**Document Title** : Procedure to operate "Data Bus Analyzer" (DBA) for ARINC-429
**Document No** : AN0003
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**Introduction** : This document explains the steps for setting up Data Bus Analyzer (DBA) GUI tool to simulate or monitor ARINC 429 traffic.

**Procedure** :

## I) Software to be installed

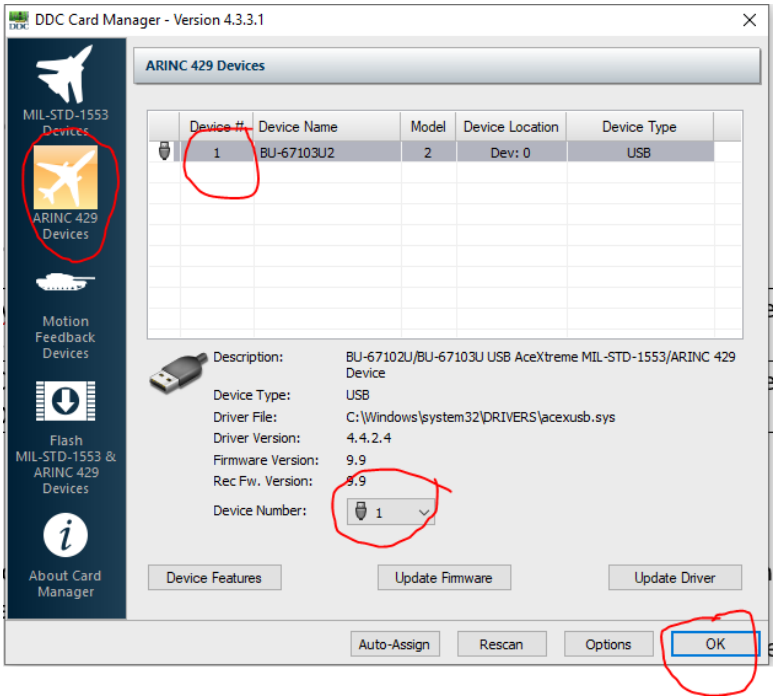
| | | | |
|---|---|---|---|
| 1 | DD-42992S0 | AceXtreme ARINC 429 SDK | <CDROM>\src_Storage\dbi\software\ARINC\dd-42992S0_4_3_2.zip |
| 2 | DD-42999S0 | Commercial Avionics Suite Data Bus Analyzer NOTE 3 | <CDROM>\src_Storage\dbi\software\ARINC\dd-42999S0_6_3_1.zip |

Note:

1. Latest versions of these software can be downloaded from DDC's website also.
2. Commercial Avionics Suite Data Bus Analyzer (DD-42999S0) is provided as a 60-day evaluation software following which a suitable license key or dongle is needed to continue using this software.
3. *Ensure to restart the computer after installation of the SDK and the DBA, especially the DBA, even if not prompted to do so. Without a restart DBA does not work.*

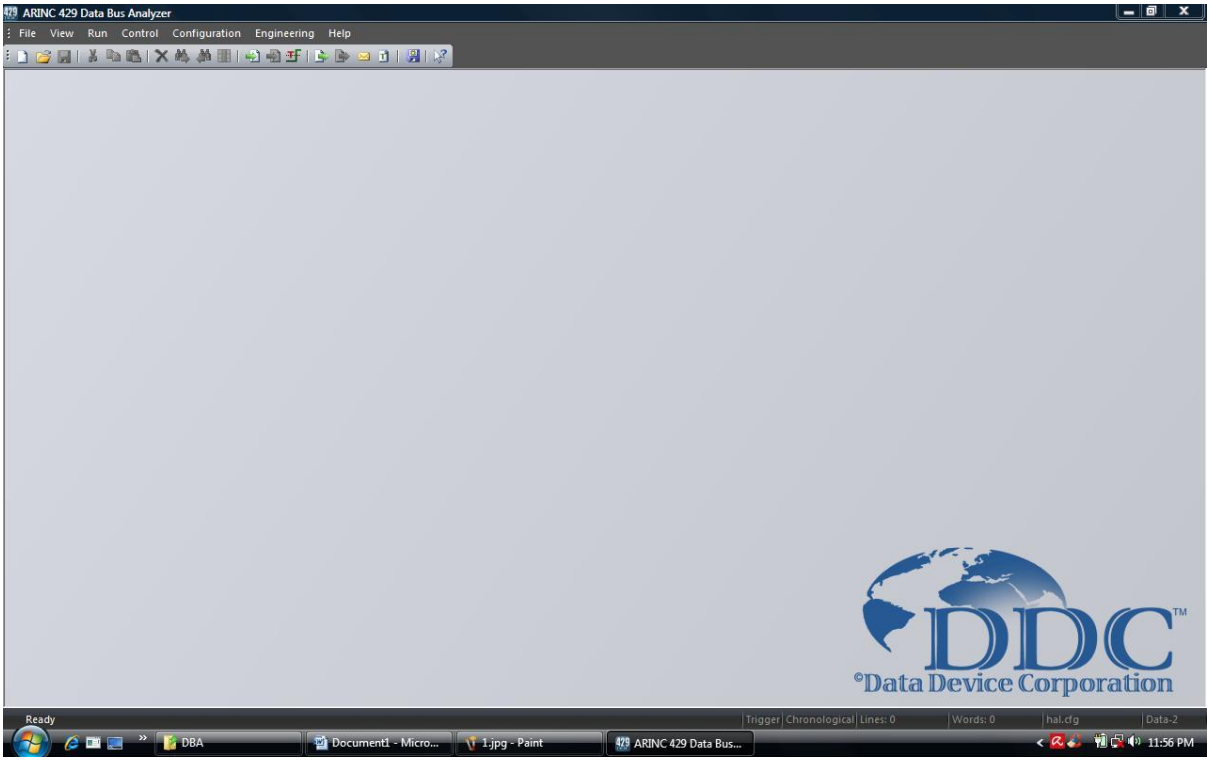
## II) Steps for ARINC 429 USB card Setup and Configuration

