

禾胜成科技有限公司

SPECIFICATION

PRODUCT NAME: AH6257K

REVISION:

V1.0

DATE:

2021/5/22

Customer APPROVED	
Company	
Representative Signature	

PREPARED	REVIEW			APPROVED	DCC ISSUE
	PM	QA	ET		

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Revision

Revision	Date	Description	Revised By
V0.1	2021 / 04 / 11	- Preliminary	UU
V1.0	2021 / 05 / 22	-Update RF SPEC	UU

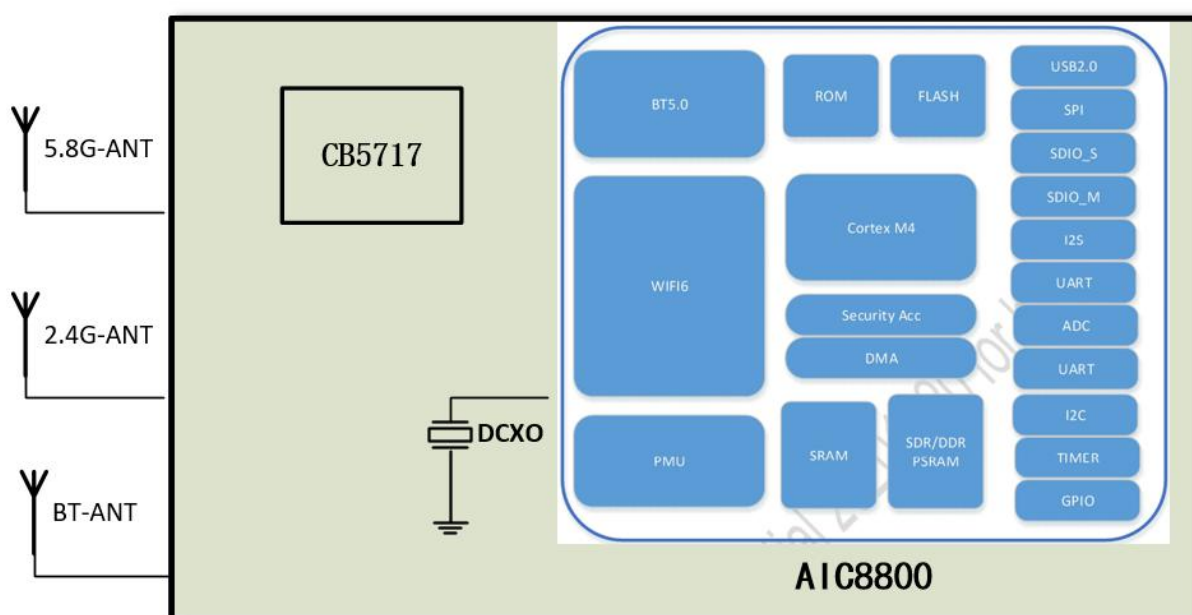
1.Introduction

1.1: OVERVIEW

AH6275K 模块采用AIC出品的高性能SOC AIC8800.AIC8800是行业内领先的WIFI6/BT5.0双模单芯片。支持WIFI6所有指标的同时，功耗为行业最低。AIC8800同时集成Cortex-M4F CPU，主频可达400MHz。配合内部集成的992KB SRAM,752KB ROM,最高可达128Mbits 的片内SPI flash，为用户提供强大的二次开发的硬件支持。AIC8800拥有丰富的外围接口，可以通过 SPI/SDIO/I2C/UART进行控制和数据传输，快速应用到基于任何微控制器的设计中。

AH6275K模块支持标准的 IEEE802.11 b/g/n/e/i 协议以及完整的 TCP/IP 协议栈。用户可以使用该模块为现有设备添加联网功能，也可以构建独立的网络控制器。

AH6275K 模块以最低成本提供最大实用性，为 Wi-Fi 功能嵌入其他系统提供无限可能。



1.2 Product Feature

CPU 指标

内部集成Cortex-M4F CPU / MPU/FPU

CPU 主频可达 480MHz

片内集成Memory 992KB SRAM

752KB ROM

支持接口：SDIO

SPI

USB2.0

集成硬件Crypto Accelerator:

AES

RSA

HASH

ECC

集成 TRNG

支持外接：OPI SDR/DDR PSRAM

内部集成SPI flash; 8Mbits ~ 128Mbits

集成硬件watchdog

支持freeRTOS

1.2.1 Wi-Fi key Feature

CMOS 工艺单芯片SOC, 集成RF, Modem和MAC

WIFI6 支持2.4GHz/5GHz 频段

速率支持: 286.8Mbps@TX 229.4Mbps@RX

20/40MHz bandwidth

接收灵敏度: -98dBm (11b 1M mode)

发射功率: 20dBm (11b mode)

18dBm (HT/VHT/HE40 MCS7 mode)

支持: STA;

AP;

Wi-Fi Direct modes

支持: STBC;

Beam Forming

支持: Wi-Fi6 TWT

支持: Two NAV;

Buffer Report;

Spatial reuse;

Multi-BSSID;

Intra-PPDU Power Save

支持: LDPC

支持: MU-MIMO;

OFDMA

支持: DCM;

Mid-amble;

UORA

1.2.2 Bluetooth Key Features

支持: BT2.1+EDR

BT3.0

BT4.x

BT5.0

支持: BT-TX

2.General Specification

Wi-Fi Power Consumption (Ivbat):

(VBAT = 3.6V, VIO = 1.8V, TA = +27°C, DCDC mode unless otherwise specified)

DESCRIPTION	MIN	TYP	MAX	UNIT
OFF(WIFI OFF)		1		uA
Idle		2.5		uA
DTIM1@Period 102.4ms, Duration 3ms		0.5 8		mA
DTIM3@Period 102.4ms, Duration 3ms		0.3		mA
DTIM10@Period 102.4ms, Duration 3ms		0.1		mA
Rx@11b 1M		21		mA
Tx@MCS7/18dbm		210		mA

BT Power Consumption (Ivbat):

(VBAT = 3.6V, VIO = 1.8V, TA = +27°C, DCDC mode unless otherwise specified)

DESCRIPTION	MIN	TYP	MAX	UNIT
OFF(BT OFF)		1		uA
Idle		2.5		uA
Associated State		0.3		mA
Rx		10		mA
Tx (13dbm, 1M)		21		mA

3.Wi-Fi RF Specification

2.4 GHz Wi-Fi Receive Performance Specifications

(VBAT = 3.6V, TA = 27° C, unless otherwise specified)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
	Frequency range		2.412	-	2.484	GHz
Rx Sensitivity 灵敏度	1 Mbps DSSS			-98	-99	dBm
	11 Mbps DSSS			-90	-91	dBm
	6 Mbps OFDM			-94	-95	dBm
	54 Mbps OFDM			-	-77	dBm
				76.5		
	HT/VHT20 MCS0			-		dBm
				93.5		
	HT/VHT20 MCS7			-		dBm
				74.5		
	HT/VHT 40 MCS0			-90		dBm
	HT/VHT 40 MCS7			-71		dBm
	HT/VHT 40 MCS9			-65		dBm
	HE20 MCS0			-		dBm
				93.5		
	HE20 MCS7			-		dBm
				74.5		
	HE20 MCS8			-		dBm
				70.5		
HE20 MCS9			-		dBm	
			68.5			
HE40 MCS0			-91		dBm	
HE40 MCS7			-		dBm	
			73.5			
HE40 MCS8			-		dBm	
			68.5			
HE40 MCS9			-		dBm	
			65.5			
Adjacent channel rejection 灵敏度	2Mbps DSS			52		dB
	11Mbps DSS			50		dB
	6 Mbps OFDM			48		dB
	54 Mbps OFDM			31		dB
	HT20 MCS0			47		dB
	HT20 MCS7			29		dB
Max input level	11b			0		dBm
	MCS0			0		dBm
	MCS3			0		dBm

最大接收电平	MCS5		0		dBm
	MCS7		0		dBm

2.4 GHz Wi-Fi Transmit Performance Specifications

(VBAT = 3.6V, TA = 27° C, unless otherwise specified)

