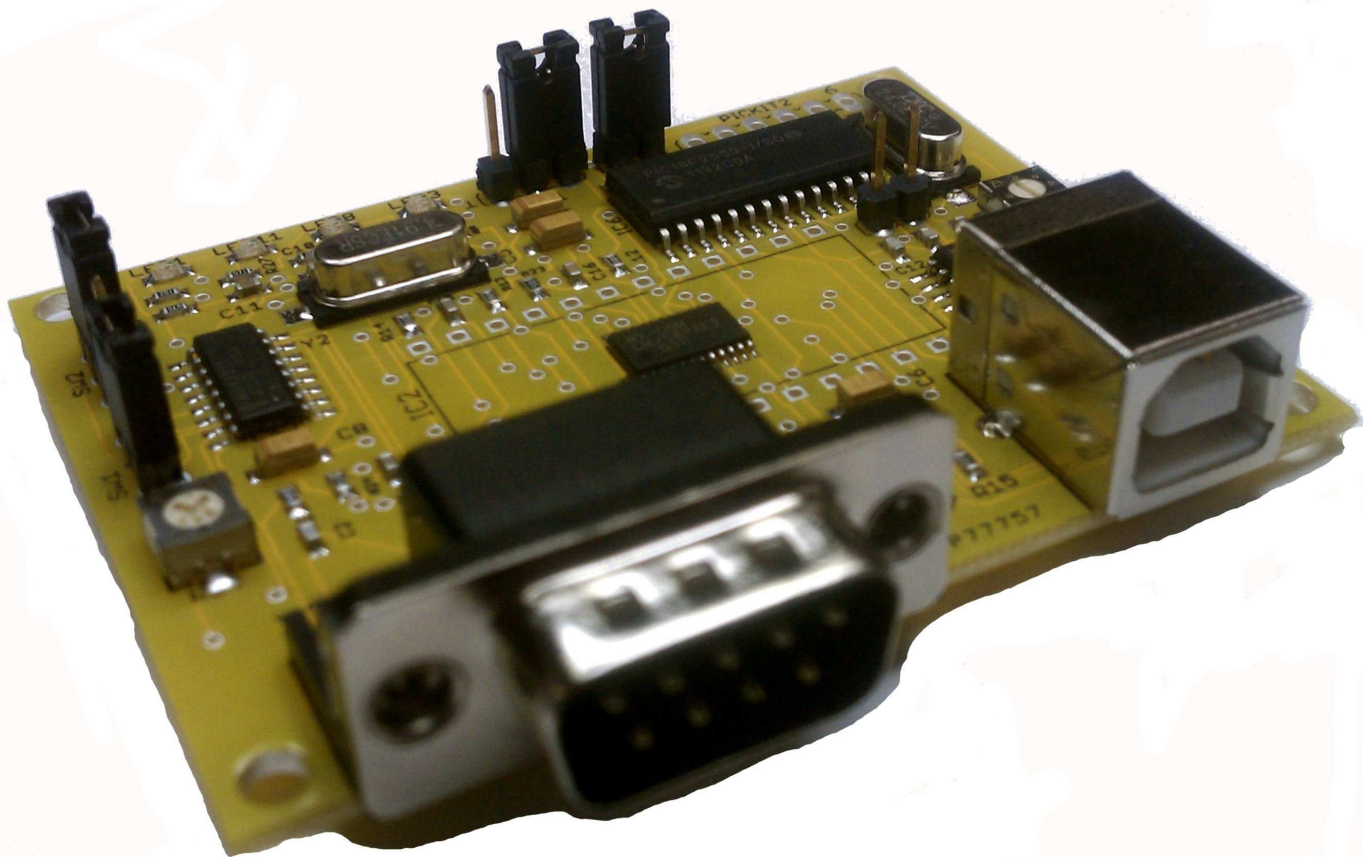


Matrix Circuits
Star★Board™
GMSK Node Adapter
V1.00

***Featuring the DUTCH*Star Firmware**



Matrix Circuits, LLC
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New London, IA 52645
Ph: 1-319-367-2440

***DUTCH*Star is a trademark of MicroWalt Corporation in the EU and other countries.**

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Thank you for purchasing the Star*Board GMSK Node Adapter V1. This is a completely assembled and tested unit. The unit has been evaluated and approved for running the DUTCH*Star HSA firmware and associated software. The unit has been preprogrammed with the DUTCH*Star boot loader for USB. The boot loader will allow you to use the supplied license key to install the firmware.

