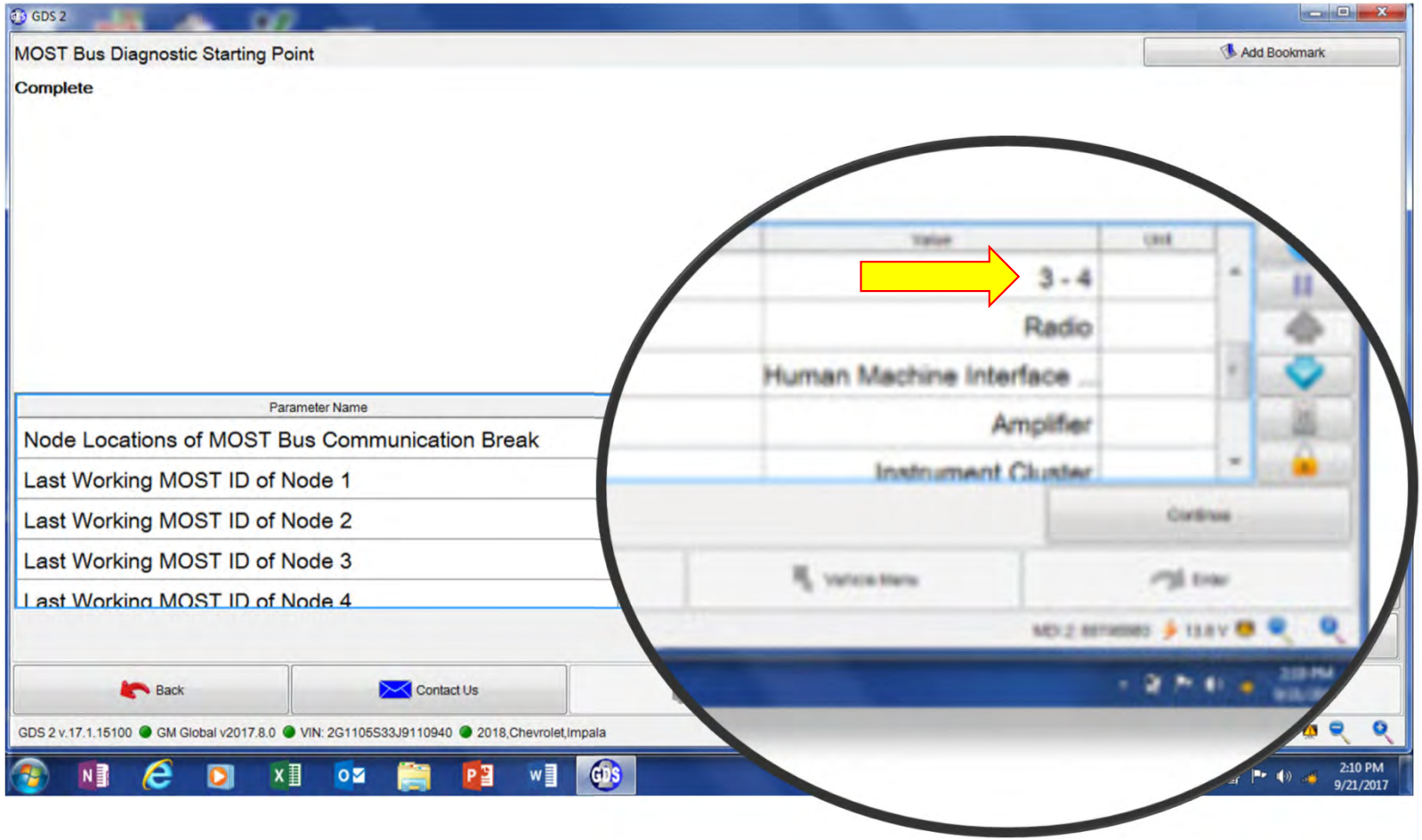
Instrument Cluster 1

Amplifier

2018 Chev Impala



2018 Chev Impala

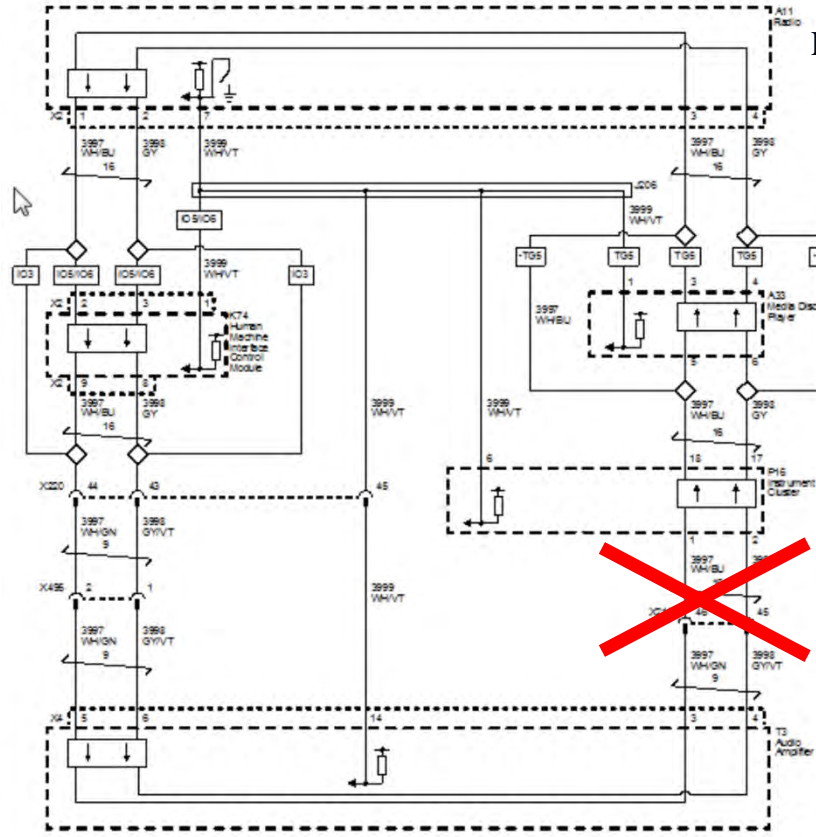


MOST Schematic – 2018 Impala

1

2

Human Interface Module



Radio

No Media Player on this Vehicle

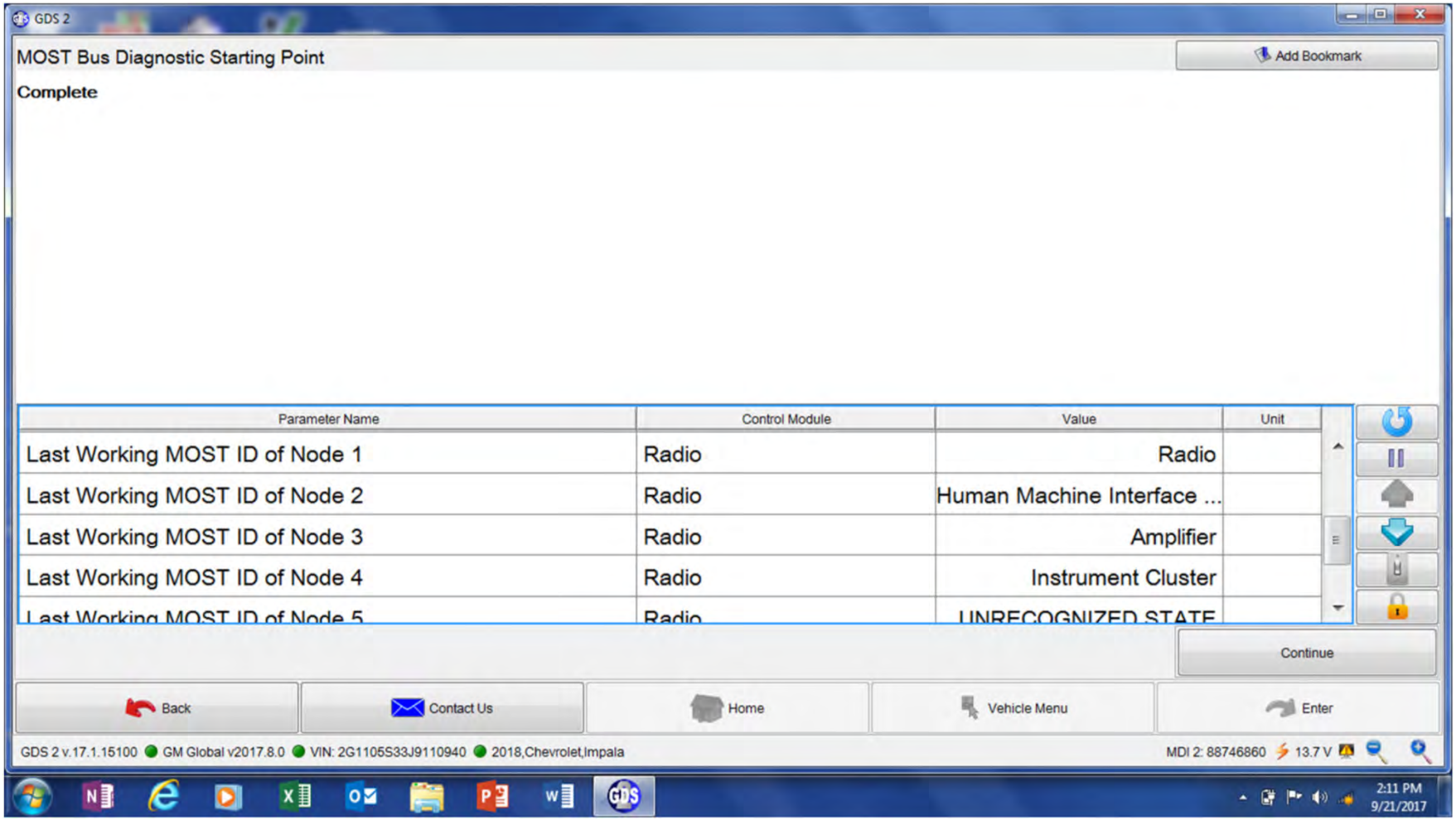
Instrument Cluster

4

