

RAK5675 Wireless HDMI Transmission Datasheet V1.0

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1 Overview

1.1 Module overview

RAK5675 supports IEEE802.11a/n wireless protocol ,it is an intelligent image transmission module which support the HDMI input and output.It has small foot print and the easy using feature. The Module support the H.264 codec and the sound processor and it is specially designed for accelerating video/audio streaming performance with 300Mbps data rate WIFI module .

RAK5675 integrates the WIFI Module ,which support IEEE 802.11a/n 2x2 MIMO.The data rate is up to 300Mbps and the distance can reach to 200meters.

1.2 Application Field

- Air vehicle
- Smart Robot
- Underwater Robot
- Movies-making
- Video broadcast
- DID
- Smart Factory
- Office Meeting
- Live sports
- vocal concert

1.3 Product Features

● Powerful WIFI

- Support IEEE 802.11a/n protocol
- 2x2 300M PHY Rate
- support Infra/Soft AP network type
- support multiple security authentication mechanism: WEP64/WEP128/ TKIP/CCMP (AES) / WEP/WPA-PSK/WPA2-PSK
- supporting many network protocol: TCP/UDP/ICMP/DHCP/DNS/HTTP

● Video

- H.264 simple profile encoder & decoder
- Real-time video decoder of H.264
- Supports frame timeout interrupt, frame finish interrupt and bitstream error interrupt
- Error detection and concealment support for video formats
- I-/P- frame support
- Variable Image size up to 1920x1080@60fps
- Progressive video
- In/Out video frame rate = 60Hz
- Support RGB single video interface
- Support HDCP
- EDID for VESA/CES

● Audio

- Audio and Video sync
- Support up to 48KHz sample rate .

1.4 Parameters

| Items | Transmitter | Receiver |
|-----------------------|---|------------|
| Device Name | RAK5675-TX | RAK5675-RX |
| Video Interface | HDMI 1.4a Type A | |
| HDCP | Supported | |
| Distance | About 650ft (200Meters) LOS | |
| Latency | About 100ms | |
| Non-DFS Frequencies | EU Channels – 5.19 ~ 5.23 GHz, US Channels – 5.19 ~ 5.23 GHz and 5.755~5.795 GHz | |
| DFS Frequencies | 5.27 ~ 5.55 and 5.67 GHz | |
| WIFI Channel | Up to 24 channels | |
| Bandwidth | 20MHz / 40MHz | |
| TX Power | 50mW(17dBm) | |
| Power Input | Micro USB or DC Jack :5.5*2.1mm , 5V input | |
| Operating Power | 2.5V ~7.5V | |
| Power LED | Red LED . | |
| Status LED | Green LED. Blink: Ready to Video | |
| Working Condition | Indoor or Outdoor | |
| Operating Temperature | -20-70°C | |
| Relative Humidity | 10%-80% | |
| Video Input Mode | Output Resolution is same with Input Resolution. | |

| | | |
|-------------------------|--|-------------------------------------|
| Video Data Rate | 18Mbps ----- 50Mbps | |
| Default Video Data Rate | 30Mbps | |
| Audio Sample Rate | 32KHz , 44.1KHz , 48KHz | |
| Input Resolution | 1920*1080P/60FPS , 1920*1080P/59FPS , 1280*720P/60FPS , 1280*720P/59FPS, 1024*768P/60FPS , 800*600P/60FPS, 1280*1024/60FPS , 640*480/60FPS, 720*480P/60FPS , 720*480P/59FPS, | |
| Button | RESET : Factory Reset. Do not operate. | |
| Size (LxWxH) | Basic : 87 x 64 x 26mm Add Antenna : 124 x 64 x 93mm | |
| Adaptor | Universal 1/4" screw | |
| Antenna Connector | SMA Female Inner Hole Jack * 2 | |
| Antenna Gain | 2dBi (Default) | |
| Power Consumption | 3.3W(5V , 1080P) 2.8W(5V , 720P) | 2.3W(5V , 1080P) 2.0W(5V , 720P) |

2 Hardware Overview

2.1 Product overview



2.2 Interface





| Label | Name | Description |
|-------|---------|-----------------------------------|
| 1 | DC-JACK | 5.5*2.1mm DC Connector , 5V Input |
| 2 | IN | Standard HDMI Input , TX |
| 3 | DC5V | Micro USB 5V Input |
| 4 | OUT | Standard HDMI Output , RX |
| 5 | RESET | Factory Reset. Do NOT USE! |

3 Radio Feature

| | |
|----------------------------|---|
| Frequency | 5.21GHz ~ 5.23GHz (20MHz) / 5.21GHz ~ 5.25GHz (40MHz) |
| WLAN | IEEE 802.11n |
| Modulation | OFDM, BPSK, QPSK, 16-QAM, 64-QAM |
| Bandwidth | 20MHz / 40MHz |
| Access Method | CSMA/CA |
| RF | 2X2 MIMO |
| Data rate | Maximum 300Mbps (2T2R-2CH Bonding) |
| Spectrum Mask | [Bandwidth 20MHz] $f_c \pm 11\text{MHz}$: -20dB or lower $f_c \pm 20\text{MHz}$: -28dB or lower $f_c \pm 30\text{MHz}$: -40dB or lower [Bandwidth 40MHz] $f_c \pm 21\text{MHz}$: -20dB or lower $f_c \pm 30\text{MHz}$: -28dB or lower $f_c \pm 40\text{MHz}$: -40dB or lower |
| Transmission Power | 14dBm(25mW) |
| Receive Sensitivity | -77dBm (HT20, MCS7, 1stream, 1Tx, 1Rx) -73dBm (HT40, MCS7, 1stream, 1Tx, 1Rx) |
| Adjacent channel rejection | 14dB (MCS7, 1stream, 1Tx, 1Rx) |

4 Electrical Characteristics

4.1 Absolute maximum

The table below gives the absolute maximum value, exceed the maximum range may make the module device damaged. In order to avoid the modules and devices damaged please operate under specified conditions.

Table 4-1: parameter and range

| parameters | Symbol | value | unit |
|-----------------------------------|--------|------------|------|
| The external power supply voltage | VDDIN | 2.5V ~7.5V | V |
| Operation temperature | Toper | -20~70℃ | ℃ |
| Operating humidity | Hoper | 10%~80% | - |

4.2 Recommended operating parameters

Figure 4-2 Power supply range

| parameters | Symbol | minimum | Typical values | maximum | unit |
|--------------|--------|---------|----------------|---------|------|
| Power supply | VDD | 2.5 | 5.0 | 5.0 | V |

5 Order Information

Table 5-1: Product Models

| PART NO. | Description |
|------------|-------------------------------|
| RAK5675-TX | Wireless HDMI Transmission TX |
| RAK5675-RX | Wireless HDMI Transmission RX |

6 Sales and Technical Support

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7 Revision&History

| Revision | Update | Date |
|----------|---------|------------|
| V1.0 | Release | 2017-07-22 |