SKI.WB800D.3

IEEE 802.11a/b/g/n/ac/ax 1T1R Wi-Fi Module

Integrated BT 5.0

Approved by Shikun		
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Content

1. Introduction（简介）

SKI.WB800D.3 module is based on AICSEMI AIC8800D solution.SKI.WB800D.3 is a Wi-Fi 6 / BT 5.0 combo low-power, high-performance and high-integrated wireless communication module ，which is designed for meeting the customers' needs of small size and low cost. This module supports both WLAN and BT functions. Its WLAN/BT function supports the USB 2.0 interface, and the module meets the requirements of standard protocol IEEE 802.11 b/g/n/ax. Such units as power management, power amplifier and low-noise amplifier are integrated in the main chip of the module.This documentation describes the engineering requirements specification.

SKI.WB800D.3 模块基于爱科微 AIC8800D 方案。SKI.WB800D.3 是一款内置高性能的 Wi-Fi 6 / BT 5.0 组合的低功耗、高性能、高集成度无线通信模块，专为满足客户小尺寸、低成本的需求而设计。该模块支持 WLAN 和 BT 功能。WLAN/BT 功能支持 USB 2.0，满足 IEEE 802.11 a/b/g/n/ac/ax 标准协议要求。本文档描述了工程要求规范。

2. Features（特性）

Protocol **支持标准**	IEEE Std. 802.11b
	IEEE Std. 802.11g
	IEEE Std. 802.11n
	IEEE Std. 802.11a
	IEEE Std. 802.11ac
	IEEE Std. 802.11ax
	BT 5.0
Chip Solution **芯片方案**	AIC8800D
Band **波段**	2.4GHz/5GHz
Bandwidth **占用带宽**	20MHz/40MHz
Dimensions **尺寸**	19mm×17mm×3.2mm
Antenna **天线**	Stamp Hole*2
Installation Mode **安装方式**	SMD
Remark **备注**	1T1R Wi-Fi Module Integrated BT 5.0

3. General Requirements（一般要求）

No.	Feature	Description
3-1	Operation Voltage 工作电压范围	3.3V+/-0.3
3-2	Current Consumption 最大电流	600mA
3-3	Ripple 纹波	120mV
3-4	Operation Temperature 工作温度范围	0°C to +40°C
3-5	Antenna Type 天线类型	External antenna
3-6	USB	High Speed USB 2.0 Interface
3-7	Storage Temperature 存储温度	-40°C to +85°C

4. Electrical Characteristics（电气特性）

除非另有说明，电气规范试验都在下列条件下进行:

环境条件温度：25℃±5℃；

电源电压：模块输上入电压 3.3V+/-0.3；

The Test for electrical specification was performed under the following condition unless otherwise specified：

Ambient condition Temperature :25℃ ± 5℃;

Power supply voltages：3.3V+/-0.3 input power at the Module;

4.1 IEEE 802.11b Section(2.4GHz)

Items	Contents				
Specification	IEEE802.11b				
Mode	CCK				
Channel	CH1 to CH13				
Data rate	1, 2, 5.5, 11Mbps				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
1. Power Levels(Calibrated)					
1) For antenna port（CCK 11M）	14.0	16.0	18.0	dBm	
2. Spectrum Mask @ target power					
1) fc +/-11MHz to +/-22MHz	-	-	-30	dBr	
2) fc > +/-22MHz	-	-	-50	dBr	
3 Constellation Error(EVM)@ target power					
1) 1Mbps	-	-	-10	dB	
2) 2Mbps	-	-	-10	dB	
3) 5.5Mbps	-	-	-10	dB	
4) 11Mbps	-	-	-10	dB	
4. Frequency Error	-20	-	20	ppm	

RX Characteristics	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity (each chain)					
1) 1Mbps (FER ≦8%)	-	-	-83	dBm	
2) 2Mbps (FER ≦8%)	-	-	-80	dBm	
3) 5.5Mbps (FER ≦8%)	-	-	-79	dBm	
4) 11Mbps (FER ≦8%)	-	-	-76	dBm	
6 Maximum Input Level (FER ≦8%)	-10	-	-	dBm	