Amplifier

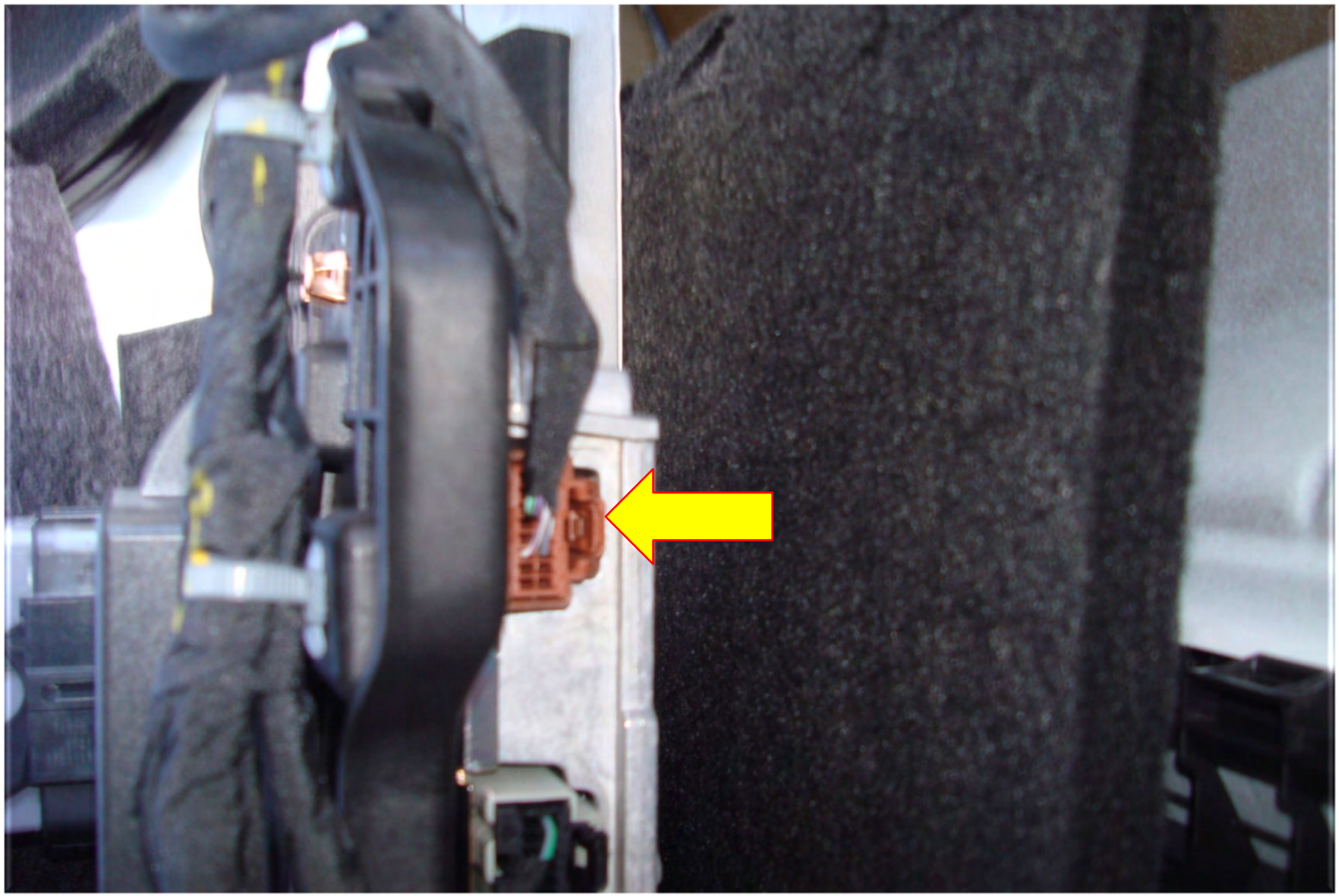
3

2018 Chev Impala



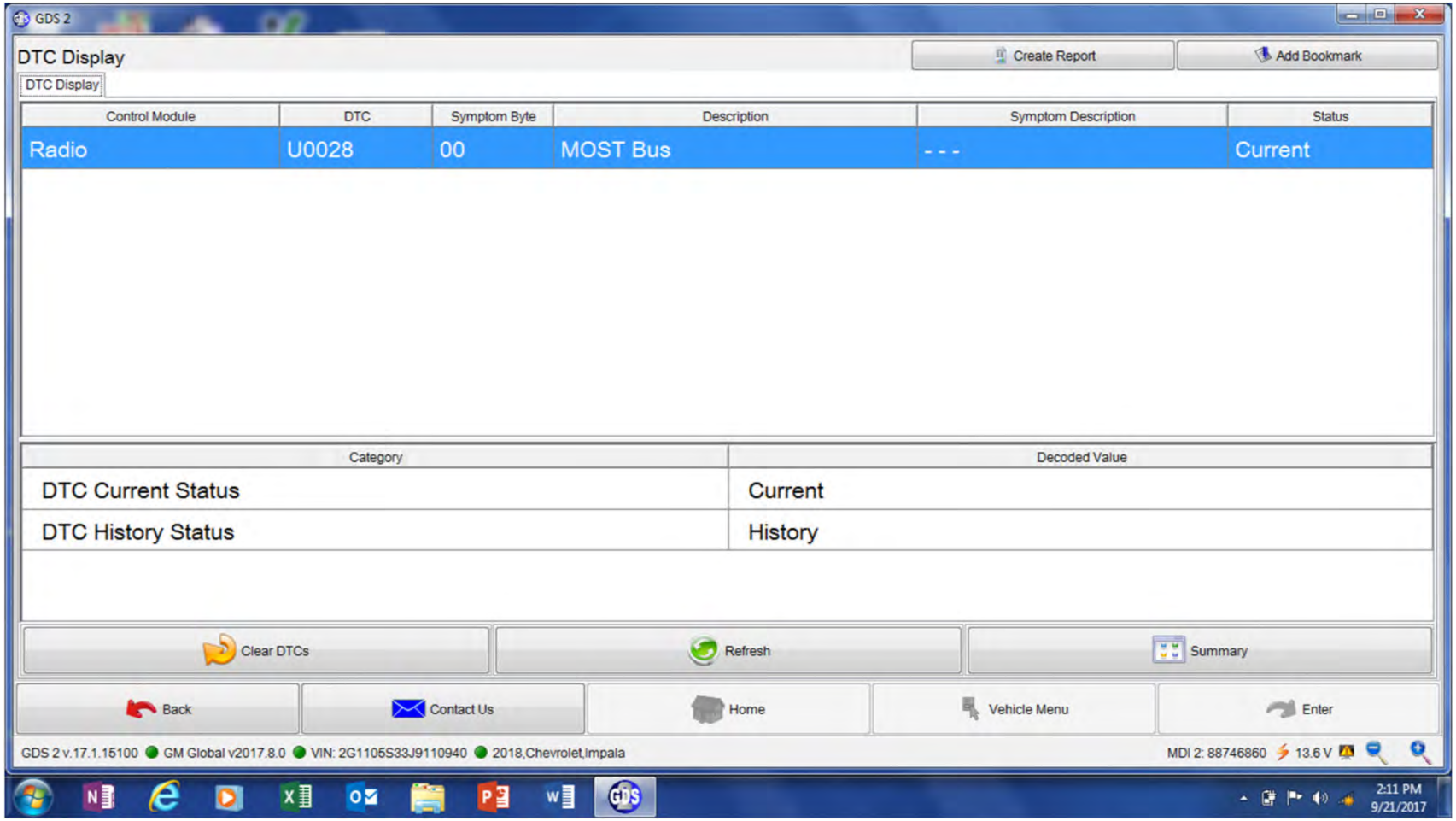
2018 Chev Impala

2018 Chev Impala



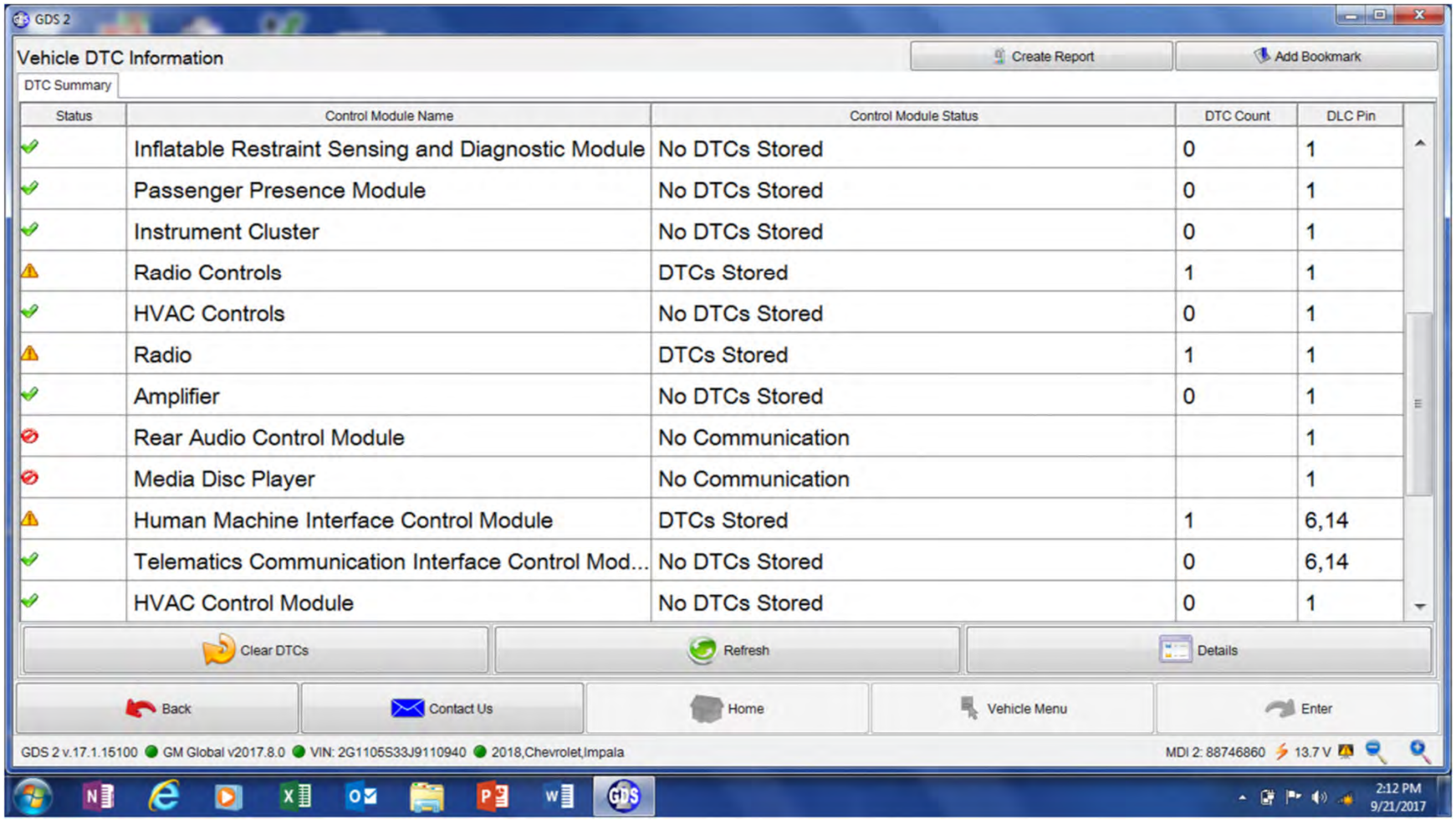
2018 Chev Impala

2018 Chev Impala - Current

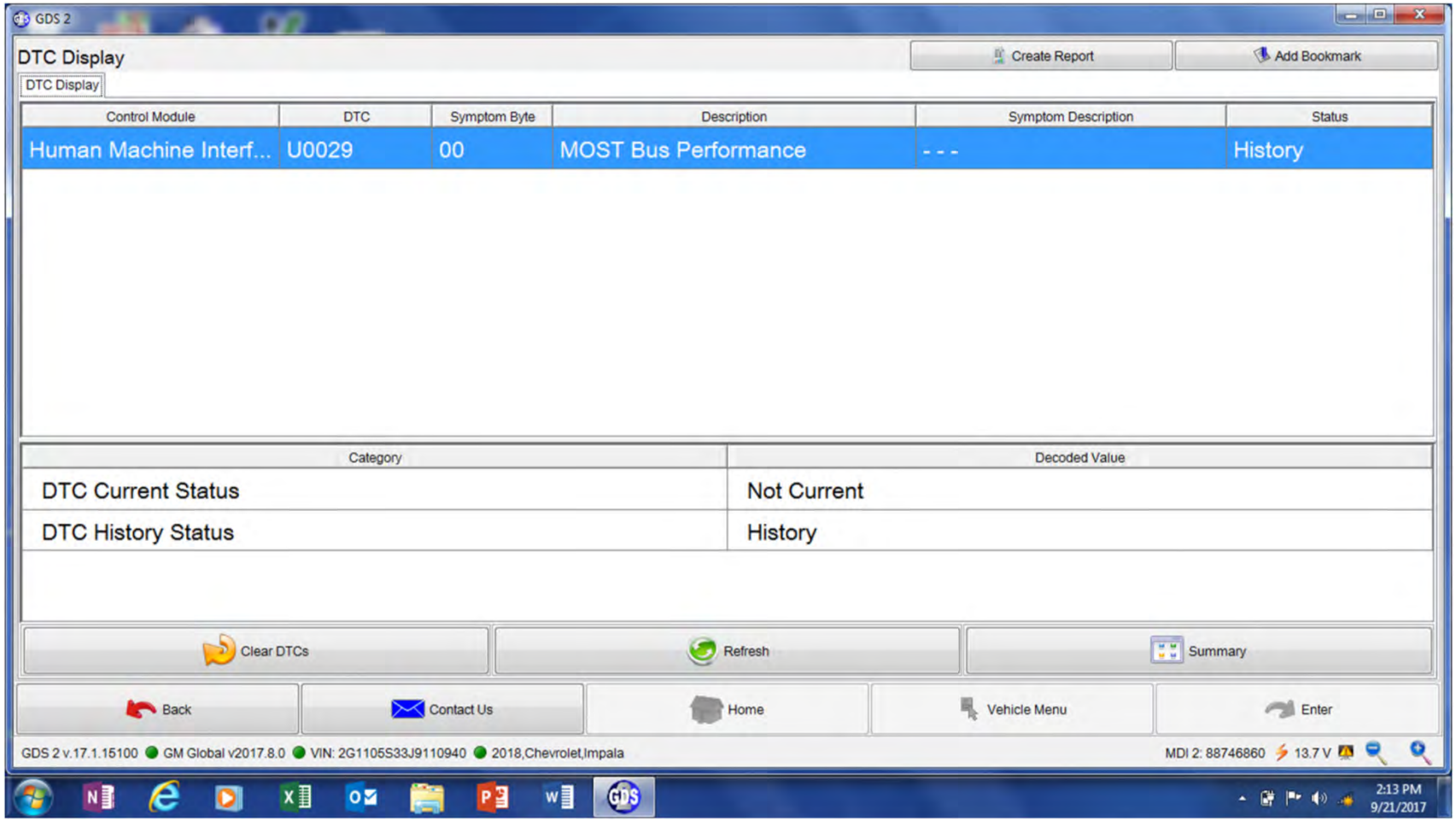


Bypass Tool

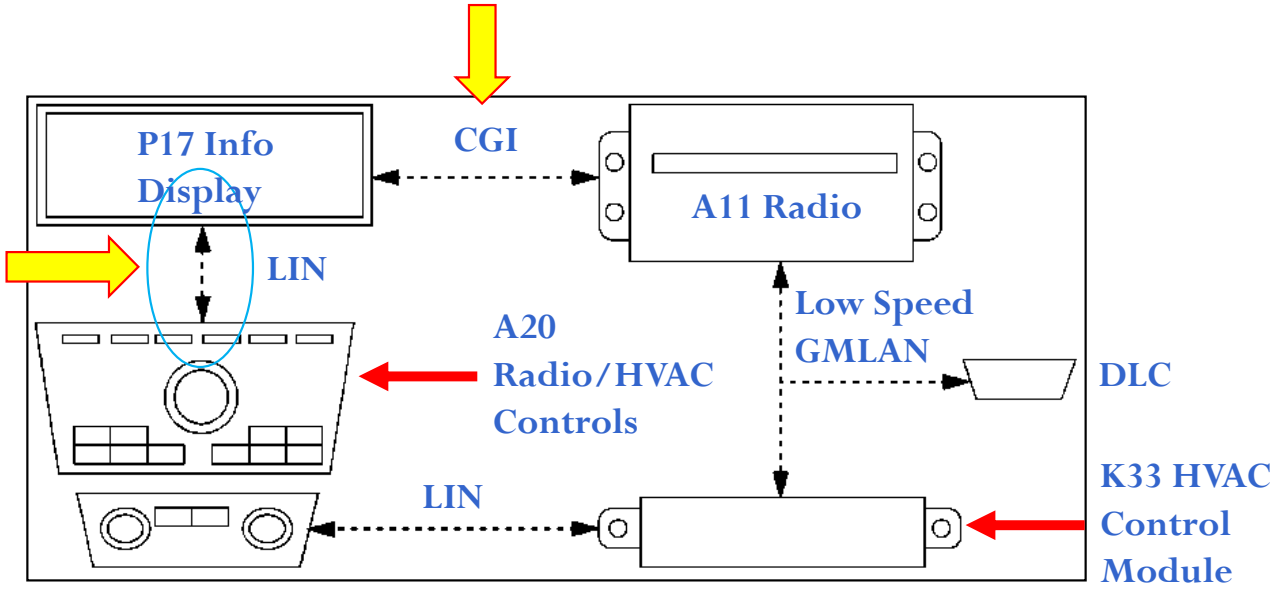
