Oolite V1 wireless router module Spec

Oolite V1 is a highly integrated wireless router module. It is not only a wireless module, it is a complete router, only energized, it can work in a wireless AP module, if coupled with a network transformer and RJ45 network port, it’ s a whole wireless router。

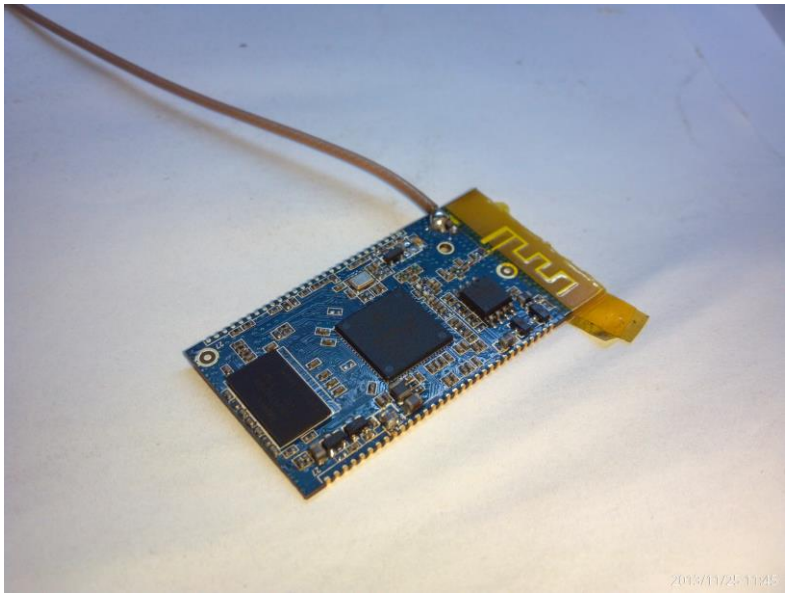
Oolite V1 power is very low, working alone, only 0.4W, suitable for battery products, it has a 150M wireless transmission rate, up to 21 gpios. All can be defined for input or output.