a. Ensure all Anti-Virus software is disabled. Login as administrator and install the SDK followed by the Commercial Avionics Suite Data Bus Analyzer.
b. Connect the USB card to the computer. The card should get detected and an entry should appear in Windows Device Manager.
c. Run DDC Card Manager. On the LHS, click on "ARINC 429 Devices". Click on the entry in the grid and change "Device Number" to 1.

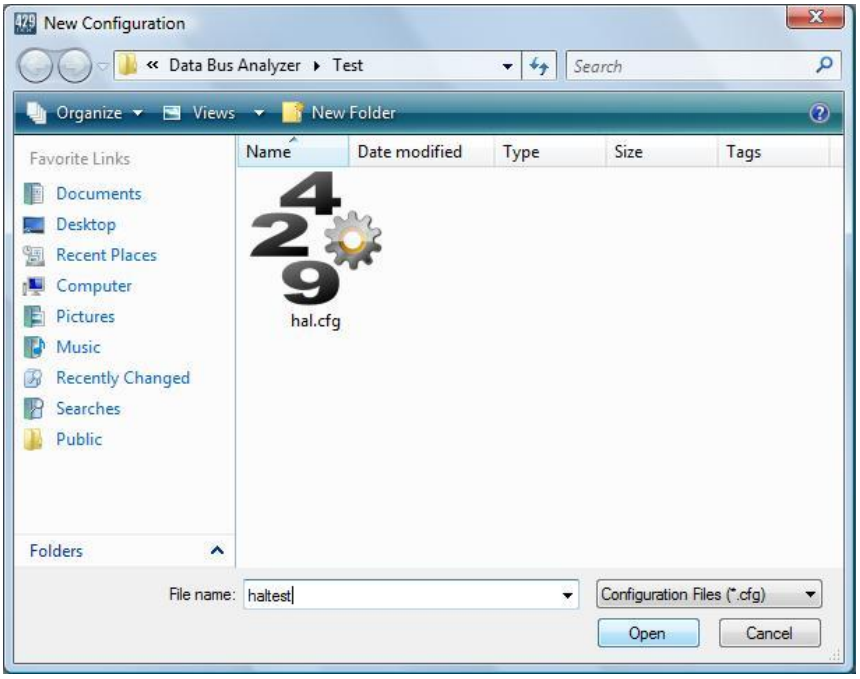


**III) Steps for Starting Data Bus Analyzer Software and Configuring Channels**

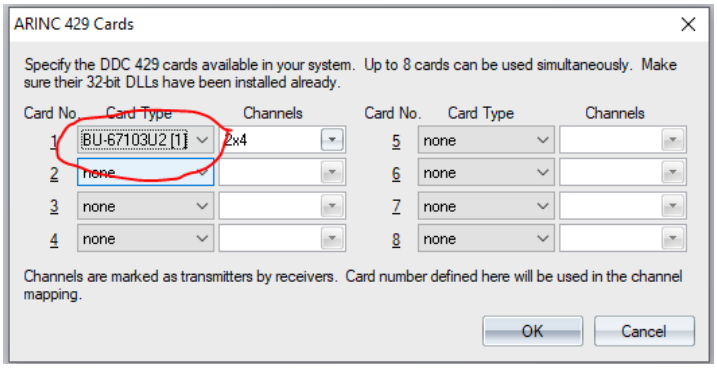
a. Run the DBA software as an administrator by choosing Start Menu ->"Data Device Corporation" group->"Data Bus Analyzer", right-click and "Run