4.2 IEEE 802.11g Section(2.4GHz)

Items	**Contents**				
Specification	IEEE802.11g				
Mode	OFDM				
Channel	CH1 to CH13				
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
1. Power Levels					
1) For antenna port（54M）	11.0	13.0	15.0	dBm	
2. Spectrum Mask @ target power					
1) at fc +/-11MHz	-	-	-20	dBr	
2) at fc +/-20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-40	dBr	
3 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	-	-	-25	dB	
4 Frequency Error	-20	-	20	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity (each chain)					
1) 6Mbps (PER ≦10%)	-	-	-85	dBm	
2) 9Mbps (PER ≦10%)	-	-	-84	dBm	
3) 12Mbps (PER ≦10%)	-	-	-82	dBm	
4) 18Mbps (PER ≦10%)	-	-	-80	dBm	
5) 24Mbps (PER ≦10%)	-	-	-77	dBm	
6) 36Mbps (PER ≦10%)	-	-	-73	dBm	
7) 48Mbps (PER ≦10%)	-	-	-69	dBm	

8) 54Mbps (PER ≦10%)	-	-	-65	dBm	
6 Maximum Input Level (PER ≦10%)	-20	-	-	dBm	

4.3 IEEE 802.11n HT20/40 Section(2.4GHz)

Items	**Contents**				
Specification	IEEE802.11n HT20/40@2.4GHz				
Mode	OFDM				
Channel	HT20:CH1 to CH13 HT40:CH3 to CH11				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7				
TX Characteristics	Min.	Typ.	Max.	Unit	
1. Power Levels					
1) For antenna port（MCS7）	11.0	13.0	15.0	dBm	
2. Spectrum Mask @ target power					
1) at fc +/-11MHz	-	-	-20	dBr	
2) at fc +/-20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-45	dBr	
3. 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	-	-	-28	dB	
4. Frequency Error	-20	-	20	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5.Minimum Input Level Sensitivity (each chain)			HT20 / HT40		
1) MCS0 (PER ≦10%)	-	-	-82	-79	dBm
2) MCS1 (PER ≦10%)	-	-	-79	-76	dBm
3) MCS2 (PER ≦10%)	-	-	-77	-74	dBm
4) MCS3 (PER ≦10%)	-	-	-74	-71	dBm
5) MCS4 (PER ≦10%)	-	-	-70	-67	dBm
6) MCS5 (PER ≦10%)	-	-	-66	-63	dBm
7) MCS6 (PER ≦10%)	-	-	-65	-62	dBm
8) MCS7 (PER ≦10%)	-	-	-64	-61	dBm
7. Maximum Input Level (PER ≦10%)	-20	-	-	dBm	

4.4 IEEE 802.11ax HE20/40 Section(2.4GHz)

Items	Contents				
Specification	IEEE802.11ax HE20/40@2.4GHz				
Mode	OFDMA				
Channel	HE20:CH1 to CH13 HE40:CH3 to CH11				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7/8/9				
TX Characteristics	Min.	Typ.	Max.	Unit	
1. Power Levels (Calibrated)					
1) For antenna port（MCS9）	11.0	13.0	15.0	dBm	
2. Spectrum Mask @VHT20/VHT40 target power					
1) at fc +/-11MHz/21MHz/41MHz	-	-	-20	dBr	
2) at fc +/-20MHz/40MHz/80MHz	-	-	-28	dBr	
3) at fc +/-30MHz/60MHz/120MHz	-	-	-40	dBr	
3. 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	-	-	-27	dB	
9) MCS8	-	-	-30	dB	
10) MCS9	-	-	-32	dB	
4. Frequency Error	-20	-	20	ppm	
RX Characteristics	Min.	Typ.	Max.		Unit
5.Minimum Input Level Sensitivity (each chain)			HE20	HE40	
1) MCS0 (PER ≦10%)	-	-	-82	-79	dBm
2) MCS1 (PER ≦10%)	-	-	-79	-76	dBm
3) MCS2 (PER ≦10%)	-	-	-77	-74	dBm
4) MCS3 (PER ≦10%)	-	-	-74	-71	dBm
5) MCS4 (PER ≦10%)	-	-	-70	-67	dBm
6) MCS5 (PER ≦10%)	-	-	-66	-63	dBm
7) MCS6 (PER ≦10%)	-	-	-65	-62	dBm
8) MCS7 (PER ≦10%)	-	-	-64	-61	dBm
9) MCS8(PER ≦10%)	-	-	-59	-56	dBm
10) MCS9(PER ≦10%)	-	-	-57	-54	dBm
6. Maximum Input Level (PER ≦10%)	-30	-	-		dBm