2018 Chev Impala



2018 Chev Impala - History

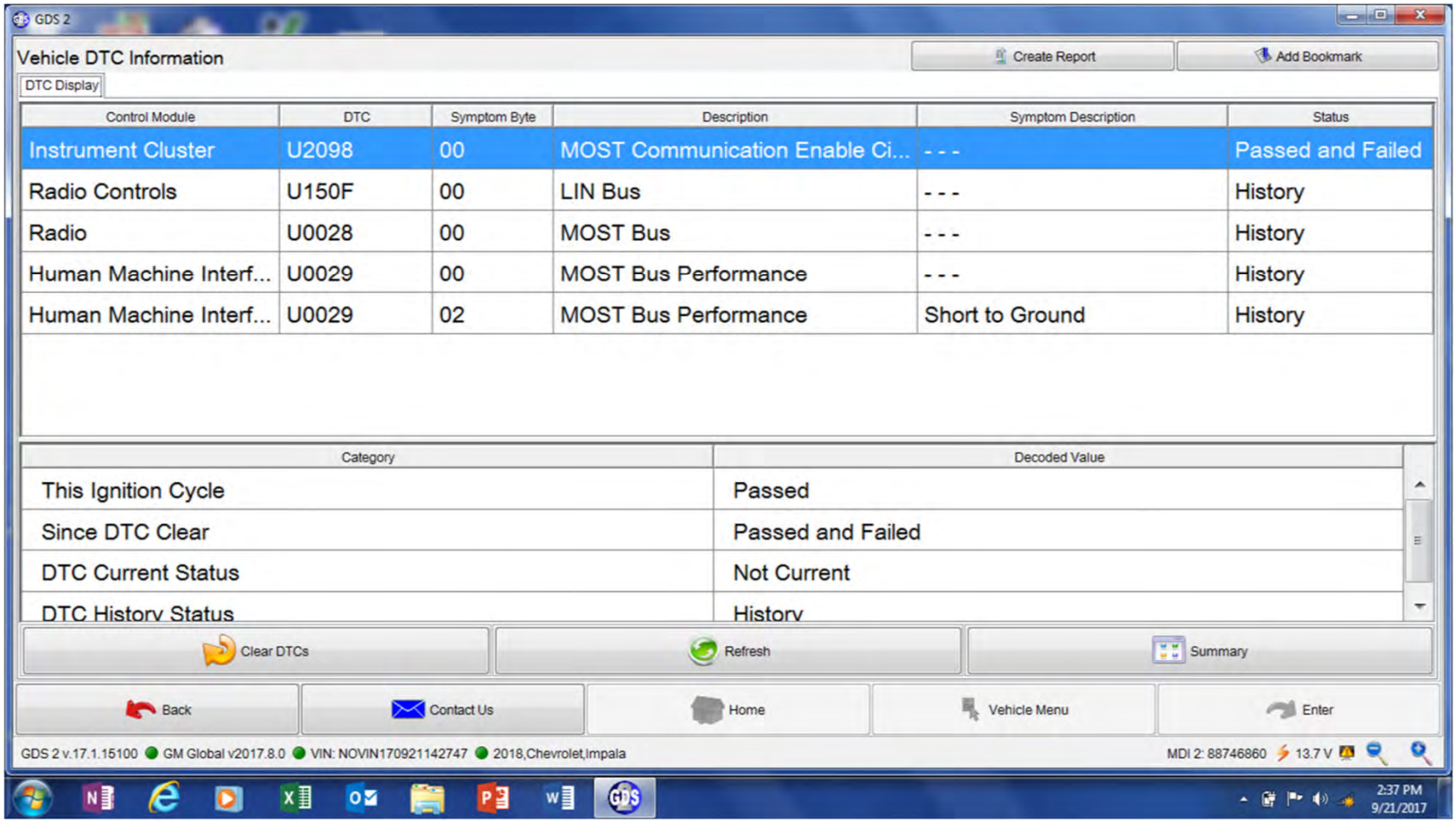


Radio and HVAC Communications

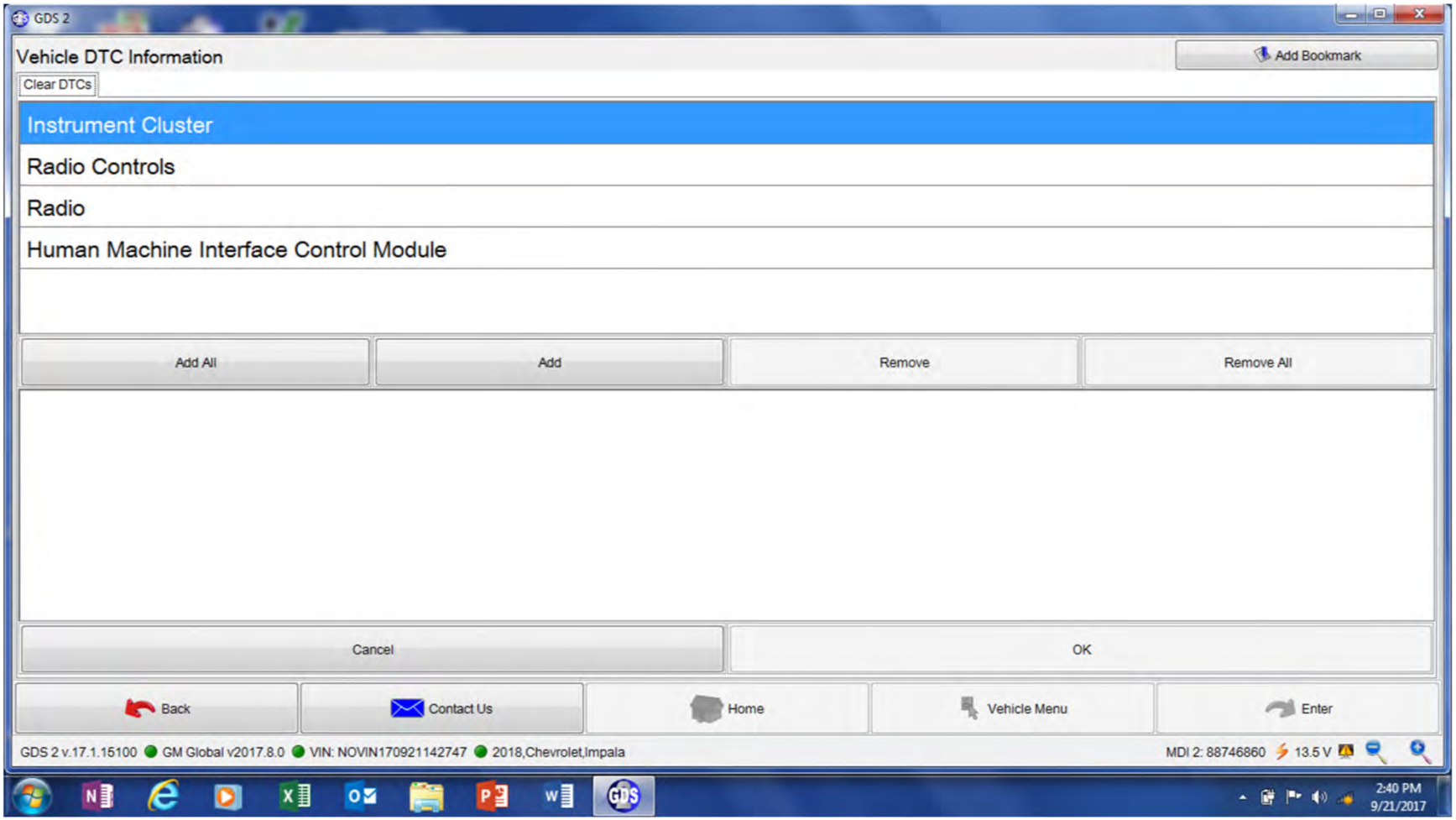


- **A20** needs to talk to **P17**, if communication is questionable a code will be set indicating that there is a possible issue with the LIN Bus

