

## 1. Absolute Maximum Ratings

The absolute maximum ratings and operating conditions listed in the CC1120 datasheet [1] and the CC1190 datasheet [3] must be followed at all times. Stress exceeding one or more of these limiting values may cause permanent damage to any of the devices.

## 2. Electrical Specifications

Note that the characteristics in this chapter are only valid when using BOOSTXL-CC1120-90 reference design and register settings recommended by SmartRF Studio Software [3].

### 2.1 Operating Conditions

Parameter	Min	Max	Unit
Operating Frequency	902	928	MHz
Operating Supply Voltage	4.0	5.5	V
Operating Supply Current at 5V		400	mA
Operating Temperature	-40	+85	°C

**Table 2.1. Operating Conditions**

### 2.2 Current Consumption

$T_c = 25^{\circ}\text{C}$ ,  $V_{DD} = 5\text{V}$ ,  $f = 915\text{MHz}$  if nothing else is stated. All parameters are measured on the BOOSTXL-CC1120-90 reference design with a 50 ohm load.

Parameter	Condition	Typical	Unit
Standby Current	Without USB Interface	7	mA
Standby Current	With USB Interface	17	mA
Receive Current	Continuous mode	38	mA
Transmit Current	PA_CFG2 = 0x7F	285	mA

**Table 2.2. Current Consumption**

## 2.3 Receive Parameters

Tc = 25°C, VDD = 5V, f = 915MHz if nothing else is stated. All parameters are measured on the BOOSTXL-CC1120-90 reference design with a 50 ohm load. Sensitivity limit is defined as 1% BER (Bit Error Rate) with 3bytes Packet length.

Parameter	Condition	Typical	Unit
Sensitivity, HGM	1.2 kbps, 2FSK, ±4 kHz deviation, 10 kHz RX filter bandwidth.	-127.2	dBm
	50 kbps, 2GFSK, ±25 kHz deviation, 100 kHz RX filter bandwidth.	-113.2	dBm
	200 kbps, 4GFSK, ±82.76 kHz deviation, 200 kHz RX filter bandwidth	-105.7	dBm
Saturation, HGM	Maximum input power level for 1% BER	+10	dBm
Selectivity and Blocking, HGM	1.2 kbps, 2FSK, ±4 kHz deviation (±2 MHz from wanted signal ±10 MHz from wanted signal	74 80	dB
	50 kbps, 2GFSK, ±25 kHz deviation ±2 MHz from wanted signal ±10 MHz from wanted signal	65 68	dB
Spurious emission, HGM	Radiated measurement @3.6 GHz	-61	dBm

**Table 2.3. Receive Parameters.**

### 2.3.1 Received Signal Strength Indicator (RSSI)

The CC1120-CC1190 RSSI readouts can be converted to an absolute level in dBm by subtracting an offset. A CC1120-CC1190 design has a different offset value compared to a standalone CC1120 design due to the CC1190 external LNA gain and the SAW filter insertion loss. Table 2.4 gives the typical offset value for HGM and LGM. Refer to the CC1120 data sheet [1] for more details on how to convert the RSSI readout to an absolute power level in dBm.

