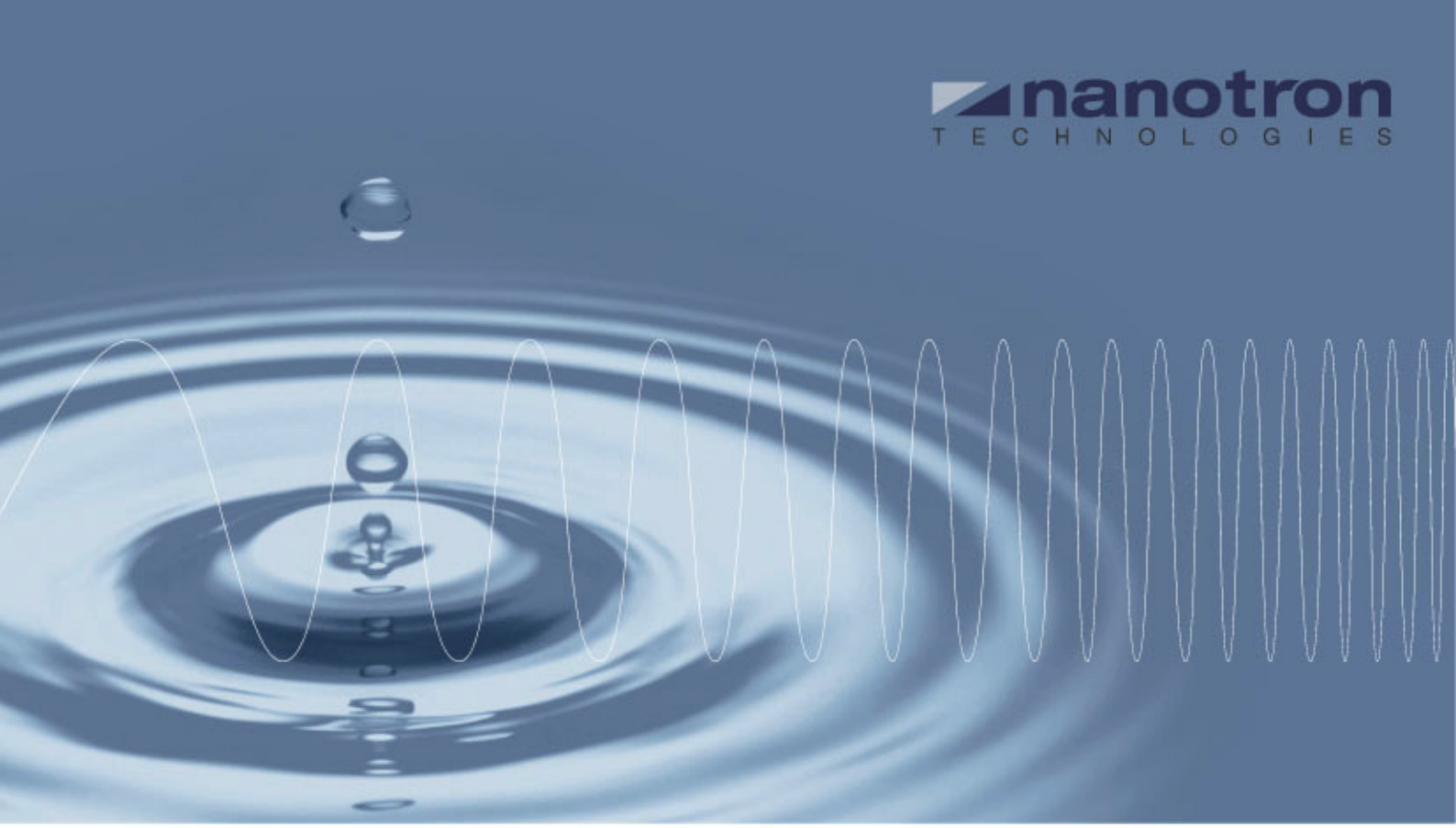

nanoNET TRX Adapter Board for RF Module

Technical Description

Version 1.01

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Document History

Version	Date	Description/Changes[a]
1.00 (0.020)	2003-12-19	Initial Release
1.01	2004-03-19	New template added

a. *See Change History (Conditional Text) for legacy history. See Internal Testing (Conditional Text) for internal use only specifications*

Table of Contents

1. Overview

The *nanoNET TRX Adapter Board* provides an interface for the *nanoNET TRX RF Module*. Its basic function is to allow the RF Module to communicate with a PC via the parallel port.

