



The GNS 5892 Starter Kit has been designed to support developers during design-in of the GNS 5892 ADS-B receiver solution.
The examples are shown as block diagrams to explain the approaches.



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Introduction

This manual shows, how to connect the GNS 5892 Starter Kit to a PC in order to verify GNS 5892 module performance and test supported features.

For technical specification, please refer to the **GNS 5892 datasheet**.

GNS 5892 is one of the smallest ADS-B receiver modules for 1090MHz "virtual radar" monitoring. The high dynamic signal processing circuit allows ADS-B data reception from near field to wide range simultaneously.

The module integrates a sensitive RF front-end, signal processing , a high speed data decoder and an output uart that can be easily connected to a host processor.

Connected to a PC, all ADS-B data is routed to the miniUSB port. A simple command interface is used to carry out the necessary settings on the module.

GNS 5892 Starter Kit Features

- Onboard USB2UART bridge for PC connection
- 5V DC input via mini USB
- LED "frame indicator"
- SMA antenna connector

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1 Description of the GNS 5892 StarterKit Hardware

FEATURES

- Small evaluation board designed for verification of GNS 5892 module ADS-B performance
- Small evaluation board designed for easy implementation to MCU controlled applications
- ADS-B frame LED indicator
- PC connection via USB
- USB powered
- ADS-B command interface via USB or UART interface

Package Content

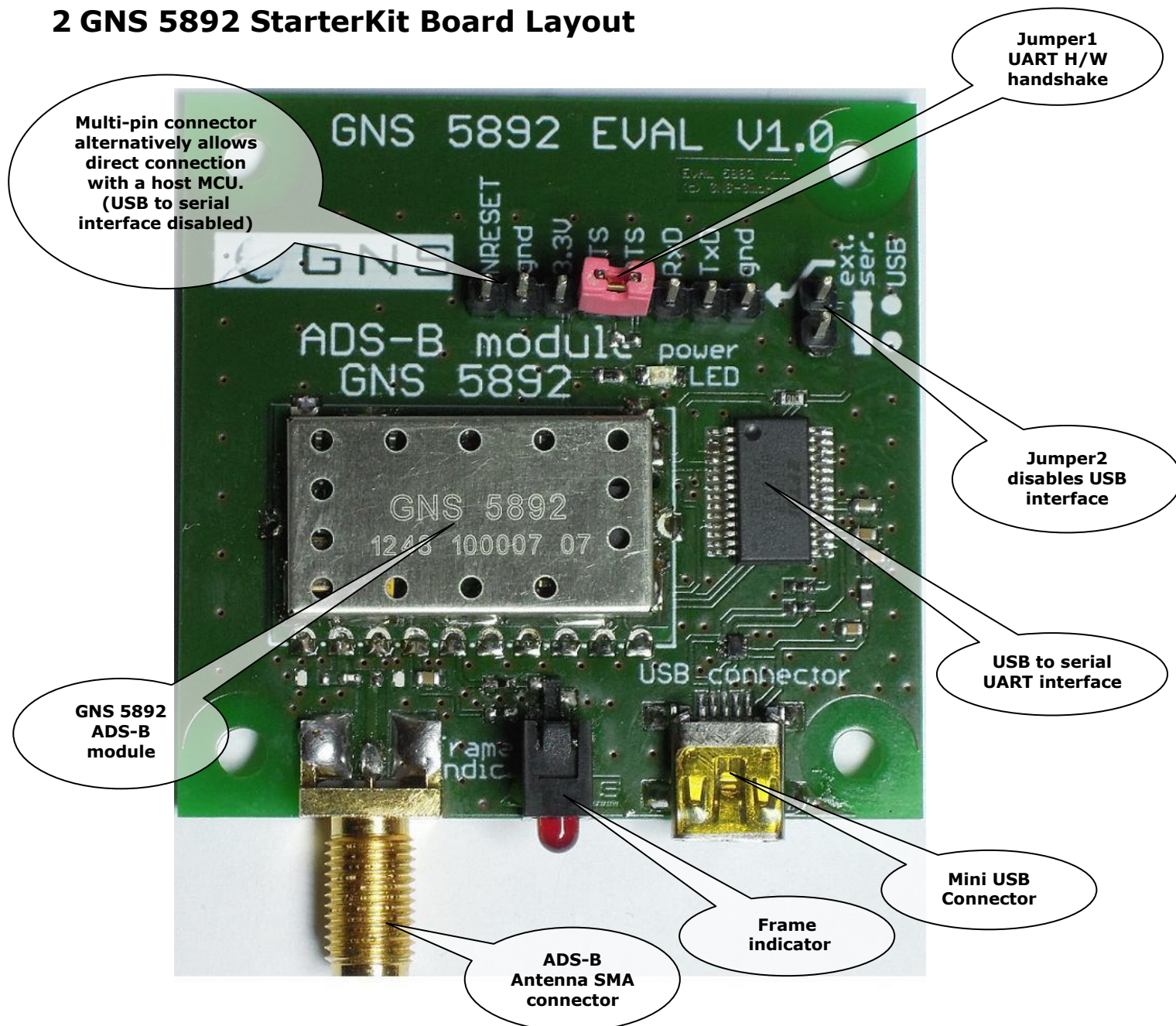
- GNS 5892 Starter Kit
- USB to miniUSB cable
- ADS-B antenna
- CD with documentation & software

