

规 格 书

SPECIFICATION FOR APPROVAL

供应商名称: SUPPLIER:	深圳创维-RGB 电子有限公司
制造商名称名称: MANUFACTURER:	深圳创维-RGB 电子有限公司
客户名称: CUSTOMER:	深圳创维-RGB 电子有限公司
部品名称: PARTNAME:	WIFI/BT 模块
厂家型号: SPEC TYPE:	NTUD-T4
创维物料编码: SKYWORTH PART NO:	
规格描述: SPECIFICATION SICES:	单频 WIFI(2T2R)+BT
制表日期: DATE:	2018.12.19

承制方 MANUFACTURER		
拟 制 DRAFTER	审 核 CHECK	批 准 APPROVER
董国发	丁星	段晓伟

承制方名称（盖章）：

地址：

电话：

传真：

网址：

E-MAIL：

WIFI 模块产品规格书

(Specification Of WIFI Module)

产品名称 : WIFI 模块
(Product Name) _____
产品型号 : NTUD-T4
(Model) _____
版 本 : 第一版
(Version) _____
日 期 : 2018/12/19
(Date) _____

设 计 确 认 (DESIGN VALIDATION)		
拟制 (DESCRIBED)	审核 (CHECKED)	批准 (APPROVED)
董国发	丁星	段晓伟

深圳创维-RGB 电子有限公司

SHENZHEN SKYWORTH-RGB ELECTRONICS CO., LTD.

地址:深圳市宝安区石岩镇塘头工业区创维工业园

ADD: Skyworth Science Industrial Park, Tangtou Industrial Zone, Shiyan Town,
Baoan District, Shenzhen, China.

电话(TEL): 0755-29689333 传真(FAX): 0755-29689332

网址(NET): <http://www.skyworth.com>

认 证 厂 家 记 录

(Certified manufacturer's record)

注：通过认证的厂家填入下表

(Fill the following table by the certified manufacturer)

序号 (Number)	厂家编号 (Manufacturer number)	厂家名称 (Manufacturer name)	厂家型号 (Manufacturer model)	确认 (Approved by)
1	534L	深圳创维-RGB 电子有限公司	NTUD-T4	董国发

变 更 记 录 表
(Change record table)

序 号 (Number)	版 本 (Revision)	主要变更内容 (Main change content)	变更日期 (Change data)	更改者 (Change person)
1	Ver00.00	Initial version	2018.12.19	董国发

Technical specifications

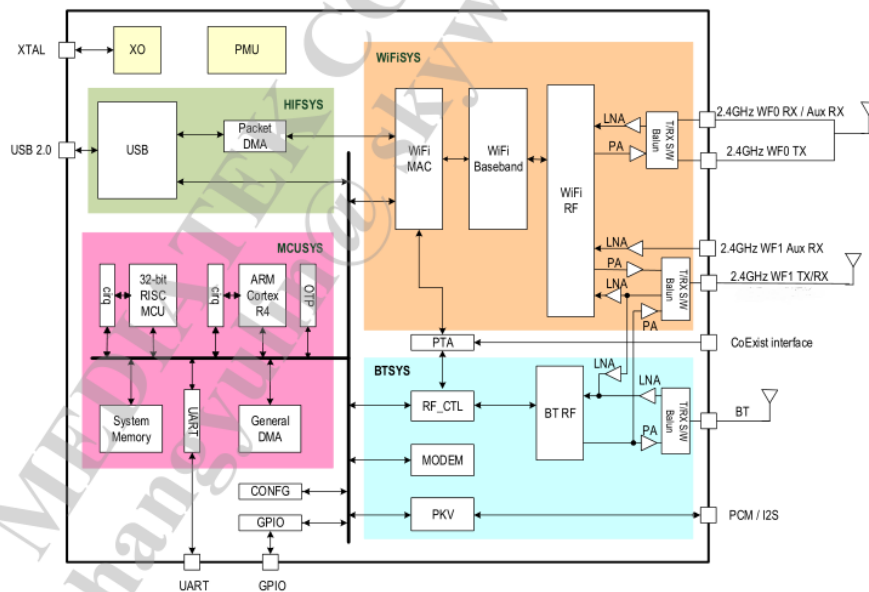
1. Summary

This module is based on the MTK7638GUN scheme, which is in line with the 802.11b/g/n standard, 2.4GHz, WIFI dual antenna, Bluetooth independent antenna design, Bluetooth support 2.1/5.0.