Please note that while the board can be programmed to use alternate firmware it has not been tested or certified for use with anything other than licensed DUTCH*Star firmware.

To setup your new board please note the locations of several pin headers as well as three potentiometers using the supplied diagram. Download the firmware and required programs as instructed in the license page. Next, locate the 2 pin header labeled SW3 and remove the jumper. Place the jumper on the 2 pin header labeled Program. Then first plug the USB cable into the node adapter board then your computer. The green power led and the yellow COS led should be on. Now start NAWinCFG and select Tools-->Update Firmware from the menu. Press the Browse button then locate and highlight the firmware (.hex) file you just downloaded then press Select. You will now be in the update window. Locate then check the Update EEPROM Data checkbox. Now press the Update button to upload the firmware into the board. The program will show the upload progress. **WARNING:** Do not unplug the USB cable during this process or the node adapter may become inoperable! Once the update has completed exit out of the program and unplug the board. Remove the jumper from the Program header and place it back on header SW3. The board is now programmed.

You now need to configure the board at both a software and hardware level. Please use the supplied board diagram and settings below to configure the hardware to your requirements:

Header	Function	Position(pins)	State
SW1	COS/DCOS	Up(1+2)	DCOS
SW1	COS/DCOS	Dn(2+3)	COS (not recommended)
SW2	SQL	Up(1+2)	Inverted
SW2	SQL	Dn(3+3)	Normal
SW3	RSSI	On	Enabled
SW3	RSSI	Off	Disabled
SW4	RSSI	Left(2+3)	Enabled
SW4	RSSI	Right(1+2)	Disabled

Jumper positions as seen with connectors facing away from you.

Locate the receive audio potentiometer R1 and set it to mid-range. Do the same for the transmit audio setting R36. These settings should be adequate for most transceivers. These resistors control the level of audio coming into the GMSK modem chip and going out the TX audio line. If you do not hear receive audio or it is garbled then it may be necessary to adjust R1. If the party you are transmitting to does not hear your transmit audio or it is garbled you may need to adjust R36.

The final hardware adjustment concerns squelch sensitivity. If in COS mode potentiometer R34 should be adjusted so that the COS led just lights when a good signal is received. A mid-range setting is normally adequate. **NOTE:** It is not recommended to configure the board for COS as the analog squelch is usually not fast enough to catch the incoming transmit header data.

Your board's hardware configuration is now set. We will now move to the software settings. Make sure your board is connected and the green power led on. Run the NAWinCFG program again. After the program has initialized it should display the current firmware release loaded into the board. If not, exit the program, reconnect the board and try again. If all else fails reboot the computer. **NOTE:** If you are using Windows XP it may be necessary to load additional DLL files in order for your board to be seen by your computer. Please visit the DUTCH*Star web site for details.