As Administrator". The following main Window appears. Note: Running as administrator is required only the first time after installation. Subsequently DBA may be launched as a normal user.



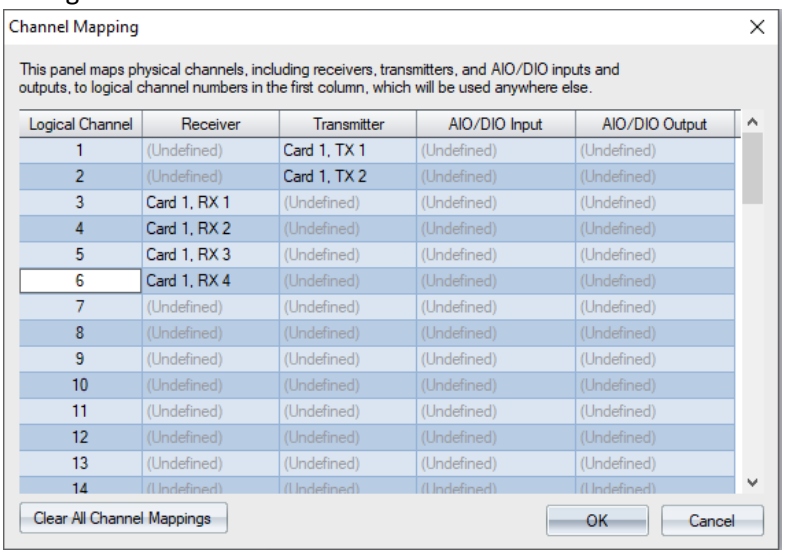

b. **Create a New Configuration:** Create a new project configuration by choosing menu ***"Configuration ->New"***. This will display a "**New Configuration"** window as shown in fig below. Type a new name for the configuration file & click "**Open**".



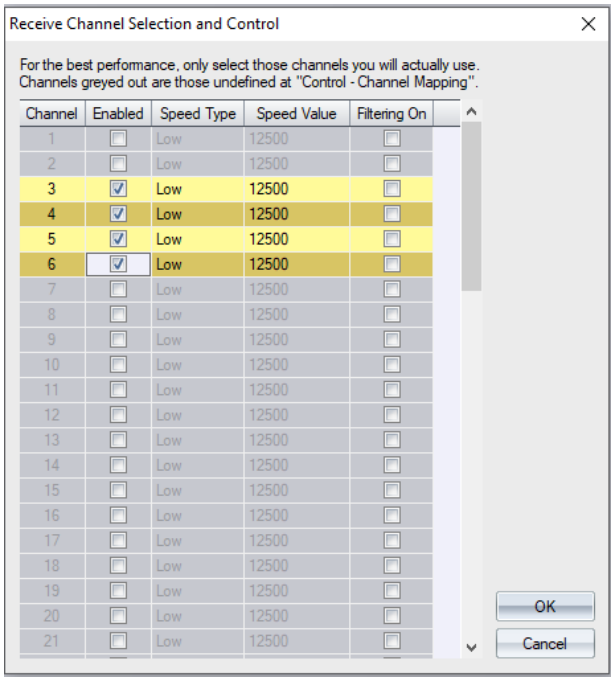
c. **Choose Card Type:** Click "Configuration->Hardware Card …". The configuration dialog box as shown below is displayed. Pull down the "Card Type" list box and choose "BU-67103U2[1]".