The *nanoNET TRX Adapter Board* consists of following components:

- nanoNET TRX module connectors
- power supply connector
- PC connector (parallel port)
- LED diode indicators

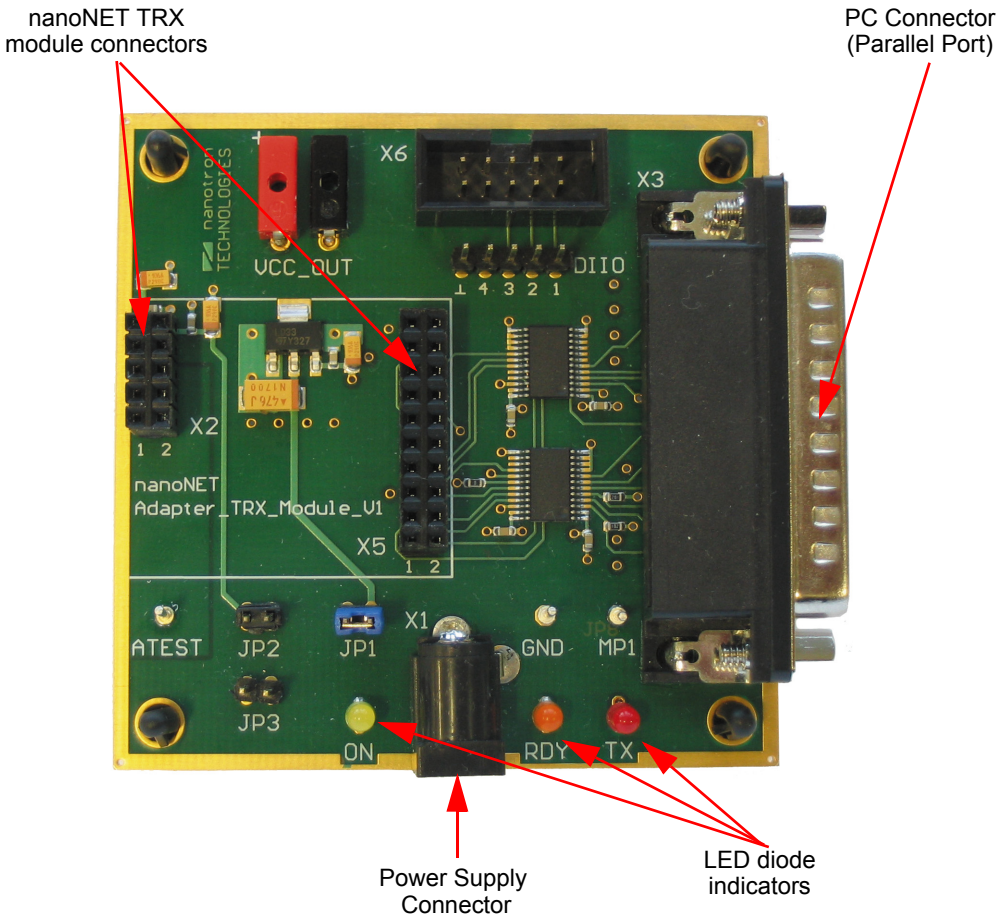

Figure 1: Top view of the nanoNET TRX Adapter Board for RF Module

CAUTION! Electrostatic Sensitive Device. Precaution should be used when handling the device in order to prevent permanent damage.