Transmit mode	MIN	TYP	MAX	UNIT
		2.412	-	2.484
11b 1M		20		dBm
11b 11M		20		dBm
11g 6M		18		dBm
11g 54M		18		dBm
HT20 MCS0		18		dBm
HT20 MCS7		18		dBm
HT40 MCS0		18		dBm
HT40 MCS7		18		dBm
HE20 MCS0		18		dBm
HE20 MCS7		18		dBm
HE20 MCS9		16		dBm
HE20 MCS11		8		dBm
HE40 MCS0		18		dBm
HE40 MCS7		18		dBm
HE40 MCS9		16		dBm
HE40 MCS11		8		dBm

5 GHz Wi-Fi Receive Performance Specifications¹

(VBAT = 3.6V, TA = 27° C, unless otherwise specified)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
	Frequency range		5.180	-	5.815	GHz
Rx Sensitivity 灵敏度	1 Mbps DSSS			/		dBm
	11 Mbps DSSS			/		dBm
	6 Mbps OFDM			-94.5	-95	dBm
	54 Mbps OFDM			-77	-77.5	dBm
	HT/VHT20 MCS0			-93		dBm
	HT/VHT20 MCS7			74.5		dBm
	HT/VHT 40 MCS0			-90.5		dBm
	HT/VHT 40 MCS7			71.5		dBm
	HT/VHT 40 MCS9			65.5		dBm
	HE20 MCS0			-93		dBm
	HE20 MCS7			-74		dBm
	HE20 MCS8			-69		dBm
	HE20 MCS9			-66		dBm
	HE40 MCS0			-91		dBm
	HE40 MCS7			73.5		dBm
	HE40 MCS8			68.5		dBm
	HE40 MCS9			65.5		dBm
Adjacent channel rejection 临道抑制	2Mbps DSS			/		dB
	11Mbps DSS			/		dB
	HT20 MCS0			40		dB
	HT20 MCS7			23		dB
	HT40 MCS0			38		dB
	HT40 MCS7			18		dB
Max input level 最大接收电平	11b			/		dBm
	MCS0			10		dBm
	MCS3			5		dBm
	MCS5			5		dBm
	MCS7			5		dBm

1. Data in this table are based on SKY85717-21 FEM

5 GHz Wi-Fi Transmit Performance Specifications¹

(VBAT = 3.6V, TA = 27° C, unless otherwise specified)

Transmit mode	MIN	TYP	MAX	UNIT
	5.180	-	5.815	GHz
11b 1M		/		dBm
11b 11M		/		dBm
11g 6M		15		dBm
11g 54M		15		dBm
HT20 MCS0		15		dBm
HT20 MCS7		15		dBm
HT40 MCS0		15		dBm
HT40 MCS7		15		dBm
HE20 MCS0		15		dBm
HE20 MCS7		15		dBm
HE20 MCS9		13		dBm
HE20 MCS11		11		dBm
HE40 MCS0		15		dBm
HE40 MCS7		15		dBm
HE40 MCS9		13		dBm
HE40 MCS11		11		dBm

Data in this table are based on SKY85717-21 FEM

4. Bluetooth Specification

2.4 GHz BT Receive enhance data rate

(VBAT = 3.6V, TA = 27° C, unless otherwise specified)

