

WISOL / WSSF10R2AT

DATA SHEET Rev.08



WISOL

531-7, Gajang-ro, Osan-si, Gyeonggi-do
Rep. of Korea

<http://www.wisol.co.kr>

▶ CONTENTS

1. Scope	3
2. Numbering of product	3
2-1. Product	3
2-2. Part No.	3
3. Absolute Maximum Ratings	4
4. DC Characteristics	4
5. I/O Specifications	4
6. RF Specifications	5
7. Pin Description	6
7-1. Interface PIN(SMD Type : 31 Pin)_Bottom view	6
7-2. Interface PIN description	7
8. Block Diagram	8
9. Dimensions & drawing	9
9-1. Design dimension	9
9-2. Soldering Footprint	10
10. Reflow profile	11
11. Package	12
11-1. Dimension of Tape	12
11-2. Dimension of Reel	12
12. Power Modes	13
12-1. TX current test	13
12-2. RX current test	13
12-3. Sleep current test	14
12-4. Deep sleep current test	14

1. Scope

Description : Sigfox Module RCZ2

Type : SMD Type

PCBA Size : 13mm(W) x 20mm(L) x 2.21mm(H)

This module is SIGFOX verified and that the FCC are completed.

2. Numbering of product

2-1. Product



2-2. Part No.

W	S	S	F	M	1	0	R	2	A	T
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

No.	EXPLANATION
(1),(2)	WISOL
(3),(4)	Application (SF:Sigfox)
(5)	Type (M:Module)
(6),(7)	Group model numbering
(8), (9)	Region Code
(10),(11)	Application Type(Firm Ware Type) AT(AT command version) AP(API version)

3. Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
VCC	Module input voltage	-0.5 to 5.5	V
OT	Operating Temperature	-30 to +85	°C
ST	Storage Temperature	-40 to +125	°C

4. DC Characteristics

Symbol	Parameter	Min	Typ.	Max	Unit
VCC	Module input voltage	2.7	3.3	3.6	V
Current	Tx Current(@ "24" setting, MOD)	-	200	-	mA
	Rx Current	-	32	-	mA
	Sleep Current		2.5		uA

5. I/O Specifications

Symbol	Parameter	Min	Typ.	Max	Unit
VIH	High level input voltage @VCC=3.3V	2.0			V
VIL	Low level input voltage @VCC=3.3V			0.8	V

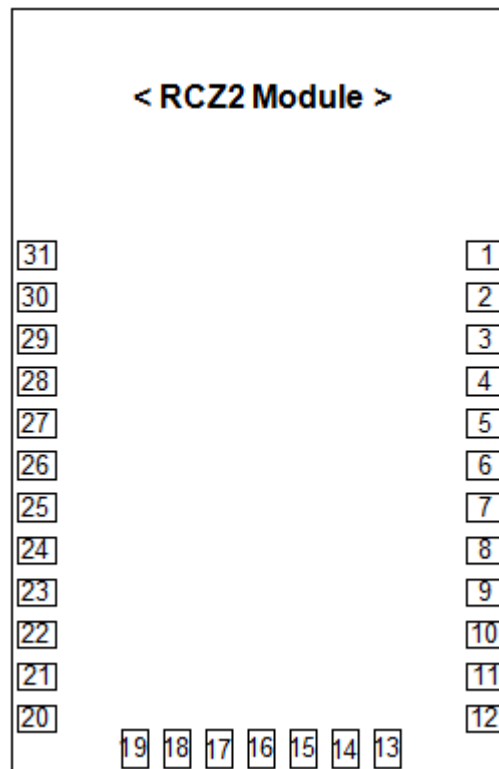
6. RF Specifications

Conditions: VCC=3.3V, Temp=25°C

Parameter		Min	Typ.	Max	Unit
RF Characteristics					
RF Frequency	Tx		902.2		MHz
	Rx		905.2		MHz
Tx output power(at "24" setting)		-	22.5	-	dBm
Frequency Error Tolerance(+25°C)		-2.5	-	+2.5	ppm
2 nd Harmonics(conducted)		-	-44	-	dBm
3 nd Harmonics(conducted)		-	-44	-	dBm
Rx Sensitivity(@600bps, GFSK)		-129	-		dBm
Rx Spurious Emission(30MHz~12.75GHz)				-54	dBm