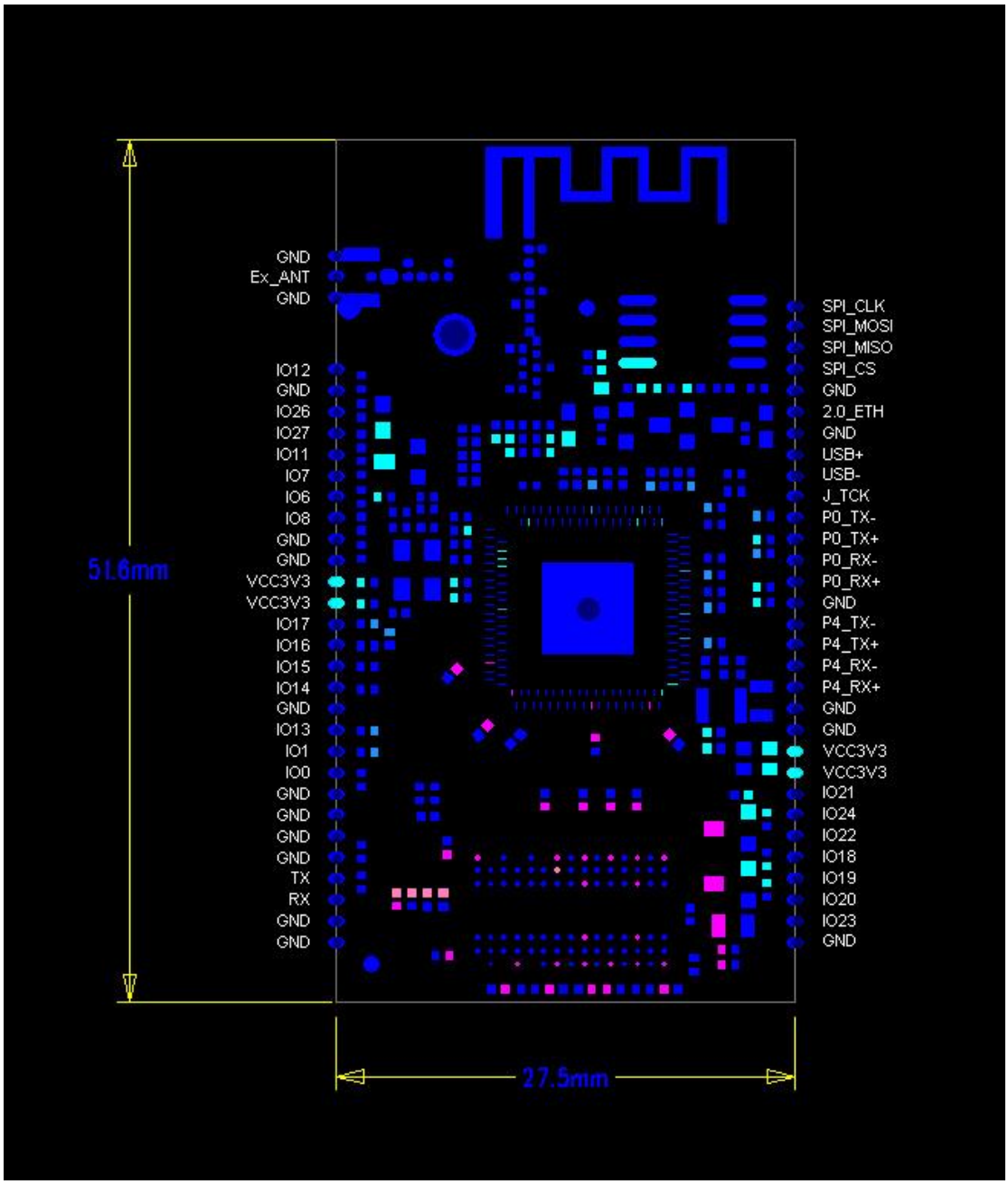
it's design for wifi hard disk, WiFi router, remote monitoring, remote video, Industrial control DIY and so on

Characteristics:

CPU: AR9331 400Mhz MIPS core
RAM: 64M DDR2 RAM
Flash: 16M SPI flash (4/8/32m option)
Wireless speed: 135Mbps
General GPIO: 21 (except TX, RX)
USB: Usb 2.0 master interface, support USB hub extension
Power supply voltage: 3.3V.
Port: 1WAN and 1LAN 10/100Mbps network interface
Antenna: the built-in PCB /IPX external antenna.
Debug: serial debugging interface has been out.
Board Power: 0.36W
Product size: 27.6 * 52MM
SPI interface pin out.

Pictures:





Pins :

Pin No.	Name	GPIO state(default)	spec
1	GND		GROUND
2	EX_ANT	disconnected	Extenal Antenna reserved
3	GND		GROUND
4	GPIO12	10K GND	I/O
5	GND		GROUND

6	GPIO26	Floating ouput	I/O
7	GPIO27/SYS_LED	1K~3K led 3.3v output	I/O
8	GPIO11	1K 100PF GND input	I/O Reset button
9	GPIO7	10K GND output	I/O
10	GPIO6	10K GND output	I/O
11	GPIO8	10K GND output	I/O
12	GND		
13	GND		
14	VCC3V3		
15	VCC3V3		
16	GPIO17	10K 2.5v output	I/O
17	GPIO16	10K GND output	I/O
18	GPIO15	10K GND output	I/O
19	GPIO14	10K GND output	I/O
20	GND		
21	GPIO13	10K 2.5v output	I/O
22	GPIO1	10K 2.5v output	I/O
23	GPIO0	10K GND output	I/O
24	GND		
25	GND		
26	GND		
27	GND		
28	Uart TX		TX
29	Uart RX		RX
30	GND		GROUND
32	GND		
P33	GND		
P34	GPIO23	Floating output	I/O
P35	GPIO20	Floating output	I/O
P36	GPIO19	Floating output	I/O
P37	GPIO18	Floating output	I/O
P38	GPIO22	Floating output	I/O

