

Mazda Entertainment System - Sample Bus Data Dumps

[Jump to navigation](#)[Jump to search](#)

The following are a bunch of dumps from the data bus to help people understand how the protocol works.

The dump format is:

```
timecode command
```

- timecode is [seconds in epoch].[fraction of a second]
- command is a hexadecimal representation of the data on the bus

NOTE: The timestamps are horribly wrong. You'll notice that some commands occur in less than 1ms which is impossible. I'm guessing that those closely-spaced packs of data were held up in some kernel buffer before being read. That explains why they appear to have happened so close together. The timestamps are still useful for seeing how the commands are sent in bursts but please do not rely on them.

A list of events is provided at the top of each dump to help the reader know when a specific action was taken and what commands were sent because of that action.

Contents

- [1Base Unit](#)
 - [1.1Initialization \(no peripherals connected\)](#)
- [2CD Deck](#)
 - [2.1Initialization and playback](#)
 - [2.2Seeking](#)
 - [2.3Random/Repeat](#)
 - [2.4Load/Eject](#)
- [3Tape Deck](#)
 - [3.1Initialization and playback](#)
 - [3.2Seeking](#)
 - [3.3Random/Repeat/Dolby](#)
 - [3.4Load/Eject](#)
- [4Tape Deck and CD Deck](#)
 - [4.1Initialization \(no disk in CD Deck, no cassette in Tape Deck\)](#)
 - [4.2Initialization \(with disk in the CD Deck, and a cassette in the Tape Deck\)](#)
- [5See Also](#)

Base Unit

Initialization (no peripherals connected)

Events:

1281462287.476655 - Radio is powered-on

1281462287.476655 38C*
1281462287.476734 089
1281462287.476770 18A
1281462287.476801 68F
1281462287.476831 58E
1281462287.476862 780
1281462288.040639 38C
1281462288.040717 089
1281462288.040752 18A
1281462288.040784 68F
1281462288.040814 58E
1281462288.040845 780
1281462288.656645 38C
1281462288.656726 089
1281462288.656762 18A
1281462288.656794 68F
1281462288.656826 58E
1281462288.656858 780
1281462289.272641 38C
1281462289.272716 089
1281462289.272752 18A
1281462289.272785 68F
1281462289.272817 58E
1281462289.272849 780

CD Deck

Initialization and playback

Events:

1281461783.680635 - Radio is powered-on (with disk in CD Deck)
1281461796.240642 - "CD" button is pressed
1281461818.376646 - "POWER" button is pressed (base unit now in standby mode)
1281461831.444645 - "POWER" button is pressed (base unit wakes up)

1281461783.680635 38C*
1281461783.680714 089
1281461783.680749 B813
1281461783.680779 18A
1281461784.112651 BBA0006000C1
1281461784.112740 68F
1281461784.112775 58E
1281461784.112807 780
1281461784.112838 39B
1281461784.320651 BB91000000C5
1281461784.320738 089
1281461785.124654 BB91000000C5
1281461785.124744 18A
1281461785.124780 68F
1281461785.124812 58E
1281461785.124843 780
1281461785.124874 089
1281461785.124905 18A
1281461785.124935 68F
1281461785.124965 58E
1281461785.124994 780
1281461785.604641 089
1281461785.604722 18A
1281461785.604759 68F
1281461785.604790 58E
1281461785.604820 780
1281461786.068638 39B
1281461786.228857 BB91000000C5
1281461786.468658 BD1000000000008000
1281461786.648654 BC00000000008
1281461786.864658 B9000010000000C0
1281461796.240642 39B*
1281461796.400648 BB91000000C5
1281461796.640654 BD1000000000008000
1281461796.808649 BC00000000008
1281461797.120650 B9000010000000C0
1281461797.120745 3110121
1281461797.328653 B940001000000017
1281461797.540655 B940001000000017
1281461800.068653 B940101000000018
1281461800.244651 BC101104138F8
1281461800.460650 B950101000000017
1281461800.712651 B940101000000018
1281461800.924659 B940101000000018