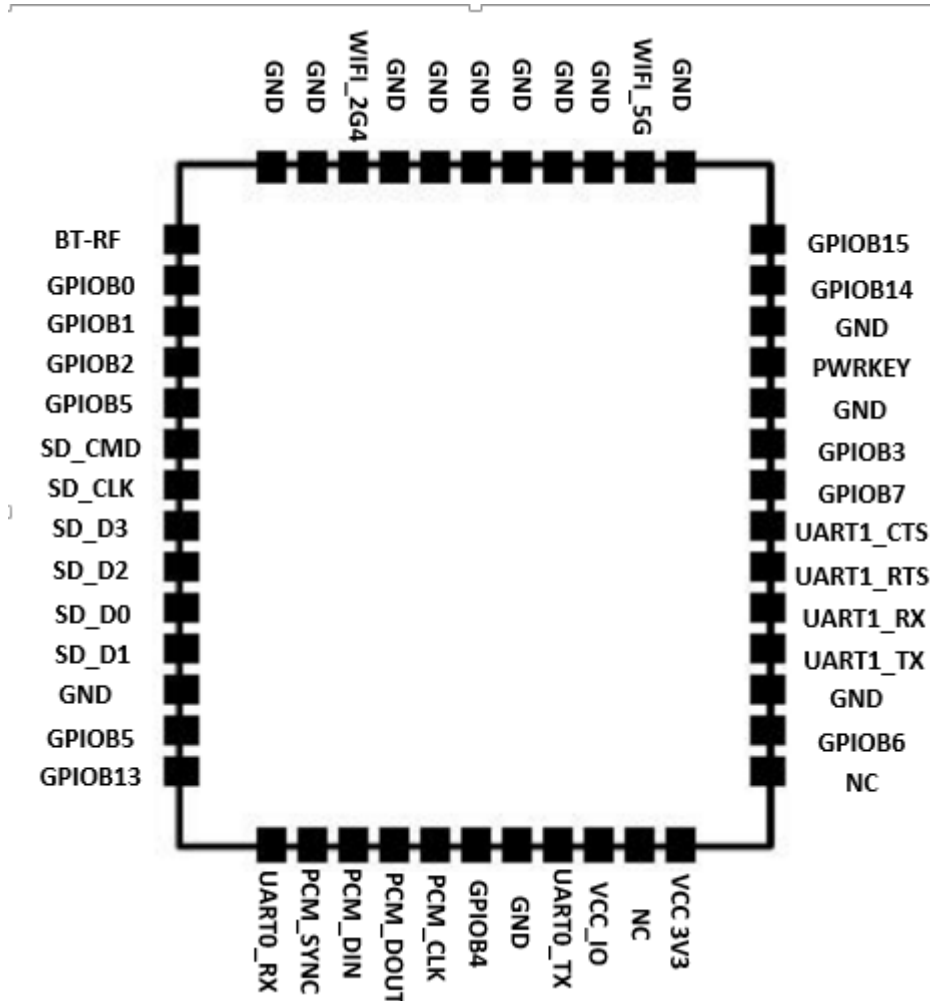
Description		Min	Typ	Max	Spec	Unit	
Receiver sensitivity	pi/4 DQPSK		-96.0		≤ -70	dBm	
	8DPSK		-90.0		≤ -70		
Maximum input level	pi/4 DQPSK		-5		≥ -20	dBm	
	8DPSK		-5		≥ -20		
Co-Channel interference, C/I	pi/4 DQPSK		7.5		≤ 13	dB	
	8DPSK		14.5		≤ 21		
C/I	F=F ₀ +1MHz	pi/4 DQPSK		-14.0		≤ 0	dB
		8DPSK		-8.0		≤ 5	
	F=F ₀ -1MHz	pi/4 DQPSK		-14.0		≤ 0	dB
		8DPSK		-7.0		≤ 5	
	F=F ₀ +2MHz	pi/4 DQPSK		-44.0		≤ -30	dB
		8DPSK		-42.0		≤ -25	
	F=F ₀ +3MHz	pi/4 DQPSK		-47.0		≤ -40	dB
		8DPSK		-40.0		≤ -33	
	F=F ₀ -3MHz	pi/4 DQPSK		-47.0		≤ -40	dB
		8DPSK		-40.0		≤ -33	
	F=F _{image}	pi/4 DQPSK		-43.0		≤ -20	dB
		8DPSK		-38.0		≤ -13	

2.4 GHz BT Receive low energy 2Mbps

(VBAT = 3.6V, TA = 27° C, unless otherwise specified)

Description		Min	Typ	Max	Spec	Unit
Receiver sensitivity			-96		≤ -70	dBm
Maximum input level			0		≥ -10	dBm
Co-Channel interference, C/I			5.5		≤ 21	dB
C/I	F=F ₀ +2MHz		-11.0		≤ 15	dB
	F=F ₀ -2MHz		-7.5		≤ 15	dB
	F=F ₀ +4MHz		-46.0		≤ -17	dB
	F=F ₀ +6MHz		-51.5		≤ -27	dB
	F=F ₀ -6MHz		-50.5		≤ -27	dB
	F=F _{image}		-44.0		≤ -15	dB
Inter-modulation			-20		≥ -50	dBm
Blocking	30MHz to 2000MHz	-30			≥ -30	dBm
	2003MHz to 2399MHz	-35			≥ -35	dBm
	2484MHz to 2997MHz	-35			≥ -35	dBm
	3000MHz to 12.75GHz	-30			≥ -30	dBm