2. Characteristics

- Compatible with IEEE 802.11b standard to provide wireless 11Mbps data rate.
- Compatible with IEEE 802.11g standard to provide wireless 54Mbps data rate.
- Compatible with IEEE 802.11n standard to provide wireless 300Mbps data rate.
- Operation at 2.4~2.5GHz frequency band to meet worldwide regulations
- Supports infrastructure networks via Access Point and ad-hoc network via peer-to-peer communication
- Supports IEEE 802.11i (WPA and WPA2), WAPI. enhanced security
- Friendly user configuration and diagnostic utilities
- Drivers support Win10, Win8, Win7, XP, Linux
- ROHS compliant

3. Block diagram



4. Module performance parameters:

The main chip	MTK7638GUN
Working frequency	2.400~2.4835GHz
WiFi standard	802.11 b/g/n (2T2R)
BT standard	Bluetooth2.1+EDR/4.2/5.0+BLE
Modulation mode	11b: DBPSK, DQPSK and CCK and DSSS 11g: BPSK, QPSK, 16QAM, 64QAM and OFDM 11n: MCS0~15 OFDM
Data rate	11b: 1, 2, 5.5 and 11Mbps 11g: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps 11n: MCS0~15, up to 300Mbps
Output connector specifications	On_board
Interface data standards	USB 2.0
PCB data	Layer 2 row board design
PCB size	27*33*1mm
Working temperature	0℃ to +60℃
Storage temperature	-40℃ to +85℃
Working voltage	3.3V +/-10%

5. Definition module output connector feet:

Pin #	Name	Description
1	BT-WAKE	BT WAKE HOST
2	WOW	WIFI WAKE HOST
3	GND	GND
4	GND	GND
5	D+	USB Data DP
6	D-	USB Data DN
7	VCC	3.3V DC Power supply input
8	EN	Enable the module

6. Module performance parameters:

a) 802.11b BW20MHz Mode 2.4GHz

Items	Contents				
Specification	IEEE802.11b				
Mode	DSSS / CCK				
Channel	CH1 to CH11				
Data rate	1,2, 5.5 ,11Mbps				
DC Characteristics	Min.	Typ.	Max.	Unit	Remark
1.DC current (Average) @5V input					
1) TX only @17dBm (continue Tx SISO)	-	400	450	mA	
2) TX throughput mode	-	400	450	mA	
3) RX throughput mode	-	200	250	mA	
TX Characteristics	Min.	Typ.	Max.	Unit	
2. Power Levels(Calibrated)					
1) 17dBm Target (For Each antenna port)	16	17	18	dBm	
3. Spectrum Mask @ target power					
1) fc +/-11MHz to +/-22MHz	-	-	-30	dBr	
2) fc > +/-22MHz	-	-	-50	dBr	
4 Constellation Error(EVM)@ target power					
1) 11Mbps			8	%	
5. Frequency Error	-25	0	+25	ppm	
RX Characteristics (2R)	Min.	Typ.	Max.	Unit	
6 Minimum Input Level Sensitivity					
1) 1Mbps (FER ≤ 8%)	-	-95	-83	dBm	
2) 2Mbps (FER ≤ 8%)	-	-93	-80	dBm	
3) 5.5Mbps (FER ≤ 8%)	-	-90	-79	dBm	
4) 11Mbps (FER ≤ 8%)	-	-86	-76	dBm	
7 Maximum Input Level (FER ≤ 8%)	-20	-10	-	dBm	