4.5 IEEE 802.11a Section(5GHz)

Items	Contents				
Specification	IEEE802.11a				
Mode	OFDM				
Channel	CH36 to CH165				
Data rate (MCS index)	6, 9, 12, 18, 24, 36, 48, 54Mbps				
TX Characteristics	Min.	Typ.	Max.	Unit	
1. Power Levels (Calibrated)					
1) For antenna port（54M）	9.0	11.0	13.0	dBm	
2. Spectrum Mask @target power					
1) at fc +/-11MHz	-	-	-20	dBr	
2) at fc +/-20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-40	dBr	
3. 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	-	-	-25	dB	
4 Frequency Error	-20	-	20	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity (each chain)					
1) 6Mbps (PER ≦10%)	-	-	-82	dBm	
2) 9Mbps (PER ≦10%)	-	-	-81	dBm	
3) 12Mbps (PER ≦10%)	-	-	-79	dBm	
4) 18Mbps (PER ≦10%)	-	-	-77	dBm	
5) 24Mbps (PER ≦10%)	-	-	-74	dBm	
6) 36Mbps (PER ≦10%)	-	-	-70	dBm	
7) 48Mbps (PER ≦10%)	-	-	-66	dBm	
8) 54Mbps (PER ≦10%)	-	-	-65	dBm	
6. Maximum Input Level (PER ≦10%)	-30	-	-	dBm	

4.6 IEEE 802.11n HT20/40 Section(5GHz)

Items	Contents					
Specification	IEEE802.11n HT20/40@5GHz					
Mode	OFDM					
Channel	HT20:CH36 to CH165 HT40:CH38 to CH163					
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7					
TX Characteristics	Min.	Typ.	Max.		Unit	
1. Power Levels (Calibrated)						
1) For antenna port（MCS7）	9.0	11.0	13.0		dBm	
2. Spectrum Mask @target power						
1) at fc +/-11MHz	-	-	-20		dBr	
2) at fc +/-20MHz	-	-	-28		dBr	
3) at fc > +/-30MHz	-	-	-45		dBr	
3. 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	-	-	-28		dB	
4. Frequency Error	-20	-	20		ppm	
RX Characteristics	Min.	Typ.	Max.		Unit	
5. Minimum Input Level Sensitivity (each chain)			HT20	HT40		
1) MCS0 (PER ≦10%)	-	-	-82	-79	dBm	
2) MCS1 (PER ≦10%)	-	-	-79	-77	dBm	
3) MCS2 (PER ≦10%)	-	-	-77	-74	dBm	
4) MCS3 (PER ≦10%)	-	-	-74	-70	dBm	
5) MCS4 (PER ≦10%)	-	-	-70	-66	dBm	
6) MCS5 (PER ≦10%)	-	-	-66	-65	dBm	
7) MCS6 (PER ≦10%)	-	-	-65	-64	dBm	
8) MCS7 (PER ≦10%)	-	-	-64	-61	dBm	
6. Maximum Input Level (PER ≦10%)	-30	-	-		dBm	

4.7 IEEE 802.11ac VHT20/40 Section(5GHz)

Items	Contents					
Specification	IEEE802.11ac VHT20/40@5GHz					
Mode	OFDM					
Channel	VHT20:CH36 to CH165 VHT40:CH38 to CH163					
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7/8/9					
TX Characteristics	Min.	Typ.	Max.		Unit	
1. Power Levels (Calibrated)						
1) For antenna port（MCS9）	9.0	11.0	13.0		dBm	
2. Spectrum Mask @VHT20/VHT40 target power						
1) at fc +/-11MHz/21MHz/41MHz	-	-	-20		dBr	
2) at fc +/-20MHz/40MHz/80MHz	-	-	-28		dBr	
3) at fc +/-30MHz/60MHz/120MHz	-	-	-40		dBr	
3. 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	-	-	-27		dB	
9) MCS8	-	-	-30		dB	
10) MCS9	-	-	-32		dB	
4. Frequency Error	-20	-	20		ppm	
RX Characteristics	Min.	Typ.	Max.		Unit	
5.Minimum Input Level Sensitivity			VHT20	VHT40		
1) MCS0 (PER ≦10%)	-	-	-82	-79	dBm	
2) MCS1 (PER ≦10%)	-	-	-79	-76	dBm	
3) MCS2 (PER ≦10%)	-	-	-77	-74	dBm	
4) MCS3 (PER ≦10%)	-	-	-74	-71	dBm	
5) MCS4 (PER ≦10%)	-	-	-70	-67	dBm	
6) MCS5 (PER ≦10%)	-	-	-66	-63	dBm	
7) MCS6 (PER ≦10%)	-	-	-65	-62	dBm	
8) MCS7 (PER ≦10%)	-	-	-64	-61	dBm	
9) MCS8(PER ≦10%)	-	-	-59	-56	dBm	
10) MCS9(PER ≦10%)	-	-	-57	-54	dBm	
6. Maximum Input Level (PER ≦10%)	-30	-	-		dBm	

