PRODUCT   SPECIFICATION

MODEL: TD1501

2.4GHz Wireless Surveillance

System NTSC / PAL

PREPARED	CHECKED	APPROVED
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2.4GHz Wireless Surveillance Specification

Measurement Conditions

1.Normal test source voltage   Power adaptor: Input AC110V~120V 50Hz/60Hz

                 AC220V~230V 50Hz/60Hz

           Output DC12V/350mA

2.Operation Temperature   0℃ ~ +50℃

3.Operation Environment   -20℃ ~ +60℃

4.RF input impedance   50 Ohm

5.Audio output impedance   600 Ohm

6.Video output impedance   75 Ohm

CCD Camera

NO	Measurements	Specification
1	Pick up-Element	Color 1/3" CCD Image sensor
2	Scanning System	2:1 Interlace 492(V)×512(H) For NTSC (EIA)/PAL (CCIR)
3	S/N Radio	$\geq$ 48dB
4	Gain Control	Automatic Form DSP
5	White Balance	Automatic Form DSP
6	Back Light Compensation	Automatic Form DSP
7	Lens	C Mount
8	Minimum Illumination	1.5 Lux at F2.0
9	Video Output Level	1Vp-p@75Ω
10	Auto Iris	Shutter sensitivity: 1/60~1/100,000
11	Current Consumption	$\leq$160mA

Transmitter

NO	Measurements	Specification
1	Channel Frequency (4 Channels)	2413MHz, 2432MHz, 2451MHz, 2470MHz
2	Video Format	NTSC (EIA)/PAL (CCIR)
3	Transmission Power	$\leqq$ 0dBm(1mW)
4	Video Input Level	1Vp-p@75Ω
5	Audio Input Level	Electrets Condenser microphone$\leqq$-40dB
6	Channel Spacing	19MHz
7	RF Channel Bandwidth	16MHz
8	Audio Carrier	6.0 MHz±10 KHz
9	Audio-Video Modulation Type	FM-FM
10	Frequency Stability	±250KHz
11	Current Consumption	$\leqq$150mA

Receiver

NO	Measurements	Specification
1	Local Oscillator Frequency (4 Channels)	1933MHz, 1952MHz, 1971MHz, 1990MHz
2	Video Format	NTSC (EIA)/PAL (CCIR)
3	Sensitivity	$\geqq$ –80dBm
4	Video Output Level	1Vp-p@75Ω
5	Audio Output Level	1.45Vp-p@600Ω
6	Channel Spacing	19MHz
7	IF Frequency	480MHz
8	Audio-Video Modulation Type	FM-FM
9	Frequency Stability	±250KHz
10	Current Consumption	$\leqq$300mA

Block Diagram

- **TX MODULE**

```
LENS → CCD Sensor → DSP → Video out
              ↑
             V/D ← DSP
                    ↓
Mic → Mic AMP → FM Modulator → RF AMP → (antenna)
                      ↑
Frequency Synthesis or → VCO
```