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2 GNS 5892 StarterKit Board Layout



Description of LED frame indicator:

LED frame indicator

Comment

flicker

Valid ADS-B frames received & ready to be processed

off

No valid frames received or frame buffer full (no data processing)

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JUMPER AND CONNECTOR DESCRIPTION

CONNECTOR	DEFAULT	SIGNAL	DESCRIPTION
JUMPER1	PLUGGED	H/W UART handshake RTS/CTS loop	See note 1
JUMPER2	UNPLUGGED	External UART disable	See note 2
MULTI-PIN CONNECTOR		GNS 5892 serial port	See Table 1

Notes

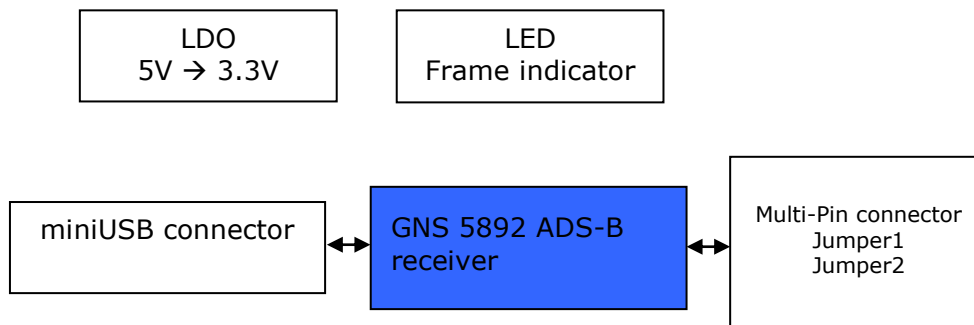
- 1 Because of the high data rate hardware handshake is needed to prevent data overflow. GNS 5892 signals the host with its CTS signal that he is ready to receive data. GNS 5892 examines the receptivity of the host with RTS. If hardware handshake is not supported by the host the RTS signal must be activated externally. This can be done by connecting the CTS with the RTS signal directly.
- 2 If Jumper2 is set, the USBtoUART interface is reset and the serial port can be accessed directly with the Multi-Pin-Connector.

Table 1. Multi-Pin Connector description

Pin	Name	I/O	Description & Note
1	GND	P	Ground
2	TXD	I	Serial Data Input for command interface (TTL) This is the UART receiver of the module. It is used to receive commands from system
3	RXD	O	Serial Data Output for ADS-B data output (TTL) This is the UART transmitter of the module. It outputs ADS-B frames for application.
4	RTS	I	Request To Send – H/W flow control (TTL) LOW -> active / HIGH -> inactive
5	CTS	O	Clear To Send – H/W flow control (TTL) CTS is always LOW. GNS 5892 is always clear to receive serial data.
6	3.3V	P	Main DC Power +3.3V output from integrated LDO regulator if powered from USB. GNS 5892 StarterKit can be powered from this pin if not powered from USB.
7	GND	P	Ground
8	NRESET	I	Reset Input, Low Active Low active, it causes the module to reset. If not used, keep floating.