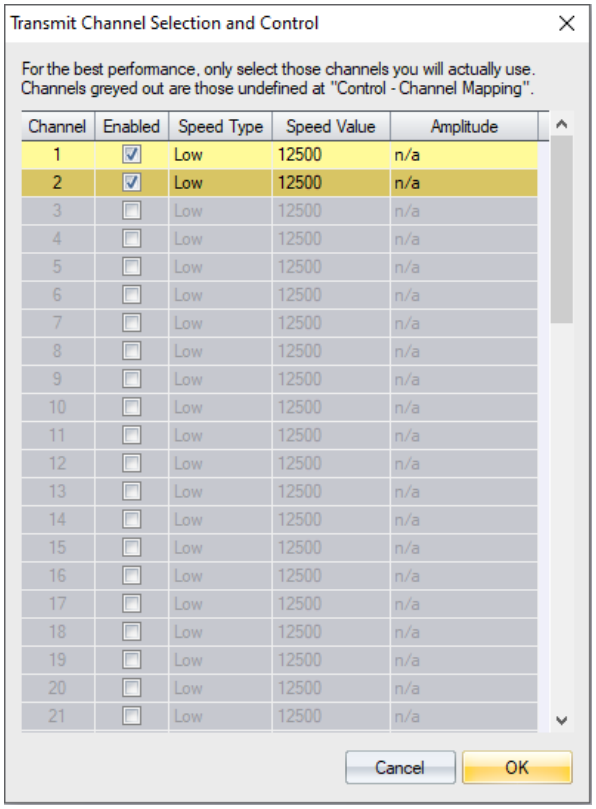

d. **Map physical channels as transmitters or receivers:** Click "Control->Channel Mapping …". Configure the channels as below.




e. **Enable and Set Speed for Receive Channels:** Click "Control->Receive Channels …" and *check* the "Enable" checkbox for channels on which reception is desired. Configure speed appropriately to match the speed of the device to which this channel is connected.



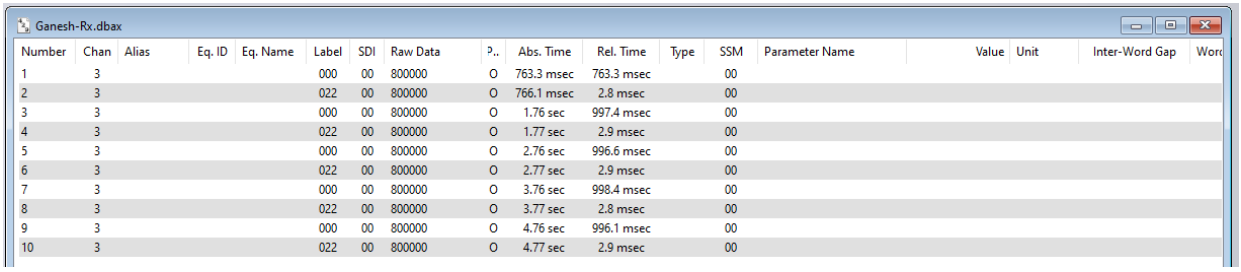

f. **Enable and Set Speed for Transmit Channels:** Click "Control->Transmit Channels …" and check the "Enable" checkbox for channels on which transmission is desired. Configure speed appropriately.



## IV) Operation

This section describes the operation of the DBA for receiving/monitoring ARINC 429 traffic and for transmission of ARINC 429 words/labels in FIFO and Scheduled modes.

a. **ARINC 429 traffic monitoring/reception:** Click "File-New" to create a receive db file. Save the file with an appropriate name. Start reception by clicking "Run->Start Reception". If ARINC 429 traffic is found on any of the enabled channels such traffic will be displayed chronologically on this file as below.