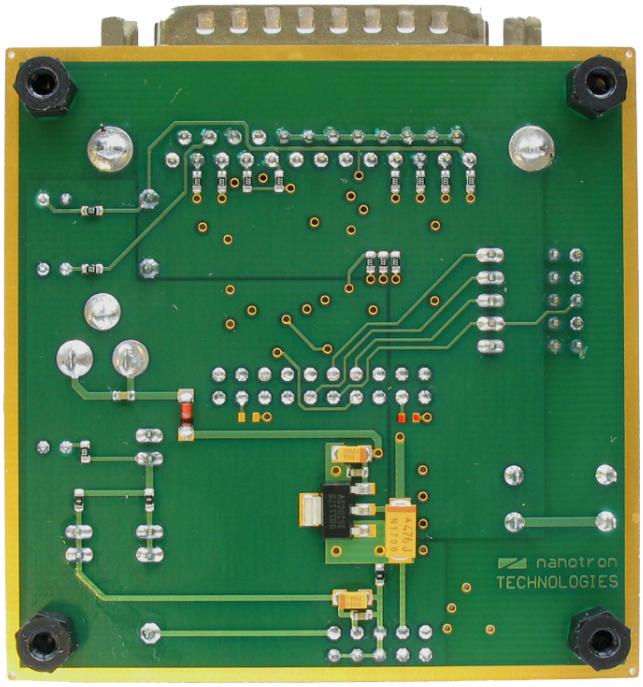

Figure 2: Bottom view of the nanoNET TRX Adapter Board for RF Module

Each block of the Adapter Board is described in the following sections.

1.1. nanoNET TRX module connectors

Power supply, control signals, and data are passed to the RF Module via these connectors.

1.2. Power supply connector

The Adapter Board and the mounted RF Module is supplied with power via this DC power jack. A battery can also be used to power these two devices using this connector. A power supply of 7.5 to 9 volts is recommended.

1.3. PC connector (parallel port)

This connector allows the Adapter Board to connect to a PC using a IEEE–1284 25 pin Parallel cable.

1.4. LED diode indicators

Yellow LED	On	Indicates power supply is on.
Orange LED	Ready	Indicates the board is ready to receive and send.
Red LED	Tx	Indicates the board is transmit-ting.