(1) I = INPUT; O = OUTPUT; I/O = BIDIRECTIONAL; P = POWER PIN; ANA = ANALOG PIN.

3 GNS 5892 StarterKit Board Block Diagram

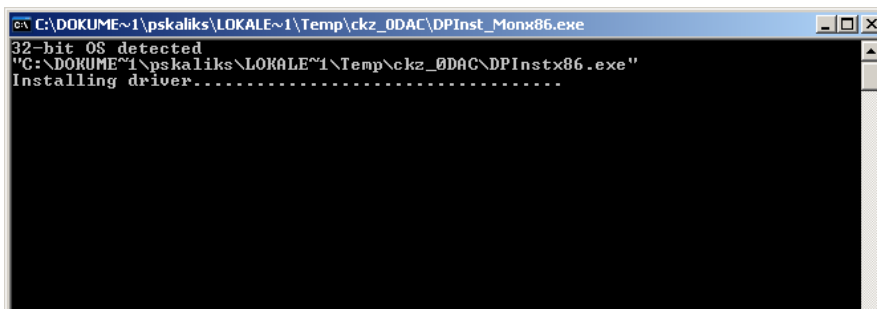


3.1 Getting started

1. Connect the ADS-B antenna to the GNS 5892 StarterKit.
2. Insert the included CD into your CD Rom Drive. Change to \Driver folder.
3. Copy the two files from the \Driver folder to a PC folder of your choice.
4. GNS 5892 StarterKit will be connected to the PC via a virtual COM-Port with USB.
This conversion is performed by an onboard chip.

Do not connect the USB cable now!

First, please install the FTDI VCP (Virtual Com Port) driver by invoking USB-Driver-CDM20600.exe. A DOS window will open and close again after a few seconds when finished.



5. The VCP USB driver is now ready to use.
6. Connect the Starter Kit to your PC by using the USB- to miniUSB cable. This will power up the Starter Kit (shown by the blinking green LED fix indicator) and establish the active state.
7. You should see a hint on the right lower corner of your PC screen, that a new hardware has been found and is ready to use.

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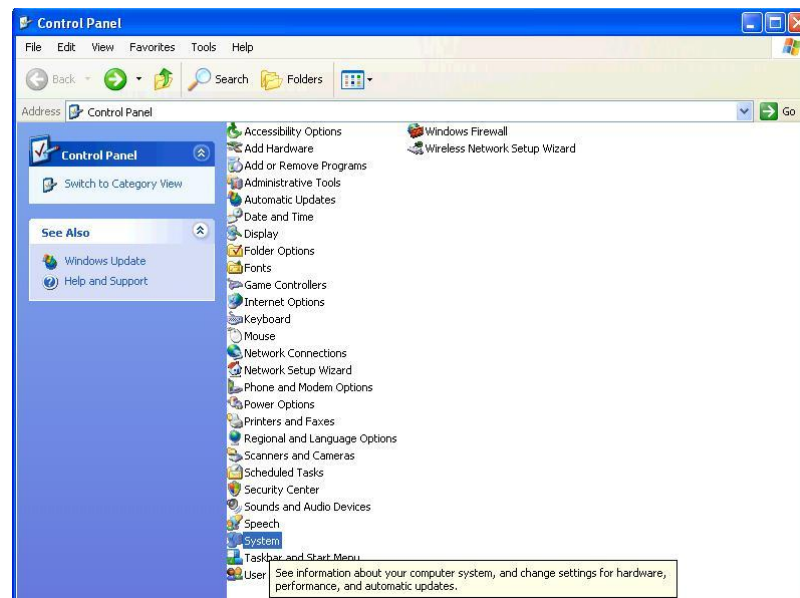
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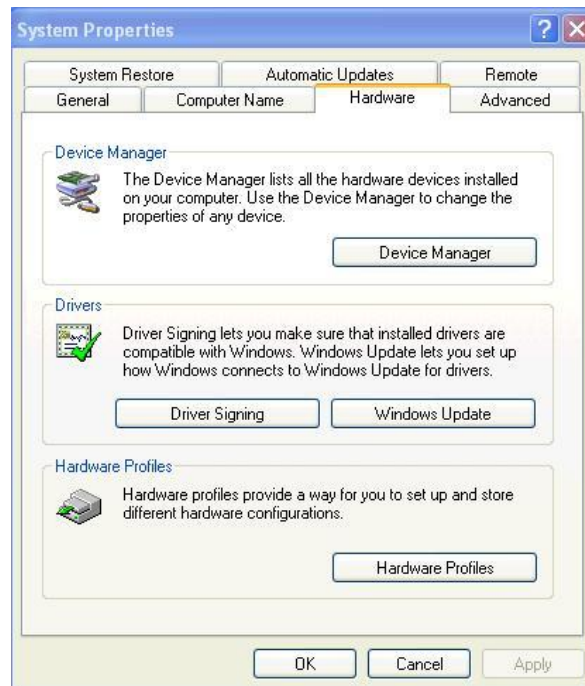
8. Assign the virtual COM-Port number by executing "Windows Start Button" and select "Control panel".