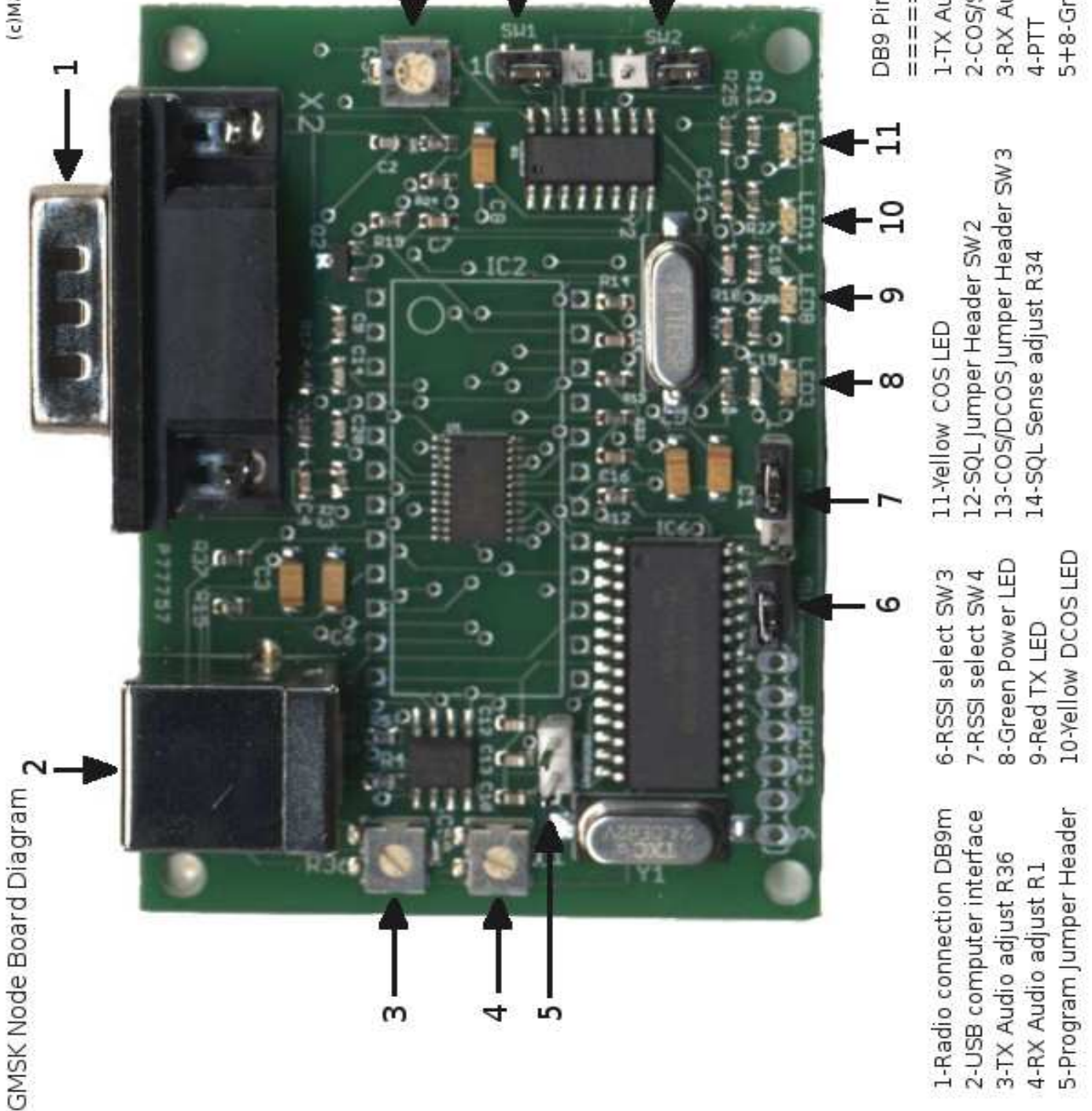
Once the configuration program can read your firmware you can begin configuring the board for its intended use. Most of the numbers on this window you can ignore for now. The only thing you might need to change are the polarity settings. If you have no receive audio uncheck the AutoPolarity box and check the RX Invert box. If you have no transmit audio check the TX Invert box. Press the Save button to make changes permanent. Next press the Mode button to bring up the final configuration window. Typically the only boxes that need to be checked here are CRC Check, Last Frame and Half Duplex depending on whether you are setting up a repeater or hotspot node. Press the Save button to make changes permanent. Now press the close button to exit back to the main window. You will notice a Repeater button. This is for settings related to running a repeater node and are beyond the scope of this document. Please refer to the DUTCH*Star web site for further details.

The board is now ready for testing. Exit out of the configuration program and start the NAWinTEST program. Once again after program initialization the firmware version should be displayed indicating that the node adapter was recognized. Select the RF Read tool to display radio settings and raw transmit data when the radio is keyed. This is useful to determine whether transmit audio settings are correct. Select the Echo tool to test the complete audio loop through the node adapter. Start the test, key up the radio and speak for a few seconds then de-key. The program will play back your call sign, a brief message from Fred of DUTCH*Star and then echo back your transmission. If this works successfully you are all ready to go. Start up WinDV and have fun!

For more detailed help with running the NAWin tool set please visit the DUTCH*Star web site.
<http://www.dutch-star.eu>

Once again, thank you for purchasing the Matrix Circuits GMSK Node Adapter!