4.8 IEEE 802.11ax HE20/40 Section(5GHz)

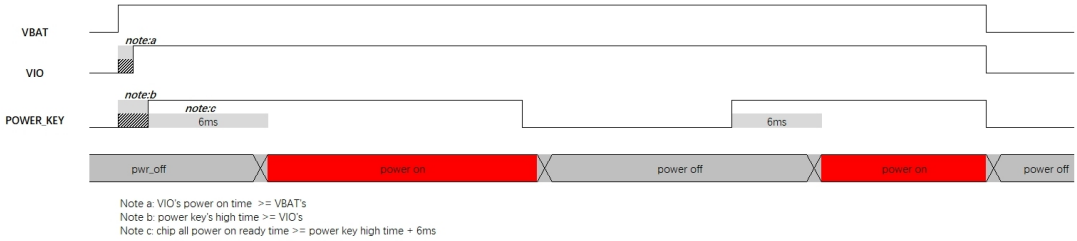
Items	Contents					
Specification	IEEE802.11ax HE20/40@5GHz					
Mode	OFDMA					
Channel	HE20:CH36 to CH165 HE40:CH38 to CH163					
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7/8/9					
TX Characteristics	Min.	Typ.	Max.		Unit	
1. Power Levels (Calibrated)						
1) For antenna port（MCS9）	9.0	11.0	13.0		dBm	
2. Spectrum Mask @VHT20/VHT40 target power						
1) at fc +/-11MHz/21MHz/41MHz	-	-	-20		dBr	
2) at fc +/-20MHz/40MHz/80MHz	-	-	-28		dBr	
3) at fc +/-30MHz/60MHz/120MHz	-	-	-40		dBr	
3. 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	-	-	-27		dB	
9) MCS8	-	-	-30		dB	
10) MCS9	-	-	-32		dB	
4. Frequency Error	-20	-	20		ppm	
RX Characteristics	Min.	Typ.	Max.		Unit	
5.Minimum Input Level Sensitivity			HE20	HE40		
1) MCS0 (PER ≦10%)	-	-	-82	-79	dBm	
2) MCS1 (PER ≦10%)	-	-	-79	-76	dBm	
3) MCS2 (PER ≦10%)	-	-	-77	-74	dBm	
4) MCS3 (PER ≦10%)	-	-	-74	-71	dBm	
5) MCS4 (PER ≦10%)	-	-	-70	-67	dBm	
6) MCS5 (PER ≦10%)	-	-	-66	-63	dBm	
7) MCS6 (PER ≦10%)	-	-	-65	-62	dBm	
8) MCS7 (PER ≦10%)	-	-	-64	-61	dBm	
9) MCS8(PER ≦10%)	-	-	-59	-56	dBm	
10) MCS9(PER ≦10%)	-	-	-57	-54	dBm	
6. Maximum Input Level (PER ≦10%)	-30	-	-		dBm	

