

CC2592 Evaluation Module

The CC2592 is a combined PA and LNA, operating in the 2.4 GHz frequency band. Rx/Tx switches, as well as a balun, are integrated on the chip. This allows it to operate as a drop-in range extender for radio transceivers and wireless MCUs with a differential combined Rx/Tx RF port.

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1 Using the CC2592EM

Caution: Do not leave the EVM powered when unattended.

The CC2592 standalone evaluation module (EM) can be used as a simple add-on to your existing system to improve output power and sensitivity. Use a 50 Ω coaxial cable with SMA connectors to connect the RF signal from the radio to the CC2592EM connector J1 (marked “Transceiver port”). Connect the antenna to connector J2 (marked “Antenna port”). To locate the connectors, see [Figure 1](#).

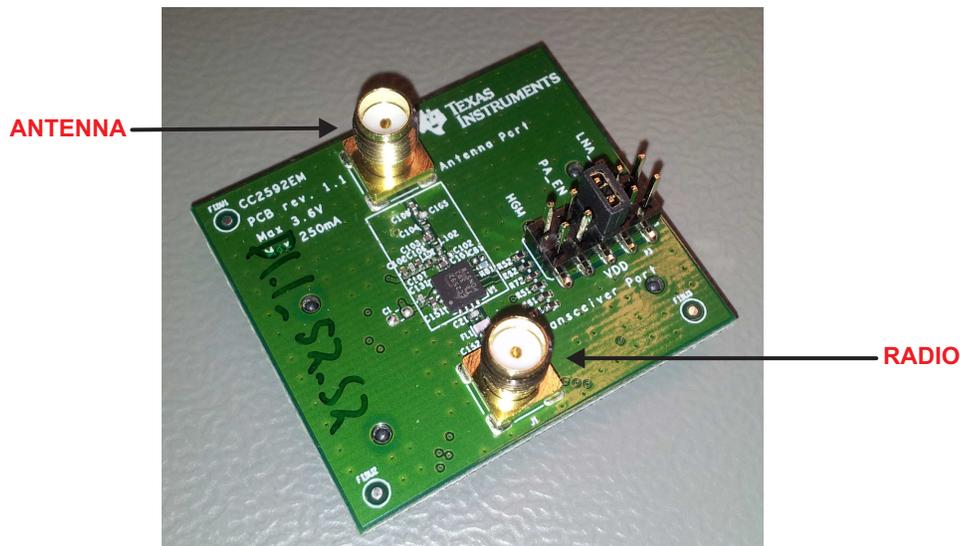


Figure 1. CC2592EM

Figure 2 shows one possible setup where the output of a radio EM, in this case a CC2530, is connected to the transceiver port of the CC2592EM. In the example below, there are no discrete control lines between the radio node and CC2592, so control of the LNA and PA enable signals has to be done manually by placing jumpers on header P3. This setup provides a quick way to test the CC2592 with your chosen radio, but may not deliver the same performance as integrating both devices on one board would. This is due to the added losses through two baluns, and the cable and connectors.