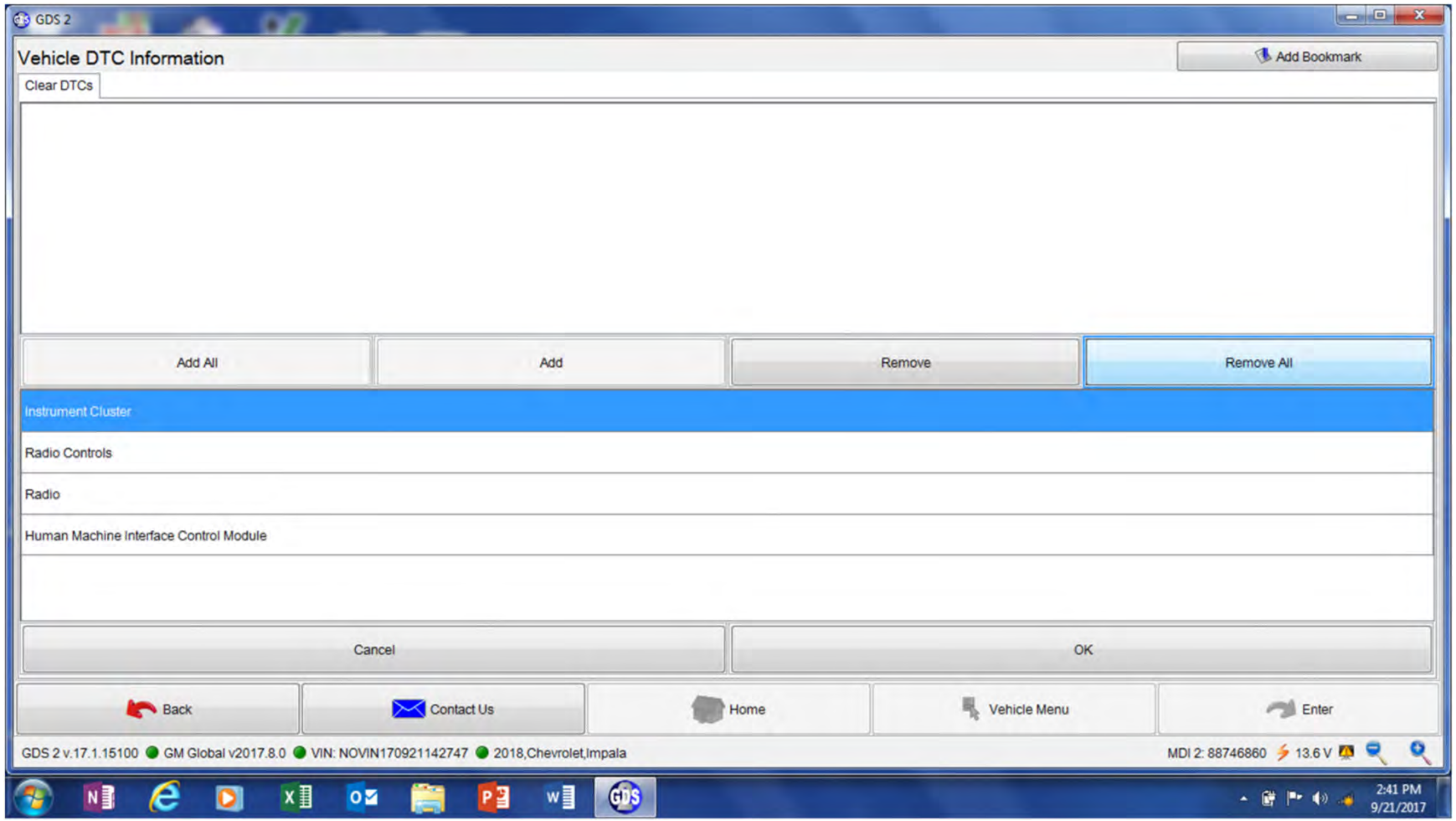
2018 Chev Impala



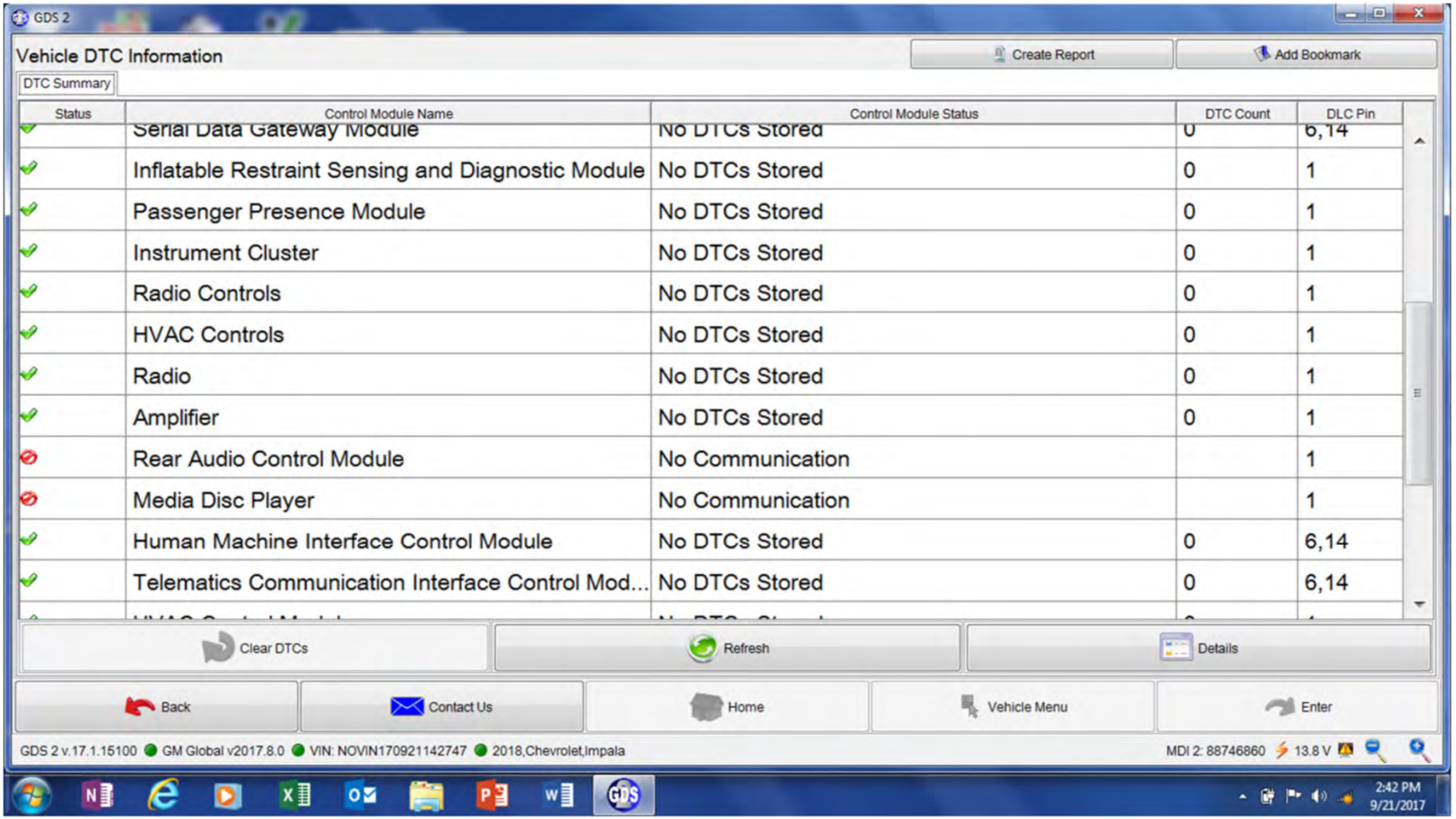
2018 Chev Impala – Code Clear



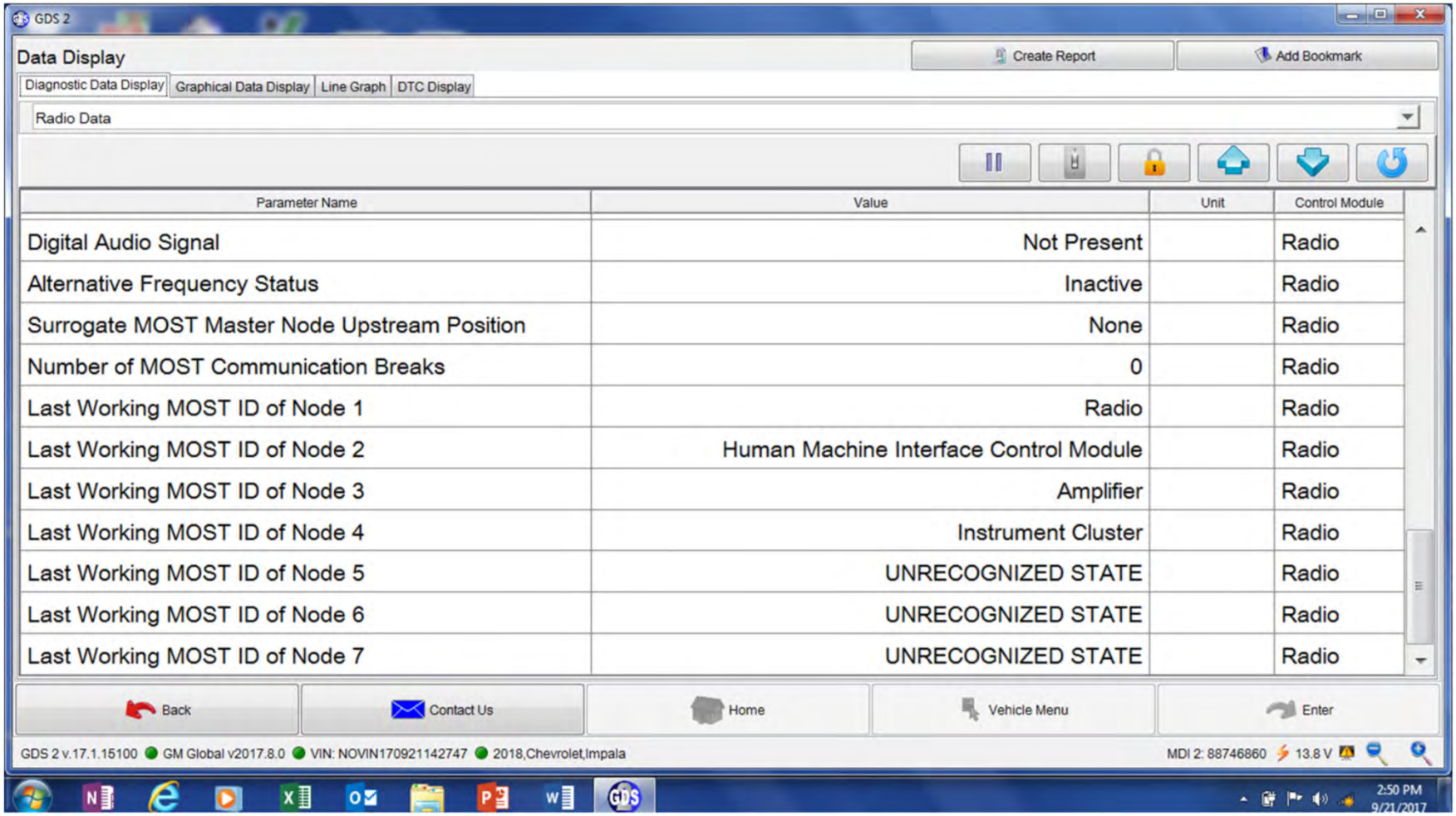
2018 Chev Impala



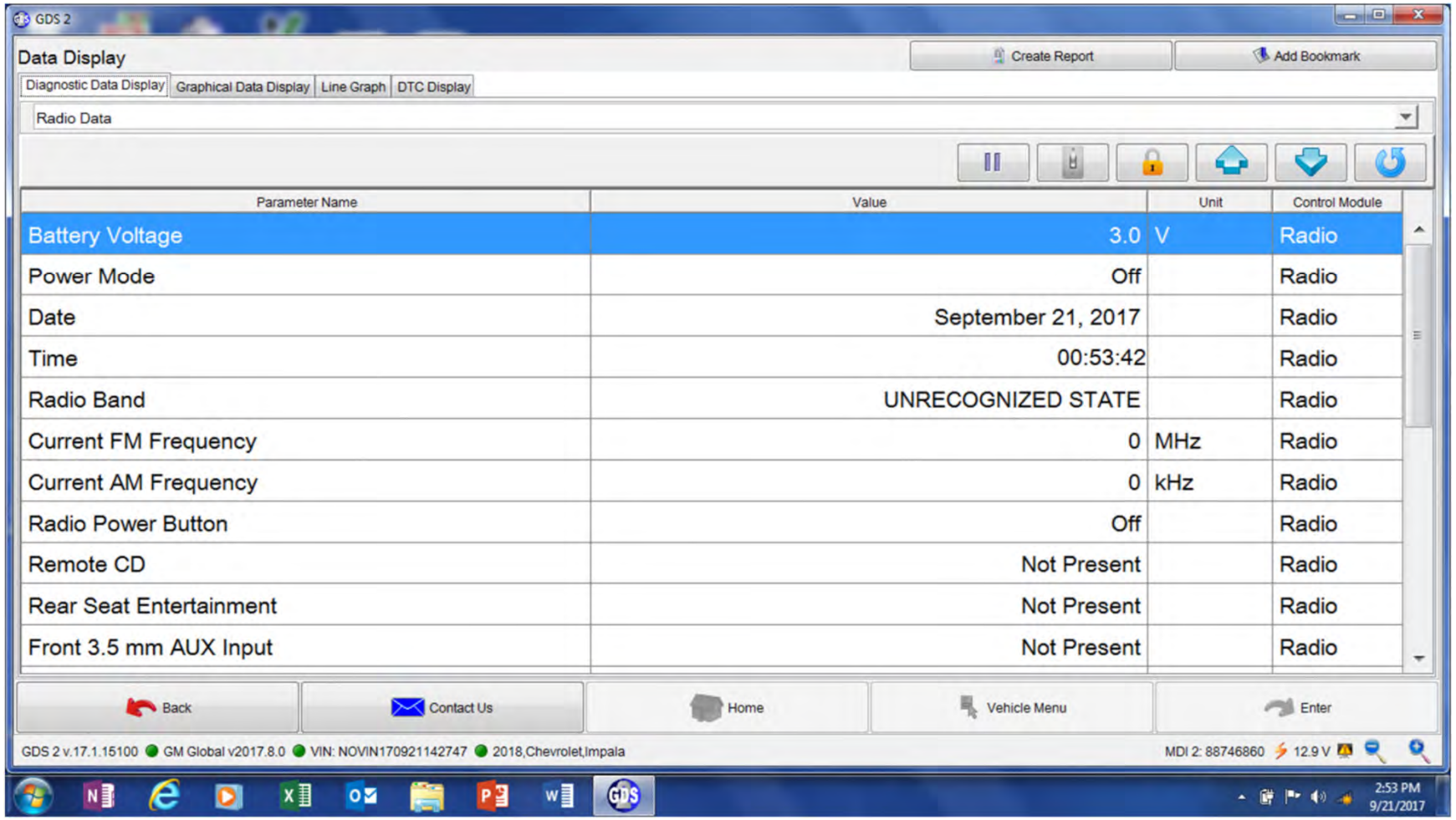
2018 Chev Impala



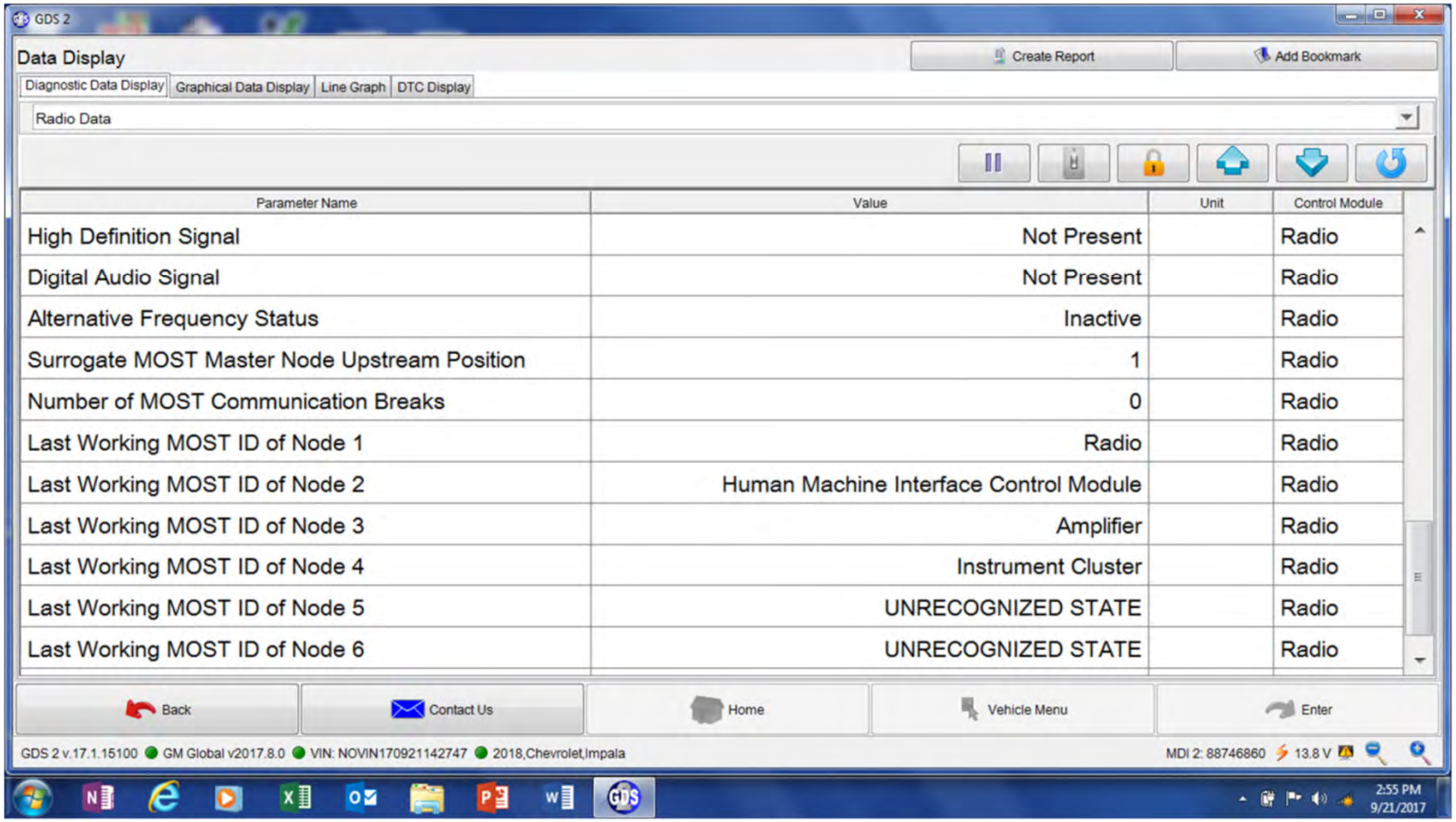
2018 Chev Impala – Code Clear



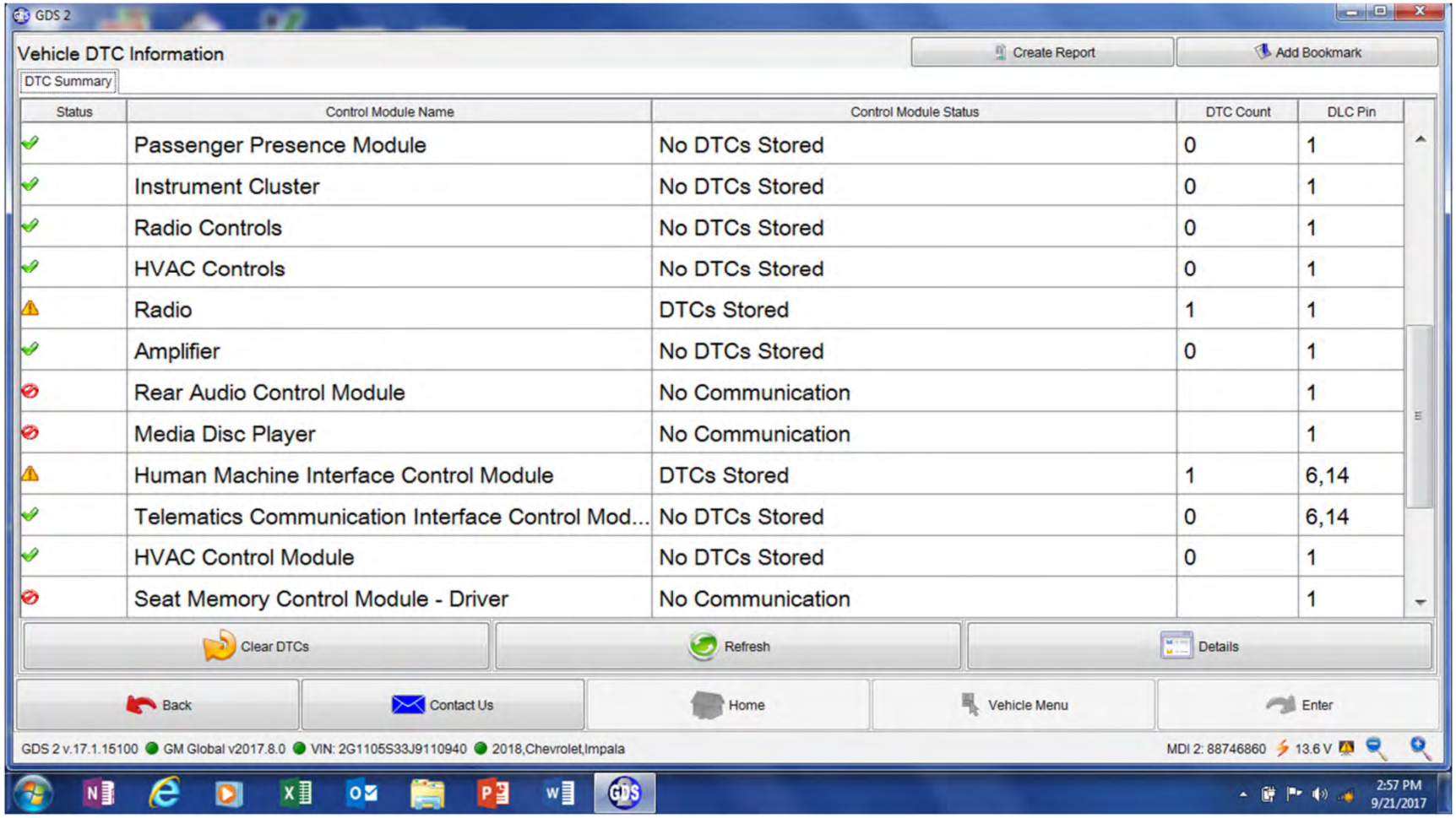
2018 Chev Impala No Fault



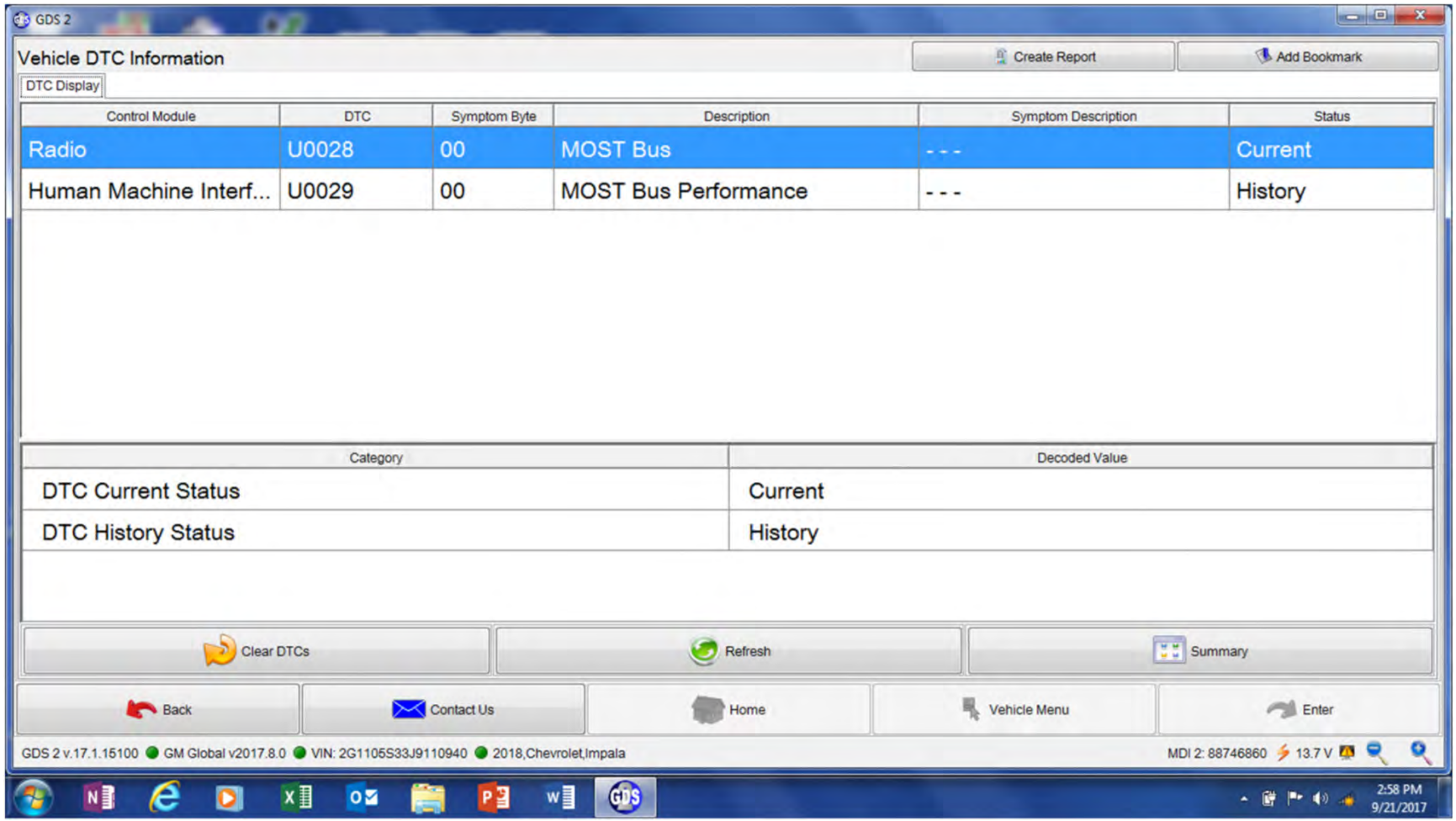
2018 Chev Impala - Fault



2018 Chev Impala

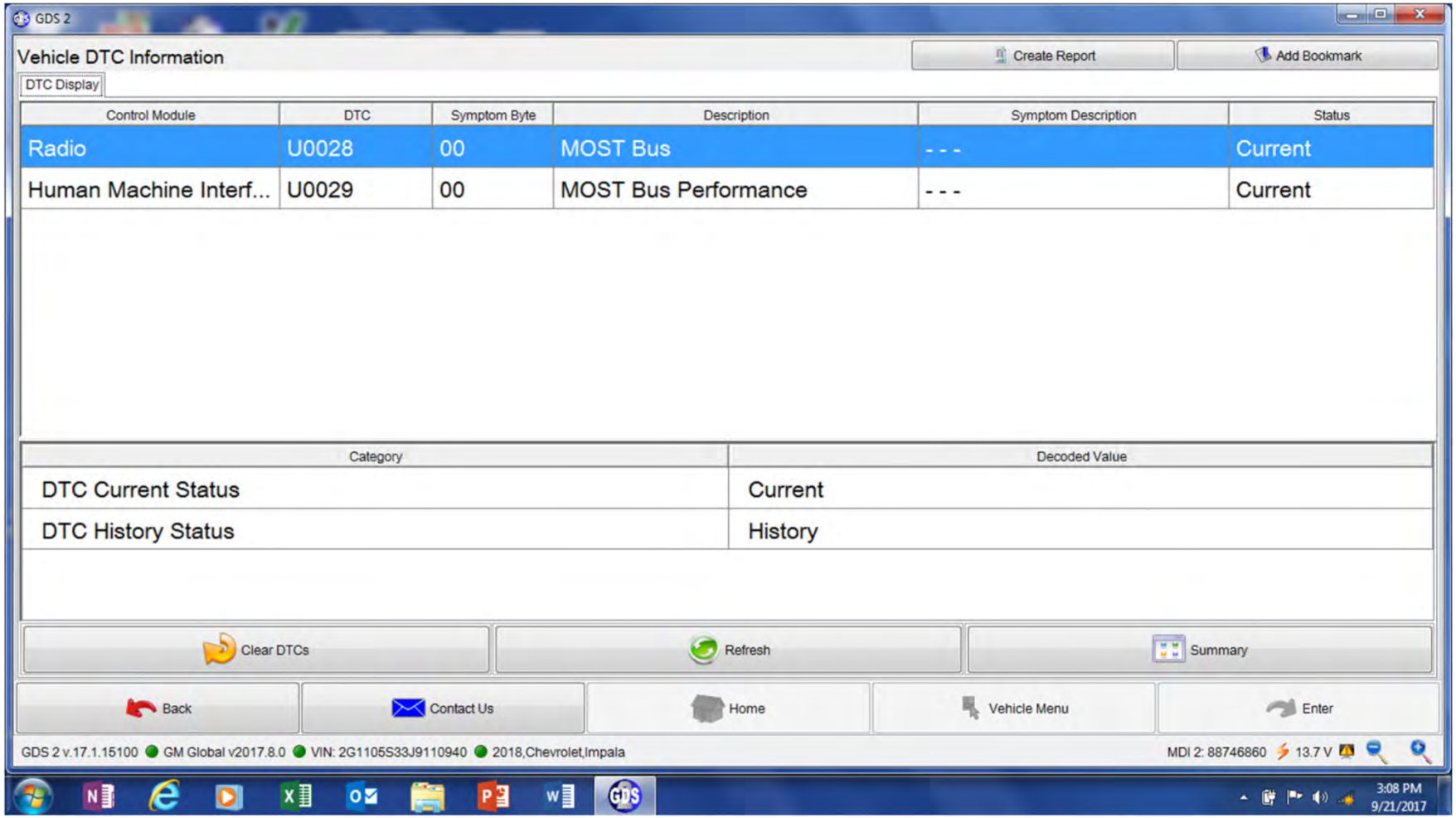


2018 Chev Impala - Fault

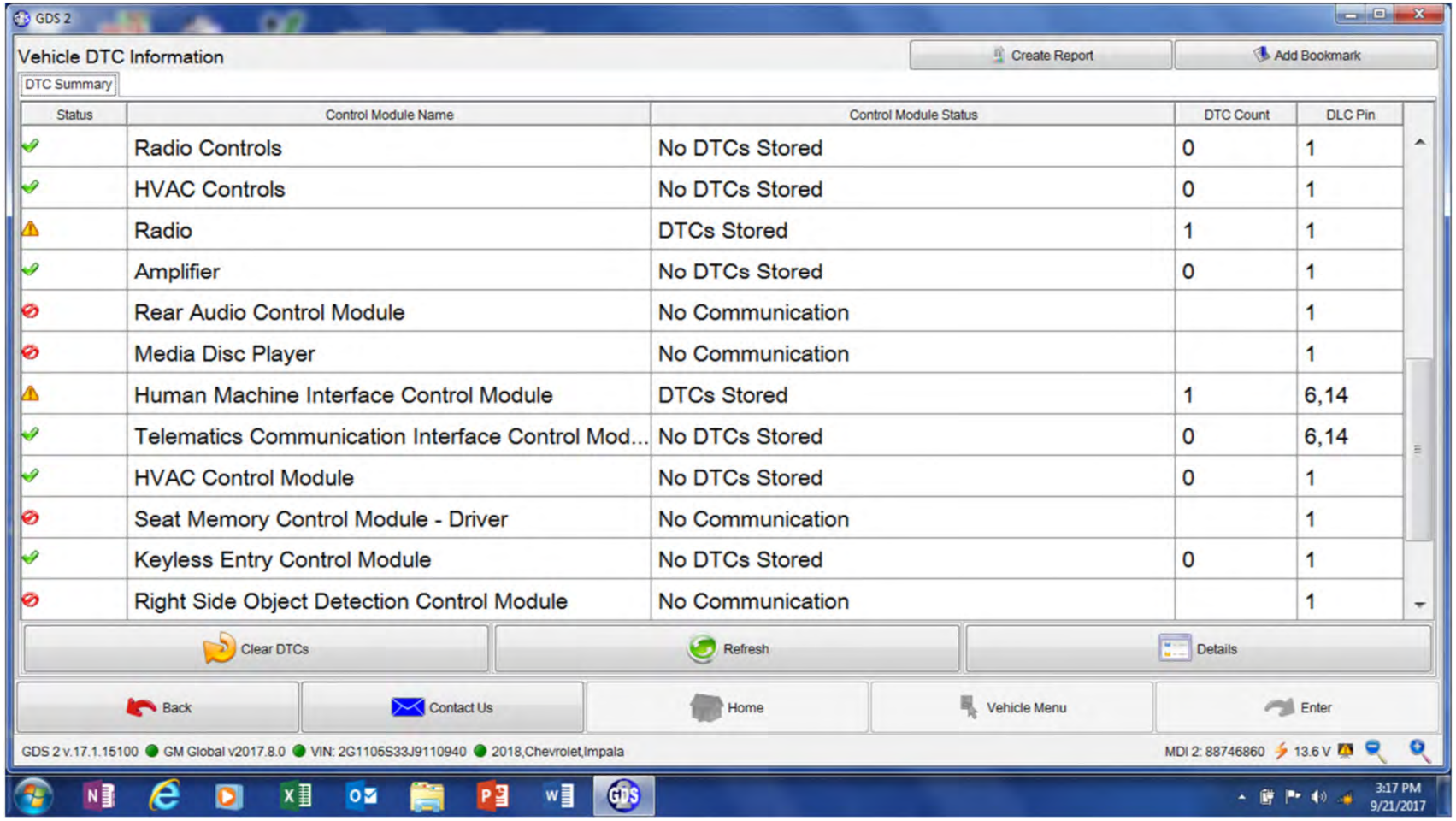


2018 Chev Impala - Fault