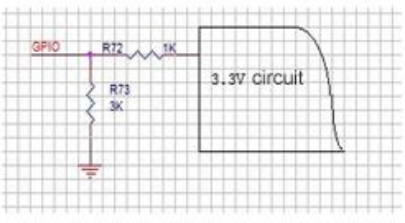
P39	GPIO24	Floating output	I/O
P40	GPIO21	Floating output	I/O
P41	VDD3V3		
P42	VDD3V3		
P43	GND		
P44	GND		
P45	P4_RX+		P4 Network Port
P46	P4_RX-		
P47	P4_TX+		
P48	P4_TX-		
P49	GND		
P50	P0_RX+		P0 Network Port
P51	P0_RX-		
P52	P0_TX+		
P53	P0_TX-		
P54	JTAG_TCK		JTAG TCK
P55	USB-		USB Master USB+
P56	USB+		USB Master USB-
P57	GND		GROUND
P58	E_2.0V		Bias power output
P59	GND		GROUND
P60	SPI_CS0	IO2	
P61	SPI_MISO		
P62	SPI_MOSI		
P63	SPI_CLK		

NOTE：

1. All power supply pins (VCC3V3) can power on, recommended 14 and 15 pin
2. Unused GPIOs can floating, no need pull-up or pull-down.
3. The power supply voltage of GPIO is 2.62V, when the GPIO outputs high, the voltage is 2.62V, the low voltage is 0V.

If the control circuit of GPIO access to 3.3V, recommended circuit:

Input mode：



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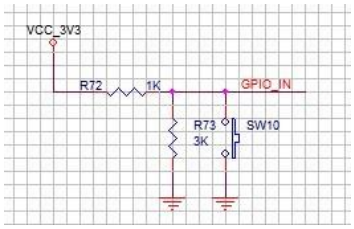

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4. NET_POW, Network transformer bias power output. The output of 2.2V, to offset the use of wired network transformer
5. network port(default)： P0、P4 Lan/Wan can be programmer

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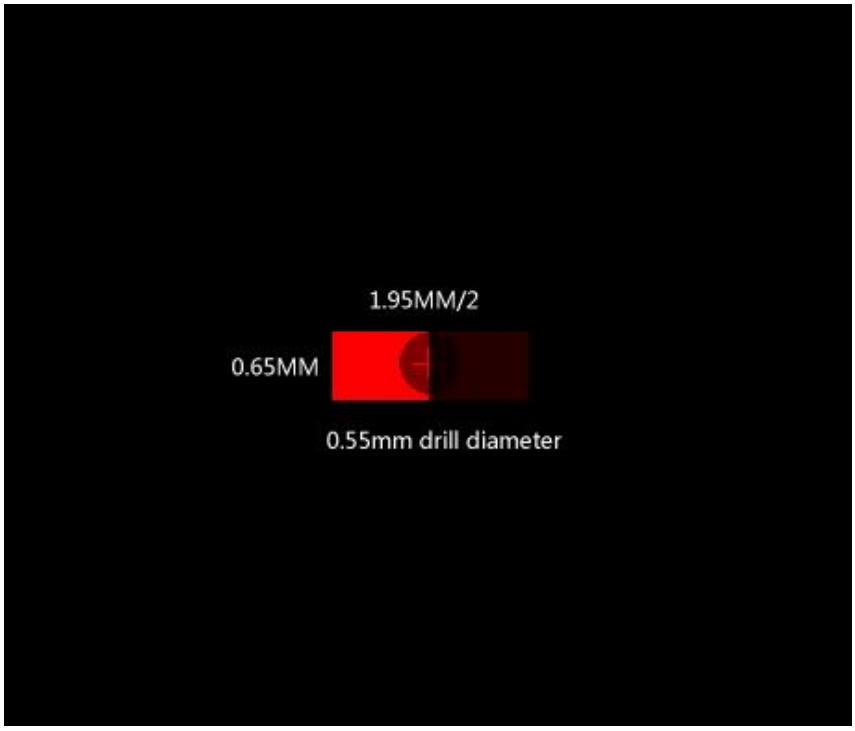
Pins Size：1.27mm PINs



