The chip on-chip keyboard scanner is designed to autonomously sample keys and store them
into buffer registers without requiring host microcontroller intervention. A state machine of three states (Idle,
Scan, and Scan-End) controls the keyscan block.

A 256 KB I2C interface EEPROM is used to store the firmware and configuration information.

The antenna is a variation of the printed Fantenna and has characteristics similar to those of the F-antenna.

The crystal oscillator requires a crystal with an accuracy of ±20 ppm as defined by the Bluetooth specification. Two external load capacitors in the range of 5 pF to 30 pF are required to work with the crystal oscillator.

The BCM20730 has an integrated radio transceiver that is optimized for 2.4 GHz Bluetooth® wireless systems. It has been designed to provide low power, low cost, and robust communications for applications operating in the globally available 2.4 GHz unlicensed ISM band. It is fully compliant with Bluetooth Radio Specification 3.0 and meets or exceeds the requirements to provide the highest communication link quality of service.

## RF SEPC

# RF Specifications

*Table 14: Receiver RF Specifications*

| *Parameter* | *Mode and Conditions* | *Min* | *Typ* | *Max* | *Unit* |
|---|---|---|---|---|---|
| **Receiver Section** | | | | | |
| Frequency range | – | 2402 | – | 2480 | MHz |
| RX sensitivity (standard) | GFSK, 0.1%BER, 1 Mbps | – | –86.0 | –84.0 | dBm |
| RX sensitivity (low current) | | – | –84.0 | – | dBm |
| Input IP3 | – | –16 | – | – | dBm |
| Maximum input | – | –10 | – | – | dBm |
| **Interference Performance** | | | | | |
| C/I cochannel | GFSK, 0.1%BER[a] | – | – | 11.0 | dB |
| C/I 1 MHz adjacent channel | GFSK, 0.1%BER[a] | – | – | 0.0 | dB |
| C/I 2 MHz adjacent channel | GFSK, 0.1%BER[a] | – | – | –30.0 | dB |
| C/I ≥ 3 MHz adjacent channel | GFSK, 0.1%BER[b] | – | – | –40.0 | dB |
| C/I image channel | GFSK, 0.1%BER[a] | – | – | –9.0 | dB |
| C/I 1 MHz adjacent to image channel | GFSK, 0.1%BER[a] | – | – | –20.0 | dB |
| **Out-of-Band Blocking Performance (CW)**[b] | | | | | |
| 30 MHz to 2000 MHz | 0.1%BER | – | –10.0 | – | dBm |
| 2000 MHz to 2399 MHz | 0.1%BER | – | –27 | – | dBm |
| 2498 MHz to 3000 MHz | 0.1%BER | – | –27 | – | dBm |
| 3000 MHz to 12.75 GHz | 0.1%BER | – | –10.0 | – | dBm |
| **Spurious Emissions** | | | | | |
| 30 MHz to 1 GHz | – | – | – | –57.0 | dBm |
| 1 GHz to 12.75 GHz | – | – | – | –55.0 | dBm |

a. Desired signal is 10 dB above the reference sensitivity level (defined as –70 dBm).
b. Desired signal is 3 dB above the reference sensitivity level (defined as –70 dBm).

*Table 15: Transmitter RF Specifications*

| *Parameter* | *Min* | *Typ* | *Max* | *Unit* |
|---|---|---|---|---|
| **Transmitter Section** | | | | |
| Frequency range | 2402 | – | 2480 | MHz |
| Output power adjustment range | –6.0 | – | 4.0 | dBm |
| Default output power | – | 4.0 | – | dBm |
| Output power variation | – | 2.0 | – | dB |
| 20 dB bandwidth | – | 900 | 1000 | kHz |
| **Adjacent Channel Power** | | | | |
| \|M – N\| = 2 | – | – | –20 | dBm |
| \|M – N\| ≥ 2 | – | – | –40 | dBm |
| **Out-of-Band Spurious Emission** | | | | |
| 30 MHz to 1 GHz | – | – | –36.0 | dBm |
| 1 GHz to 12.75 GHz | – | – | –30.0 | dBm |
| 1.8 GHz to 1.9 GHz | – | – | –47.0 | dBm |
| 5.15 GHz to 5.3 GHz | – | – | –47.0 | dBm |
| **LO Performance** | | | | |
| Initial carrier frequency tolerance | – | – | ±75 | kHz |
| **Frequency Drift** | | | | |
| DH1 packet | – | – | ±25 | kHz |
| DH3 packet | – | – | ±40 | kHz |
| DH5 packet | – | – | ±40 | kHz |
| Drift rate | – | – | 20 | kHz/50 µs |
| **Frequency Deviation** | | | | |
| Average deviation in payload (sequence used is 00001111) | 140 | – | 175 | kHz |
| Maximum deviation in payload (sequence used is 10101010) | 115 | – | – | kHz |
| Channel spacing | – | 1 | – | MHz |