7. Pin Description

7-1. Interface PIN(SMD Type : 31 Pin)_Bottom view



1	GND	9	GPIO5	17	TXLED/ DBG_CLK	25	GPIO2
2	GND	10	GPIO4	18	NC4/DBG_EN	26	GPIO3
3	GND	11	CPU_LED	19	RST_N	27	GND
4	GND	12	RADIO_LED	20	GND	28	GND
5	NC3/ SYSCLK	13	GPIO9	21	VDD_IO	29	GND
6	GPIO8	14	UARTTX	22	GND	30	RF_IO
7	GPIO7	15	UARTRX	23	GPIO0	31	GND
8	GPIO6	16	RXLED/ DBG_DATA	24	GPIO1		

Pin-map of RCZ1, RCZ2, RCZ3 and RCZ4 module is compatible (Pin to Pin)

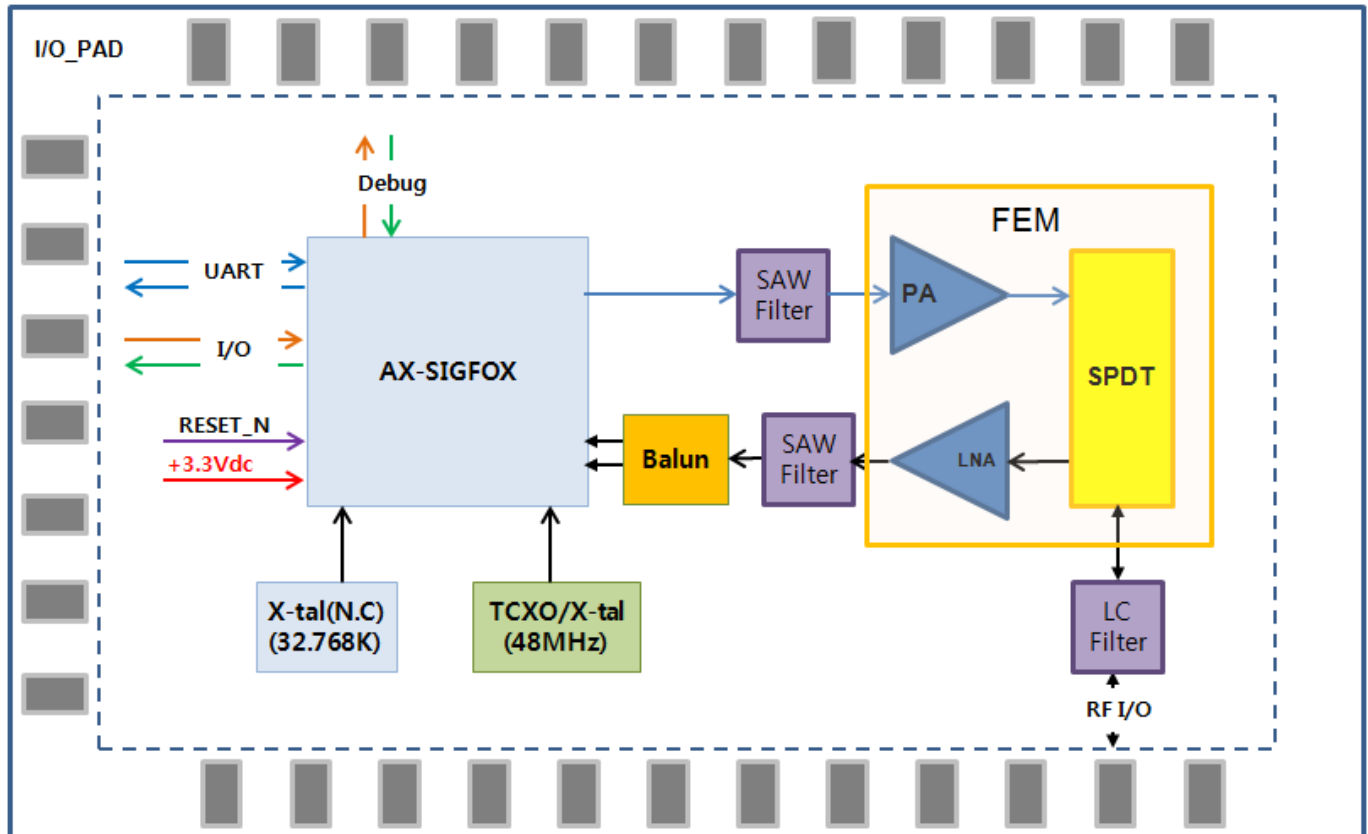
7-2. Interface PIN description

PIN(s)	NAME	TYPE	Description
1~4	GND	P	Ground
5	NC3/SYSCLK	N	Do not connect
6	GPIO8	I/O/PU	General purpose IO
7	GPIO7	I/O/PU	General purpose IO, selectable SPI functionality (MISO)
8	GPIO6	I/O/PU	General purpose IO, selectable SPI functionality (MOSI)
9	GPIO5	I/O/PU	General purpose IO, selectable SPI functionality (SCK)
10	GPIO4	I/O/PU	General purpose IO, selectable $\Sigma\Delta$ DAC functionality, selectable dock functionality
11	CPU_LED	O	CPU activity indicator
12	RADIO_LED	O	Radio activity indicator
13	GPIO9	I/O/PU	General purpose IO, wakeup from deep sleep
14	UARTTX	O	UART transmit
15	UARTRX	I/PU	UART receive
16	RXLED/DBG_DATA	O	Receive activity indicator
17	TXLED/DBG_CLK	O	Transmit activity indicator
18	NC4/DBG_EN	PD	Do not connect
19	RST_N	I/PU	Optional reset pin
20	GND	P	Ground
21	VDD_IO	P	Power supply
22	GND	P	Ground
23	GPIO0	I/O/A/PU	General purpose IO, selectable ADC functionality, selectable $\Sigma\Delta$ DAC functionality, selectable clock functionality
24	GPIO1	I/O/A/PU	General purpose IO, selectable ADC functionality
25	GPIO2*	I/O/A/PU	General purpose IO, selectable ADC functionality
26	GPIO3**	I/O/A/PU	General purpose IO, selectable ADC functionality
27	GND	P	Ground
28~29	GND	P	Ground
30	RF_IO	A	RF input/output
31	GND	P	Ground

* GPIO2 is TX_EN pin of FEM. This pin can not be used by the user.