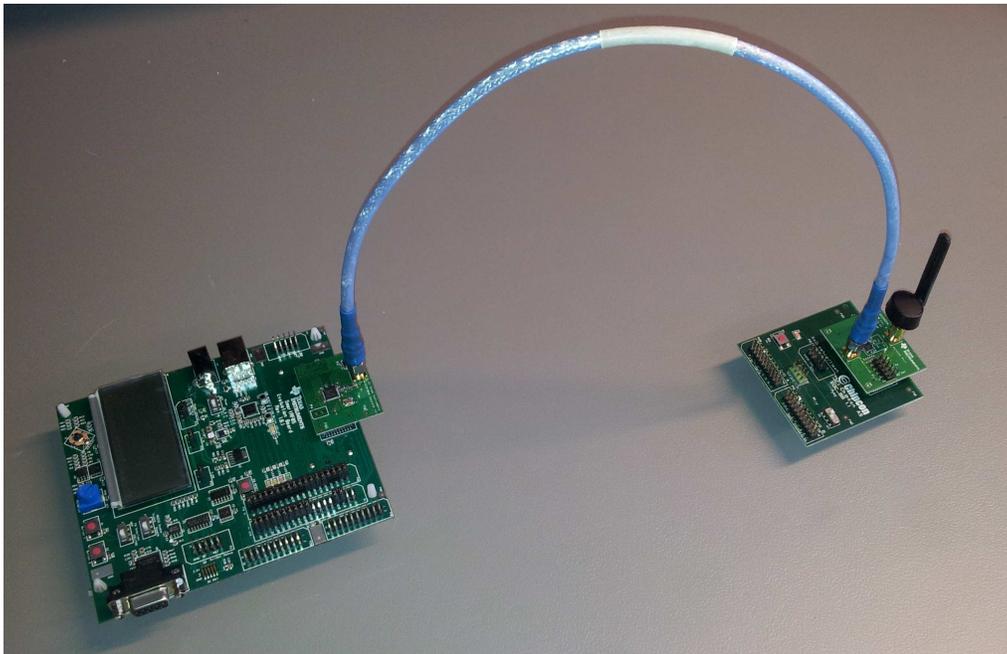
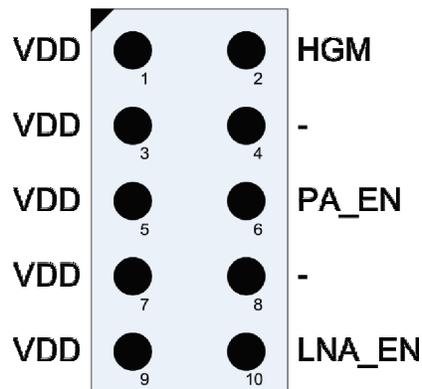


Figure 2. Possible SetUp of CC2592 + Radio (no control signals)

In order to measure the performance of the CC2592 PA, connect a signal generator to J1 (radio side) and a spectrum analyzer to J2 (antenna side). To test the LNA, reverse the connections.

The CC2592EM contains a 2x5 pin row header (P3). This can be used both to power and control the CC2592. Controlling the modes of the CC2592 can be done manually by using jumpers on the board, or by using an external controller to set the appropriate signal levels on the pins on P3.



Pin	Signal
1	VDD (used for pull-up jumper)
2	HGM (connect to pin 1 with jumper to set high)
3	VDD
4	Not used
5	VDD (used for pull-up jumper)
6	PA_EN (connect to pin 5 with jumper to set high)
7	VDD
8	Not used
9	VDD (used for pull-up jumper)
10	LNA_EN (connect to pin 9 with jumper to set high)

The three control signals have pull-down resistors, giving a default value of 0. They also have series resistors to avoid shorting the power in case the signals are forced to ground through the EM connector. To force any of the signals to 1, connect a jumper between pins 1-2, 5-6 or 9-10.

For detailed description on the usage of the three control signals, see the *CC2592 2.4-GHz Range Extender Data Manual* ([SWRS159](#)).

The sockets P1 and P2 can also be used to power and control the device, as seen in the schematic drawing. The EM can be connected to a SoC Battery Board, a SmartRF06EB or a SmartRF05EB to power the device. The EM cannot be controlled directly from SmartRF™ Studio.

The CC2592 control signals are routed to the EM connector according to [Table 1](#).

Table 1. CC2592 Control Signals

Signal	EM Connector
VDD	P2.7, P2.9
GND	P1.1, P1.19
HGM	P1.9
LNA_EN	P1.7
PA_EN	P1.3

P1.3, P1.7 and P1.9 are sharing the UART signals on SmartRF05EB. On SmartRF05EB, please disconnect the jumpers in position 5-6 and 7-8 on header P1. It is also recommended to disable the UART level converter (P10 in position 1-2). For more details, see the schematics diagrams in the *SmartRF05 Evaluation Board User's Guide* ([SWRU210](#)).