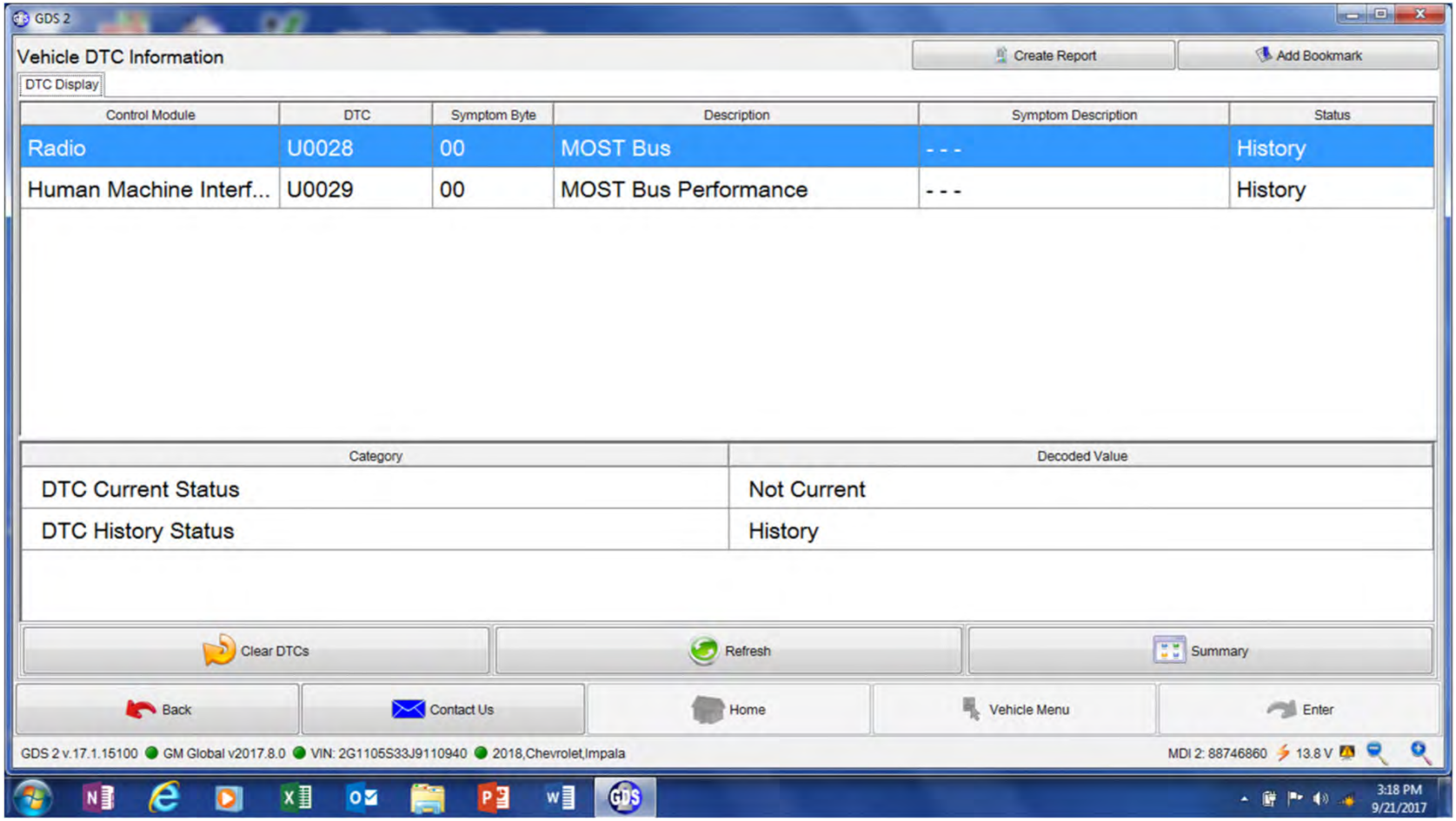
2018 Chev Impala



2018 Chev Impala



2018 Chev Impala – No Fault

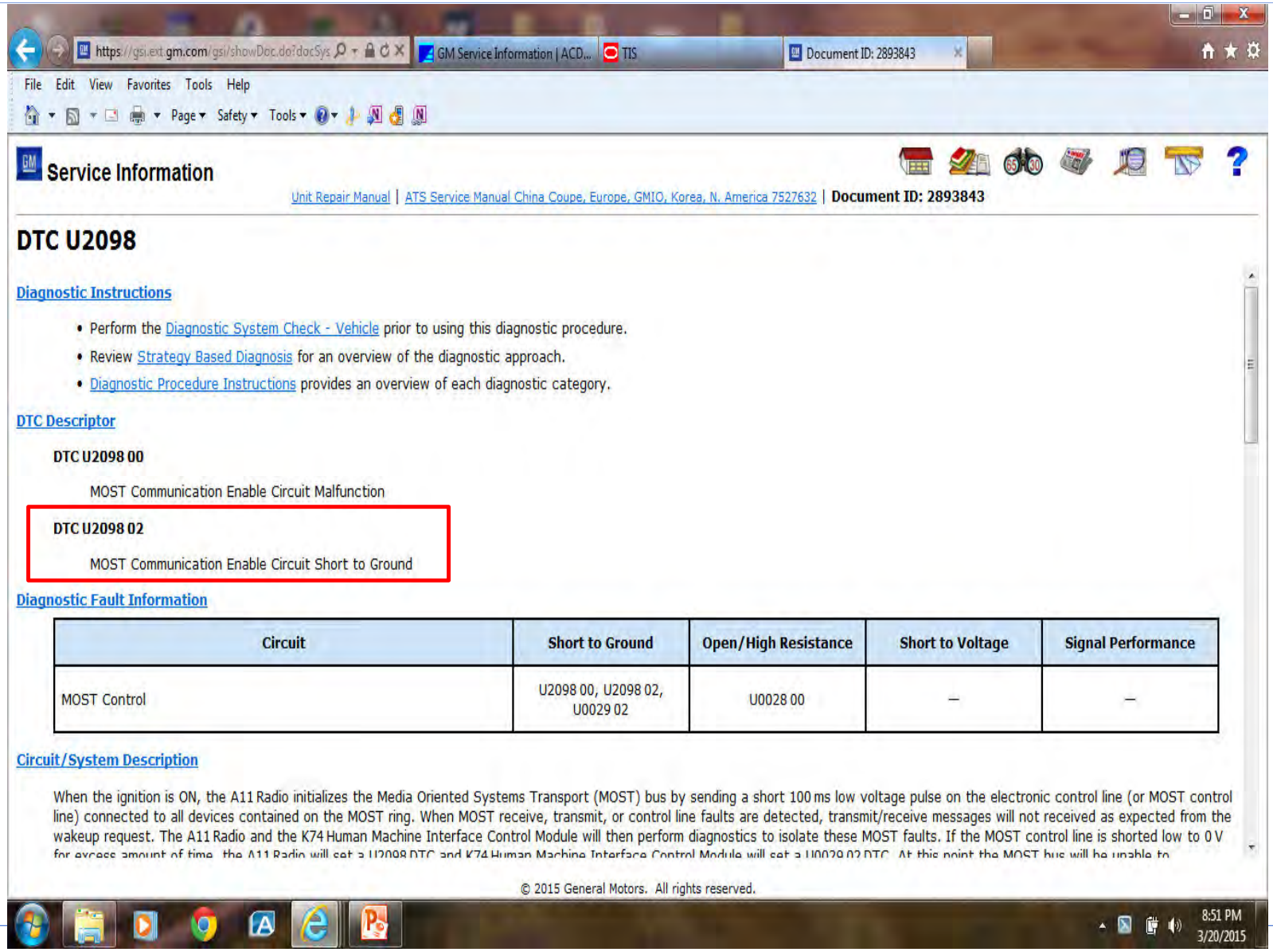


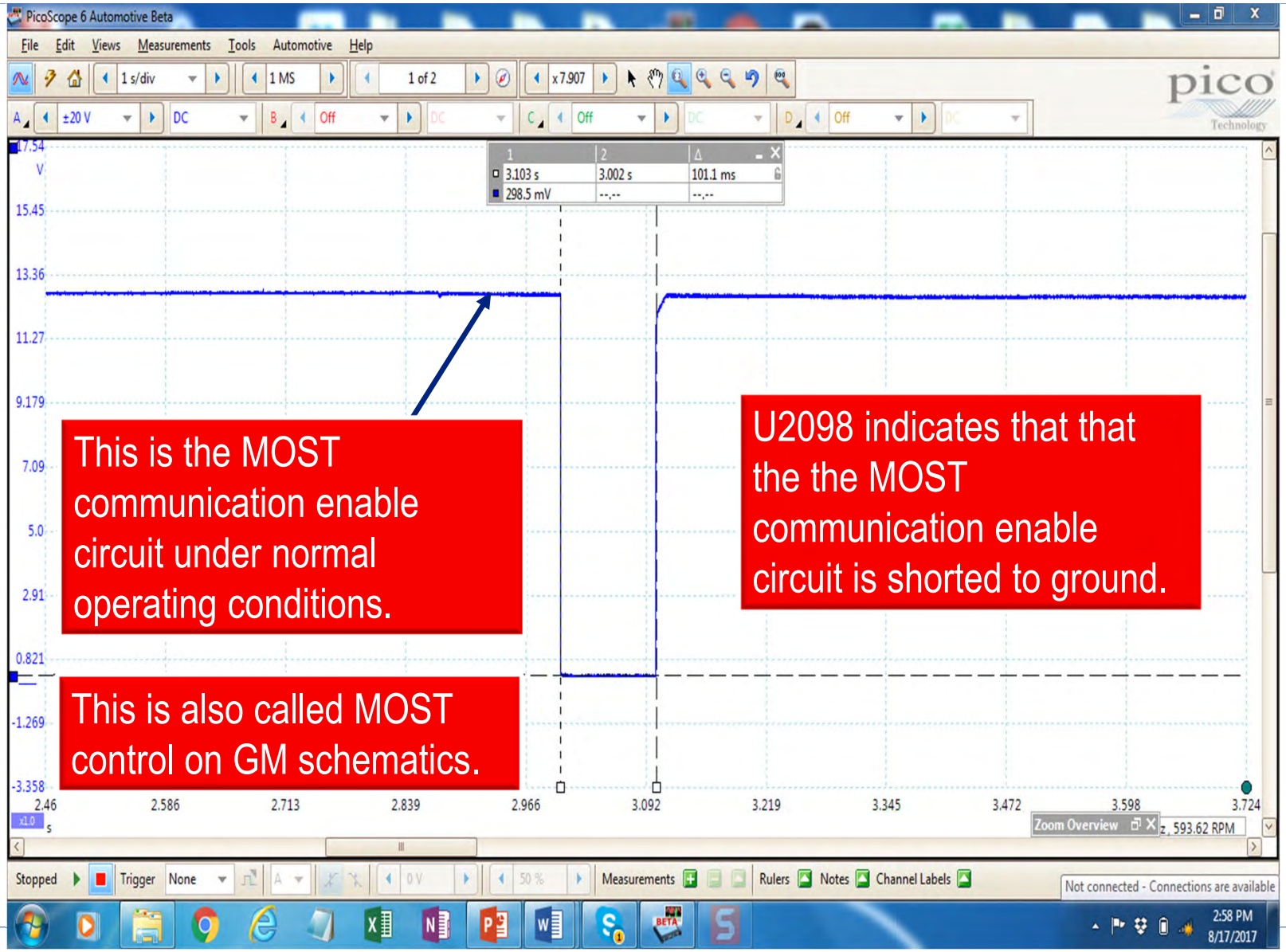
2018 Chev Impala – No Fault

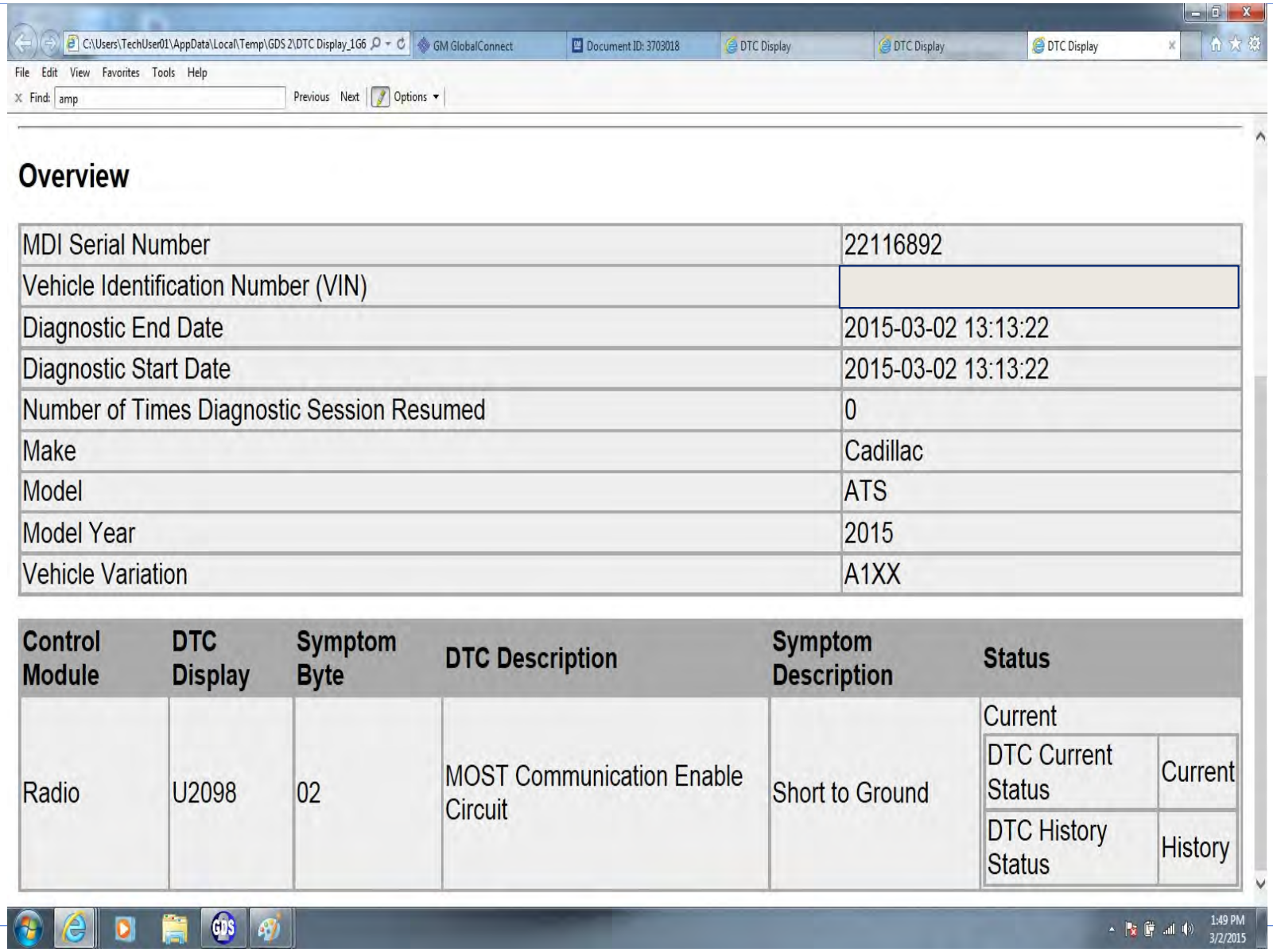
Case Study #2

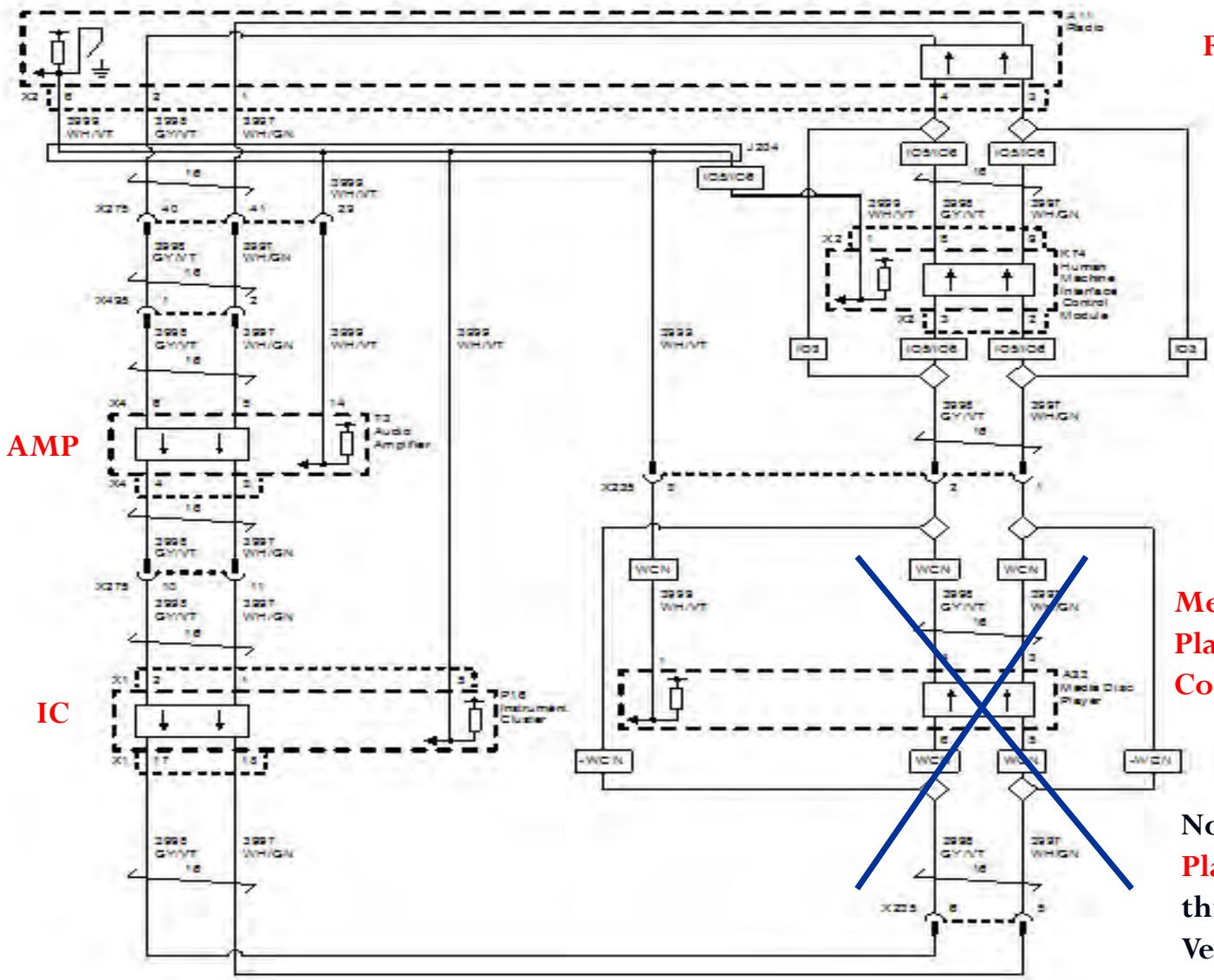
2015 Cadillac ATS
U2098 Code

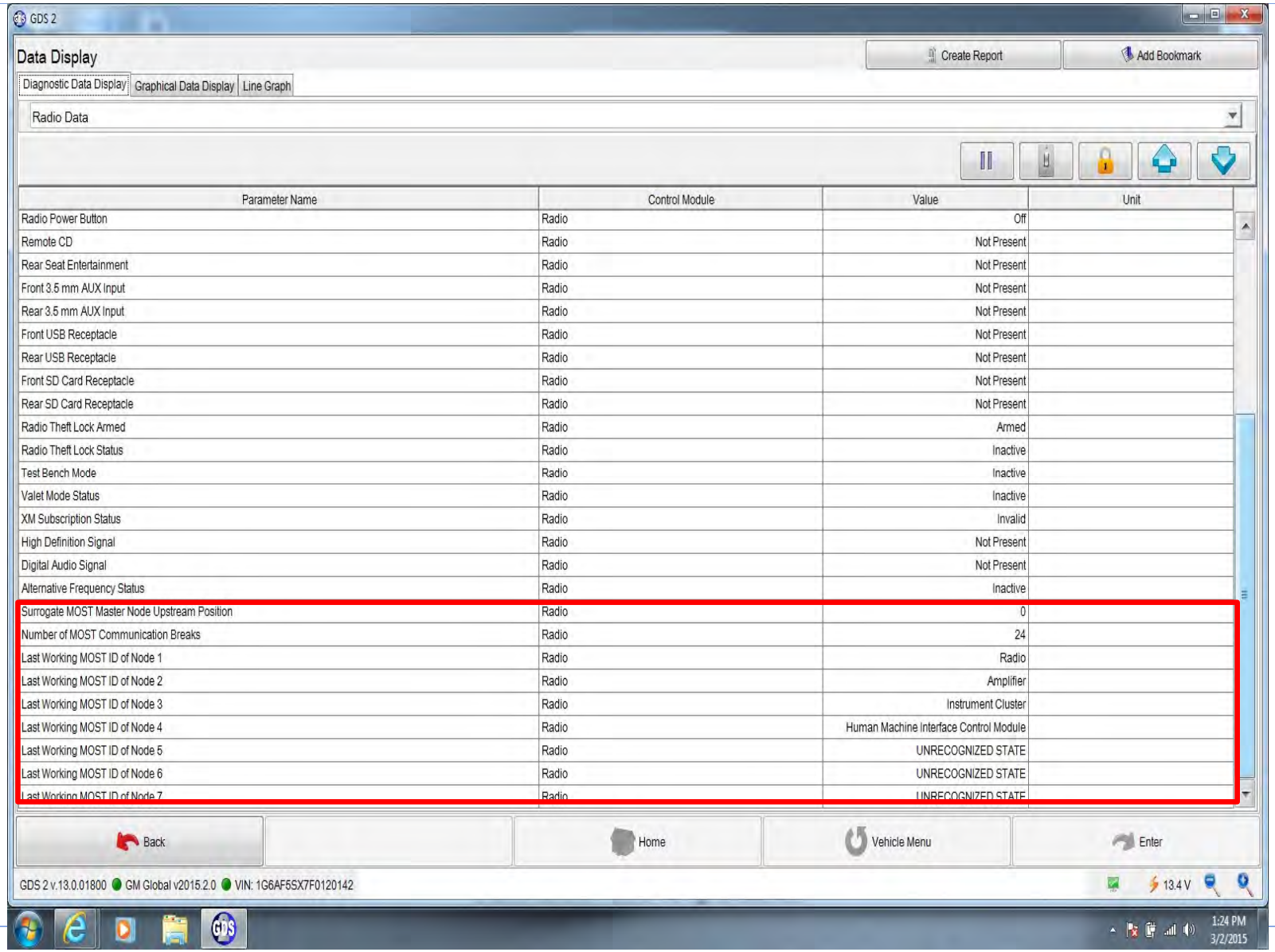

Radio Face is Blank
(Failure)


https://gsi.ext.gm.com/gsi/showDoc.do?docSys
GM Service Information | ACD...
TIS
Document ID: 2893843
File Edit View Favorites Tools Help
Page Safety Tools
Service Information
