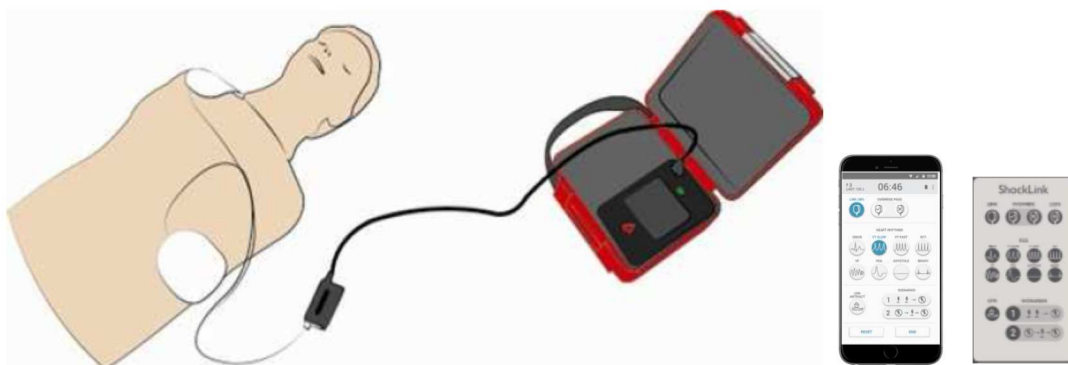


### ShockLink Operation Description.

ShockLink enables rescuers to train with defibrillators in the way clinical procedures are carried out.



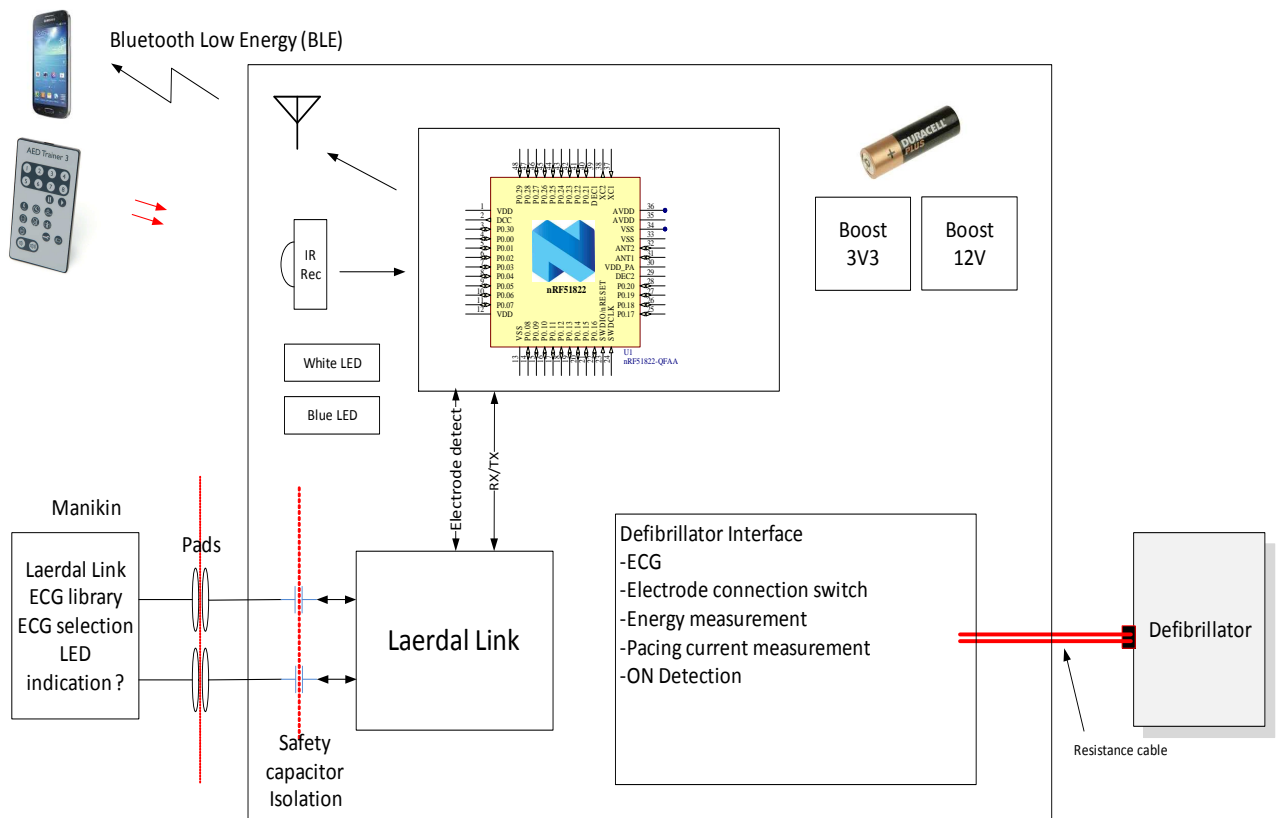
ShockLink connects to a defibrillator in one end. The other end of ShockLink connects to self adhesive training pads, intended to be placed on training manikins.

Depending on the state of the training electrodes, the defibrillator will see an open circuit or a connected patient. With a connected patient ShockLink will generate ECG to the defibrillator.

ShockLink accepts high voltage shocks from the defibrillator which are absorbed in the attachment cable. No defibrillator voltages or energy appear on the training pads side.