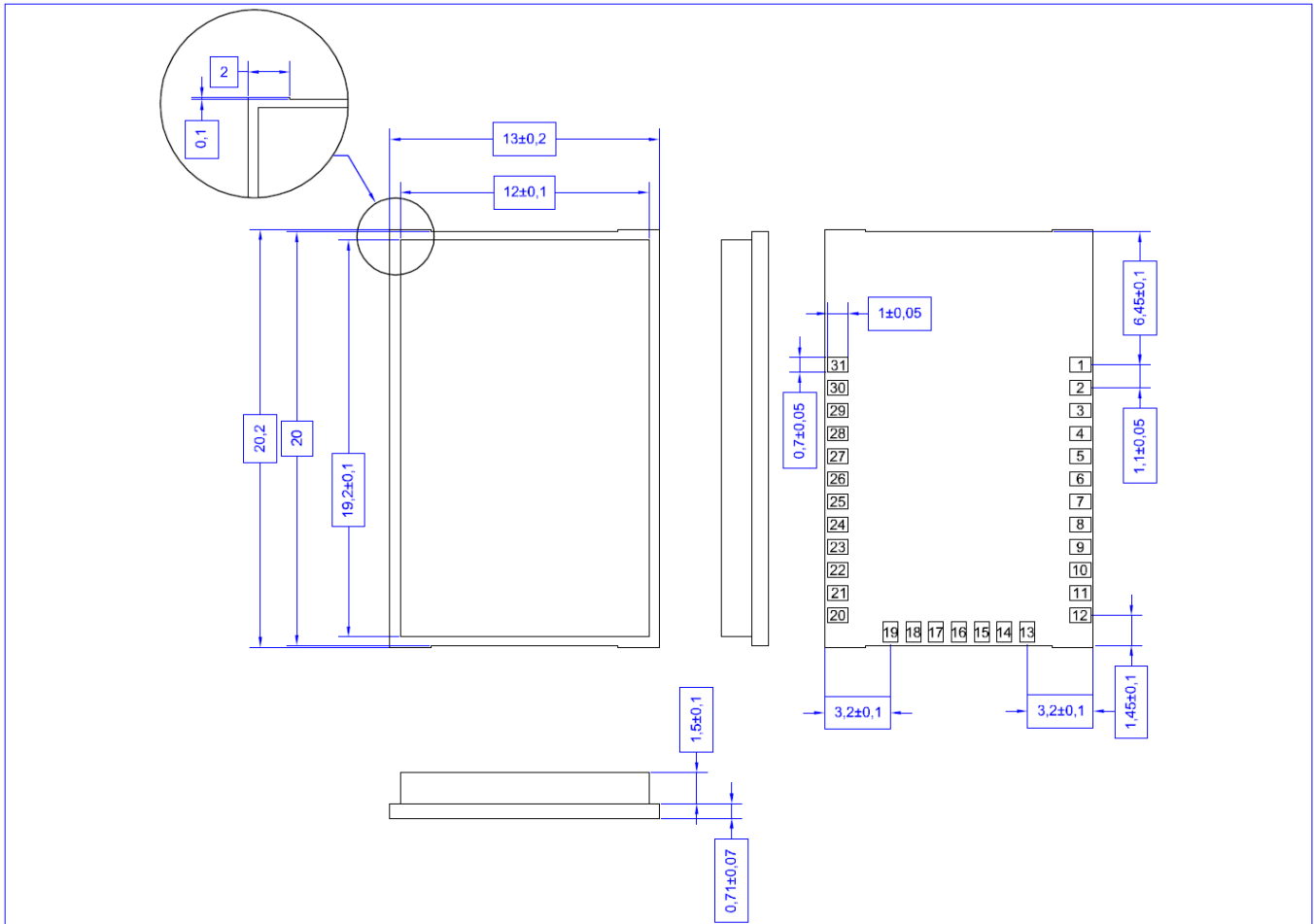
** GPIO3 is RX_EN pin of FEM. This pin can not be used by the user.