b) 802.11g BW20MHz Mode 2.4GHz

Items	Contents				
Specification	IEEE802.11g				
Mode	OFDM				
Channel	CH1 to CH11				
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps				
DC Characteristics	Min.	Typ.	Max.	Unit	Remark
1. DC current (Average) @5V input					
1) TX only @14dBm (continue Tx SISO)	-	235	250	mA	
2) TX throughput mode	-	235	250	mA	
3) RX throughput mode	-	165	180	mA	
TX Characteristics	Min.	Typ.	Max.	Unit	
2. Power Levels					
1) 14dBm Target (For Each antenna port)	13	14	15	dBm	
3. Spectrum Mask @ target power					
1) at fc +/- 11MHz	-	-	-20	dBr	
2) at fc +/- 20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-40	dBr	
4 Constellation Error(EVM)@ target power					
1) 6Mbps	-	-	-5	dB	
2) 9Mbps	-	-	-8	dB	
3) 12Mbps	-	-	-10	dB	
4) 18Mbps	-	-	-13	dB	
5) 24Mbps	-	-	-16	dB	
6) 36Mbps	-	-	-19	dB	
7) 48Mbps	-	-	-22	dB	
8) 54Mbps	-	-30	-25	dB	
5 Frequency Error	-25	0	+25	ppm	
RX Characteristics (2R)	Min.	Typ.	Max.	Unit	
6 Minimum Input Level Sensitivity					
1) 6Mbps (PER $\leq$ 10%)	-	-93	-85	dBm	
2) 9Mbps (PER $\leq$ 10%)	-	-92	-84	dBm	
3) 12Mbps (PER $\leq$ 10%)	-	-90	-82	dBm	
4) 18Mbps (PER $\leq$ 10%)	-	-88	-80	dBm	
5) 24Mbps (PER $\leq$ 10%)	-	-85	-77	dBm	
6) 36Mbps (PER $\leq$ 10%)	-	-82	-73	dBm	
7) 48Mbps (PER $\leq$ 10%)	-	-78	-69	dBm	
8) 54Mbps (PER $\leq$ 10%)	-	-77	-68	dBm	
7 Maximum Input Level (PER $\leq$ 10%)	-20	-10	-	dBm	

c) 802.11n HT20 Mode 2.4GHz

Items	Contents				
Specification	IEEE802.11n HT20 @ 2.4GHz				
Mode	OFDM				
Channel	CH1 to CH11				
Data rate (MCS index)	MCS0-MCS15				
DC Characteristics	Min.	Typ.	Max.	Unit	Remark
1. DC current (Average) @5V input					
1) TX only @ 13dBm Target(each port), (continue Tx MIMO MCS15)	-	330	360	mA	
2) TX throughput mode (MCS7)	-	300	350	mA	
3) RX throughput mode	-	165	180	mA	
TX Characteristics	Min.	Typ.	Max.	Unit	
2. Power Levels					
1) 13dBm Target (For Each antenna port)	12	13	14	dBm	
2) 13dBm Target (Combined two antenna port)	15	17	19	dBm	
3. Spectrum Mask @14.5dBm					
1) at fc +/- 11MHz	-	-	-20	dBr	
2) at fc +/- 20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-45	dBr	
4. Constellation Error(EVM)@ target power					
1) MCS0	-	-	-5	dB	
2) MCS1	-	-	-10	dB	
3) MCS2	-	-	-13	dB	
4) MCS3	-	-	-16	dB	
5) MCS4	-	-	-19	dB	
6) MCS5	-	-	-22	dB	
7) MCS6	-	-	-25	dB	
8) MCS7	-	-30	-28	dB	
5. Frequency Error	-25	0	+25	ppm	
RX Characteristics (2R)	Min.	Typ.	Max.	Unit	
6. Minimum Input Level Sensitivity					
1) MCS0 (PER $\leq$ 10%)		-91	-85	dBm	
2) MCS1 (PER $\leq$ 10%)		-88	-82	dBm	
3) MCS2 (PER $\leq$ 10%)		-87	-80	dBm	
4) MCS3 (PER $\leq$ 10%)		-83	-77	dBm	
5) MCS4 (PER $\leq$ 10%)		-81	-73	dBm	
6) MCS5 (PER $\leq$ 10%)		-76	-69	dBm	
7) MCS6 (PER $\leq$ 10%)		-75	-68	dBm	
8) MCS7 (PER $\leq$ 10%)		-75	-67	dBm	
9) MCS8(PER $\leq$ 10%)	-	-89	-82	dBm	
10) MCS9(PER $\leq$ 10%)	-	-87	-79	dBm	
11) MCS10 (PER $\leq$ 10%)	-	-84	-77	dBm	
12) MCS11(PER $\leq$ 10%)	-	-81	-74	dBm	
13) MCS12(PER $\leq$ 10%)	-	-78	-70	dBm	
14) MCS13(PER $\leq$ 10%)	-	-73	-66	dBm	
15) MCS14(PER $\leq$ 10%)	-	-72	-65	dBm	
16) MCS15(PER $\leq$ 10%)		71	-64	dBm	
7. Maximum Input Level (PER $\leq$ 10%)	-20	-10	-	dBm	