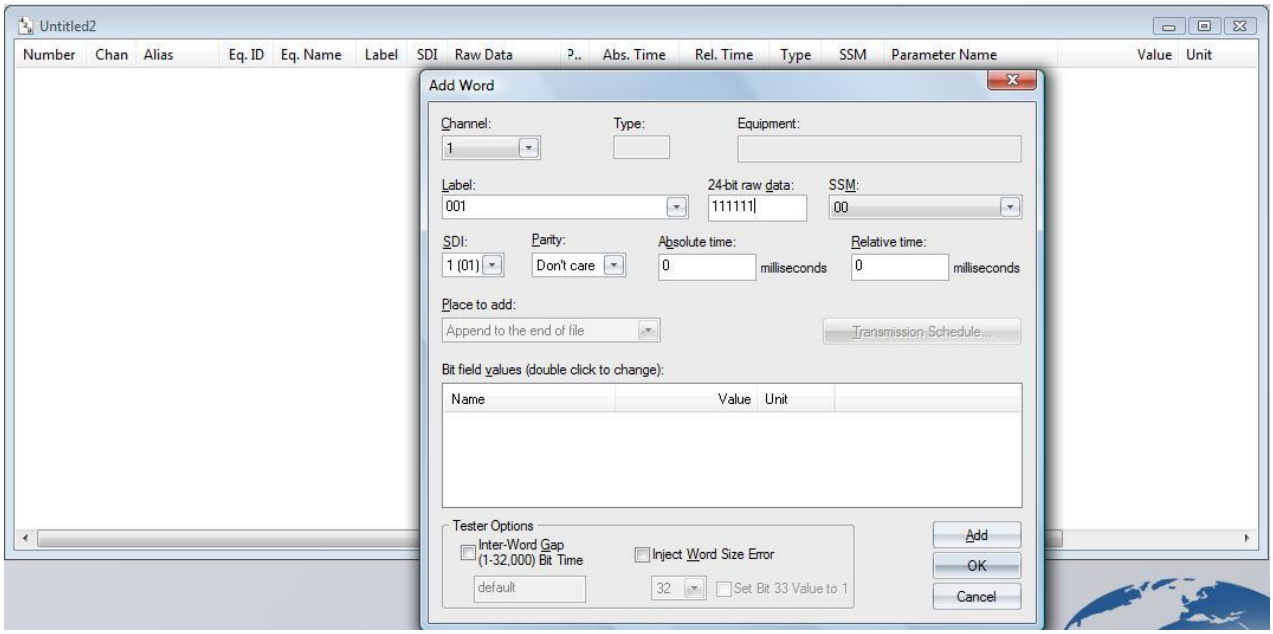

Ganesh-Rx.dbax

| Number | Chan | Alias | Eq. ID | Eq. Name | Label | SDI | Raw Data | P.. | Abs. Time | Rel. Time | Type | SSM | Parameter Name | Value | Unit | Inter-Word Gap | Word |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | | | | 000 | 00 | 800000 | O | 763.3 msec | 763.3 msec | | 00 | | | | | |
| 2 | 3 | | | | 022 | 00 | 800000 | O | 766.1 msec | 2.8 msec | | 00 | | | | | |
| 3 | 3 | | | | 000 | 00 | 800000 | O | 1.76 sec | 997.4 msec | | 00 | | | | | |
| 4 | 3 | | | | 022 | 00 | 800000 | O | 1.77 sec | 2.9 msec | | 00 | | | | | |
| 5 | 3 | | | | 000 | 00 | 800000 | O | 2.76 sec | 996.6 msec | | 00 | | | | | |
| 6 | 3 | | | | 022 | 00 | 800000 | O | 2.77 sec | 2.9 msec | | 00 | | | | | |
| 7 | 3 | | | | 000 | 00 | 800000 | O | 3.76 sec | 998.4 msec | | 00 | | | | | |
| 8 | 3 | | | | 022 | 00 | 800000 | O | 3.77 sec | 2.8 msec | | 00 | | | | | |
| 9 | 3 | | | | 000 | 00 | 800000 | O | 4.76 sec | 996.1 msec | | 00 | | | | | |
| 10 | 3 | | | | 022 | 00 | 800000 | O | 4.77 sec | 2.9 msec | | 00 | | | | | |

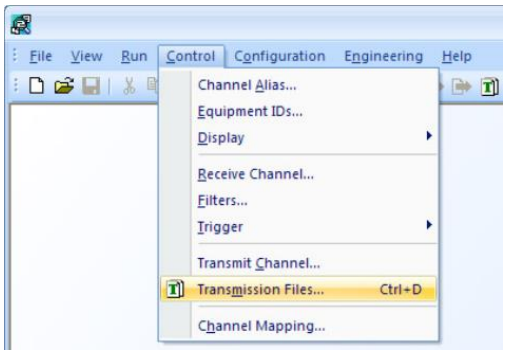
b. **ARINC 429 traffic generation/transmission:** Transmission of ARINC 429 messages can be done in one of two ways:
   a. **FIFO**: Data words that need not be transmitted on a periodic update rate may be transmitted via the First-In-First-Out method. Transmission will take place as fast as the ARINC card can process the data (back-to-back transmission).
   b. **Scheduled**: This transmission mode involves placing a time constraint on the word/label to be transmitted by setting a Transmission Rate, Start, Stop and Offset time (in milliseconds) for each word.