Unit Repair Manual | ATS Service Manual China Coupe, Europe, GMIO, Korea, N. America 7527632 | Document ID: 2893843
DTC U2098
Diagnostic Instructions
Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
Review Strategy Based Diagnosis for an overview of the diagnostic approach.
Diagnostic Procedure Instructions provides an overview of each diagnostic category.
DTC Descriptor
DTC U2098 00
MOST Communication Enable Circuit Malfunction
DTC U2098 02
MOST Communication Enable Circuit Short to Ground
Diagnostic Fault Information
Circuit
Short to Ground
Open/High Resistance
Short to Voltage
Signal Performance
MOST Control
U2098 00, U2098 02, U0029 02
U0028 00
—
—
Circuit/System Description
When the ignition is ON, the A11 Radio initializes the Media Oriented Systems Transport (MOST) bus by sending a short 100 ms low voltage pulse on the electronic control line (or MOST control line) connected to all devices contained on the MOST ring. When MOST receive, transmit, or control line faults are detected, transmit/receive messages will not received as expected from the wakeup request. The A11 Radio and the K74 Human Machine Interface Control Module will then perform diagnostics to isolate these MOST faults. If the MOST control line is shorted low to 0 V
© 2015 General Motors. All rights reserved.
8:51 PM
3/20/2015