1281461801.700656	B940101000100017
1281461802.696652	B940101000200016
1281461803.692652	B940101000300015
1281461804.688653	B940101000400014
1281461805.684656	B940101000500013
1281461806.684659	B940101000600012
1281461807.680655	B940101000700011
1281461808.676655	B940101000800010
1281461809.672654	B94010100090001F
1281461810.672651	B940101001000017
1281461811.668671	B940101001100018
1281461812.664655	B940101001200015
1281461813.660648	B940101001300016
1281461814.656657	B940101001400013
1281461815.652659	B940101001500014
1281461816.652653	B940101001600011
1281461817.648656	B940101001700012
1281461818.376646	3116028*
1281461818.500642	3116028
1281461819.128650	B9001010017000C9
1281461831.444645	39B*
1281461831.600654	BB91010000C6
1281461831.840655	BD10000000000008000
1281461832.012655	BC101104138F8
1281461832.320656	B9001010017000C9
1281461832.320752	3110121
1281461832.528650	B940101001700012
1281461832.740647	B950101001700011
1281461834.568659	B940101001700012
1281461835.224646	B94010100180001F
1281461836.220655	B940101001900010
1281461837.217076	B940101002000016
1281461838.212656	B940101002100015
1281461839.208654	B940101002200018
1281461840.208650	B940101002300017
1281461841.204652	B940101002400012
1281461842.200652	B940101002500011
1281461843.196657	B940101002600014
1281461844.192654	B940101002700013
1281461845.188657	B94010100280001E
1281461846.184655	B94010100290001D
1281461847.180730	B940101003000015

Seeking

Events:

1281462697.556635 - SEEK "up" button pressed/released
1281462699.692641 - SEEK "up" button pressed/released
1281462704.168635 - SEEK "down" button
pressed/released
1281462709.928643 - Skip forward (>>) button pressed
1281462712.380741 - Skip forward (>>) button released
1281462715.704642 - Skip backward (<<) button pressed
1281462717.312736 - Skip backward (<<) button
released

1281462694.704647 B94010100090001F
1281462695.700649 B940101001000017
1281462696.696646 B940101001100018
1281462697.556635 31300213*
1281462697.760644 B940101001200015
1281462697.972650 B950201000000016
1281462698.368645 B940201000000015
1281462698.580647 B940201000000015
1281462699.364645 B940201000100016
1281462699.692641 31300314*
1281462699.936648 B950301000000015
1281462700.312647 B940301000000016
1281462700.524647 B940301000000016
1281462701.308646 B940301000100015
1281462702.304646 B940301000200018
1281462703.304646 B940301000300017
1281462704.168635 31300314*
1281462704.376645 B940301000400012
1281462704.588648 B950301000000015
1281462704.800646 B940301000000016
1281462705.008647 B940301000000016
1281462705.736645 B940301000100015
1281462706.732647 B940301000200018
1281462707.728645 B940301000300017
1281462708.724646 B940301000400012
1281462709.720653 B940301000500011
1281462709.928643 3110426*
1281462710.172643 B960301000500013
1281462710.384645 B960301000800010
1281462710.596645 B960301001200015
1281462710.804644 B960301001500014
1281462711.016664 B96030100180001F

1281462711.228650 B960301002100015
1281462711.440648 B960301002500011
1281462711.652650 B96030100280001E
1281462711.868647 B960301003100016
1281462712.080649 B960301003300018
1281462712.380648 B960301003600013
1281462712.380741 3110121*
1281462712.592648 B940301004100011
1281462712.804645 B940301004300013
1281462713.012648 B940301004300013
1281462713.240650 B940301004400016
1281462714.236646 B940301004500015
1281462715.232647 B940301004600018
1281462715.704642 311082A*
1281462715.952648 B970301004600015
1281462716.164846 B970301004300012
1281462716.372646 B970301004000013
1281462716.588647 B970301003600014
1281462716.800644 B970301003300017
1281462717.012652 B970301003000016
1281462717.312646 B970301002700014
1281462717.312736 3110121*
1281462717.520646 B940301002300015
1281462717.732647 B940301002300015
1281462717.940652 B940301002300015
1281462718.152645 B940301002400014

Random/Repeat

Events:

1281467080.200636 - RPT button is pressed/released
1281467084.040637 - RPT button is pressed/released
1281467086.080638 - RDM button is pressed/released
1281467087.696638 - RDM button is pressed/released

1281467079.372645 B940101001300016
1281467080.200636 31440003*
1281467080.412645 B940101001400013
1281467080.624647 B940101001440017
1281467081.372644 B940101001540018
1281467082.360644 B940101001640015
1281467083.364650 B940101001740016
1281467084.040637 31400007*
1281467084.284645 B940101001700012

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1281467084.496647 B94010100180001F
1281467085.352644 B940101001900010
1281467086.080638 31400052*
1281467086.324646 B950201000002018
1281467086.824644 B940201000002017
1281467087.036649 B940201000002017
1281467087.696638 31400007*
1281467087.908650 B940201000102018
1281467088.120648 B940201000100016
```

Load/Eject

Events:

```
1281470880.932653 - Disk is loaded
1281470890.384647 - Eject button pressed
```

