



LoRa Module WSL300ASR

Compact-sized
With Ultra-low Power
Consumption



LoRaWAN Support



WSL300ASR(L) : 470MHz
WSL300ASR(H) : 868MHz
WSL300ASR(H2) : 915MHz
WSL300ASR(H3) : 923MHz



AT Commands



Extended Temperature
Range: -40°C to +85°C



Ultra-Low Power
Consumption
(<3uA @ sleep mode)

The WSL300ASR feature the LoRa™ long range modem that provides ultra-long range spread spectrum communication and high interference immunity whilst minimising current consumption.

LoRa™ also provides significant advantages in both blocking and selectivity over conventional modulation techniques, solving the traditional design compromise between range, interference immunity and energy consumption.

◆ General Feature

- General LoRa module for Smart City, Smart Agriculture , Smart Industry, IOT Application
- Compact Form Factor: 15 x 15.5 x 2.5 mm
- 20 Pin Stamp Pad for PCB SMT mounting
- I/O port: UART/I2C/GPIO
- Temperature range: -40°C to +85°C
- Supply voltage: 1.8 ~ 3.6V
- Frequency range: : 470MHz(or 862 – 932 MHz),ISM and SRD systems
- IEEE 802.15.4g, Wireless M-Bus and Proprietary Systems
- Maximum 22dBm output power and -141dBm high sensitivity
- Low-Power Wireless Systems with 7.8-kHz to 500-KHz Bandwidth

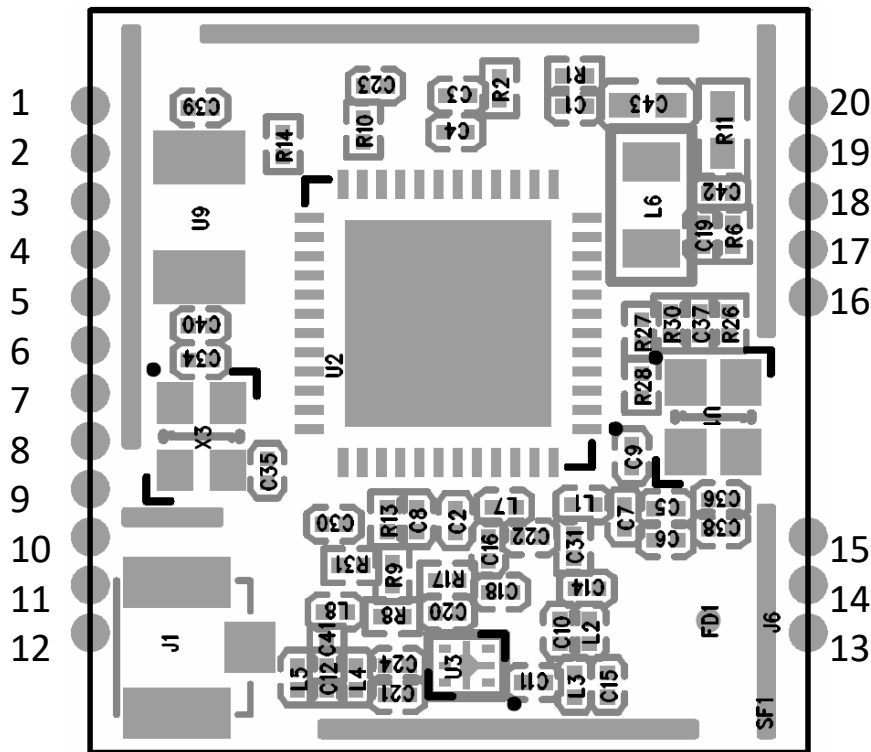
◆ Product Specifications

RF Function	
Standard	IEEE 802.15.4g
Interface	UART/I2C/GPIO
Transmit Output Power	Max. 22dBm
Data Rate	0.018 - 37.5 kbps
Modulation Techniques	Multilevel (G)FSK and MSK
Frequency bands	470MHz or 862 – 932 MHz
Operating Voltage	1.8 ~ 3.6V
Operating Temperature	-40 ~ 85 degree C

◆ Power Consumption

Item	Min.	Typ.	Max.	Unit	Condition
Transmit mode @22dBm		118		mA	
Receive mode		10		mA	
Sleep mode		3		uA	