2. Schematics

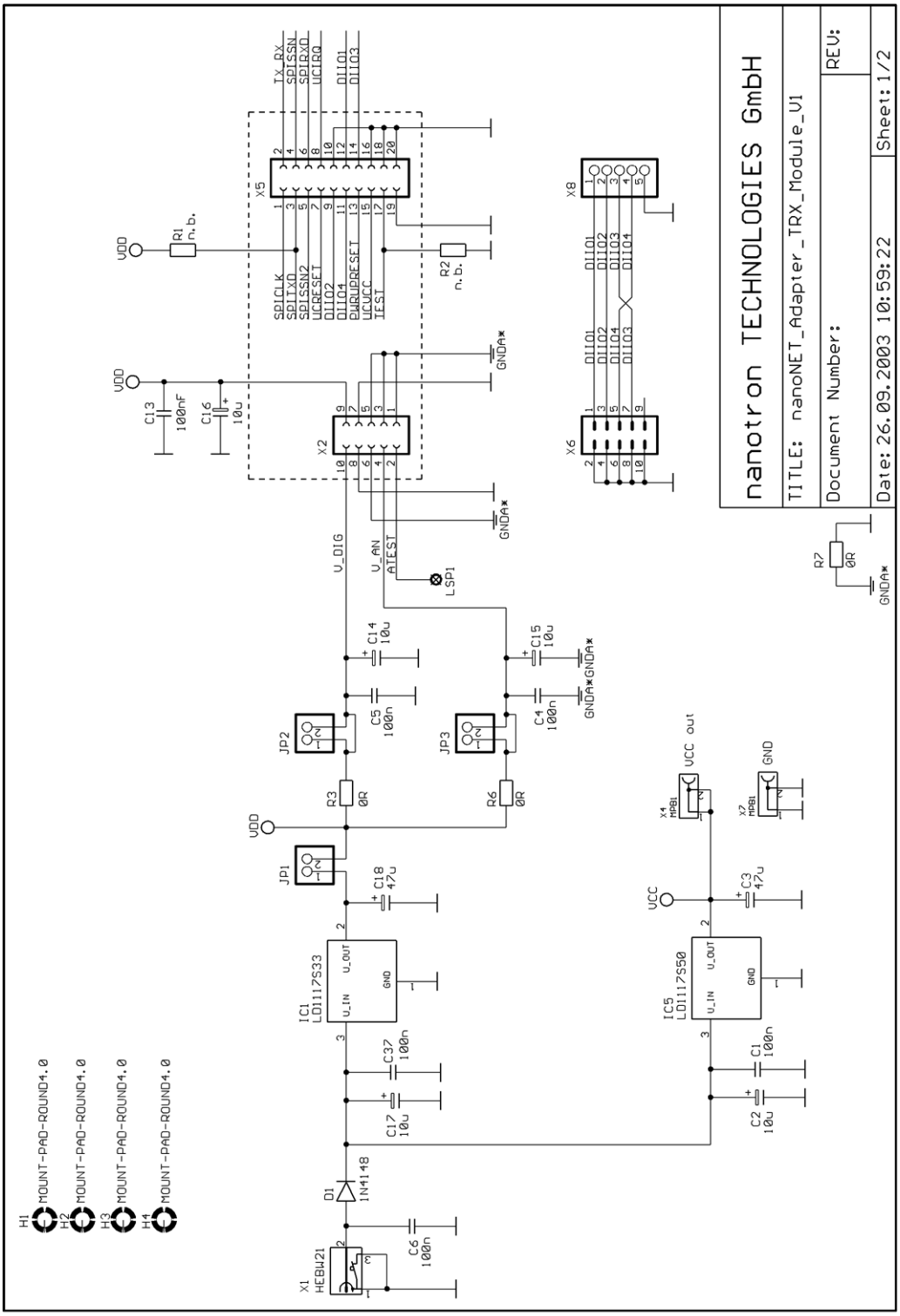

Figure 3: nanoNET TRX Adapter Board Schematic 1

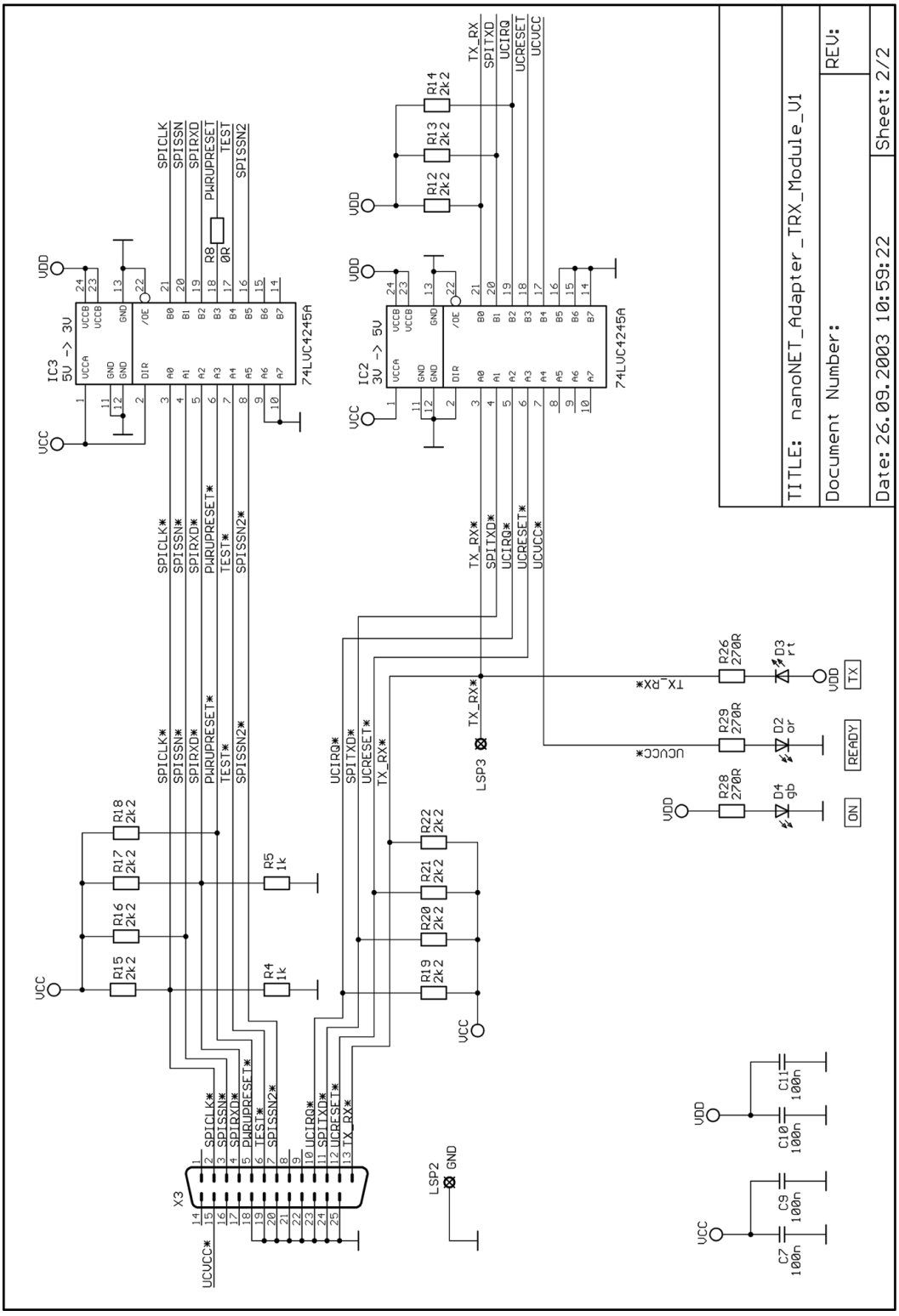

Figure 4: nanoNET TRX Adapter Board Schematic 2

3. PCB Layout

3.1. Measures

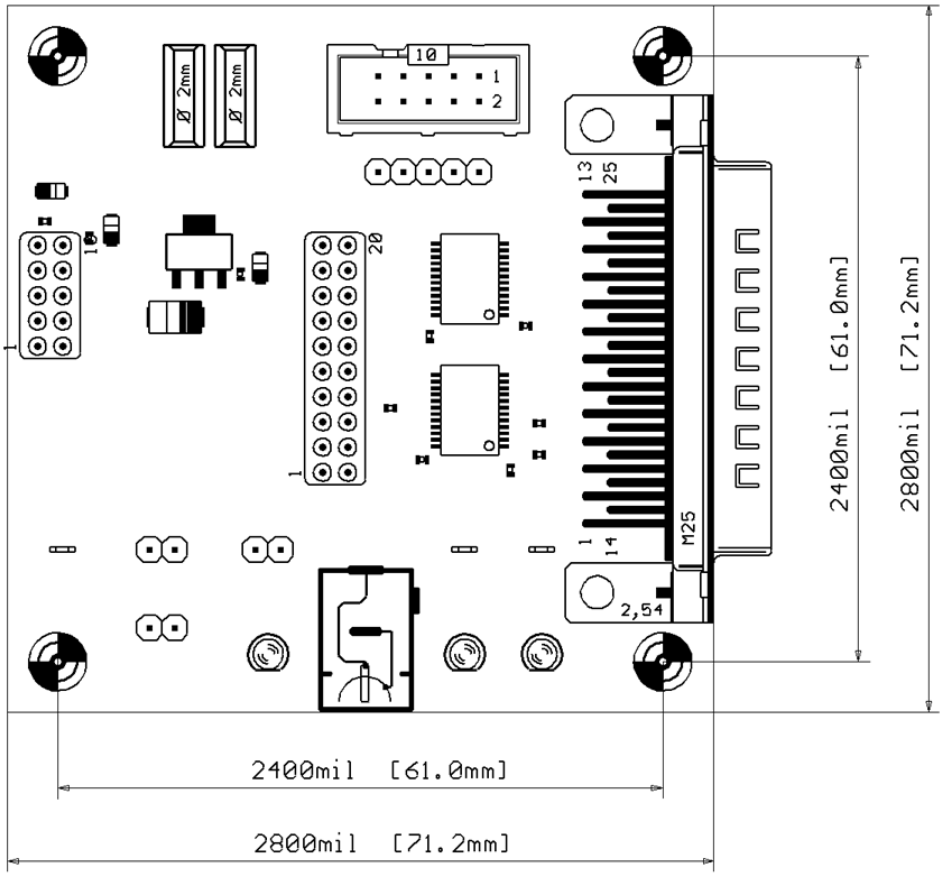

Figure 5: PCB Layout - Measures

3.2. Component Side

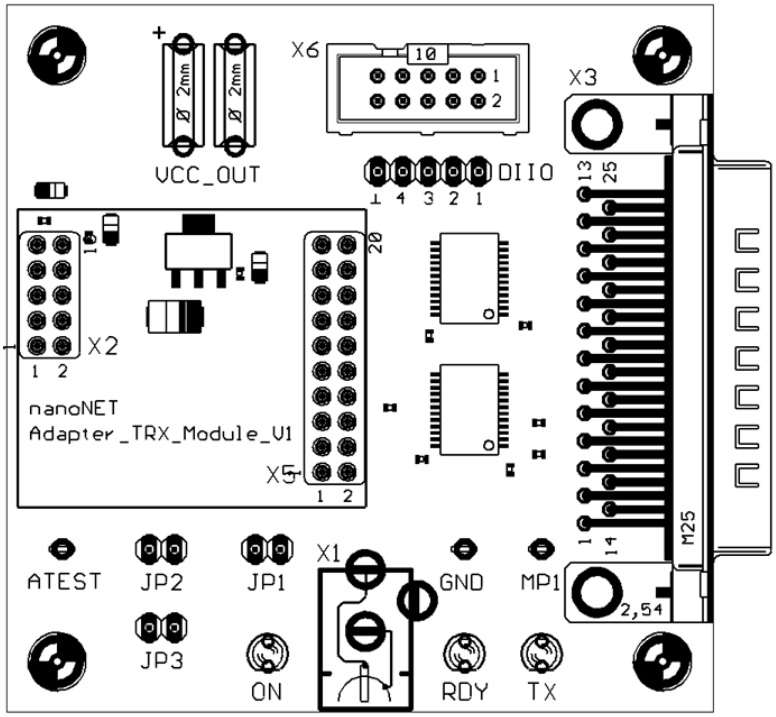

