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ICOM

OUTLINES

2.4GHz Direct Sequence Spread spectrum wireless LAN card which enters computer extended slot (PCMCIA/JEIDA type - Ⅱ)

This card is treated as a radio station of the wireless data communications system on the radio method and has the following characteristics.

The fast data in 2Mbps can communicate by using DS spread spectrum .

Because the use frequency can compose a small zone of 2.4GHZ and the repetition use for the same strap is possible, the frequency can be effectively used.

1. Operation explanation

1-1. Receiving part

① 2.4G

The received signal input from the antenna terminal passes dielectric substance BPF FI1 and is led to RF-AMP IC2 through the antenna switch of PA-IC IC1.

The output of RF-AMP passes BPF FI4 after being input to mixer IC IC3 and being amplified and enters IC3 again.

It is mixed with 1stLO of 2204 MHz and it is converted into 1stIF signal of 280MHz.

② IF part

The 1stIF signal is limited with SAW BPF FI3 and input to IF-IC IC4.

Orthogonalization detection is done in IC4 by two LO with the phase difference of 90 degrees after being amplified and I/Q-signal (baseband signal). I/Q-signal passes LPF in IC4 and is output.

The detecting LO is that is 2 dividing frequency and phase-shifting in IC4 from 2nd LO(560MHz)

③ Baseband part

I/Q-signal from IF IC is input to baseband processor IC8.

The input signal is A/D converted in 11bit. The signal is detected de-spread spectrum by Baker sequence. The detected data is output through I/F to IC5.

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1-2. Transmission part

① Baseband part

Transmission data is input to baseband processor IC8. It is taken through I/F and DPSK is modulated to the data input to IC8. The diffusion sign in 11 bits is crossed and the output signal of the modulator is output as I/Q-signal.

② IF part

I/Q-signal is input to IF-IC IC4. In IC4, the input signal is done the orthogonalization modulation by two LO with the phase difference of 90 degrees after LPF's passing and becomes 1stIF signal of 280MHz. The 1st IF signal that is limited by SAW BPF FI2 is output.

③ 2.4G part

The radio frequency signal of 2.4GHz is mixed with 1stLO of (2132-2182MHz) and 2nd LO(280MHz) by the mixer IC (IC3). The radio frequency signal passes LC BPF FI5, is amplified in IC3, and is output. After LC BPF FI6 passes and the level is adjusted by D4, the output of IC3 is amplified by YGR-AMP IC9. In addition, the electric power is amplified by PA-IC IC1 and it is output through the antenna switch. The output of IC1 limits an unnecessary band frequency with dielectric substance BPF FI1 and is sent to the antenna.

④ALC part

The power supply current which flows to PA of PA-IC IC1 is detected with R51, it amplifies with the ALC amplifier composed of Q6 and Q3, and the bias of PA of IC1 is controlled. The transmission output power can be kept constant with this circuit.

1-3. VCO・PLL part

①2.2GHz LO part

1stLO is generated frequencies of 11 point from 2132MHz to 2182MHz. The signal of 2204MHz which is the oscillation with VCO IC19 is amplified by LO-AMP IC20 on the other hand by division into two and is supplied to mixer IC IC3. It is supplied to PLL-IC IC7 on the other hand and it is used to put the lock up.

②560MHz LO part

LO of 560MHz for a strange orthogonalization and recovery is generated. The 560MHz VCO is composed of D1 and D1. The signal is amplified in the buffer of Q8. It is supplied to PLL-IC IC7 on the other hand and it is used to put the lock up. On the other hand, the output is supplied to IF-IC IC4 by

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two dividing.

③ System clock generation part

A standard clock necessary for the transmitter-receiver is generated. It is an oscillation circuit composed of IC10(B) and X5 and 22 MHz is oscillated and it outputs it through the buffer of IC10(A). The output clock is supplied to PLL-IC IC7 and baseband processor IC8.

1-4. MAC (Media Access Controller) part

IC5 offers the interface between the personal computer, the baseband processor, and the memory with single-chip MAC(Media Access Controller) IC for wireless LAN. Moreover, do the buffering of the data and the control such as PLL. It is maintained in flash memory IC13, and the peculiar data including transmitting ID is read with MAC and is sent. IC6 is S-ram memory that the input-output data is stored.

1-5. Power unit part

① 3.5V1 power supply

It is supplied to MAC-IC IC5. The 3.5V power is regulated from Vcc(5V) with REG-IC IC14.

② 3.5V2 power supply

It is supplied to PA-IC IC1, mixer IC IC3, and IF-IC IC4 in the power supply around IF.
Moreover, when receiving time, it is supplied to RF-AMP IC2 with the switch of Q9.

② 3.5V3 power supply

It is supplied to PLL-IC IC7, OSC IC10, VCO IC19, and VCO Q7 and Q8 in the power supply around VCO・PLL.

③ 3.5V4 power supply

It is supplied to baseband processor IC8.

⑤ -5V power supply

It is supplied to PA IC1. Vcc is converted into -5V with DC-DC-IC IC12.

MACNICA

TKW0001M

2.4GHz Wireless LAN Radio Card

"ANYWHEREYOU CAN !"

General

The TKW0001M is a direct sequence spread spectrum PCMCIA typeII card with integrated antenna.
Operating in the 2.4GHz ISM band the card provides compatibility the IEEE802.11 wireless LAN protocol.

Specifications

- ✓ Discription / 2.4GHz spread spectrum PCMCIA typeII card
- ✓ Wireless medium / Direct sequence spread spectrum radio
- ✓ Operating frequency range / 2.471 - 2.497 GHz (for Japan)
  / 2.400 - 2.4835 GHz (for US)
- ✓ Air Range / indoor : up to 50m, outdoor : up to 200m
- ✓ Data rate / 1 Mbps - 2Mbps (min - max)
- ✓ Number of channels / 11
- ✓ Mudulation / BPSK (1Mbps), QPSK (2Mbps)
- ✓ Out put power / Less than 50mW
- ✓ Sensitivity / -80 dBm (@10 to the -5 bit error rate)
- ✓ Host interface / PCMCIA typeII
- ✓ Antenna / Inveted F type

Characteristics

- ✓ Dimensions / 130(w),54(d),5(h)mm
- ✓ Operating temp range / 0 - 55 degrees Celcius
- ✓ Weight / 75g
- ✓ Input Voltage / 4.75 - 5.25v
- ✓ Power supply / 450mA (transmit),240mA (receive) TA=25C
- ✓ Support driver / NDIS3 for windows95

Approval

- ✓ RCR STD - 33A (for Japan)
- ✓ FCC Pending (for US)

MACNICA

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