```
1281470880.932653 BD1000000000008000*
1281470881.088649 BBB1006000C1
1281470882.536648 BB91000000C5
1281470882.536736 39B
1281470882.696656 BB910000001A
1281470882.932653 BD1000000000008000
1281470883.112655 BC000000000008
1281470883.420648 B9000010000000C0
1281470883.420745 3110121
1281470883.632653 B940101000000018
1281470886.252653 BC101104138F8
1281470886.468654 B940101000000018
1281470886.680830 B940101000000018
1281470887.236778 B940101000100017
1281470888.232653 B940101000200016
1281470889.228654 B940101000300015
1281470890.224647 B940101000400014
1281470890.384647 BBA0008000CF*
1281470890.488647 3116028
1281470890.788658 B9000010000000C0
1281470890.788756 3116028
1281470891.000674 B9000010000000C0
1281470891.156651 BBA0008000CF
1281470891.456652 BBA0008000CF
1281470891.756649 BBA0008000CF
1281470892.808649 BBA0006000C1
1281470893.112649 BBA0006000C1
```

1281470893.364653 B9000010000000C0

Tape Deck

Initialization and playback

Events:

1281456004.300642 - Radio is powered-on (cassette in tape deck)

1281456011.724645 - "MD/TAPE" button is pressed

1281456026.028646 - "POWER" button is pressed (base unit now in standby mode)

1281456036.192641 - "POWER" button is pressed (base unit wakes up)

1281456004.300642 38C*
1281456004.508650 089
1281456004.508729 8812
1281456004.508763 18A
1281456004.900642 8B90400C3
1281456004.900724 68F
1281456004.900759 58E
1281456004.900790 780
1281456004.900821 09A
1281456005.788648 8B90400C3
1281456005.788737 38C
1281456005.788774 890CE
1281456005.788808 18A
1281456005.788841 68F
1281456005.788872 58E
1281456005.788903 780
1281456005.788934 38C
1281456005.788964 18A
1281456005.788994 68F
1281456005.789024 58E
1281456005.789054 780
1281456006.400638 38C
1281456006.400715 18A
1281456006.400751 68F
1281456006.400782 58E
1281456006.400812 780
1281456006.868639 09A
1281456007.072648 8B90400C3
1281456007.072737 890CE

1281456011.724645 09A*
1281456011.929062 8B90400C3
1281456011.929150 890CE
1281456012.340640 0110124
1281456012.500636 89415
1281456013.560651 8B9040010
1281456014.512638 89415
1281456015.568647 8B9040010
1281456016.520644 89415
1281456017.580643 8B9040010
1281456018.532651 89415
1281456019.588649 8B9040010
1281456020.540645 89415
1281456021.600653 8B9040010
1281456022.552645 89415
1281456023.608652 8B9040010
1281456024.560640 89415
1281456025.620649 8B9040010
1281456026.028646 0116025*
1281456027.244643 890CE
1281456036.192641 09A*
1281456036.392646 8B90400C3
1281456036.392735 890CE
1281456036.796641 0110124
1281456036.952646 89415
1281456037.956643 89415
1281456039.016982 8B9040010
1281456039.968647 89415
1281456041.024647 8B9040010
1281456041.976641 89415
1281456043.036644 8B9040010
1281456043.988641 89415
1281456045.044652 8B9040010
1281456045.996641 89415
1281456047.052660 8B9040010
1281456048.005066 89415

Seeking

Events:

- 1281468749.168637 - SEEK up button pressed/released
(high-speed fast-forward)
- 1281468754.880642 - SEEK up button pressed/released
(high-speed fast-forward)

1281468756.464639 - SEEK down button pressed/released
(high-speed rewind)
1281468760.348767 - SEEK down button pressed/released
(high-speed rewind)
1281468763.612637 - Fast-forward (>>) button
pressed/released
1281468767.812638 - Rewind (<<) button
pressed/released
1281468772.620636 - Rewind (<<) button
pressed/released

1281468749.168637 0141005*
1281468749.328635 89516
1281468749.460641 8B924011D
1281468750.456641 8B924011D
1281468751.408636 89516
1281468752.468641 8B924011D
1281468753.420634 89516
1281468754.476641 8B924011D
1281468754.880642 0140006*
1281468755.168640 8B9040010
1281468755.168723 89415
1281468756.172635 89415
1281468756.464639 0142008*
1281468756.624638 89516
1281468756.756645 8B934011E
1281468757.752638 8B934011E
1281468758.704636 89516
1281468759.764642 8B934011E
1281468760.348767 0140006*
1281468760.636639 8B9040010
1281468760.636725 89415
1281468761.640637 89415
1281468762.696639 8B9040010
1281468763.612637 0110427*
1281468763.900641 8B9040010
1281468763.900725 89617
1281468764.960640 8B9040010
1281468765.912637 89617
1281468766.968640 8B9040010
1281468767.812638 011082B
1281468767.812720 89718*
1281468768.816635 89718
1281468769.872639 8B9040010

1281468770.824633 89718
1281468771.884640 8B9040010
1281468772.620636 0110124*
1281468772.784634 89415
1281468773.788635 89415
1281468774.848638 8B9040010
1281468775.800635 89415
1281468776.856674 8B9040010
1281468777.808635 89415

Random/Repeat/Dolby

Events:

1281469266.648728 - RPT button pressed/released
1281469269.484645 - RPT button pressed/released
1281469272.012650 - RDM button pressed/released
1281469276.436642 - RDM button pressed/released
1281469279.792652 - Dolby noise reduction button
pressed/released
1281469283.036649 - Dolby noise reduction button
pressed/released

1281469264.544694 89415
1281469265.600647 8B9040010
1281469266.648645 89415
1281469266.648728 0140105*
1281469266.772648 8B905001F
1281469267.612651 8B905001F
1281469268.564638 89415
1281469269.484645 0140006*
1281469269.604652 8B9040010
1281469270.608650 8B9040010
1281469271.560640 89415
1281469272.012650 0140208*
1281469272.224651 8B906001E
1281469273.228647 8B906001E
1281469274.180646 89415
1281469275.240648 8B906001E
1281469276.192644 89415
1281469276.436642 0140208*
1281469276.648653 8B9040010
1281469277.652649 8B9040010
1281469278.604641 89415
1281469279.660646 8B9040010

