KEY FEATURES AND BENEFITS

- Instantaneous bandwidth of 20MHz
- Received Signal Strength Indication (RSSI) output

APPLICATIONS

- Spectrum monitoring and management systems
- Signal intelligence and surveillance systems
- Wideband intercepting and monitoring receiver systems

DESCRIPTION

VHF/UHF tuner is a modular building block, which can be used for high-performance surveillance and monitoring receiver applications. The tuner can be used as a stand-alone, wide band, front end for a digital IF software defined receiver.

BLOCK LEVEL EXPLANATION

VHF/UHF tuner instantaneously receives signals across the entire 20MHz – 3000 MHz spectrum and generates IF Signal using double conversion super hetero-dyne principle. The received signals are segregated in the frequency range of 20MHz - 1000MHz and 1000MHz - 3000MHz. Each RF input has a limiter, an amplifier, an RF digital attenuator and appropriate filters and pre-selection bands.

The RF digital attenuator is a programmable attenuator with an attenuation of 30dB in steps of 10dB.

The pre-selection bands are selected by FPGA. The 20 to 1000 MHz range has four pre-selection band as follows;

- 20 – 90MHz
- 90 – 500MHz
- 20 – 500MHz
- 480 – 1000MHz

The 1000-3000 MHz range has four pre-selection band as follows;

- 980 – 1300MHz
- 1280 – 1900MHz
- 1880 – 2440MHz
- 2420 – 3000MHz

The two RF signals are passed through the above bands and fed into Mixer 1 for up/down conversion. The local oscillator (LO 1) used for the mixer 1 is with a variable frequency of 1620 MHz -3040 MHz range. The converted frequency signals (IF1) are fed into a no. of IF filters which covers 20MHz bandwidth each as follows;

- 2820 – 2840MHz
- 2040 – 2060MHz
- 420 – 440MHz
- 620 – 640 MHz

The signal from the frequency bands are fed into Mixer 2 for down conversion. Four fixed Local Oscillators (LO 2) are used for the mixer 2 and its frequency ranges are 2830 ± 10MHz, 2050 ± 10MHz, 630 ± 10MHz and 430 ± 10MHz. The down converted frequency (IF 2) of 70 MHz ± 10 MHz is passed through the IF digital attenuator, amplifier and directional coupler, log detector and comparator. The coupled port output from the directional coupler is for RSSI validation purpose.
SPECIFICATIONS

ELECTRICAL
Frequency range : 20 MHz - 3000 MHz
First IF frequency : IF1 out1 = 2830 ± 10 MHz
                   IF1 out2 = 2050 ± 10 MHz
                   IF1 out3 = 630 ± 10 MHz
                   IF1 out4 = 430 ± 10 MHz
Final IF frequency : 70 MHz ± 10 MHz
Receiver net gain : 40 dB ± 3dBi
Two tone spurious free:
   dynamic range : = 70 dB (for 12.5 kHz RBW)
   Sensitivity : = -106 dBm with 10 dB SNR for 12.5 kHz RBW
   Noise figure : = 14 dB
   Internally generated spurious : -70 dBm max measured at IF output
   RF attenuation : Programmable - 30 dB in 10 dB steps
   IF attenuation : Programmable - 30 dB in 1 dB steps
   LO re-radiation : = 90 dB
   IF rejection : = 90 dB
   Image rejection : = 90 dB

Fixed LO2 frequency
LO2-1 : 2900 MHz
LO2-2 : 2120 MHz
LO2-3 : 700 MHz
LO2-4 : 500 MHz

RSSI output : TTL '1' - for RF BITE input = -60 dBm
Controls : SPI controls from synthesizer and control unit

CONNECTORS
RF connectors : SMA connectors - Female (7)
I/O connectors : 96 pin euro connector - Male (1)

POWER REQUIREMENTS
Power consumption : 10 W

MECHANICAL
Overall dimension : 300mm x 220mm x 25mm (L x B x W)
Weight : = 2000g

ENVIRONMENTAL
Operating temperature : -20º C to 55º C
Storage temperature : -40ºC to 65ºC

ORDERING INFORMATION
DP-CRF-7127-600
- Reserved
- Reserved
- Rugged

BLOCK DIAGRAM OF DP-CRF-7127