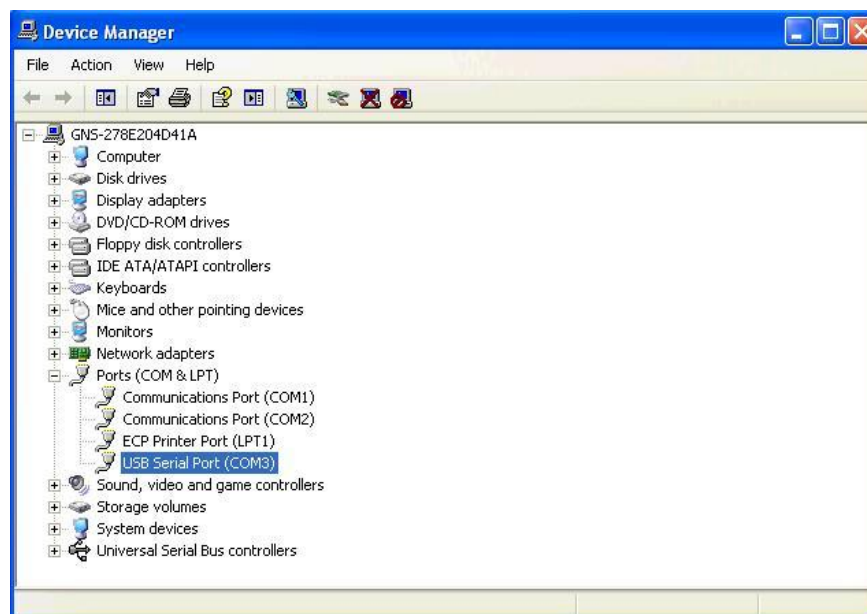
9. Select "system".