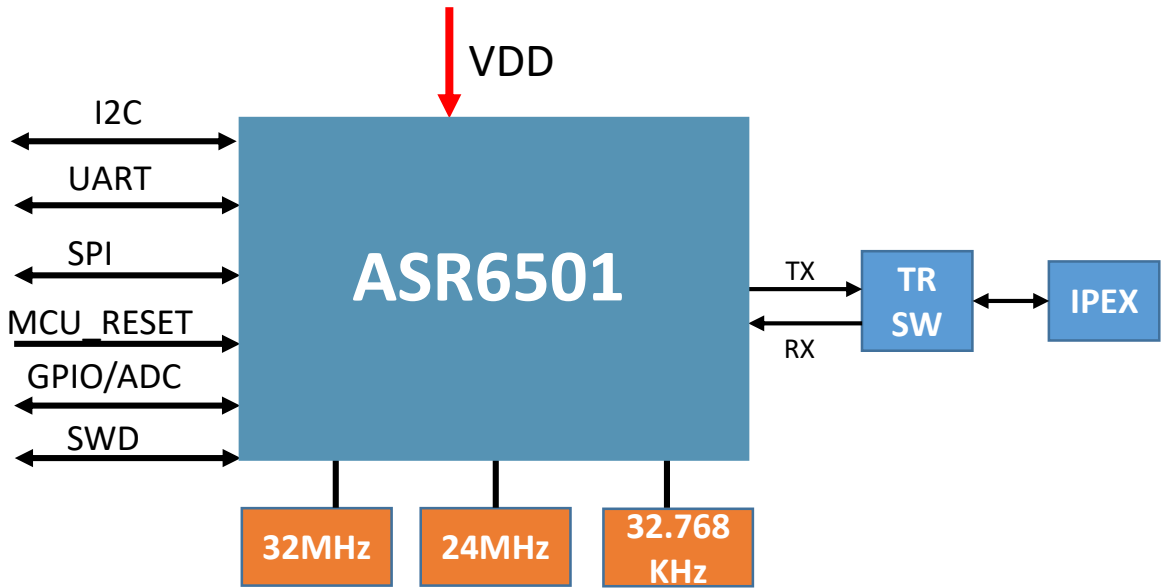
◆ **MODULE PINOUT**



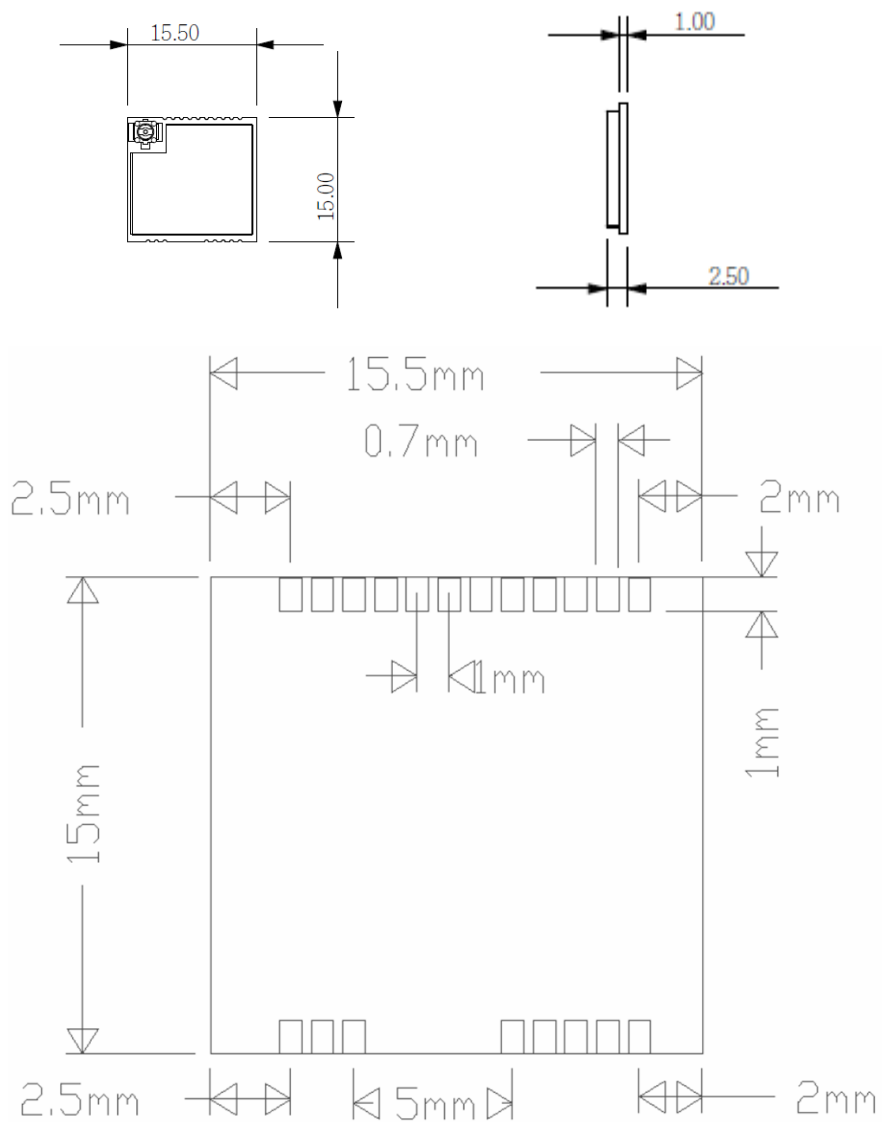
◆ **PIN DEFINITION**

PIN	Name	I/O	Description
1	UART_RX	I	Main UART
2	UART_TX	O	Main UART
3	ADC_IN	I/O	ADC_IN
4	SETA	I/O	General GPIO
5	AUX	I/O	AUX
6	SETB	I/O	General GPIO
7	SWDIO	I/O	Programming
8	SWCLK	I/O	Programming