Figure 6: PCB Layout - Component Side

3.3. Soldered Side

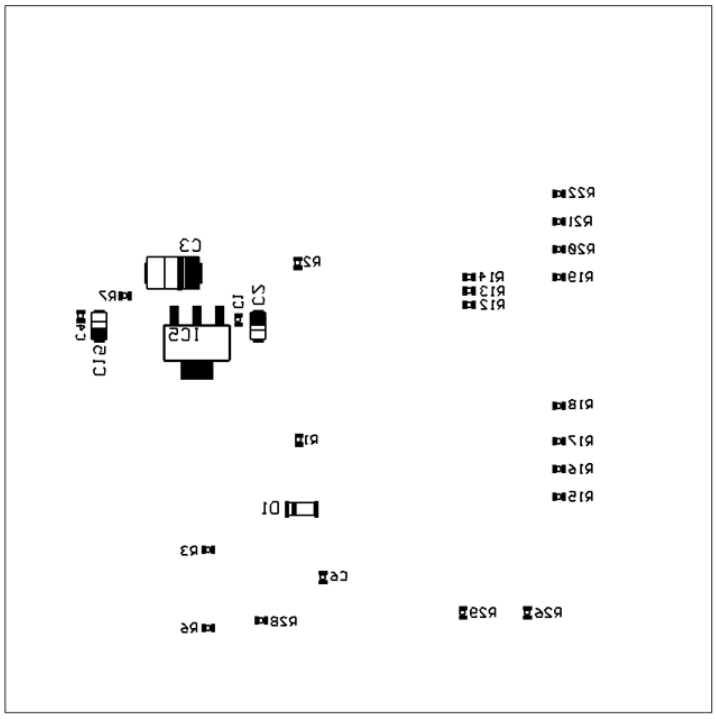

Figure 7: PCB Layout - Soldered Side

4. Bill of Materials

Name	Part	Value	Quantity	Description	Package	Series/Material
Resistors		0R	4		0603	
		1k	4		0603	
		2k2	11		0603	
		270R	3		0603	
Capacitors		100n	10		0603	
		10u	5		3216	
		47u	2		6032	
Diode		1N4148	1		SOD-80	
		or	1		LED3MM	
		rt	1		LED3MM	
		gb	1		LED3MM	
ICs		LD1117S33	1		X SOT-223	
		74LVC4245	2		5A SSOP24	
		LD1117S50	1		X SOT-223	
Strips		serial, 3p.	4		1X03	
		serial, 2.p	4		1X02	
		solder pin 1 mm	3		LSP1	
Connectors		DC jack HEBW21	1			
		SUB D 25 pin male	1		M25HP	
		IF connector 10 pin	1		ML10	
			1		FE10-2	
			1		FE05-2	
		red	1		MPB1	
		black	1		MPB1	
PCB			1			