Radio Receiver Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
F_{rx}	Receiver input frequency range	5 MHz center frequency	2.412	—	2.472	GHz
NF	Receive chain noise figure (max gain)				—	dB
		LNA1 (Tx/Rx shared)	—	5.0	—	
S_{rf}	Sensitivity[1]					
	CCK, 1 Mbps	See Note[2]	-80	-93	—	dBm
	CCK 11 Mbps		-76	-87	—	
	OFDM, 6 Mbps		-82	-88	—	
	OFDM, 54 Mbps		-65	-74	—	
	HT20, MCS0, 1 stream, 1 Tx, 1 Rx	See Note[2]	-82	-88	—	dBm
	HT20, MCS7, 1 stream, 1 Tx, 1 Rx		-64	-71	—	
	HT40, MCS0, 1 stream 1 Tx, 1 Rx	See Note[2]	-79	-85	—	dBm
	HT40, MCS7, 1 stream 1 Tx, 1 Rx		-61	-69	—	
IP1dB	Input 1 dB compression (min. gain)	—	—	-4	—	dBm
IIP3	Input third intercept point (min. gain)	—	—	5.5	—	dBm
Z_{RFin_input}	Recommended LNA differential drive impedance	LNA2	—	27-j5	—	Ω
ER_{phase}	I, Q phase error	—	—	0.15	—	°
ER_{amp}	I, Q amplitude error	—	—	1.0	—	dB
R_{adj}	Adjacent channel rejection					
	OFDM, 6 Mbps	10 to 20 MHz[3]	16	34	—	dB
	OFDM, 54 Mbps		-1	19	—	
	HT20, MCS0		16	34	—	dB
	HT20, MCS7		-2	18	—	
TR_{powup}	Time for power up (from synthesizer)	—	—	1.5	—	µs

[1]Sensitivity for LNA2 (Rx only chain). Sensitivity for LNA1 (Rx/Tx shared chain) is 3dB worse than LNA2.
[2]Sensitivity performance based on Atheros reference design, which includes Tx/Rx antenna switch. Minimum values based on IEEE 802.11 specifications.
[3]Typical values measured with reference design. Minimum values based on IEEE 802.11 specifications.

Radio Transmitter Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
F_{tx}	Transmit output frequency range	5 MHz center frequency	2.412	—	2.472	GHz
P_{out}	Mask Compliant CCK output power	See Note[1]	—	19.5	—	dBm
	Mask Compliant OFDM output power					
	802.11g BPSK 6 Mbps	See Note[2]	—	20	—	dBm
	HT20, MCS0		—	19	—	
	HT40, MCS0		—	16	—	
	EVM Compliant OFDM output power					
	802.11g 64 QAM 54 Mbps	See Note[1]	—	19	—	
	HT20, MCS7		—	17	—	dBm
	HT40, MCS7		—	16	—	
SP_{gain}	PA gain step	See Note[2]	—	0.5	—	dB
A_{pl}	Accuracy of power leveling loop	See Notes[3][4]	—	±0.5	—	dB
Z_{RFout_load}	Recommend differential PA load impedance	See Note[5]	—	12+j13	—	Ω
OP1dB	Output P1dB (max. gain)	2.442 GHz	—	21	—	dBm
OIP3	Output third order intercept point (max. gain)	2.442 GHz	—	31	—	dBm
SS	Sideband suppression	—	—	–37	—	dBc
RS	Synthesizer reference spur	—	—	–62	—	dBc
TT_{powup}	Time for power up (from synthesizer on)	—	—	1.5	—	µs