5 Pin Definition

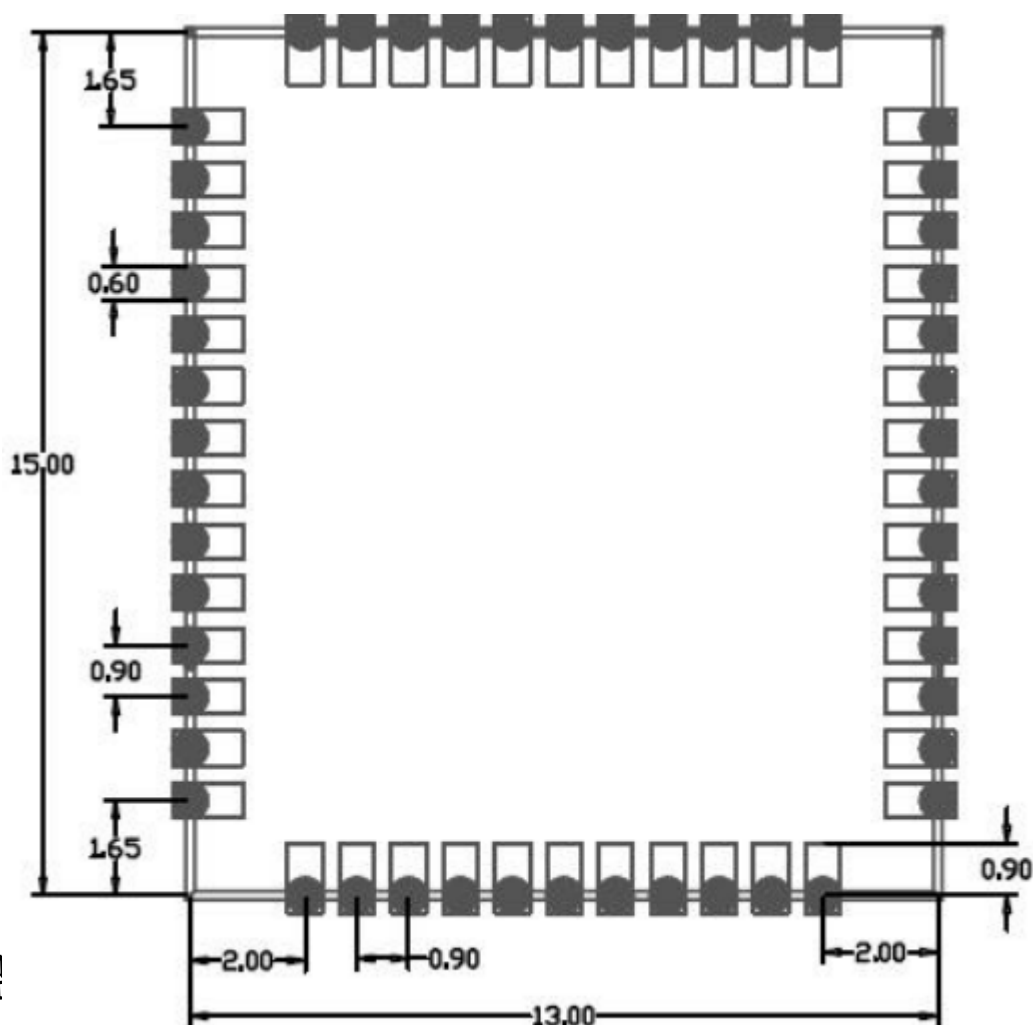


NO	PIN	DESCRIPTION
1	BT_RF	蓝牙射频
2	GPIOB0	GPIO
3	GPIOB1	GPIO
4	GPIOB2	GPIO
5	GPIOB5	GPIO
6	SD_CMD	SD 接口
7	SD_CLK	SD 接口
8	SD_D3	SD 接口
9	SD_D2	SD 接口
10	SD_D0	SD 接口
11	SD_D1	SD 接口
12	GND	接地
13	GPIOB5	GPIO
14	GPIOB13	GPIO
15	UART0_RX	串口
16	PCM_SYNC	PCM接口
17	PCM_DIN	PCM接口
18	PCM_DOUT	PCM接口
19	PCM_CLK	PCM接口
20	GPIOB4	GPIO
21	GND	接地
22	UART0_TX	串口
23	VCC_IO	接口电
24	NC	悬空
25	VCC_3V3	电源输入
26	NC	悬空
27	GPIOB6	GPIO
28	GND	接地
29	UART1_TX	串口
30	UART2_RX	串口
31	UART1_RTS	串口
32	UART1_CTS	串口
33	GPIOB7	GPIO
34	GPIOB3	GPIO
35	GND	接地
36	PWRKEY	开机接口
37	GND	接地
38	GPIOB14	GPIO
39	GPIOB15	GPIO
40	GND	接地
41	WIFI_5G	WIFI 5G射频
42	GND	接地

43	GND	接地
44	GND	接地
45	GND	接地
46	GND	接地
47	GND	接地
48	WIFI_2G4	WIFI 2.4G射頻
49	GND	接地
50	GND	接地

4:尺寸参考 (Dimensions(mm))

Length	Width	Height
