

Operational Description
FCC ID: TNE-900LMA1

Label	Description
IC1	Translates TRF6900A commands and signals to CC1020 SPI commands in real time
IC2	Single chip low power RF transceiver for narrowband systems
Q1 R9 LD1	PLL locked – inverts the active low LOCK signal out of the CC1020. LED LD1 gives visual PLL lock indication.
TCX01	External clock for the CC1020
IC3	RF switch – switches the antenna between the receive and transmit circuits
FL1	SAW filter
IC4	D/A converter used to generate the RSSI signal
R2 R3 C6 to C8	PLL loop filter
R10 C1 C3 L1 L2	Impedance matching network
C71 C72 L70 L71	LC filter
C9 C13 L4	Additional and optional LC filter

The module is a PCB in the form of a 28 pin DIP. The module must be supported and configured by a host on which it is either plugged into sockets or soldered in place. The module is based on the Texas Instruments CC1020 RF chip.

The module is configurable (via 0 ohm jumper resistors) to operate in one of two forms:

- TRF6900A emulation. In this form the Microchip PIC18F2410 intercepts TRF6900A configuration data and signals and translates them into corresponding CC1020 configuration in real time. The configuration data is communicated over an SPI interface. The signals include MODE and STANDBY. The MODE signal selects one of two configuration sets. Typically, one set is configured to transmit and the other is configured to receive. The STANDBY signal switches between power down and operational states. The D/A converter is used to emulate the TRF6900A RSSI_OUT analog signal, and follows the instantaneous RSSI signal as read from the CC1020 registers.
- Native CC1020. In this form, the CC1020 is configured and controlled directly by the host via an SPI interface. The CC1020 contains 52 1-byte registers that are used to control and monitor the device.

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In both forms the following apply:

- The CC1020 is configured to operate the RF switch via the LNA_EN and PA_EN signals which are automatically set according to the transmit/receive state of the chip.
- The CC1020 LOCK signal (active low) indicates that the PLL is locked. This signal is inverted by Q1 and R9 to produce the (active high) output LOCKDET signal. LED LD1 provides a visual lock detect indication.