



# SB555 Embedded Modem

## Hardware Integration Guide Addendum

<b>Original Document</b>	2130075 SB555 Hardware Integration Guide
<b>Revision</b>	1.0 (April 2002)

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# 1: RF Integration

- Receiver sensitivity
- Matching
- Antenna options

## Receiver sensitivity

Page 79 of the of the Hardware Integration Guide includes “Table 7-1: Radio specifications”. This table has been corrected to:

**Table 7-1: Radio specifications**

Transmitter power	Maximum 224 mW into 50 $\Omega$ (+23.5 dBm)
Closed loop frequency stability	$\pm$ 150 Hz
<b>PCS band</b>	
Receiver sensitivity	< -106.5 dBm
Transmit band	1850–1910 MHz
Receive band	1930–1990 MHz
Channel spacing	1.25 MHz
<b>Cellular band</b>	
Receiver sensitivity	< -104 dBm
Transmit band	824–849 MHz
Receive band	869–894 MHz
Channel spacing	1.25 MHz

The receiver sensitivity in the PCS band has changed from -104 dBm to less than -106 dBm. The corresponding sensitivity on the Cellular band now indicates less than -104 dBm.

## Matching antenna and cable

The text on page 83 referring to antenna gain and cable loss should read: “Overall system antenna gain, with cable loss should be  $\leq$  +9 dBi. Keep in mind that your achieved value will have an impact on radiated power and RF exposure.”

## Antenna options

Page 83 text referring antenna requirements to Table 7-1 is specifically for frequency band information.

## 2: FCC Approval

- FCC
- Mobile vs. portable
- Mobile approval and RF exposure
- Product labeling

The Sierra Wireless SB555 embedded modem for CDMA2000 has been approved by the FCC for mobile applications. Chapter 7: "RF Integration" has been amended. A section headed FCC should be added, as follows.

### FCC

For operation in the United States, your integration is required to meet appropriate regulatory requirements for stand-alone operation, including FCC parts 2, 15, 22, and 24.

FCC Part 15 tests must be performed on the "whole device" and are therefore your responsibility.

### Mobile vs. portable devices

The Federal Communications Commission Office of Engineering & Technology has published a bulletin, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", OET Bulletin 65. This provides a detailed description of the difference between mobile and portable devices.

The FCC guidelines differentiate between these devices according to the antenna's proximity to people, either the user or others nearby.

**Mobile** The FCC defines a mobile device as being designed for use "in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between radiating structures and the body of the user or nearby persons."

Mobile devices include vehicle-mounted systems designed to be used by people that are typically well separated from the antenna. This also includes wireless devices associated with a personal computer, provided the antenna is kept at least 20 cm away from people.

These devices are normally evaluated for exposure potential with relation to Maximum Permissible Exposure (MPE) limits. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR part 2.1091.

**Portable** A portable device has a transmitter “designed to be used with any part of its radiating structure in direct contact with the user’s body or within 20 centimeters of the body of a user or bystanders under normal operating conditions.”

This category includes hand-held cellular telephones with the antenna built into the handset.

Portable devices are evaluated with respect to the Specific Absorption Rate (SAR) rules. These can be found in 47 CFR part 2.1093.

## Mobile approval and RF exposure requirements

The SB555 module is approved for *mobile* operations only with respect to CFR 47 part 2.1091.

FCC ID: N7NSB555

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*Note: If this module is intended to be used as a portable device, you are responsible for separate approval to satisfy the SAR requirements of part 2.1093.*

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To ensure that the module meets the current FCC RF exposure guidelines, a separation distance of at least 20 cm (7.88”) must be maintained between the module’s antenna and the body of the user and any nearby persons at all times and in all applications and uses. Additionally, in mobile applications, maximum antenna gain must not exceed 9 dBi to comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation.

## Product labeling requirements

For mobile devices, using the FCC approval obtained by Sierra Wireless, a label must be affixed to the outside of your end product—into which the authorized module is incorporated—with a statement similar to the following:

**This device contains TX FCC ID: N7NSB555**

You need to provide a manual with your end product that clearly states the operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines (as detailed above).

The warnings must appear in a prominent location in the User Guide for your product and may include:

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**CAUTION** Unauthorized modifications or changes not expressly approved by Sierra Wireless, Inc. could void compliance with regulatory rules, and thereby your authority to use this equipment.

**WARNING (EMI)** - This equipment has been tested and found to comply with the limits pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in an appropriate installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- 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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