4.9 Bluetooth Section

Items	Contents				
Specification	BT2.1+EDR/4.2/5.2 with BLE				
Mode	FHSS,GFSK,DPSK,DQPSK				
Number of Channel	79 Channels				
Frequency Band	2.402 GHz ~2.480GHz				
	Min.	Typ.	Max.	Unit	Remark
1. Output Power	-	3.0	-	dBm	
2. Gain step	-	1	-	dB	
3. Receiver sensitivity (BER ≦0.1%)	-	-93.5	-80	dBm	
4. Maximum usable signal (BER ≦0.1%)	-	-5	-		
5. C/I co-channel (BER<0.1%)	-	4	11	dB	
6. C/I 1MHz (BER<0.1%)	-	-14	0	dB	
7. C/I 2MHz (BER<0.1%)	-	-42	-30	dB	
8. C/I≥3MHz (BER<0.1%)	-	-49	-40	dB	
9. C/I Image channel (BER<0.1%)	-	-25	-9	dB	
10. C/I Image 1MHz (BER<0.1%)	-	-50	-20	dB	
11. Inter-modulation	-	-13	-	dB	
12. Out-of-band blocking					
1). 30MHz to 2000MHz	-10	-	-	dBm	
2). 2000MHz to 2399MHz	-27	-	-	dBm	
3). 2498MHz to 3000MHz	-27	-	-	dBm	
4). 3000MHz to 12.75GHz	-10	-	-	dBm	
13. Modulation characteristics					
1). Δf1avg	140	157	175	KHz	
2). Δf2max (For at least 99.9% of all Δf2max)	115	140	-	KHz	
3). Δf1avg /Δf2avg	0.8	0.98	-	KHz	
14. ICFT	-75	±20	+75	KHz	
15. Carrier frequency drift					
1). One slot packet (DH1)	-25	±15	+25	KHz	
2). Two slot packet (DH3)	-40	±15	+40	KHz	
3). Five slot packet (DH5)	-40	±15	+40	KHz	
4). Max drift rate	-	6	20	KHz/50us	
16. TX output spectrum(20dB bandwidth)	-	922	1000	KHz	
17. In-Band spurious emission					
1). ±2MHz offset	-	-45	-20	dBm	
2). ±3MHz offset	-	-48	-40	dBm	
3). >±3MHz offset	-	-48	-40	dBm	

5. Reference Design（参考设计）

5.1 Timing specification（时序规范）



时序要求

5.2 DC Electrical Characteristics（直流电气特性）

Symbol	Description	conditions	Min.	Typ.	Max.	Unit
VDD33	Power supplies	-	3.0	3.3	3.6	V
VDDIO	I/O input power supplies	-	3.0	3.3	3.6	V
			1.7	1.8	1.9	
I_{VDD33}	Power supply current	-	-	-	800	mA
I_{VDDIO}	I/O supply current	-	-	-	50	mA
V_{IH}	High-level input voltage	VDDIO=3.3V	VDDIO*0.625	-	VDDIO+0.3	V
		VDDIO=1.8V	VDDIO*0.65			
V_{IL}	Low-level input voltage	VDDIO=3.3V	-0.3	-	VDDIO*0.25	V
		VDDIO=1.8V			VDDIO*0.35	
V_{OH}	High-level output voltage	VDDIO=3.3V	VDDIO-0.4	-	VDDIO+0.3	V
		VDDIO=1.8V	VDDIO-0.2			
V_{OL}	Low-level output voltage	VDDIO=3.3V	-0.3	-	0.4	V
		VDDIO=1.8V			0.2	
R_{PU}	Internal pull-up resistor	VDDIO=3.3V	40	75	190	kΩ
		VDDIO=1.8V	10	50	100	
R_{PD}	Internal pull-down resistor	VDDIO=3.3V	40	75	190	kΩ
		VDDIO=1.8V	10	50	100	

		10Hz to 30Hz to 10Hz,amplitude 2.0mm, 5 times vibrations, 5x times vibration.		visual inspection and the products should be ok.
2-1	**Soldering ability test (Only for SKI module)**	Soldering temperature: 245±5℃ Soldering duration: 3±0.5S	3	1.After soldering, the soldered area must be covered by a smooth bright solder layer, some deficiencies such as a small amount of the pinhole, not wetting are allowed, but the deficiencies can not be in the same place; 2. At least 90% of soldered area shall be covered continuously by the soldering material.
2-2	**High Temperature and Humidity Operation Test**	Leave samples in 60℃, 90% RH @ 24 hours	4	After test, the products appearance, power, EVM and frequency error functional parameter shall be satisfied with the test specification.
2-3	**Low Temperature Operation Test**	Leave samples in -15℃ @24 hours	4	After test, the products appearance, power, EVM and frequency error functional parameter shall be satisfied with the test specification.
2-3	**High Temperature and Humidity Start Test**	Leave samples in 60℃, 90% RH for 4x hours	4	After test, power on and off the samples for 3x tiems, the samples should be able to start normally
2-4	**Low temperature start test**	Leave samples in -15℃ for 4x hours	4	After test, power on and off the samples for 3x tiems, the samples should be able to start normally
2-5	**High Temperature and Humidity Storage Test**	Leave samples in 85℃, 95% RH @ 48 hours	4	After test, the products appearance, power, EVM and frequency error functional parameter shall be satisfied with the test specification.
2-6	**Low Temperature Storage Test**	Leave samples in -40℃, @48 hours	4	After test, the products appearance, power, EVM and frequency error functional parameter shall be satisfied with the test specification.
2-7	**Thermal Shock Test**	-40~85℃，dwell time：30min，50cycles	4	After test, the products appearance, power, EVM and frequency error functional parameter shall be satisfied

