

RAK5675 Wireless HDMI Adaptor

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 1920x1200@60fps
- Progressive video
- In/Out video frame rate = 60Hz
- Operating clock.
 - Codec clock = Max 150MHz
 - Video clock = variable according to the video size
 - SDRAM clock = Max 190MHz
- Support RGB single video interface
- Support TMDS RX/TX (HDMI)
- 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	
RF Band	5.1G~~~5.8G Band	
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	
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 Adaptor TX
RAK5675-RX	Wireless HDMI Adaptor RX

6 Sales and Technical Support

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7 Revision&History

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