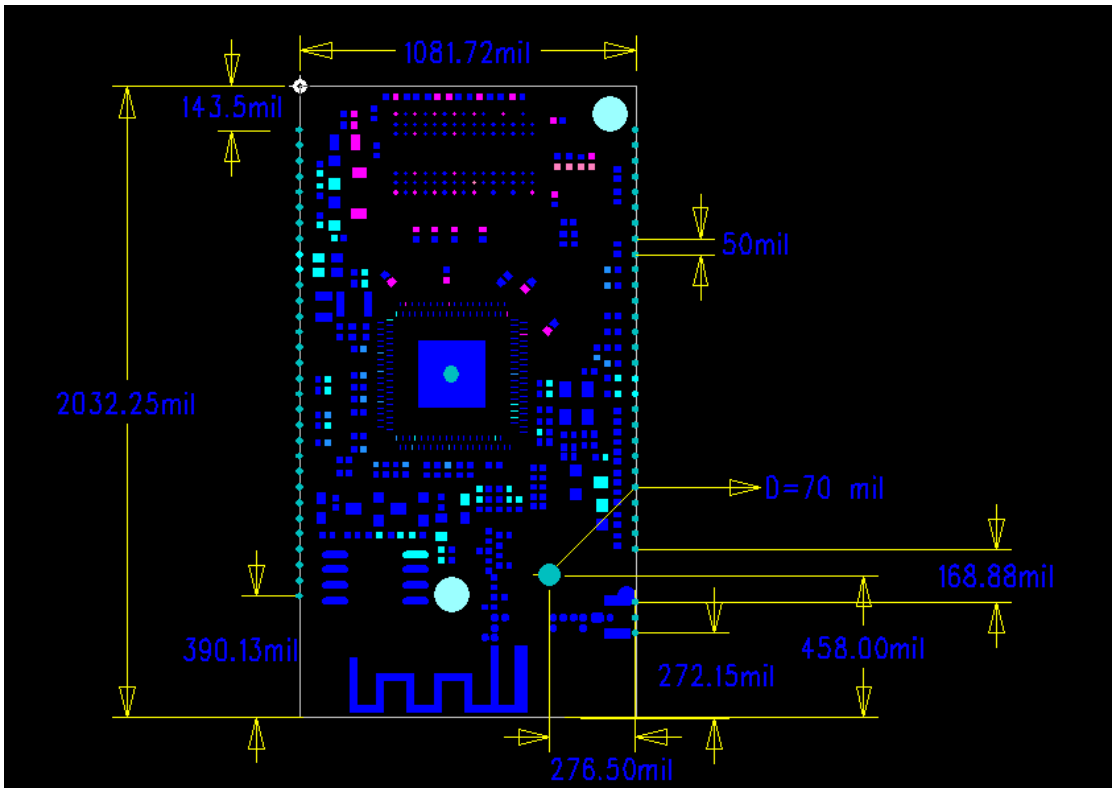
[1]Measured using the balun recommended by Atheros under Tx power control.
[2]Guaranteed by design.
[3]Manufacturing calibration required.

Module operating environment

Working temperature: 0 ℃ to 40 ℃;
Storage temperature: -40 ℃ to 70 ℃;
Humidity: 10% to 90%RH no condensation;
Storage humidity: 5% to 90%RH no condensation.

Open source code link:
https://github.com/ooioe/Oolitev1
http://www.ooiot.com/oolitev1/openwrt
http://wiki.openwrt.org/toh/oolite/oolitev1

MT7620A ,QCA4004 modules come, MT7621A can ODM now.
MT7681 module will come, welcome to ask spec.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143.5mil
50mil
2032.25mil
D=70 mil
168.88mil
390.13mil
458.00mil
272.15mil
276.50mil