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GMSK Node Board Diagram

Licensing Instructions

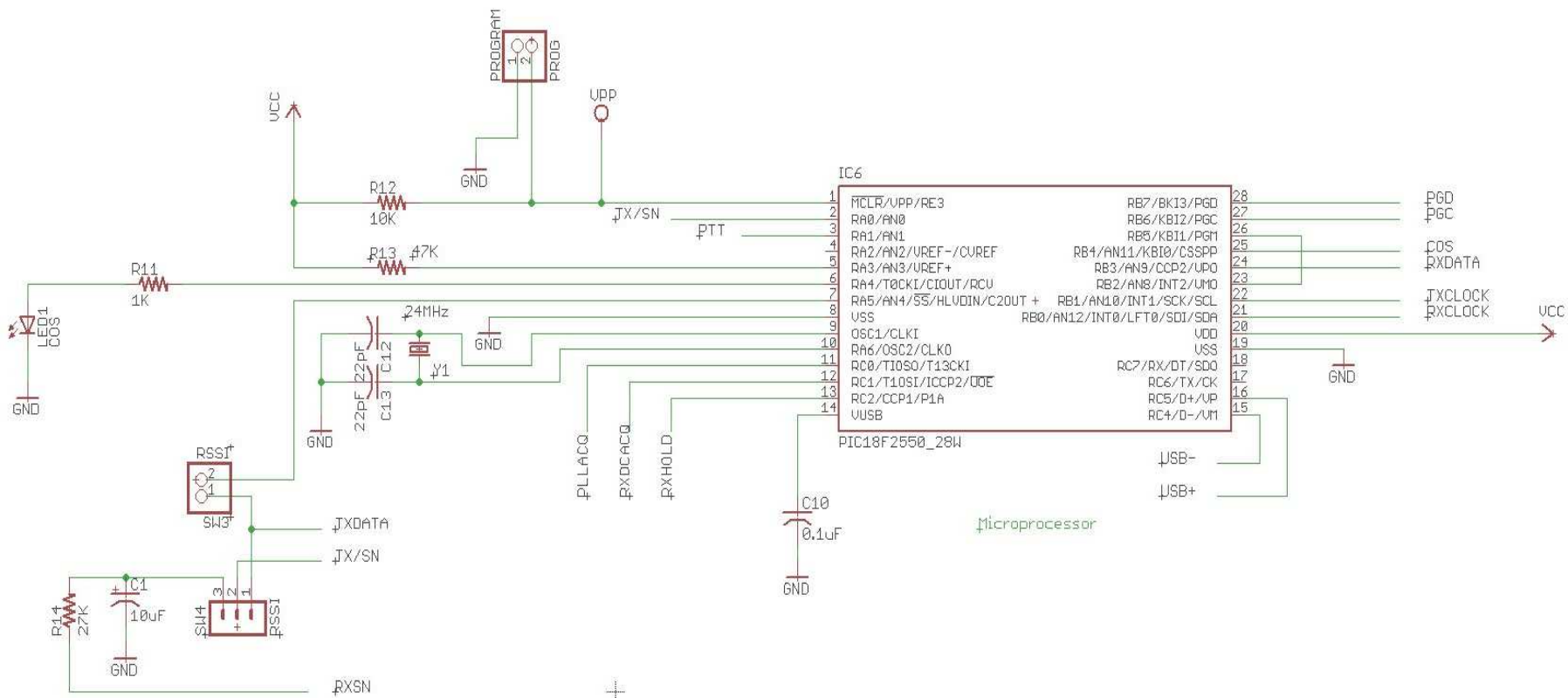
To activate the license, you will have to log on to your account on the DUTCH*Star website, <http://www.dutch-star.eu>, and then go to the “My Account” section. One of the tabs shown is the Licenses page; click on that tab to enter. If you have other licenses active, you will see a list of them, including their status, activation date, and so on.

To add your new license, click on the “Add New License” button, and enter the license key shown on your license form. When done, click on the SUBMIT button to have the system locate and activate this license for you. If all goes well, you should now see this license in the list as described above !

DOWNLOADING FIRMWARE

If you wish to download firmware, click on the diskette icon shown in the license for which you would like to download the file. A new page will be created, showing all downloadable files valid for that license.

In additions to the firmware file you will need to download NATools for Windows and possibly USB drivers.