d) 802.11n HT40 Mode 2.4GHz

Items	Contents				
Specification	IEEE802.11n HT40 @ 2.4GHz				
Mode	OFDM				
Channel	CH3 to CH9				
Data rate (MCS index)	MCS0-MCS15				
DC Characteristics	Min.	Typ.	Max.	Unit	Remark
1. DC current (Average) @5V input					
1) TX only @ 13dBm Target(each port), (continue Tx MIMO MCS15)	-	330	360	mA	
2) TX throughput mode	-	300	350	mA	
3) RX throughput mode	-	165	180	mA	
TX Characteristics	Min.	Typ.	Max.	Unit	
2. Power Levels (Calibrated)					
1) 13dBm Target (For Each antenna port)	12	13	14	dBm	
2) 13dBm Target (Combined two antenna port)	15	17	19	dBm	
3. Spectrum Mask @13dBm					
1) at fc +/- 22MHz	-	-	-20	dBr	
2) at fc +/- 40MHz	-	-	-28	dBr	
3) at fc > +/-60MHz	-	-	-45	dBr	
4. Constellation Error(EVM)@target power					
1) MCS0	-	-	-5	dB	
2) MCS1	-	-	-10	dB	
3) MCS2	-	-	-13	dB	
4) MCS3	-	-	-16	dB	
5) MCS4	-	-	-19	dB	
6) MCS5	-	-	-22	dB	
7) MCS6	-	-	-25	dB	
8) MCS7	-	-30	-28	dB	
5. Frequency Error	-25	0	+25	ppm	
RX Characteristics (2R)	Min.	Typ.	Max.	Unit	
6. Minimum Input Level Sensitivity					
1) MCS15 (PER ≤ 10%)	-	-67	-61	dBm	
2) MCS14 (PER ≤ 10%)	-	-69	-62	dBm	
3) MCS13 (PER ≤ 10%)	-	-70	-63	dBm	
4) MCS12 (PER ≤ 10%)	-	-75	-67	dBm	
5) MCS11 (PER ≤ 10%)	-	-78	-71	dBm	
6) MCS10 (PER ≤ 10%)	-	-82	-74	dBm	
7) MCS9 (PER ≤ 10%)	-	-83	-76	dBm	
8) MCS8 (PER ≤ 10%)	-	-87	-79	dBm	
1) MCS7 (PER ≤ 10%)	-	-71	-64	dBm	
2) MCS6 (PER ≤ 10%)	-	-72	-65	dBm	
3) MCS5 (PER ≤ 10%)	-	-74	-66	dBm	
4) MCS4 (PER ≤ 10%)	-	-78	-70	dBm	
5) MCS3 (PER ≤ 10%)	-	-81	-74	dBm	
6) MCS2 (PER ≤ 10%)	-	-84	-77	dBm	
7) MCS1 (PER ≤ 10%)	-	-86	-79	dBm	
8) MCS0 (PER ≤ 10%)	-	-88	-82	dBm	
7. Maximum Input Level (PER ≤ 10%)	-20	-10	-	dBm	