2 References

- *CC2592 2.4-GHz Range Extender Data Manual* ([SWRS159](#))
- *System-on-Chip Battery Board User's Guide* ([SWRU241](#))
- *SmartRF05 Evaluation Board User's Guide* ([SWRU210](#))
- *SmartRF06 Evaluation Board User's Guide* ([SWRU321](#))

Schematic

A.1 CC2592EM Schematic Diagram

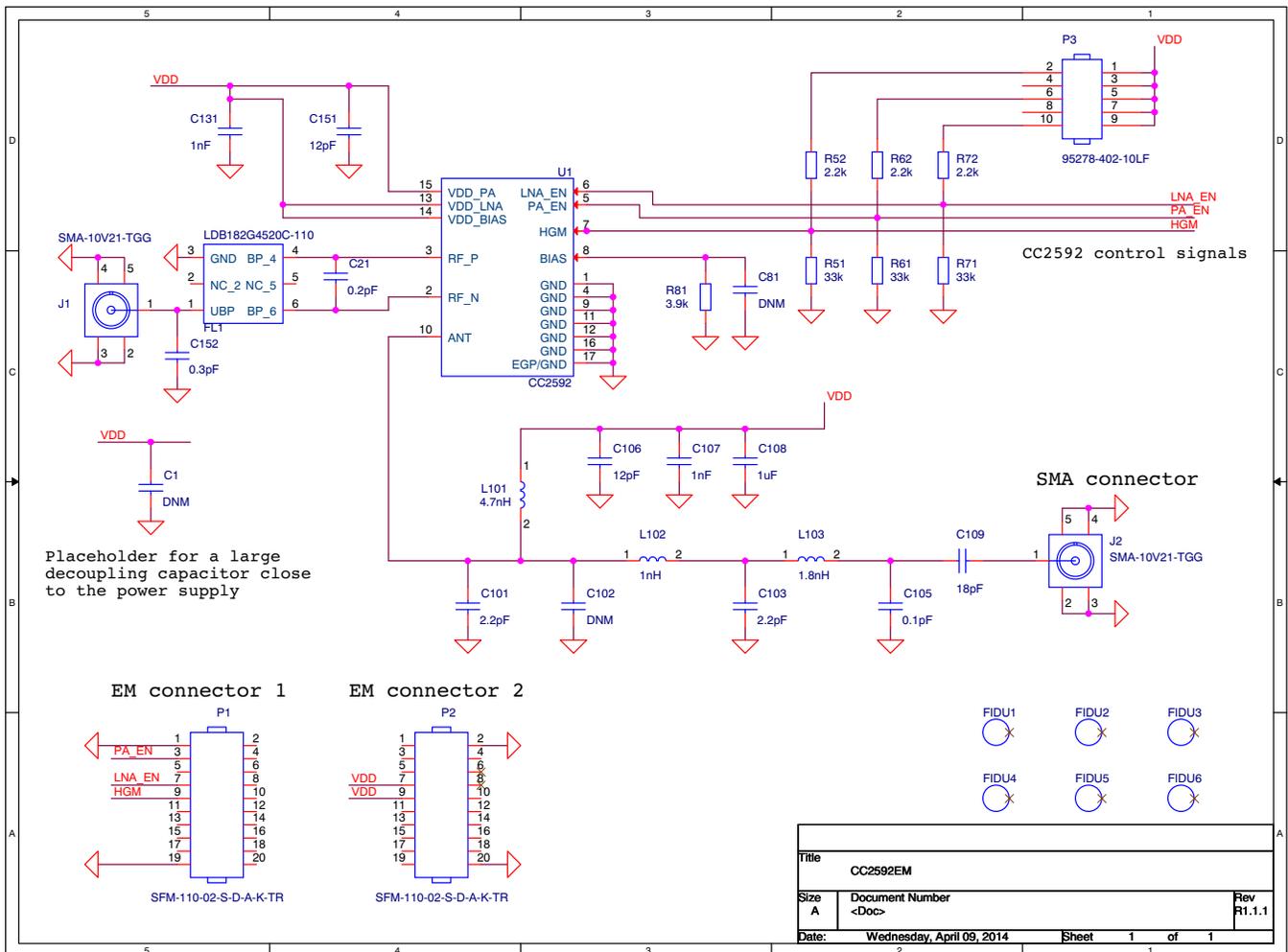


Figure 3. CC2592EM Schematic Diagram

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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