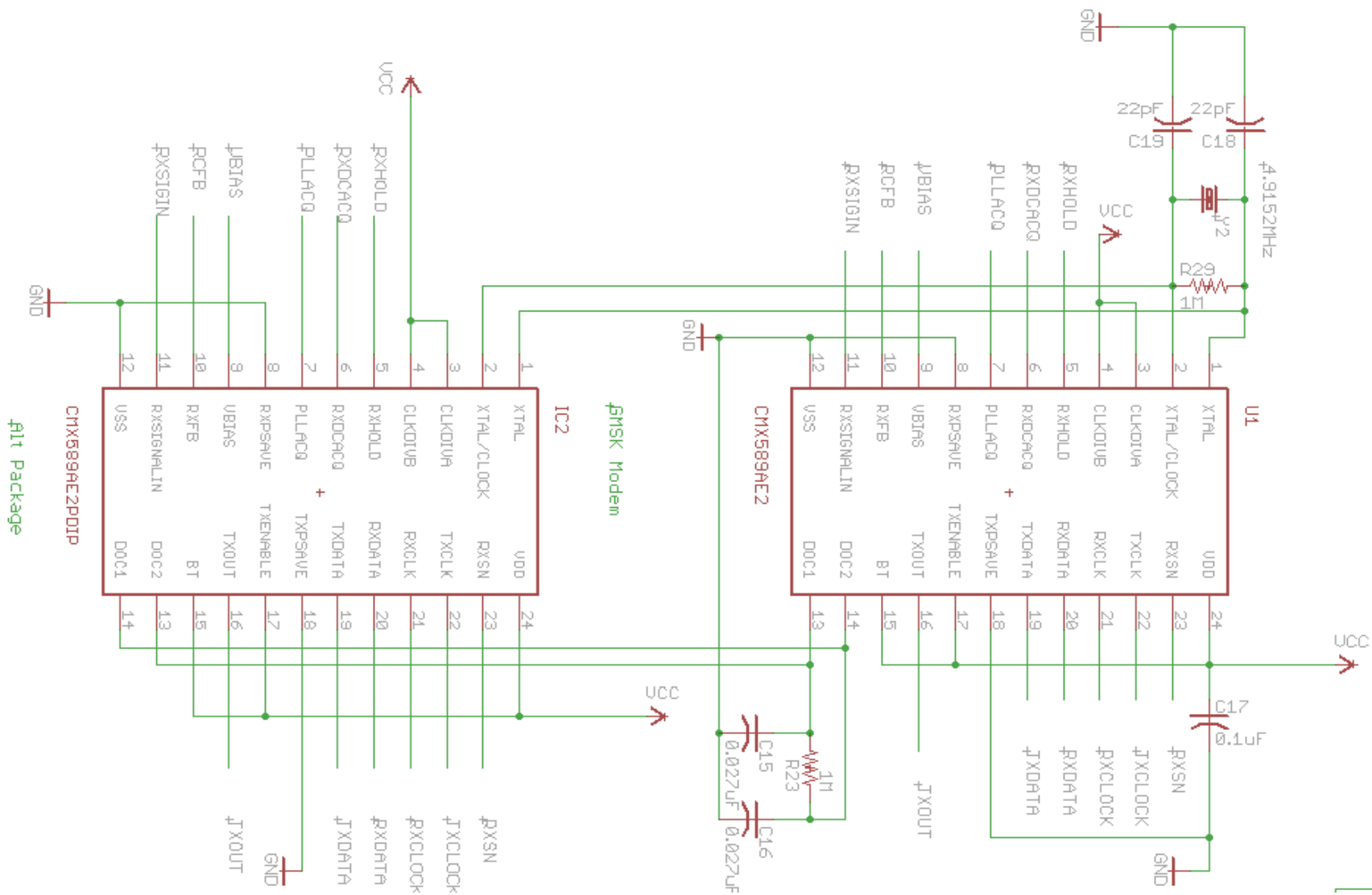


Title: Microprocessor

Electrical and schematic design based on DUTCH*Star node adapter Rev A01