HGM	LGM
107.5	91.5

**Table 2.4. Typical RSSI Offset Values**

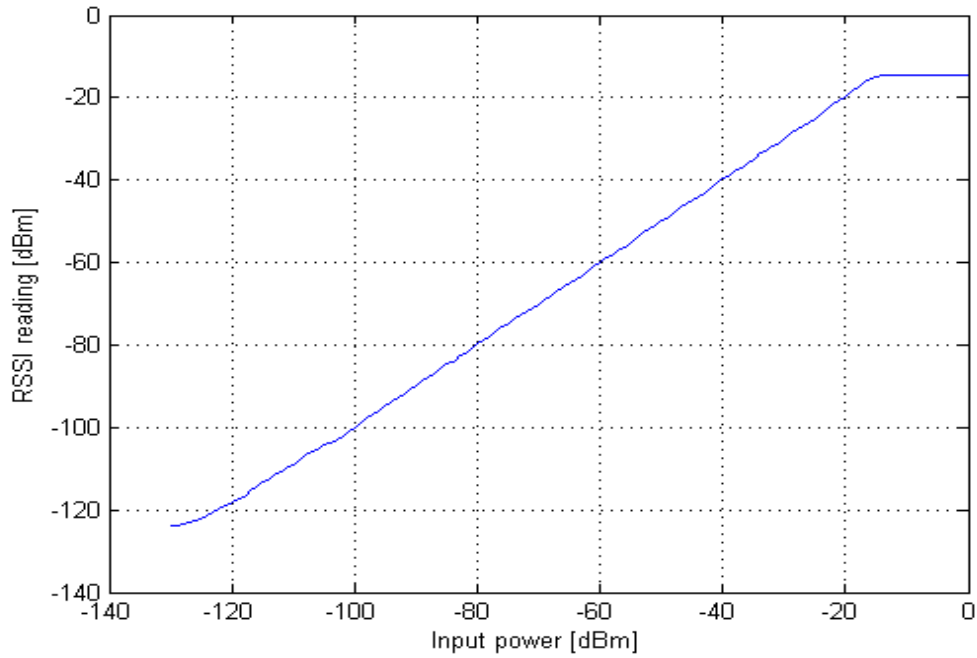


Figure 2.1. Typical RSSI vs. Input Power Level, HGM, 1.2 kbps, 20 kHz RX BW

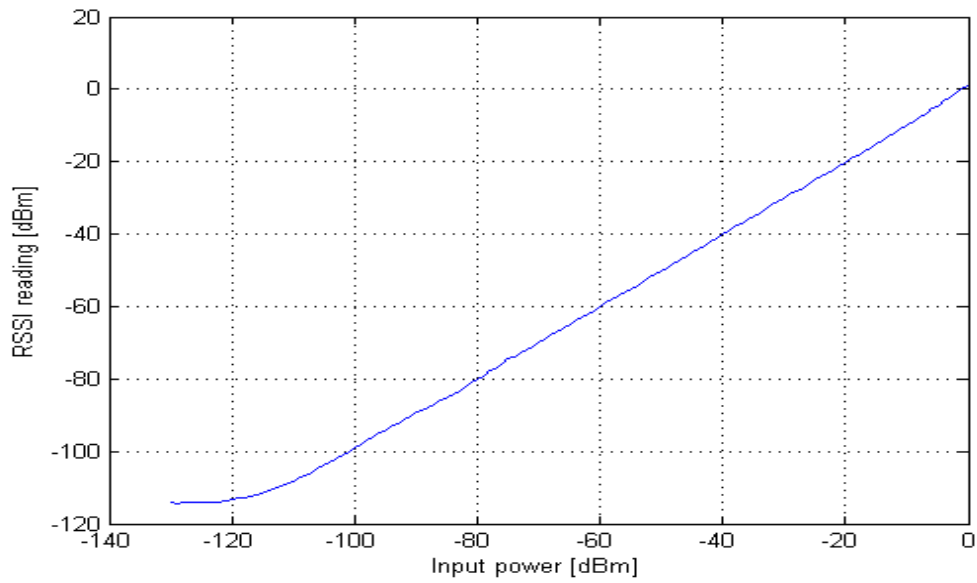


Figure 2.2. Typical RSSI vs. Input Power Level, LGM, 1.2 kbps, 20 kHz RX BW

## 2.4 Transmit Parameters

T<sub>c</sub> = 25°C, VDD = 5V, f = 915MHz if nothing else is stated. All parameters are measured on the BOOSTXL-CC1120-90 reference design with a 50 ohm load. Radiated measurements are done with the on-board PCB antenna.

Parameter	Condition	Typical	Unit
Output power; HGM	PA_CFG2 = 0x7F	24.0	dBm
Spurious emission with PATABLE = 0x6B, HGM	Conducted below 1 GHz Conducted above 1 GHz Conducted 2 <sup>nd</sup> harmonic Conducted 3 <sup>rd</sup> harmonic Radiated 2 <sup>nd</sup> harmonic Radiated 3 <sup>rd</sup> harmonic	-65 -52 -10 -47 -22 -44	dBm
20 dB bandwidth, HGM	1.2 kbps, 2FSK, ±4 kHz deviation 9.6 kbps, 4GFSK, ±2.1 kHz deviation 50 kbps, 2GFSK, ±25 kHz deviation 150 kbps, 4GFSK, ±82.76 kHz deviation 200 kbps, 4GFSK, ±82.76 kHz deviation	12.5 9.6 115 250 320	kHz
Spurious emission with PATABLE = 0x6B, HGM	Conducted below 1 GHz Conducted above 1 GHz Conducted 2 <sup>nd</sup> harmonic Conducted 3 <sup>rd</sup> harmonic Radiated 2 <sup>nd</sup> harmonic Radiated 3 <sup>rd</sup> harmonic	-65 -52 -10 -47 -22 -44	dBm

**Table 2.5. Transmit Parameters.**

## 3.0 References

- [1] CC1120 Datasheet ([SWRS112.pdf](#))
- [2] CC1120 User Guide ([SWRU295.pdf](#))
- [3] CC1190 Datasheet ([SWRS089.pdf](#))
- [4] BOOSTXL-CC1120-90 915 MHz Reference Design ([SWRR145.ZIP](#))
- [5] FCC rules ([www.fcc.gov](http://www.fcc.gov))
- [6] SmartRF™ Studio 7 ([SmartRF Studio](#))

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