				with the test specification.
2-8	**Aging Test**	60℃，120Hrs	10	The products at high temperature for a long time can continuous work normally
2-9	**Salt spray test**	NSS,35℃,PH:6.5~7.2, 24H	2	The Sample shall has no minor or major defects, such as physical damage, crack, corrosion, deformation etc;
2-10	**ESD**	Discharge voltage: 1kV C: 150pF Discharge resistance：330Ω Positive10 times 1 time for each second	3	The products can recoverable smoothly after ESD test.

7. aphorism（警語）

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditio ns:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital devic e, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection a gainst harmful interference in a residential installation. This equipment generates uses and can radia te radio frequency energy and, if not installed and used in accordance with the instructions, may cau se harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is e ncouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to the US/Canada.

This device is intended only for OEM integrators under the following conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna,

Important Note:

This modular transmitter is only FCC authorized for FCC Part 15.247&15.407 as listed on the grant, and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

End Product Labeling

If the FCC identification number is not visible when the module is installed insideanother device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: Contains Transmitter Module FCC ID: 2A7WHSKIWB800D3

Table for Filed Antenna

Antenna Type	Dipole Antenna
Antenna Gain.	For BT/BLE: 2400~2500MHz: ANT B:3.19dBi For WLAN 2400~2500MHz: ANT A:3.19dBi 5150MHz - 5850MHz: ANT A:3.09dBi

ISED Statement

- English: This device complies with Industry Canada license-exempt RSS standard(s).Operation is s ubject to the following two conditions: (1) This device may not cause interference, and (2) This devic e must accept any interference, including interference that may cause undesired operation of the de vice.The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).
- French:Le présentappareilestconforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitationestautorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareildoit accepter tout brouillageradioélec triquesubi, mêmesi le brouillageest susceptible d'encompromettre le fonctionnement.

This radio transmitter (ISED certification number:27906-MW50A) has been approved by Industry Canada to operate with theantenna types listed with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présentémetteur radio (ISED certification number: 27906-MW50A) aétéapprouvé par Industrie Canada pour fonctionner avecles types d'antenneénumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclusdanscetteliste, etdont le gain estsupérieur au gain maximal indiqué, sontstrictementinterdits pour l'exploitation de l'émetteur.

Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclarationd'exposition aux radiations

Cetéquipementestconforme Canada limitesd'exposition aux radiations dans un environnement non contrôlé. Cetéquipementdoitêtreinstallé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

This device is intended only for OEM integrators under the following condition:

The transmitter module may not be co-located with any other transmitter or antenna.

As long as the condition above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cetappareilestconçuuniquement pour les intégrateurs OEM dans les conditions suivantes:

Le module émetteurpeut ne pas êtrecoïmplanté avec unautreémetteurouantenne.

Tant que les 1 condition ci-dessussontremplies, des essaissupplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM esttoujoursresponsable des essais sur son produit final pour toutesexigences de conformitésupplémentairesrequis pour ce module installé.

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the ISED cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

Note Importante:

Dans le casoùces conditions ne peuventêtresatisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autreémetteur), l'autorisation du Canada n'est plus considérécommevalide et l' ISED ne peut pas êtreutilisé sur le produit final. Danscescirconstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y comprisl'émetteur) etl'obtentiond'uneautorisationdistincte au Canada.

End Product Labeling

The final end product must be labeled in a visible area with the following: Contains IC: 28814-SKIWB800D3

Plaque signalétique du produit final

Le produit final doitêtreétiquetédansunendroit visible avec l'inscriptionsuivante: Contient des IC: 28814-SKIWB800D3

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doitêtreconscient de ne pas fournir des informations à l'utilisateur final quant à la façond'installerou de supprimerce module RF dans le manuel de l'utilisateur du produit final qui intègrece module.

Le manuel de l'utilisateur final doitincluretoutes les informationsréglementairesrequises et avertissementscommeindiquédanscemanuel.

The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems.

les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilization à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

frequency range 5600~5650MHz is restricted to transmitting in ISED.