Date: 8-5-2011

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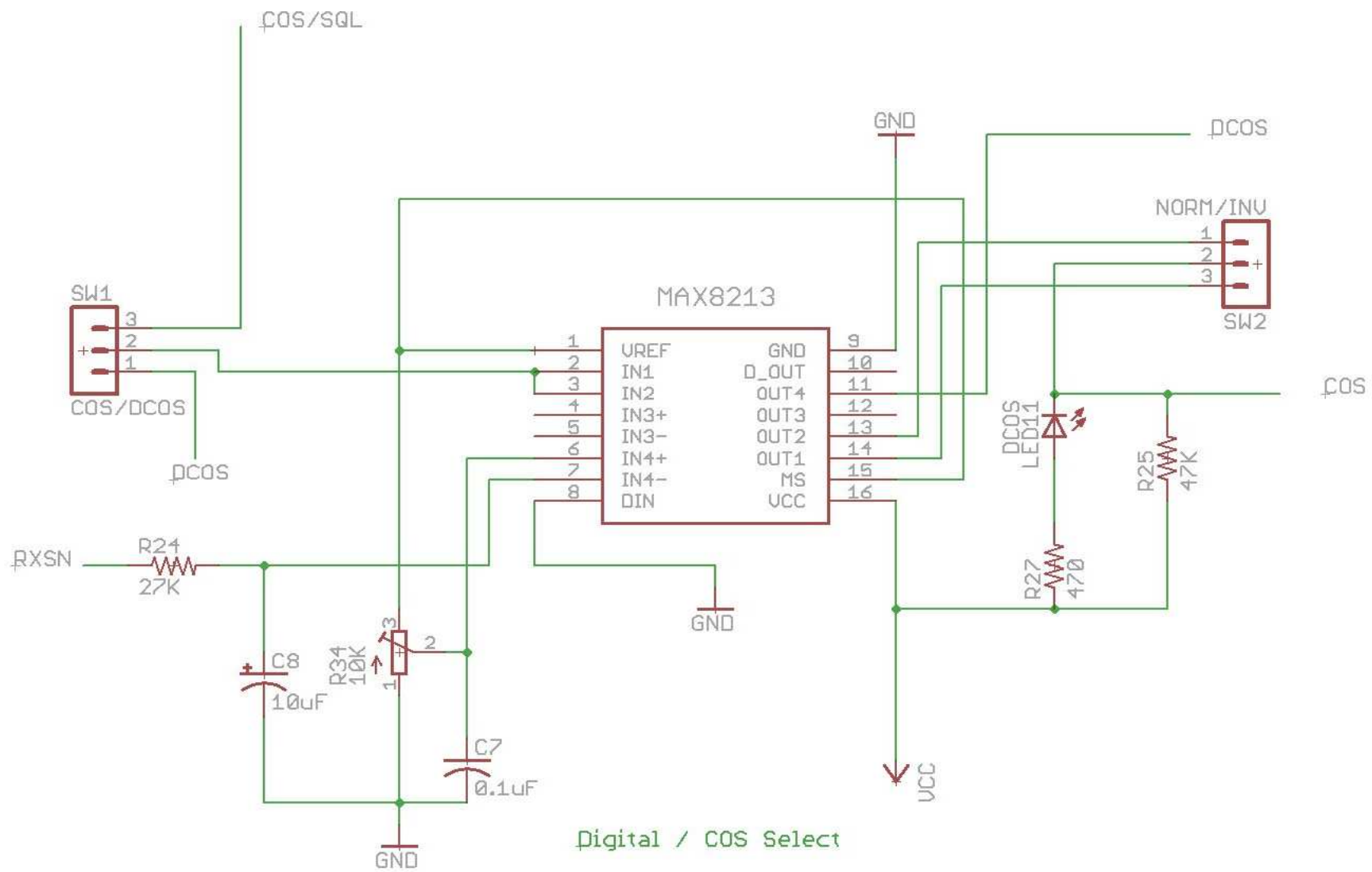