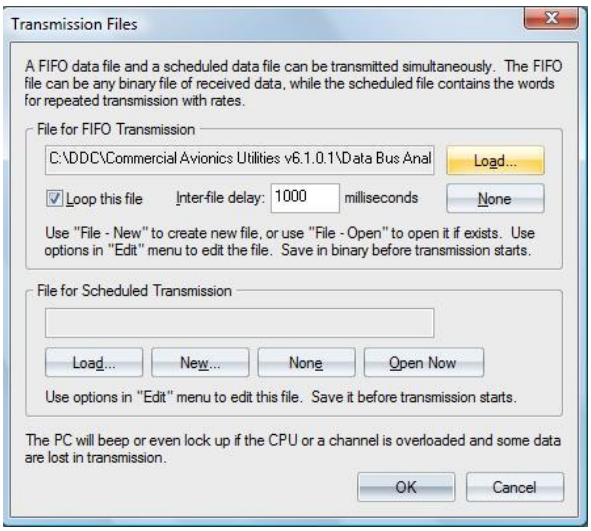
   **Following sections describe steps for transmission in FIFO and Scheduled modes**

   c. FIFO mode:
      i. Create a new FIFO data file by choosing "File->New". Save the file using an appropriate name by choosing "File->Save" (saves as a *.dba/.dbax* file).
      ii. Add 429 labels/words to this file by double-clicking in the blank area of the file or choosing "Edit->Add" menu. The "Add Word" window is displayed. Choose a *Label*, enter *24-bit raw data*, choose values for *SSM*, *SDI* and *Parity* and also the channel on which this label is to be transmitted and click "Add". Repeat this procedure for as many labels as you need.




iii. Choose menu "Control->Transmission Files …". This will bring up "Transmission Files" Window as shown below.

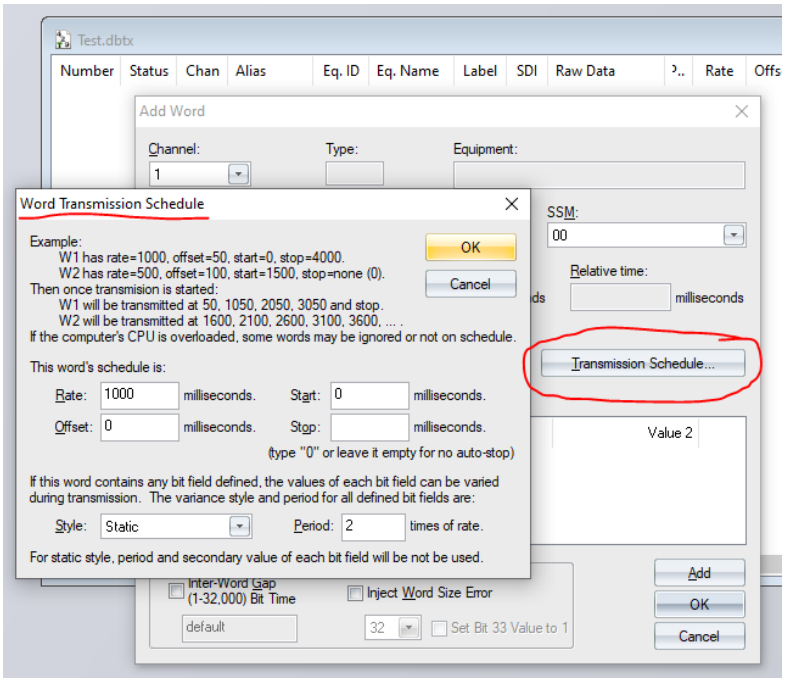



iv. Click "Load …" button and choose the transmission FIFO file name that you created in step "(c)-i". You may cause this file to be continuously transmitted by placing a check mark on "Loop this file" and setting an "Inter-file delay".

v. Start transmission by choosing menu *"Run ->Start Transmission"*

d. Scheduled Mode:
   i. Invoke the "Transmission Files" window by choosing menu "Control->Transmission Files …".
   ii. Under section "File for scheduled transmission" click "New…" to created a scheduled transmission file. A File Save dialog box appears. Save the file with an appropriate file name (saves as a *.dbt/.dbtx* file). The saved file appears behind the "Transmission Files" window.
   iii. Click "OK" to close the "Transmission files" window.
   iv. Add messages to the scheduled transmission file by following the steps under (c)-ii. The one difference you will notice is that the "Transmission Schedule" button is now enabled unlike in FIFO mode.




   v. Click "Transmission Schedule" button to bring up the "Word Transmission Schedule" window. Enter values for "Rate", "Start", "Stop" and "Offset". "Rate" controls the frequency at which this word is transmitted, Start decides after how long transmission of this word starts after overall transmission has been started, Stop decides after how long transmission of this word stops.
   vi. Click OK to close the "Word Transmission Schedule" window. Again click OK to close the "Add Word" window.
   vii. Start transmission by choosing menu *"Run ->Start Transmission"*.