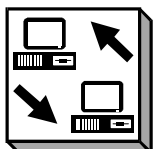
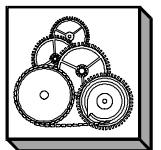
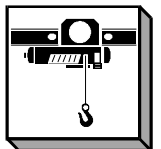
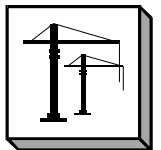


HBC – Transceiver Module

TC 690





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Appendix:

Block diagram



Warnings

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Any changes or modifications by the user could void the user's authority to operate the equipment!

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate frequency energy and, if not installed in accordance with the instructions, may cause harmful interference to radio communications. 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.

Operation Description TC690

The TC690 consists of an integrated transceiver, voltage regulator, undervoltage reset circuit and microcontroller. The receiver part is a single conversion superhet. The local oscillator is a dds type with pll multiplier (see block diagram).

The module is supplied via pins 1~4 (+3.3~4.7V) and pins 11, 12, 27 & 28 (ground). For correct operation, pin 15 has to be connected to pin 16. Also, pin 23 has to be connected to pin 24. The module will be switched on by driving pin 9 (DTR) to low level.

The voltage of the SPI interface may not exceed 3.3V! The logic level shall be in the range 2.3~3.0V for a logical '1' and 0~0.7V for a logical '0'.

When user data is applied to the SPI interface (pins5~8), the data will be transmitted automatically. When correct data is received, it will be sent through SPI interface.

Frequency programming will be done by applying configuration data to the SPI interface.

In all cases, the microcontroller software checks for correct data format. It is not possible to transmit outside the programmed frequency range. Since the RF data rate is independent of the SPI data rate, it is not possible to overmodulate the transmitter. Also, the transmitting time is limited by software.

Technical Data

Common parameters	
Supply voltage	+3.3~+4.7VDC
Temperature range	-25~+70°C
Frequency range	902.125~917.875MHz TC690L 912.125~927.875MHz TC690H
Frequency accuracy	±10kHz
RF data rate	15000bps
Frequency deviation	40~50kHz
Channel separation	250kHz
Receive parameters	
Supply current	35~45mA
Sensitivity	<-95dBm @BER=10 ⁻²
Spurious emissions	<-60dBm below 1000MHz (conducted) <-45dBm above 1000MHz (conducted)
Blocking desensitization	>80dBc
Co-channel rejection	>-10dB
Adjacent channel rejection	>60dB
Transmit parameters	
Supply current	90~110mA
Output power	+13dBm peak, -6dBm average (conducted) +3dBm peak, -16dBm average (radiated)
Spurious emissions	<-54dBm below 1000MHz (conducted) <-30dBm above 1000MHz (conducted)
Adjacent channel power	-36dBm (conducted)