10. Choose "Hardware" tab and select "Device Manager".



11. Select "Ports (COM&LPT)" and notice the "USB Serial Port" number.

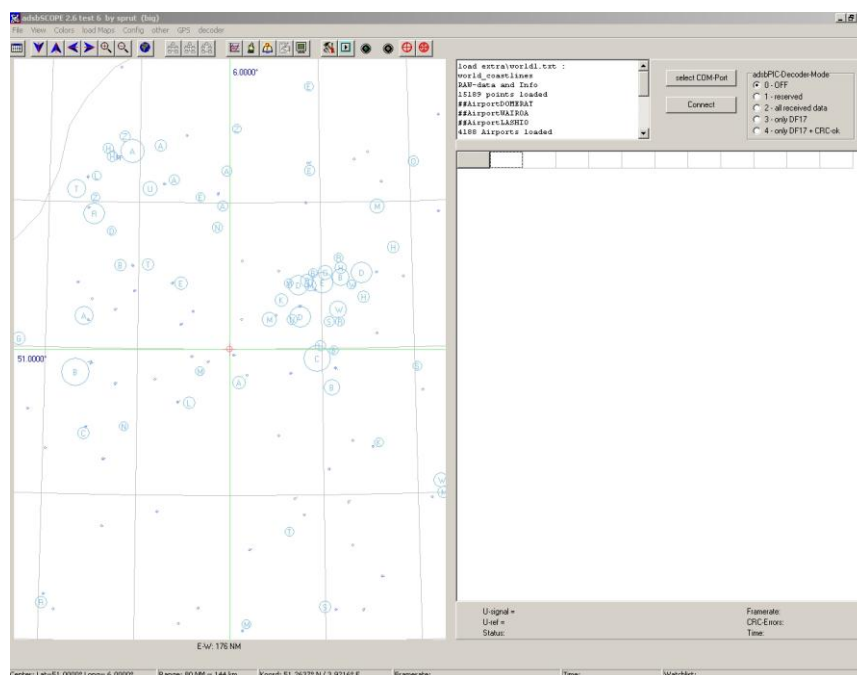


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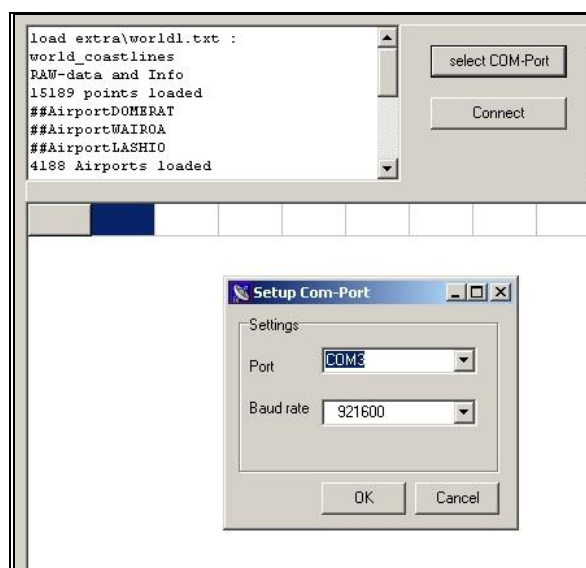
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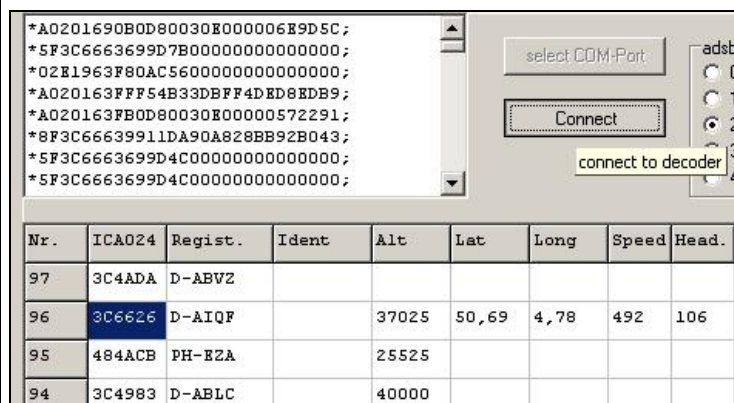
12. Start your preferred ADS-B-Viewer software (for example: adsbscope, free ADS-B tool, Link: <http://www.sprut.de>) to visualize the ADS-B-protocol data and connect COM-Port using the default data rate of the GNS 5892 module of "921600 Baud".