The ECG rhythm and other functions can be controlled from an infrared Remote Control, a Smart Phone using Bluetooth Smart (BLE) communication or through wired communication over the training pads.

### System Description



**Power supplies:**

Powered by a 1.5 V AAA alkaline battery. Typical power consumption 30 mA @ 1.5 V.  
Internal power supplies: 3.3 V and 12V.

**MicroController:**

Nordic Semiconductor nRF51822 Multiprotocol Bluetooth® 4.0 low energy/2.4 GHz RF System on Chip.

**Defibrillator interface:**

Circuitry for detecting defibrillator impedance measurement signals to be used to turn unit on. Present open circuit to a defibrillator, and present a realistic patient circuit with ECG when the training pads are connected to the manikin. Use a resistance cable as the defibrillation energy deposit (load) Detect and measure delivered defibrillation energy and pacing current.

**Laerdal Link:**

Communication towards manikin through training electrodes  
Safety barrier on training electrodes to prevent electrical hazard from delivered shock.

**Infrared:**

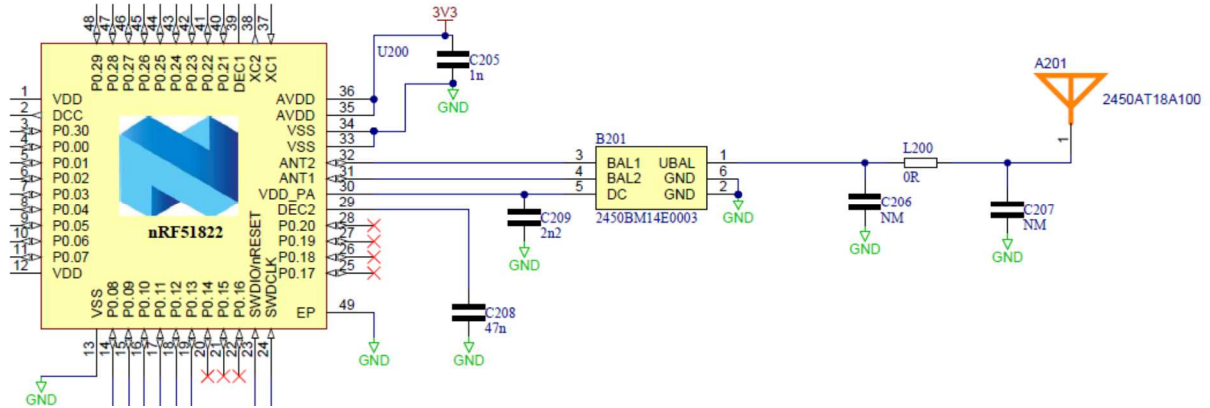
Infrared remote control receiver. Vischay TSOP75238

**LEDs:**

White and Blue LED indicators.

**Radio:**

Bluetooth Smart (BLE) communication towards mobile phone or other controller device. Radio integrated in nRF51822 Multiprotocol Bluetooth® 4.0 low energy/2.4 GHz RF System on Chip.



- Balloon: 2450BM14E0003 Johanson Technology  
2.45GHz Impedance Matched Balun + Band Pass Filter: Optimized for Nordic's Chipset nRF51822 and nRF51422.

**2.45GHz Impedance Matched Balun + Band Pass Filter: Optimized for Nordic's Chipset nRF51822 and nRF51422**

P/N 2450BM14E0003

Detail Specification: 4/22/2014

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**General Specifications**

Part Number	2450BM14E0003
Frequency (MHz)	2400 - 2500
Unbalanced Impedance	50 Ω (single ended)
Differential Balanced Impedance	Impedance matched to Nordic nRF51XX Chipset Family
Average Insertion Loss when connected to the nRF51XX chipset (Active OP)	0.9dB Typ@25C 1.5dB max. (-45 to +85C)
Insertion Loss when component measured by itself (passive insertion loss)	2.1dB typ. @25C 2.5dB max. (-45 to +85C)



<b>Attenuation Differential mode (dB):</b>		<b>Return Loss (dB)</b>	15 typ. 9.5 min.
800-928 MHz	15 typ.@25°C 10 min.	<b>Amplitude Difference</b>	150 ± 15deg
1200-1500 MHz	14 typ.@25°C 10 min.	<b>Reel Quantity</b>	4,000 pcs
4800~5000MHz	35 typ.@25°C 20 min.	<b>Operating Temperature</b>	-40 to +85°C
7200~7500MHz	21 typ.@25°C 18 min.	<b>Recommended Storage Conditions for unused T&amp;R product</b>	+5 to +35°C, Humidity: 45-75%RH, 18 mos. Max
<b>Attenuation Common mode (dB):</b>		<b>Power Capacity</b>	1W max.(CW)
4800~5000MHz	44 typ.@25°C 20 min.		

You can download measured s-parameters of this component at: <http://johansontechnology.com/nordic>

- Antenna:  
2450AT18A100 Johanson Technology.

**Mini 2.45 GHz Antenna**

P/N 2450AT18A100

Detail Specification: 7/18/2014

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**General Specifications**

Part Number	2450AT18A100
Frequency Range	2400 - 2500 Mhz
Peak Gain	0.5 dBi typ. (XZ-V)
Average Gain	-0.5 dBi typ. (XZ-V)
Return Loss	9.5 dB min.
Input Power	2W max. (CW)
Impedance	50 Ω
Operating Temperature	-40 to +125°C
Reel Quantity	3,000