8. Block Diagram

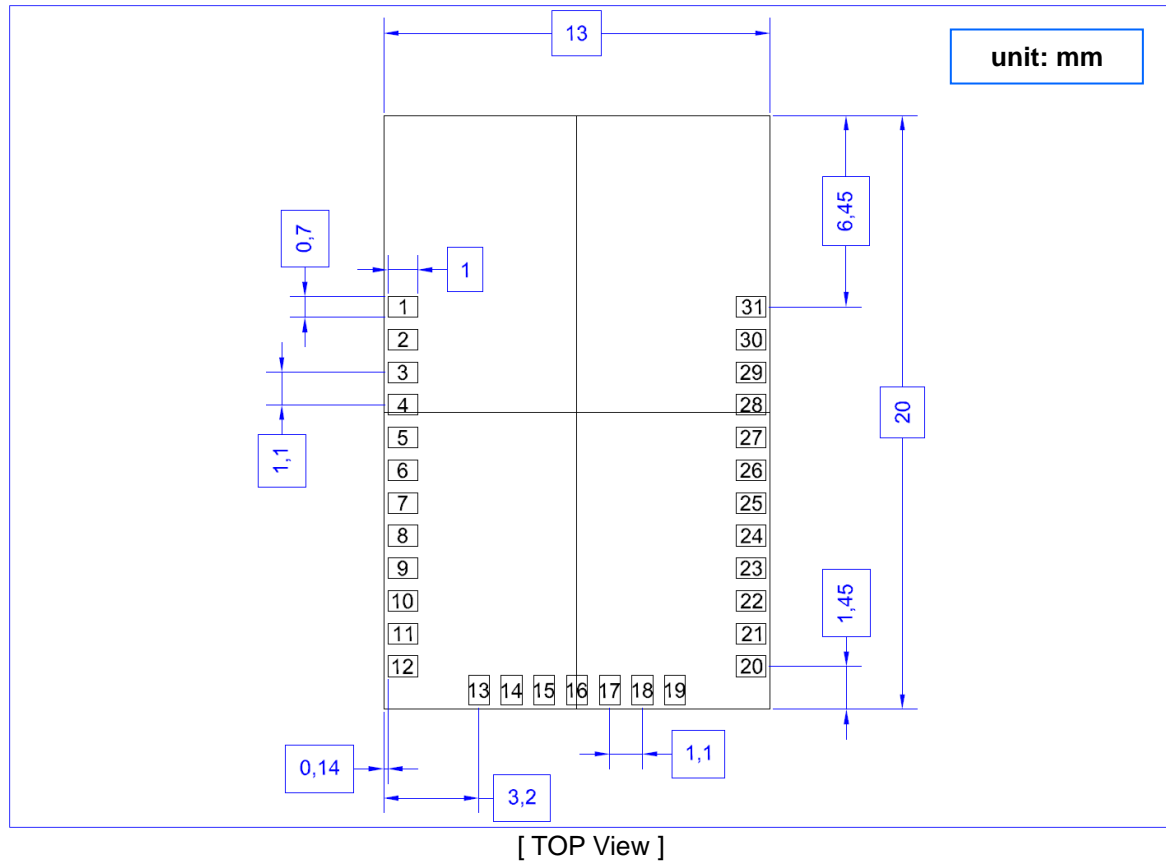


9. Dimensions & drawing

9-1. Design dimension

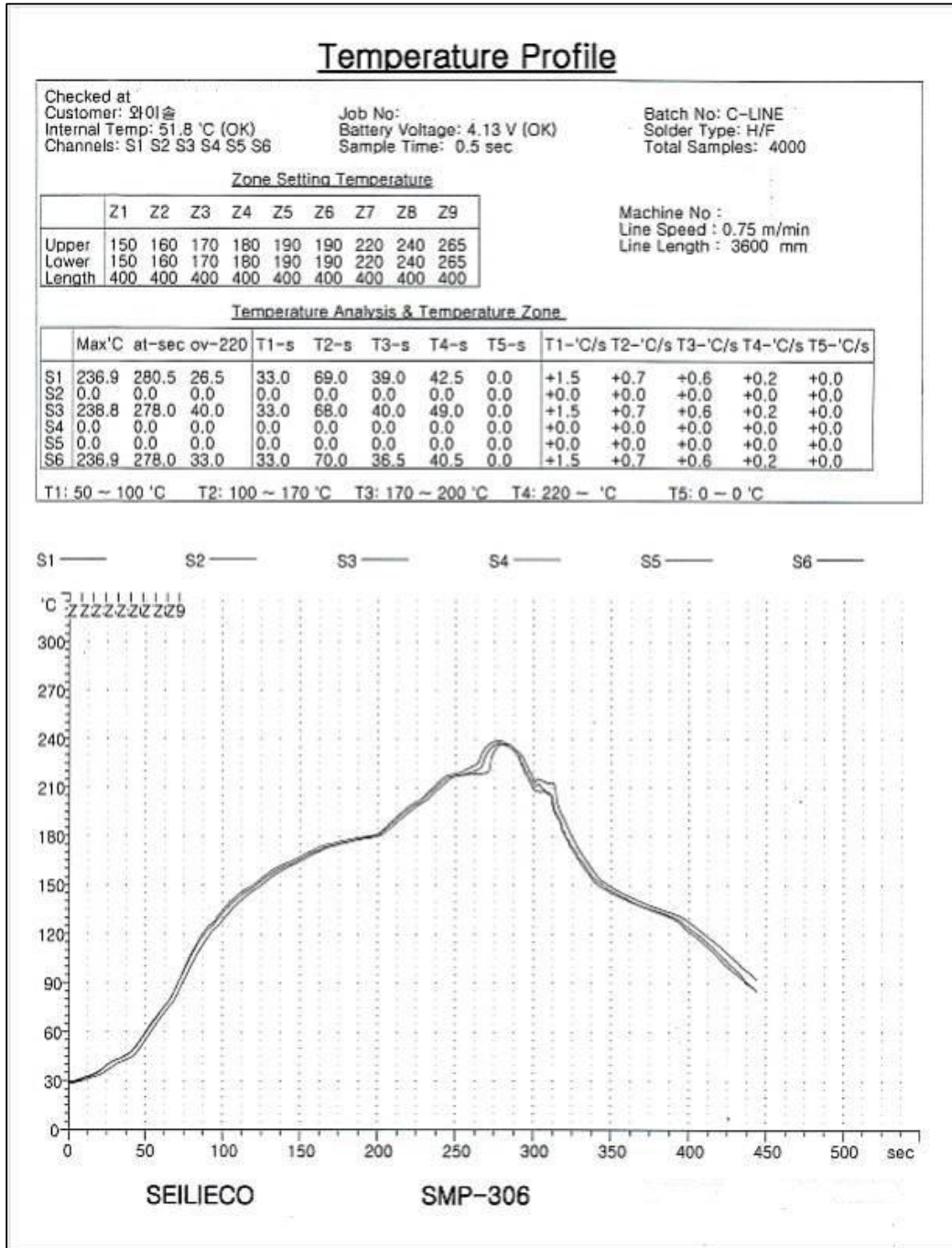


9-2. Soldering Footprint



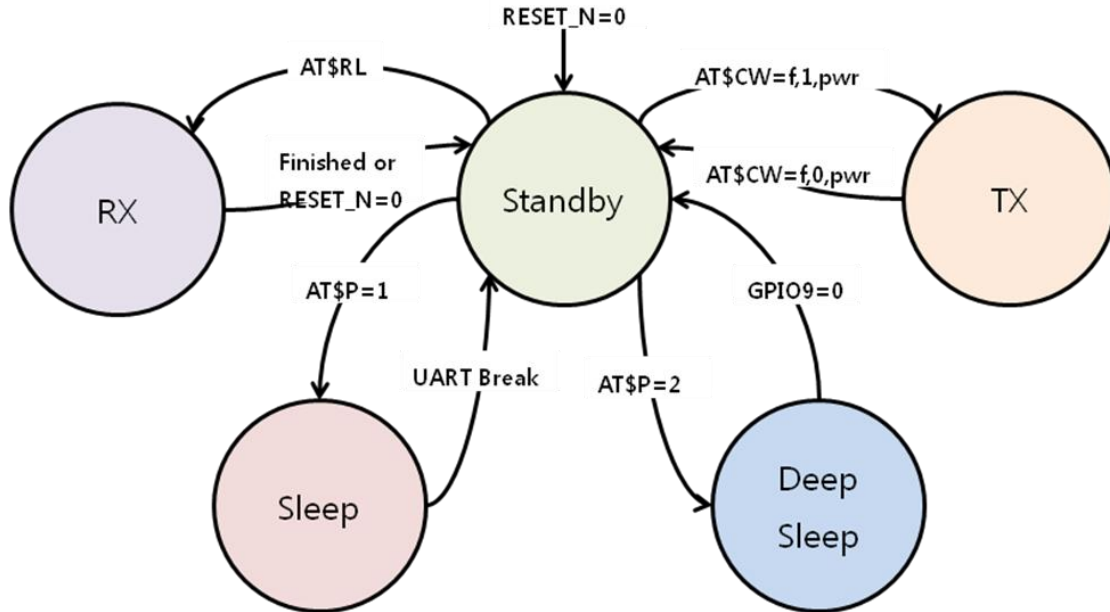
10. Reflow profile

<Reflow profile of Module>



SPEC	Preheat	Soak	Ramp	PEAK
	50~100°C	100~170°C	220°C ↑	240°C
	1~2°C/sec	60~100sec	30~50sec	±5°C
result of measurement	1.5	69	44	237.5
	OK	OK	OK	OK

12. Power Modes



12-1. TX current test

1. Disconnect Debug Switch(SW5~SW9) on EVB
2. Connect UART Switch(SW10~SW11) on EVB
3. Power switch ON(SW4) on EVB
4. Push the RESET Switch(SW1) on EVB
5. Initial mode=Standby mode (@500uA/ Remove J2-CPULED jumper)
6. TX current test method
 - 1) Input AT command 'AT' (UART condition checking)