Title: GMSK Modem ith Alt Package

Electrical and schematic design based on DUTCH*Star node adapter Rev A01

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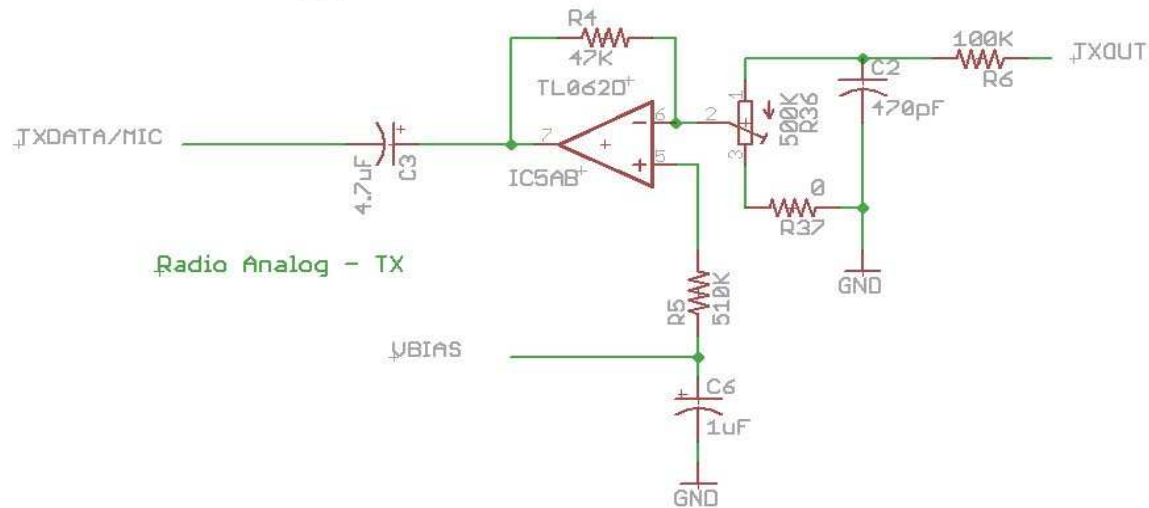
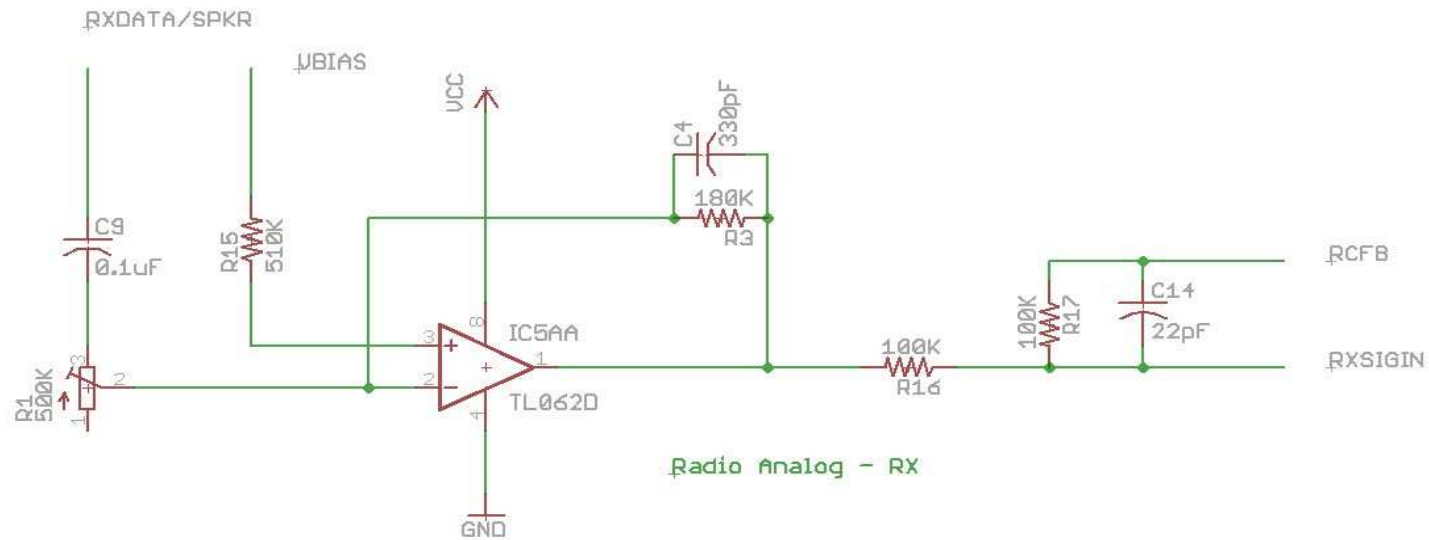


Title: Digital/Analog SQL

Electrical and schematic design based on
DUTCH*Star node adapter Rev A01

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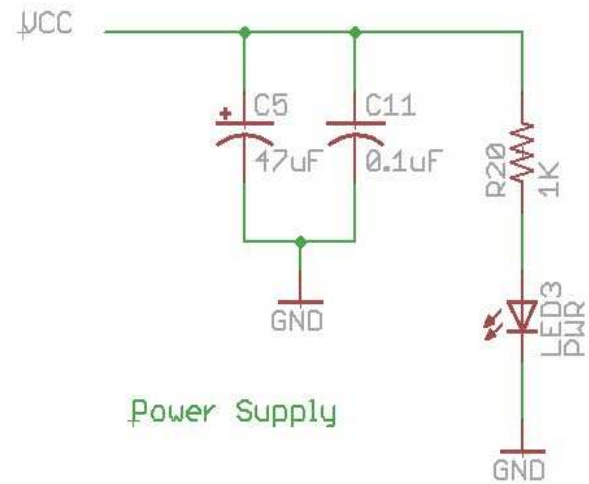
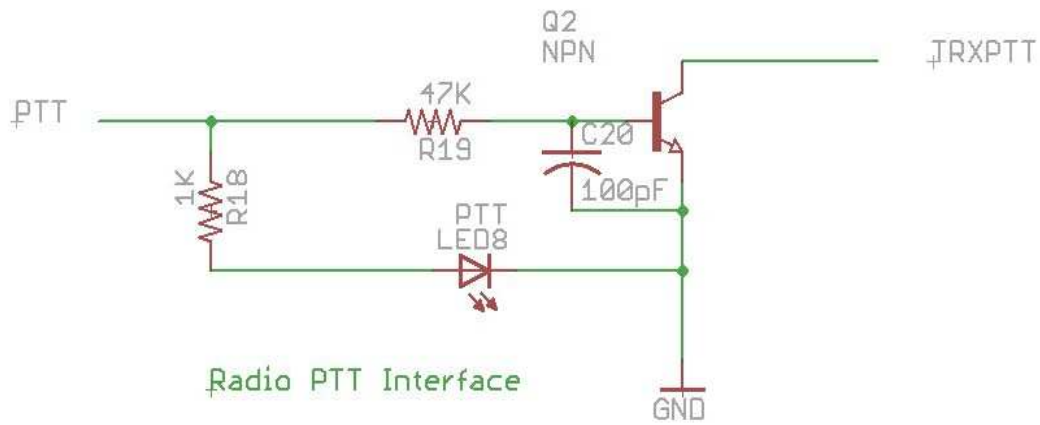