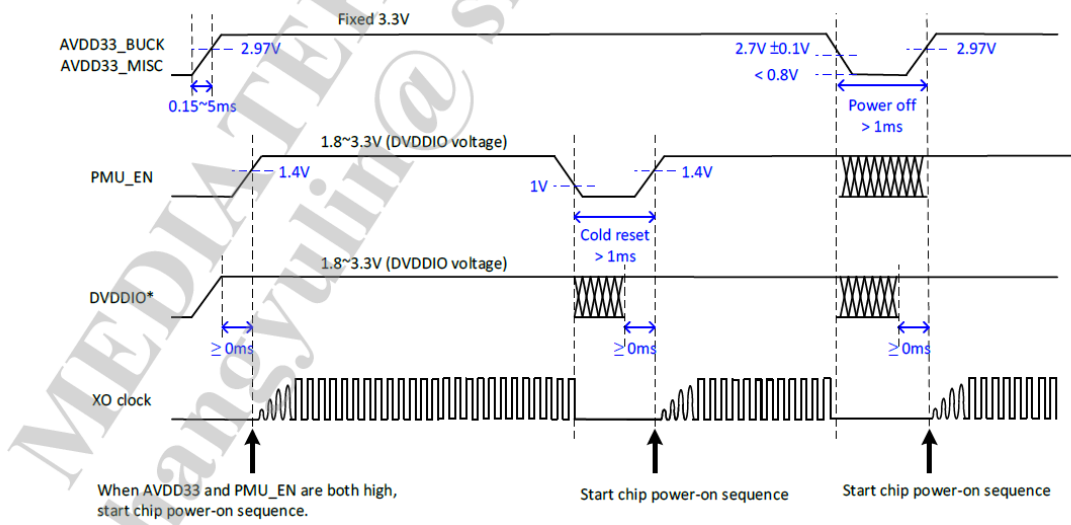
e)Bt basic rate transmitter specification

Parameter	Description	Performance			
		Min	Typ	Max	Unit
Frequency range		2402	-	2480	MHz
Output power	At maximum putout level	-	3.57	-	dBm
Modulation characteristic	Δf_1 avg	-	155.785	-	KHz

7. The antenna gain:

WiFi antenna on PCB	
Operating Frequency	2.412~2.484GHz
VSWR	<2.0
Peak Gain	3.4dBi/3.4dBi@2.4GHz
External pull of BT antenna	
Operating Frequency	2400-2500(MHz)
VSWR	<=2.0:1
Peak Gain	3.1dBi
Antenna Type	RFcable+PCB

8. Power timing requirements:



9、Product photo:





全球研发中心
模组工程研究院
电声与配件线
2018. 12. 19

材料名称	有毒有害物质或元素										
	铅 (Pb)	汞 (Hg)	镉(Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二 苯醚 (PBDE)	邻苯二 甲酸二 丁基酯 (DBP)	邻苯二甲 酸甲苯 基丁酯 (BBP)	邻邻苯二 甲酸二 (2-乙基 己基)酯 (DEHP)	邻苯二甲 酸二异 丁酯 (DIBP)	备注
所有部件	○	○	○	○	○	○	○	○	○	○	
拆分部 件											
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拆分部 件											

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 2011/65/EU 规定的限量要求以下。

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 2011/65/EU 规定的限量要求。

(供应商应将其原材料按要求进行拆分，并按照此表格进行详细标注,对不能满足标准要求的零部件进行具体的原因描述)

整体部件			是否符合(EC) No 1907/2006 标准要求
	SVHC（高关注物质）		是
	禁止和限制物质“附件 17”		是
原材料部件			是否符合(EC) No 1907/2006 标准要求
	所有部件	SVHC（高关注物质）	是
		禁止和限制物质“附件 17”	是
	材料名称 2	SVHC（高关注物质）	
		禁止和限制物质“附件 17”	
			
			
			
			
			
			
			

注：1、根据(EC) No 1907/2006 标准要求管控 SVHC（高关注物质）及禁止和限制物质。 如果在标准值以内填写是，反之则填写否。

2、请在页面加盖公司印章。