13. Select Com-Port (see pt.11) and connect.



Setup Com Port



Click the Connect button

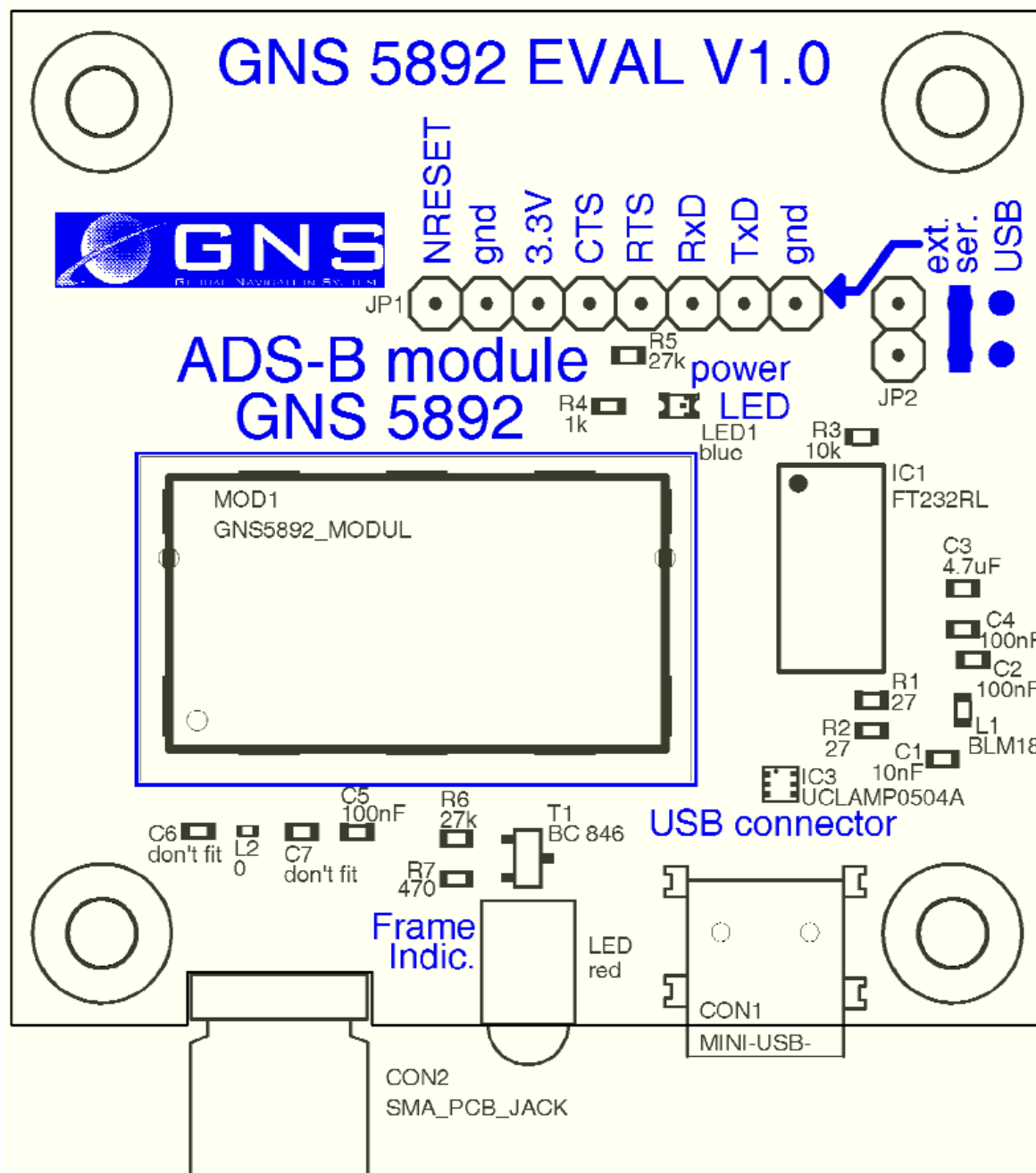
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4 GNS 5892 StarterKit Hardware