Title: TX & RX Audio Processing

Electrical and schematic design based on
DUTCH*Star node adapter Rev A01

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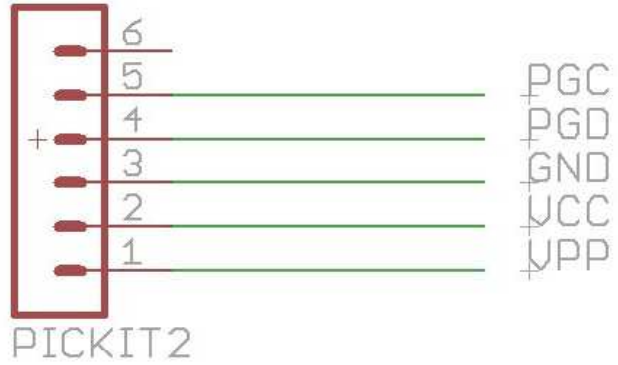
Title: PTT & Power Supply

Electrical and schematic design based on
DUTCH*Star node adapter Rev A01

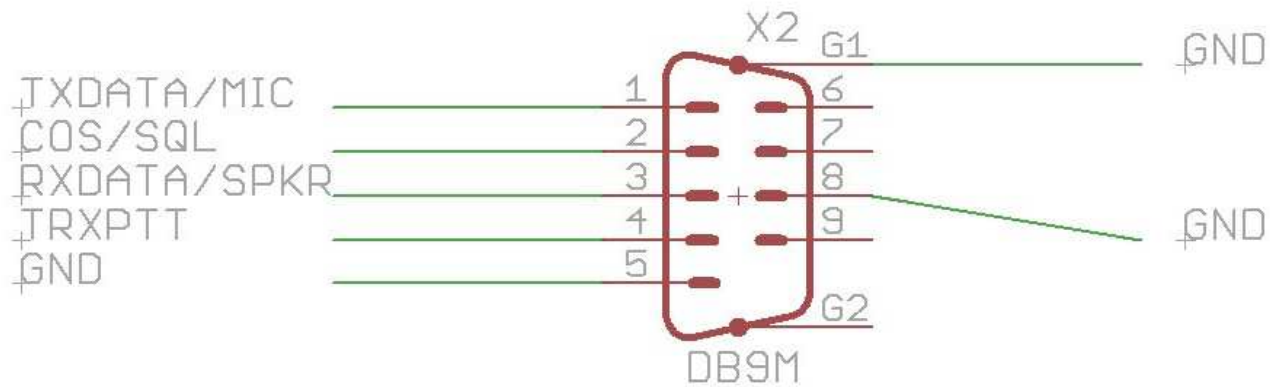
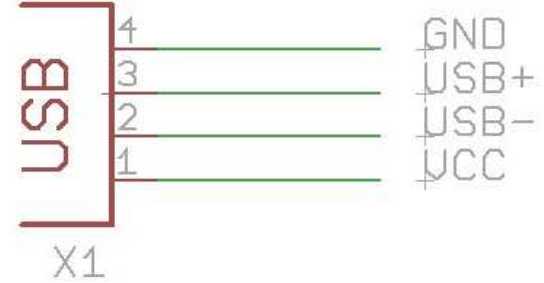
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PICKIT2



USB



Title: Board Connections

Electrical and schematic design based on
DUTCH*Star node adapter Rev A01

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