- **RX MODULE**

```
FM Demodulator ← 480M B.P.F ← AMP ← (mixer) ← LNA ← (antenna)
      ↓ R  ↓ L                          ↑
Audio AMP   Video AMP   Frequency Synthesis or → VCO
   ↓ R ↓ L     ↓
   R   L    Video out
  Audio out
```
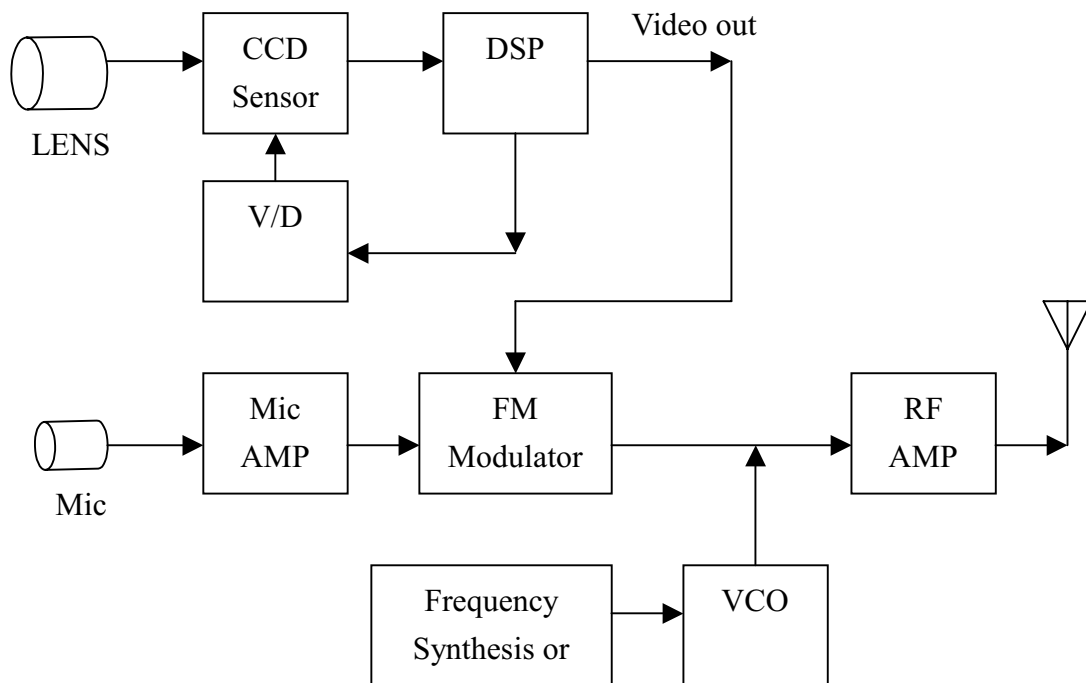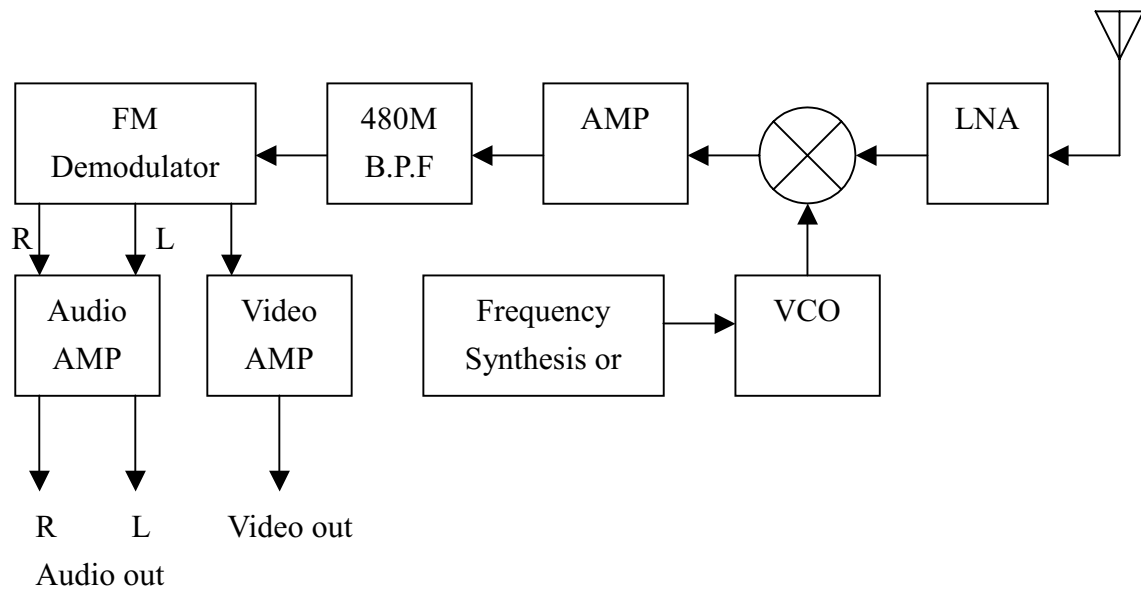
TD 1501 2.4 GHz Wireless Surveillance composite description

CCD camera: How does it work?

CCD sensor sense an incoming light and image through lens and transmit it to DSP IC (Digital Signal Processor IC), which can process coming messages. Transferring the coming messages from analogy into digital signals, subsequent processes are color separation, Auto white balance, Auto exposure, Auto Iris, Shutter control and video enhancement. In the consequence of processing incoming light and image, it turns into composite video signals that can convey to transmitter.

Transmitter: How does it work?

1. Video: Video Signal input via FM modulator.
2. Audio: Microphone input via Audio amplifier MP to augment and transmit into FM 6.0 MHz Modulator.
3. RF Tuner: VCO circuit is composed of Q2 and D1 through PLL IC U4 oscillate the frequency of 2.413 ~ 2.470 GHz, transmitting the amplification of the audio and video signals via antenna.
4. U4 is I2C bus control synthesizer is to set up channel frequency.

Receiver: How does it work?

When the transmitter sends the signals of audio and video, the receiver catch the signals via antenna. The signals procedures start from U1, U2 RF amplifier to U6 MIX amplifier, U1 Micro control send signals of SDA and SCL to U3 Micro control which can process D1 voltage control, U5 VCO control MIX amplifier to produce local oscillation. The IF 480 MHz, the subtraction of main frequency and local frequency. Through U10, U9 IF amp, FITETR, U8 amplifier and U4 FM demodulator A/V output connect to capacitor C11. The process of video signal is to amplifier the signals into video output. The process of audio signals is to connect to capacitor C27, filter, sound demodulator, and audio amplifier to audio L/R output.