4.1 Assembly Drawing Top Side

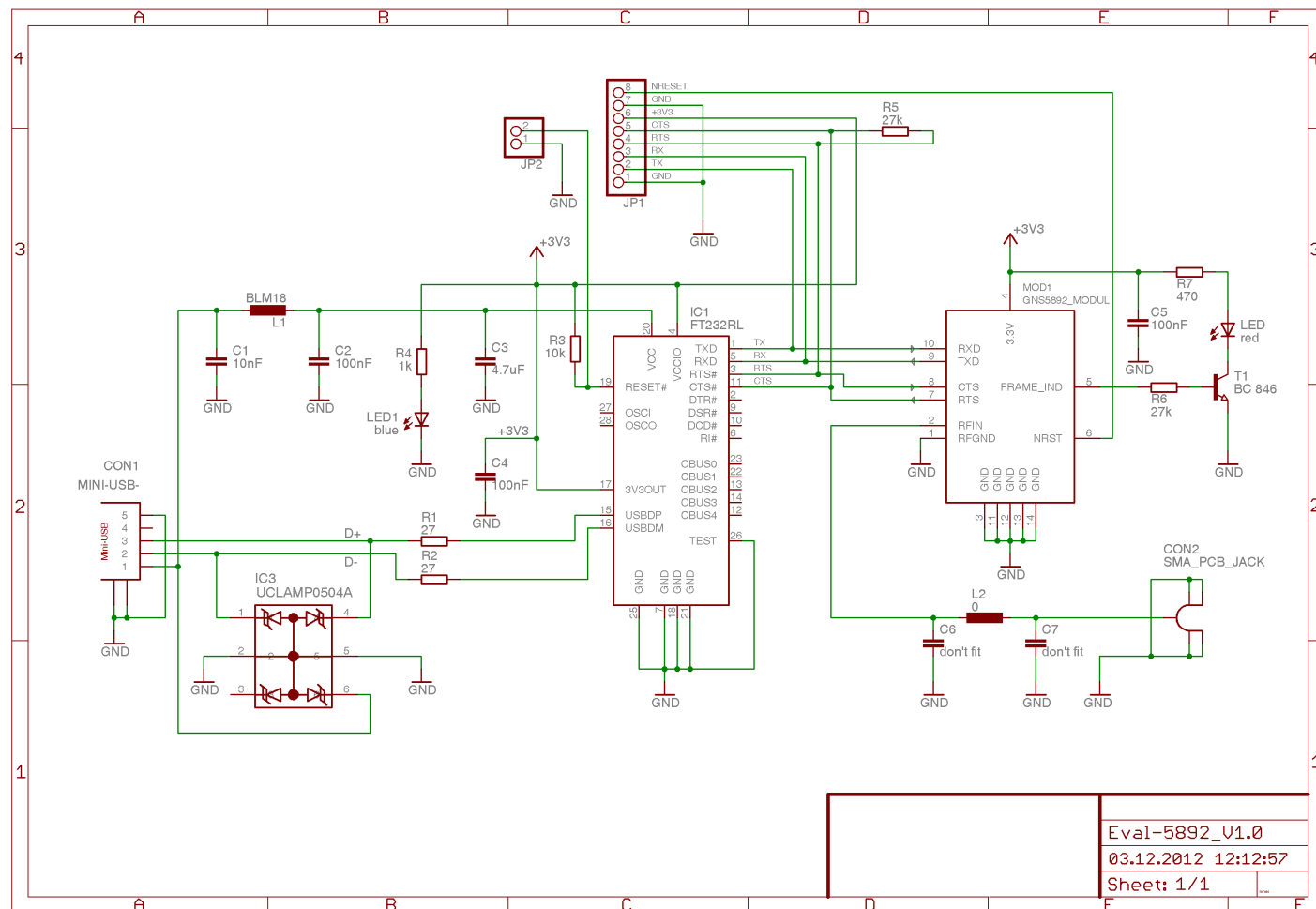


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4.2 GNS 5892 StarterKit Schematic



Eval-5892_V1.0
03.12.2012 12:12:57
Sheet: 1/1

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4.3 GNS 5892 StarterKit Bill Of Material

Qty	device	value, type	board reference
1	Connector/Jumper	PINHD-1X8	JP1
1	Connector/Jumper	PINHD-1X2	JP2
1	MiniUSB connector	MiniUSB connector	CON1
1	SMA connector	SMA connector	CON2
1	Resistor	0	L2
2	Resistor	27	R1, R2
1	Resistor	10k	R3
1	Resistor	1k	R4
2	Resistor	27k	R5, R6
1	Resistor	470	R7
1	Capacitor	10nF	C1
3	Capacitor	100nF	C2, C4, C5
1	Capacitor	4.7uF	C3
1	LED	red	LED
1	LED	blue	LED1
1	Transistor NPN	BC 846	T1
1	CBF	1000ohm@100MHz	L1
1	ADS-B receiver	GNS 5892	MOD1
1	IC	FT232RL	IC1
1	ESD protection array	UCLAMP0504A	IC3