PicoScope 6 Automotive Beta
File Edit Views Measurements Tools Automotive Help
pico Technology
17.54 V
15.45
13.36
11.27
9.179
7.09
5.0
2.91
0.821
-1.269
-3.358
2.46 2.586 2.713 2.839 2.966 3.092 3.219 3.345 3.472 3.598 3.724
s
3.103 s 3.002 s 101.1 ms
298.5 mV
This is the MOST communication enable circuit under normal operating conditions.
This is also called MOST control on GM schematics.
U2098 indicates that that the the MOST communication enable circuit is shorted to ground.
Zoom Overview
593.62 RPM
Stopped Trigger None Measurements Rulers Notes Channel Labels
Not connected - Connections are available
2:58 PM
8/17/2017

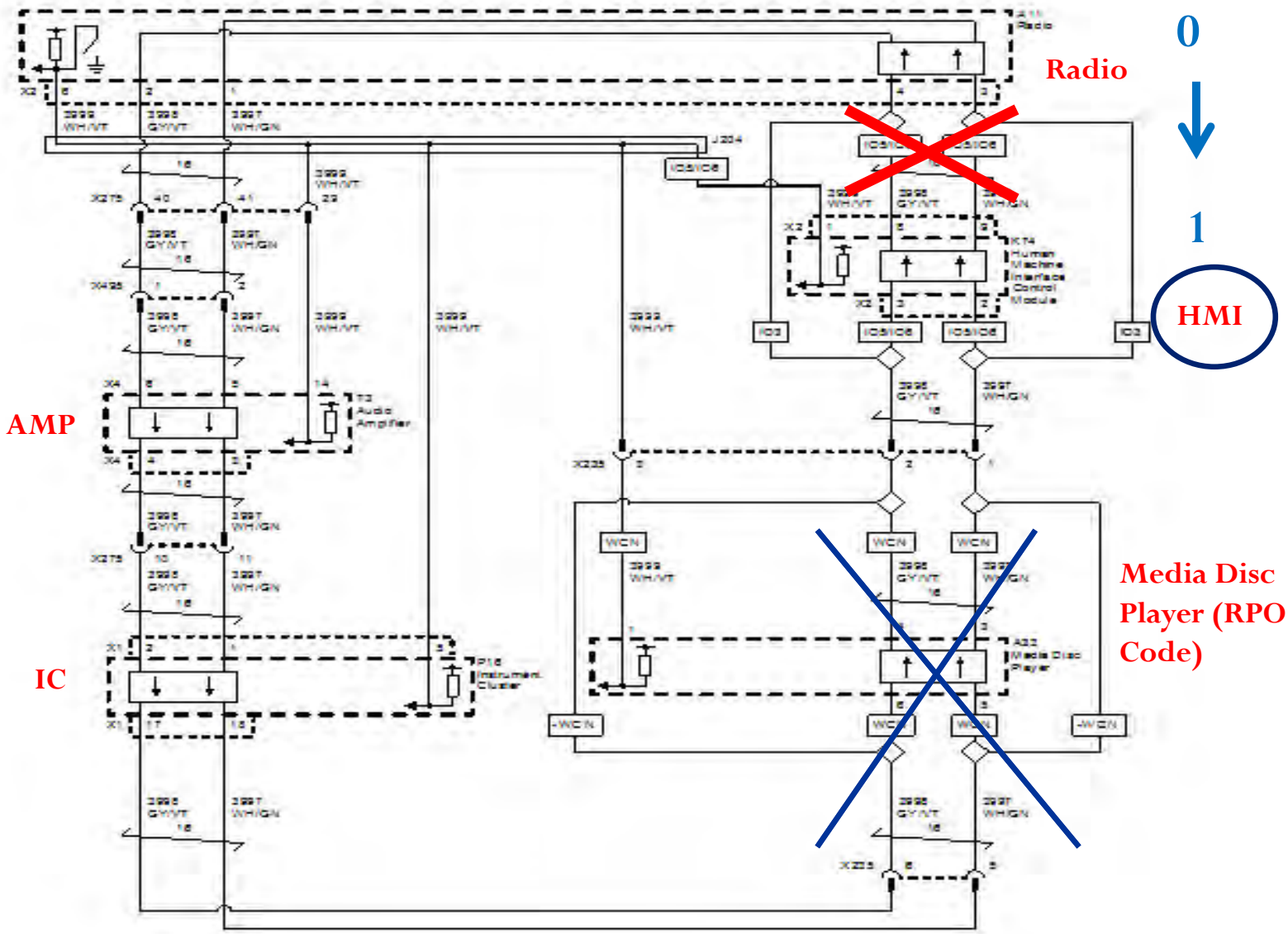

C:\Users\TechUser01\AppData\Local\Temp\GDS 2\DTC Display_1G6
GM GlobalConnect
Document ID: 3703018
DTC Display
DTC Display
DTC Display
File Edit View Favorites Tools Help
Find: amp
Previous Next Options
Overview
MDI Serial Number 22116892
Vehicle Identification Number (VIN)
Diagnostic End Date 2015-03-02 13:13:22
Diagnostic Start Date 2015-03-02 13:13:22
Number of Times Diagnostic Session Resumed 0
Make Cadillac
Model ATS
Model Year 2015
Vehicle Variation A1XX
Control Module
DTC Display
Symptom Byte
DTC Description
Symptom Description
Status
Radio
U2098
02
MOST Communication Enable Circuit
Short to Ground
Current
DTC Current Status
Current
DTC History Status
History
1:49 PM
3/2/2015


Radio
HMI
AMP
IC
Media Disc Player (RPO Code)
No Media Player on this Vehicle


GDS 2
Data Display
Create Report
Add Bookmark
Diagnostic Data Display
Graphical Data Display
Line Graph
Radio Data
Parameter Name
Control Module
Value
Unit
Radio Power Button
Radio
Off
Remote CD
Radio
Not Present
Rear Seat Entertainment
Radio
Not Present
Front 3.5 mm AUX Input
Radio
Not Present
Rear 3.5 mm AUX Input
Radio
Not Present
Front USB Receptacle
Radio
Not Present
Rear USB Receptacle
Radio
Not Present
Front SD Card Receptacle
Radio
Not Present
Rear SD Card Receptacle
Radio
Not Present
Radio Theft Lock Armed
Radio
Armed
Radio Theft Lock Status
Radio
Inactive
Test Bench Mode
Radio
Inactive
Valet Mode Status
Radio
Inactive
XM Subscription Status
Radio
Invalid
High Definition Signal
Radio
Not Present
Digital Audio Signal
Radio
Not Present
Alternative Frequency Status
Radio
Inactive
Surrogate MOST Master Node Upstream Position
Radio
0
Number of MOST Communication Breaks
Radio
24
Last Working MOST ID of Node 1
Radio
Radio
Last Working MOST ID of Node 2
Radio
Amplifier
Last Working MOST ID of Node 3
Radio
Instrument Cluster
Last Working MOST ID of Node 4
Radio
Human Machine Interface Control Module
Last Working MOST ID of Node 5
Radio
UNRECOGNIZED STATE
Last Working MOST ID of Node 6
Radio
UNRECOGNIZED STATE
Last Working MOST ID of Node 7
Radio
UNRECOGNIZED STATE
Back
Home
Vehicle Menu
Enter
GDS 2 v.13.0.01800
GM Global v2015.2.0
VIN: 1G6AF5SX7F0120142
13.4 V
1:24 PM
3/2/2015

Scan Data

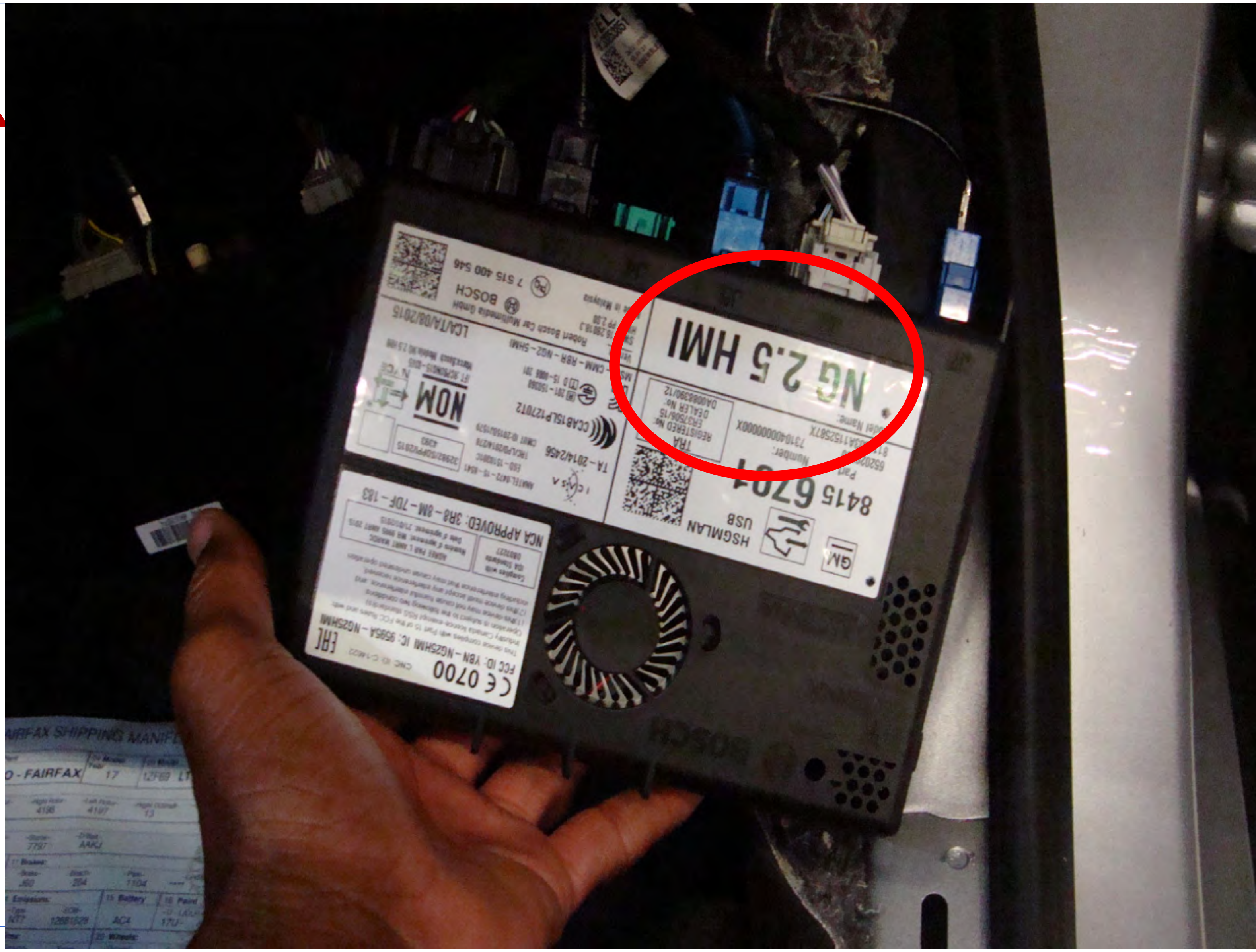
Surrogate MOST master node upstream position	Radio	0
Number of MOST communication breaks	Radio	24
Last working MOST ID of Node 1	Radio	Radio
Last working MOST ID of Node 2	Radio	Amplifier
Last working MOST ID of Node 3	Radio	Instrument Cluster
Last working MOST ID of Node 4	Radio	Human Machine Interface Control Module


Radio
0
1
HMI
AMP
IC
Media Disc Player (RPO Code)

MOST

- No Wakeup call being received with HMI Module in place.
- The wakeup call was being received with the HMI module isolated. The code also went to History as well. (Used MOST Bus Tool EL-51578)
- A bad HMI module was the cause of the issue concerning the graphics for the radio

EL-51578 Connectors


NG 2.5 HMI
BOSCH
NCA APPROVED: 3R8-3M-7DF-183
HSGMLAN
USB

TST 2022 VIRTUAL
19th ANNUAL BIG
EVENT

Thank You for Attending

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Wholesale Distributor of Original Equipment Automotive Parts