 - 2) Click the Quick command (: default power table '24') or Input AT command 'AT\$CW=902200000,1,24' and then click 'Send' icon.
 - 3) Disconnect UART Switch(SW10~SW11) on EVB
 - 4) And then, Check TX current

12-2. RX current test

1. Disconnect Debug Switch(SW5~SW9) on EVB
2. Connect UART Switch(SW10~SW11) on EVB
3. Power switch ON(SW4) on EVB
4. Push the RESET Switch(SW1) on EVB
5. Initial mode=Standby mode (@500uA/ Remove J2-CPULED jumper)
6. RX current test method
 - 1) Input AT command 'AT' (UART condition checking)
 - 2) Input AT command 'AT\$RL' and then click 'Send' icon.
 - 3) Disconnect UART Switch(SW10~SW11) on EVB
 - 4) And then, Check RX current.

12-3. Sleep current test

1. Disconnect Debug Switch(SW5~SW9) on EVB
2. Connect UART Switch(SW10~SW11) on EVB
3. Power switch ON(SW4) on EVB
4. Push the RESET Switch(SW1) on EVB
5. Initial mode=Standby mode (@500uA/ Remove J2-CPULED jumper)
6. Sleep current test method
 - 1) Input AT command 'AT' (UART condition checking)
 - 2) Input AT command 'AT\$P=1' (sleep mode command)
 - 3) Disconnect UART Switch(SW10~SW11) on EVB
 - 4) And then, Check Sleep current

12-4. Deep sleep current test

1. Disconnect Debug Switch(SW5~SW9) on EVB
2. Connect UART Switch(SW10~SW11) on EVB
3. Power switch ON(SW4) on EVB
4. Push the RESET Switch(SW1) on EVB
5. Initial mode=Standby mode (@500uA/ Remove J2-CPULED jumper)
6. Deep sleep current test method
 - 1) Input AT command 'AT' (UART condition checking)
 - 2) Input AT command 'AT\$P=2' (Deep sleep mode command)
 - 3) Disconnect UART Switch(SW10~SW11) on EVB
 - 4) And then, Check Deep sleep current
 - 5) If the module wakes up, Push the tact switch(SW2: wakeup PIN)