5. Pin Assignment of Connectors

5.1. Connector X1

- Input Supply voltage of 7.5 … 9V

5.2. Connector X2

- To nanoNET_TRX_Module

Pin	Signal	Description
1	GNDA	analog ground
2	ATEST	n.a.
3	GNDA	analog ground
4	V_AN	supply voltage, analog = 3.3V
5	GNDA	analog ground
6	GNDA	analog ground
7	GND	digital ground
8	GND	digital ground
9	VDD	supply voltage for EEPROM = 3.3V
10	V_DIG	supply voltage, digital = 3.3V

5.3. Connector X3

- To parallel Port of PC
- All signals on TTL-Level

Pin	Signal[1]	Description
1	–	–
2	SPICLK (See footnote 1)	SPI: CLK
3	SPISSN (See footnote 1)	SPI: Slave Select, [low active]
4	SPIRXD (See footnote 1)	SPI: RX
5	PWRUPRESET (See footnote 1)	power up reset from µc
6	TEST (See footnote 1)	n.a.
7	SPISSN2 (See footnote 1)	SPI: Slave Select (EEPROM)
8	–	–
9	–	–
10	UCIRQ (See footnote 1)	µc interrupt
11	SPITXD (See footnote 1)	SPI:TX
12	UCRESET (See footnote 1)	Reset for µc
13	TX_RX (See footnote 1)	Status TX/RX
14	–	–
15	UCVCC (See footnote 1)	power supply for µc
16	–	–
17	–	–
18-25	GND	digital ground

1. *Indicates signal is valid for 5 volt operation.*

5.4. Connector X4

- Output of an additional supply voltage of VCC = +5V to supply an external controller board

5.5. Connector X5

- To nanoNET_TRX_Module

Pin	Signal	Description
1	SPICLK	SPI:CLK
2	TX_RX	Status TX/RX
3	SPITXD	SPI:TX
4	SPISSN	SPI:Slave Select, [low active]
5	SPISSN2	SPI:Slave Select (EEPROM)
6	SPIRXD	SPI:RX
7	UCRESET	Reset for µc
8	UCIRQ	µc interrupt
9	DIIO2	digital I/O 2
10	GND	digital ground
11	DIIO4	digital I/O 4
12	DIIO1	digital I/O 1
13	PWRUPRESET	power up reset from µc
14	DIIO3	digital I/O 3
15	UCVCC	power supply for µc; +3.3V
16	GND	digital ground
17	TEST	n.a.
18	GND	digital ground
19	GND	digital ground
20	GND	digital ground

5.6. Connector X6

- Digital I/O signals from/to nanoNET_TRX_Module
- On 3.3V level
- Not buffered!

Pin	Signal	Description
1	DIIO1	digital I/O 1
2	GND	digital ground
3	DIIO2	digital I/O 2
4	GND	digital ground
5	DIIO4	digital I/O 4
6	GND	digital ground
7	DIIO3	digital I/O 3
8	GND	digital ground
9	GND	digital ground
10	GND	digital ground

5.7. Connector X7

- Digital ground

5.8. Connector X8

- Measuring points for digital I/O - Signals
- Not buffered!

Pin	Signal	Description
1	DIIO1	digital I/O 1
2	DIIO2	digital I/O 2
3	DIIO3	digital I/O 3
4	DIIO4	digital I/O 4
5	GND	GND

5.9. JP1

- To switch on/off supply voltages in analog and digital paths

5.10. JP2

- To switch on/off digital supply voltage (bridged)

5.11. JP3

- To switch on/off analog supply voltage (bridged)

5.12. LSP1

- Measuring point (ATEST)

5.13. LSP2

- Measuring Point (digital ground)

5.14. LSP3

- Measuring point (TX_RX* , buffered)

6. Basic Configuration

The nanoNET TRX RF Module can be used with the nanoNET TRX Adapter Board, as illustrated below:

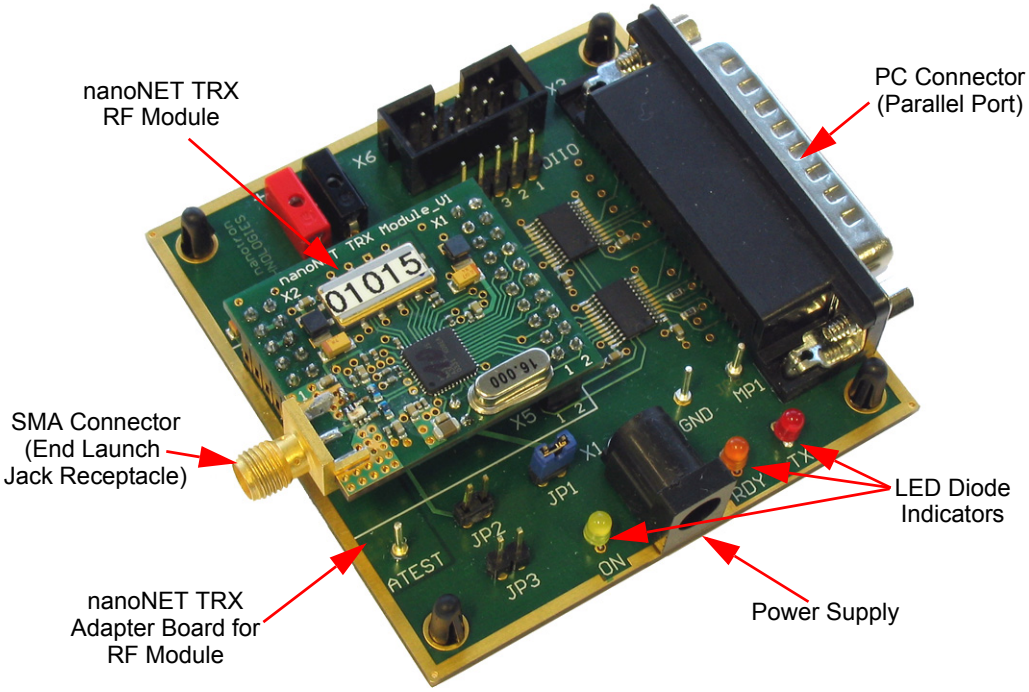

Figure 8: TRX RF Module configured with the nanoNET Adapter

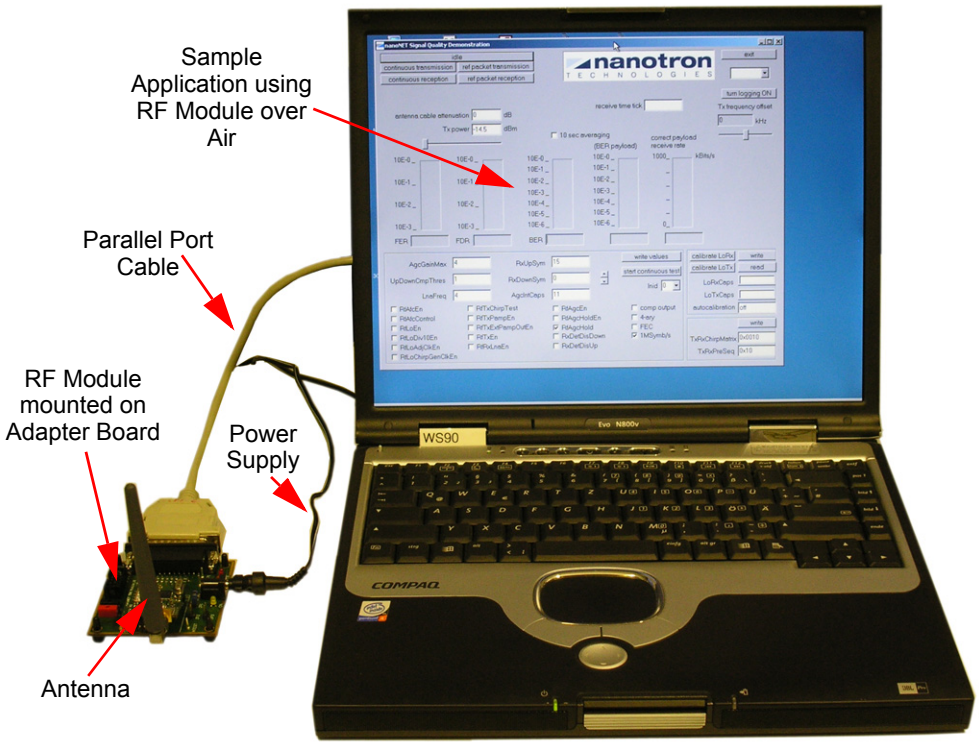

Figure 9: Sample Application using the RF Module with the Adapter Board