```
1281469279.792652 8B904101F*
1281469280.744638 89415
1281469281.800650 8B904101F
1281469282.752642 89415
1281469283.036649 8B9040010*
1281469284.044647 8B9040010
1281469284.996674 89415
1281469286.052645 8B9040010
```

Load/Eject

Events:

```
1281469649.812643 - Tape is loaded
1281469656.644649 - Eject button pressed
```

```
1281469649.812643 8BB0400C1*
1281469650.164844 09A
1281469650.364646 8B90400C3
1281469650.364738 890CE
1281469650.840641 0110124
1281469650.840730 89415
1281469651.420645 8B9040010
1281469652.372641 89415
1281469653.428647 8B9040010
1281469654.380642 89415
1281469655.440644 8B9040010
1281469656.392644 89415
1281469656.644649 8BA40004A*
1281469656.944648 8BA40004A
1281469657.248644 8BA40004A
1281469657.548645 8BA40004A
1281469661.176643 8BA0000C6
```

Tape Deck and CD Deck

Initialization (no disk in CD Deck, no cassette in Tape Deck)

Events:

```
1281469976.556674 - Radio is powered-on
```

```
1281469976.556674 38C*
1281469976.556758 089
1281469976.556795 B813
```

1281469976.556827 8812
1281469976.556859 18A
1281469976.708648 BBA0006000C1
1281469977.404645 8B90000C7
1281469977.404733 68F
1281469977.404769 58E
1281469977.404802 780
1281469977.404836 18A
1281469977.404868 68F
1281469977.404900 58E
1281469977.404931 780
1281469977.404963 39B
1281469977.608646 BBA0006000C1
1281469977.608737 18A
1281469977.880651 BD0000000000000007
1281469977.880759 68F
1281469978.088709 BC000000000008
1281469978.088795 58E
1281469978.636658 B9000010000000C0
1281469978.636750 780
1281469978.636786 18A
1281469978.636819 68F
1281469978.636851 58E
1281469978.636885 780
1281469979.392637 39B
1281469979.544653 BBA0006000C1
1281469979.784656 BD0000000000000007
1281469979.966890 BC000000000008
1281469980.220652 B9000010000000C0
1281469980.220746 09A
1281469980.420646 8B90000C7
1281469980.420734 890CE
1281469981.280650 BBA0006000C1

Initialization (with disk in the CD Deck, and a cassette in the Tape Deck)

Events:

1281470594.792638 - Radio is powered-on

1281470594.792638 38C*
1281470594.792721 089
1281470594.792758 B813
1281470594.792791 8812

1281470594.792825 18A
1281470595.216648 8B90400C3
1281470595.216736 68F
1281470595.216772 BBA0
1281470595.216806 58E
1281470595.216839 780
1281470595.216872 18A
1281470595.640713 BB91000000C5
1281470595.640800 68F
1281470595.640836 58E
1281470595.640869 780
1281470595.640903 39B
1281470595.848644 BB91000000C5
1281470595.848728 18A
1281470596.120766 BD1000000000008000
1281470596.120865 68F
1281470596.328656 BC000000000008
1281470596.328751 58E
1281470596.876848 B9000010000000C0
1281470596.876944 780
1281470596.876980 18A
1281470596.877014 68F
1281470596.877047 58E
1281470596.877079 780
1281470597.628638 39B
1281470597.784649 BB91000000C5
1281470598.024853 BD1000000000008000
1281470598.204658 BC000000000008
1281470598.460651 B9000010000000C0
1281470598.460740 09A
1281470598.664645 8B90400C3
1281470598.664731 890CE