ELSTAT BLUETOOTH MODULE

integration instructions

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Table of Contents

1.1   Purpose

The advices in this document are for the Elstat designated hardware designer to follow guidelines and points to take into consideration when the Elstat Bluetooth module is being used for new and current development of Elstat products.

1.2   Design guidelines

The elstat Bluetooth Module should be supplied with a voltage no greater than 3.3V.

An aerial is already incorporated into the PCB and the tuning is also achieved using a balun which is also incorporated to the module, additional amplification using antennae or a power booster shall not be used.

The firmware should ensure that a TX power level of greater than +4dB is not used, this can currently be achieved using the HAL TX power level setting of a value 0x06 or less.

The module maybe mounted flat onto a PCB or vertically. When mounted flat the module should be placed as shown in Fig. 1. When mounted vertically the module should be placed as shown in Fig.2
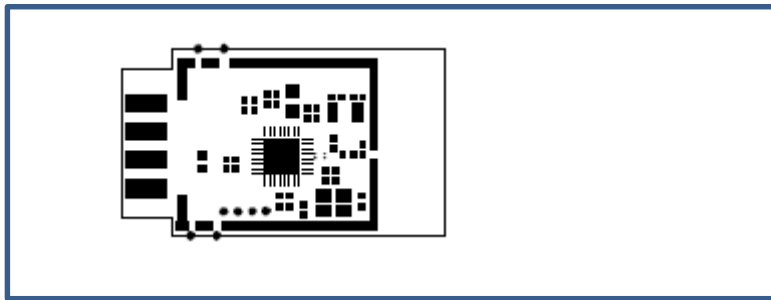

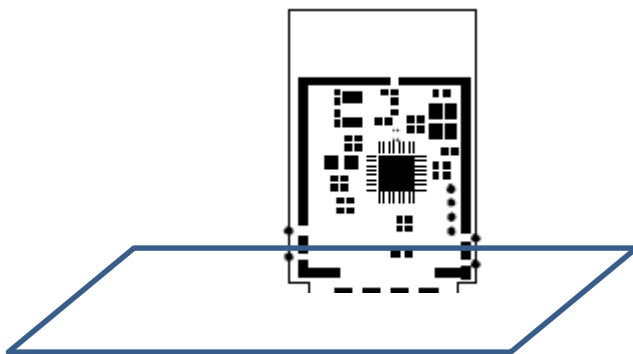Fig. 1 Elstat Bluetooth Module Flat mounted onto PCB

Fig. 2 Elstat Bluetooth Module vertically mounted onto PCB

1.3   Connectivity

There are 8 solder points on the module which are needed to make the module communicate with another digital device.
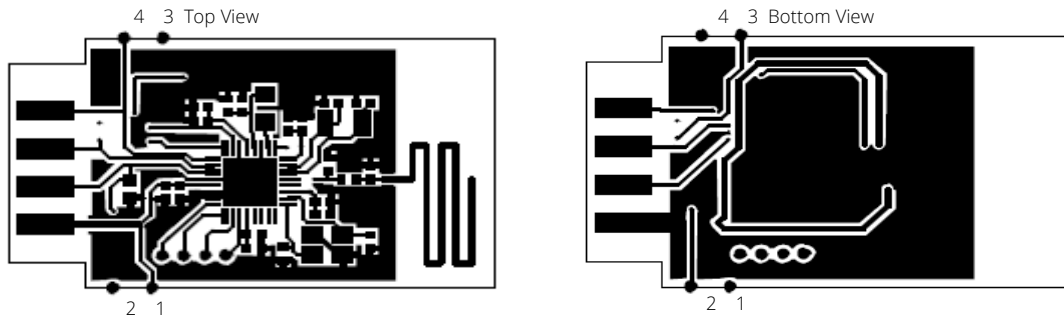

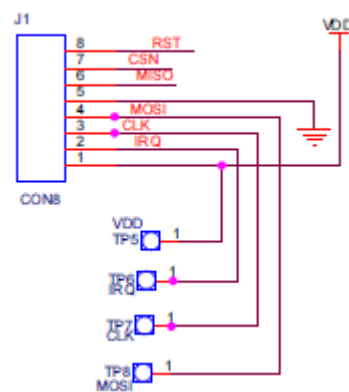Fig. 3 Elstat Bluetooth Module Top and Bottom views respectively.

Fig. 4 Elstat Bluetooth Module connection pin schematic.

As can be seen from the schematic Pin Nos 1 to 4 are also available as solder points on the sides of the module this has been done for the designer to connect to pins(1 to 4) on the module which would become unreachable if the module were to be mounted flat onto a PCB as shown in Fig.1

Elstat Bluetooth Module Pin	Function
1	VDD
2	IRQ
3	CLK
4	MOSI
5	GND
6	MISO
7	CSN
8	RST

Table. 1 Elstat Bluetooth Module connection pins descriptions

1.4   FCC ID certification Number (FCC ID: 2ACHH121-0184)

The intended final product for the Elstat Bluetooth Module shall be labelled with the FCC ID attached. The FCC ID label must be permanently marked (etched, engraved, indelibly printed etc.) either directly on the final product or on a tag that is permanently affixed (riveted, welded, etc.) to the final product. The FCC ID label must be readily visible to the purchaser at the time of purchase.

1.5   Usability

This module is only intended to be incorporated into products which Elstat design or Elstat have approved for the module to be used on. Any other use of this module shall be deemed to invalidate the certification of this module. This product must not be collocated with any other intentional transmitters within 20cm

1.6   FCC Warning statement

The following should be present on all products that are subject to radio approval under Part 15 of the FCC Rules.

FCC warning statement:

- This device complies with Part 15 of the FCC Rules.
  Operation is subject to the following two conditions:
    (1)   This device may not cause harmful interference, and
    (2)   This device must accept any interference received, including interference that may cause undesired operation.

- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

1.7   Information to user

Under §15.21   Information to user.

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section

may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

1.8   Bluetooth LE Classification

Even though the FCC (same for ETSI) classifies Bluetooth BR/EDR (means classical BT) as an FHSS system. Bluetooth LE does not fulfill these requirements. Instead, the FCC classifies Bluetooth LE as a system using digital modulation techniques.

So this allows the BlueNRG to operate without the need to use a Pseudo-random hopping sequence generation.

Please refer to the ST App note regarding more information for the BlueNRG FCC certification: http://www.st.com/st-web-ui/static/active/en/resource/technical/document/application_note/DM00098029.pdf