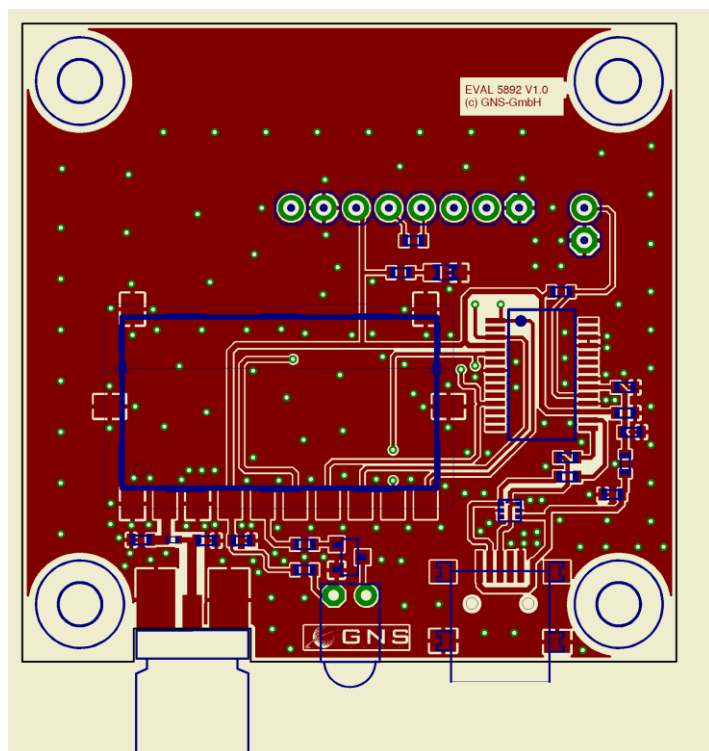
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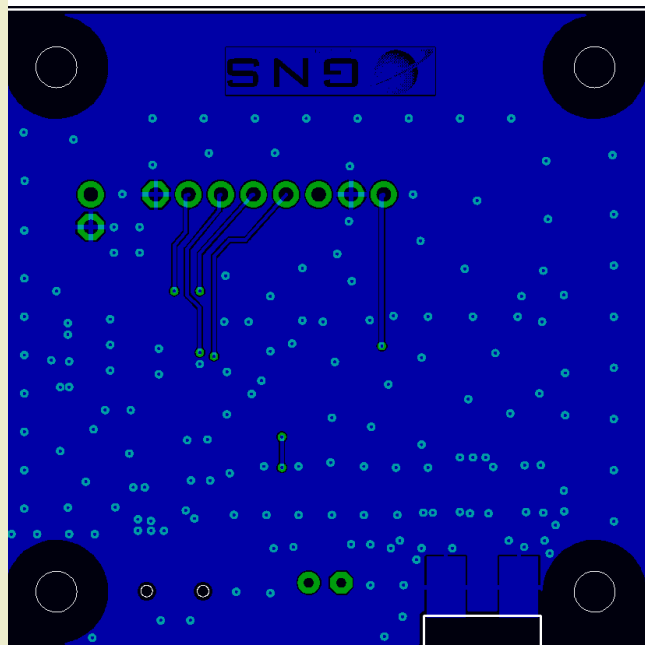
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4.4 PCB Layout TOP/BOTTOM Layer

TOP Layer



BOTTOM Layer



5 ORDERING INFORMATION

Ordering information		
Type	Part#	Description
GNS 5892 ADS-B StarterKit	4037735104792	GNS 5892 Evaluation Board

6 ENVIRONMENTAL INFORMATION

This product is free of environmental hazardous substances and complies to 2002/95/EC. (RoHS directive).



7 RELATED DOCUMENTS

Type	description	Available from
GNS 5892 data sheet	Data sheet for GNS 5892 receiver	http://www.forum.gns-gmbh.com

8 DOCUMENT REVISION HISTORY

Version	Date	Author	Description
V0.09	12/05/2012	M.Heinzel	initial document
V0.1	2/28/2013	M.Reiff	Multi-pin connector assignment corrected

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