15.0	13.0	2.1
(Tolerance: +/-0.2mm)	(Tolerance: +/-0.2mm)	(Tolerance: +/-0.2mm)



5:炉注

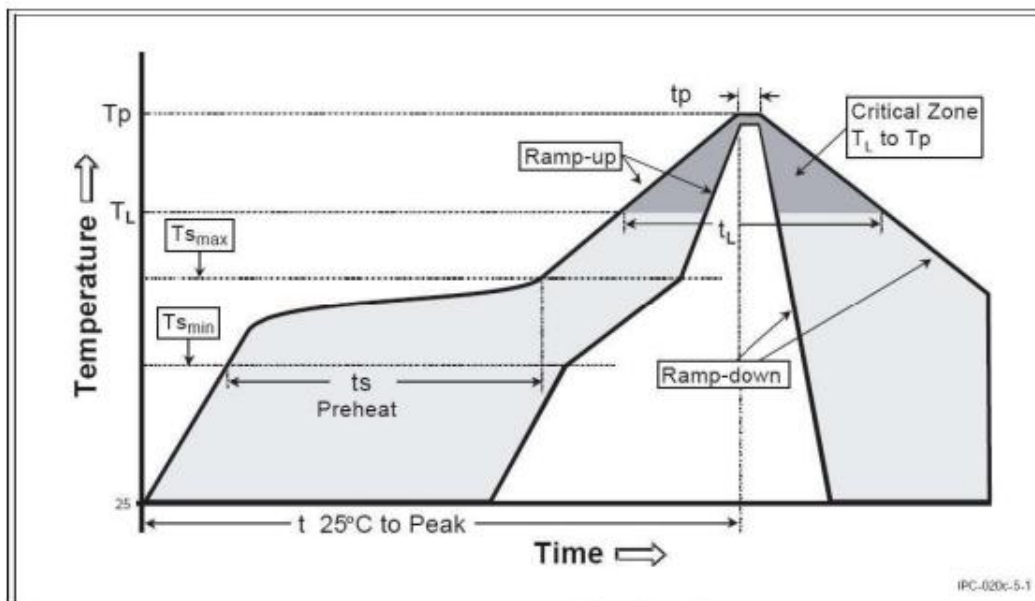


Figure.8-1 Classification Reflow Profile

Table 7-1 Classification Reflow Profiles

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (T _{Smax} to T _p)	3 °C/second max.	3 °C/second max.
Preheat		
-Temperature Min (T _{Smin})	100 °C	150 °C
-Temperature Max (T _{Smax})	100 °C	200 °C
-Time (t _{Smin} to t _{Smax})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183 °C	217 °C
-Time (t _L)	60-150seconds	60-150 seconds
Peak /Classification Temperature(T _p)	See Table 11-2	See Table 11-3
Time within 5 oC of actual Peak Temperature (t _p)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6 °C/second max.	6 °C/seconds max.
Time 25 oC to Peak Temperature	6 minutes max.	8 minutes max.