9	I2C_SCL	I/O	I2C interface
10	I2C_SDA	I/O	I2C interface
11	GND	-	
12	RF	-	RF port (RF on pad or IPEX is optional)
13	GND	-	
14	GND	-	
15	SPI_CLK	-	Reserved
16	SPI_MISO	-	Reserved
17	SPI_MOSI	-	Reserved
18	MCU_NRST	I	MCU reset
19	GND	-	
20	VDD	-	DC3V3

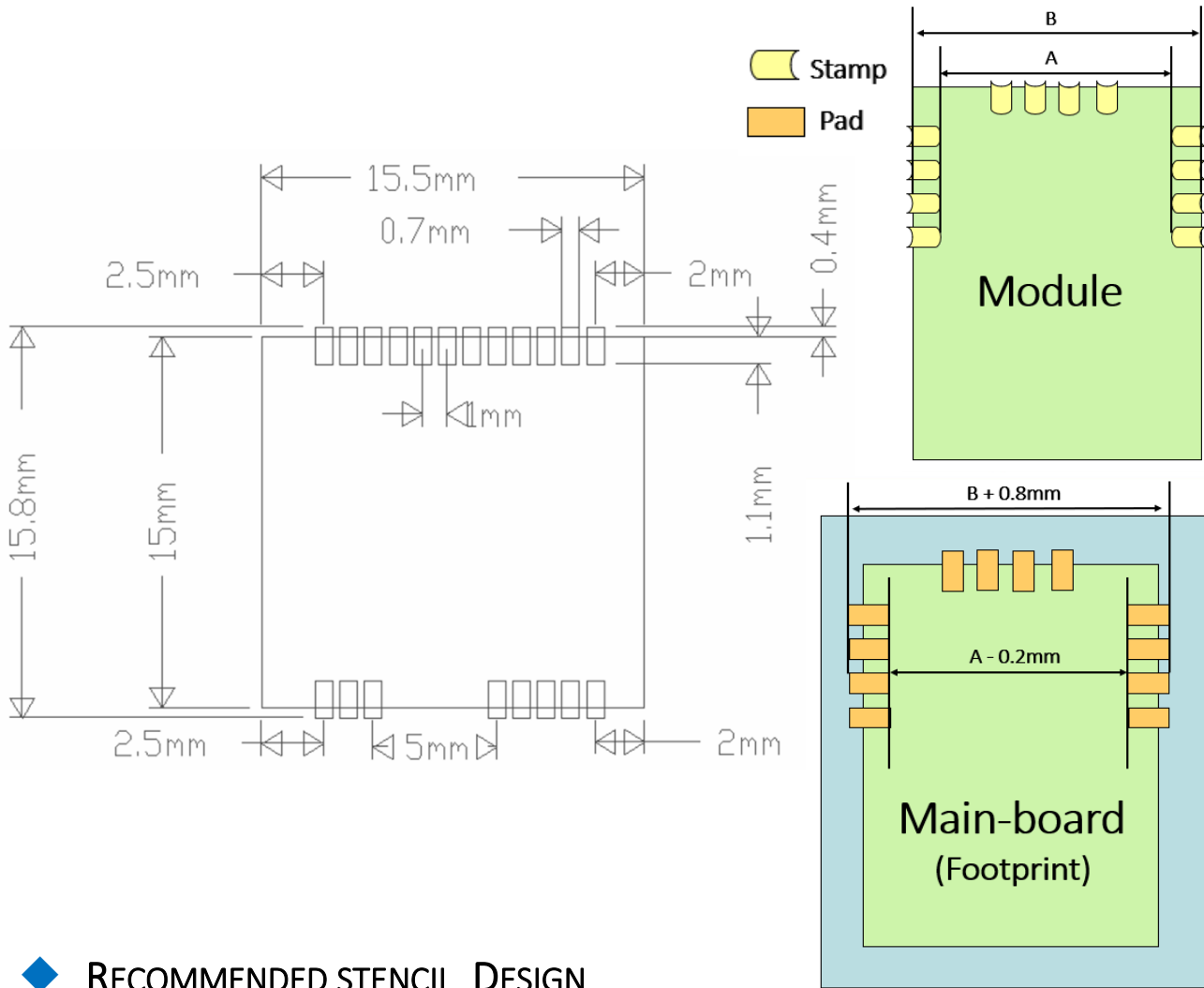
◆ BLOCK DIAGRAM



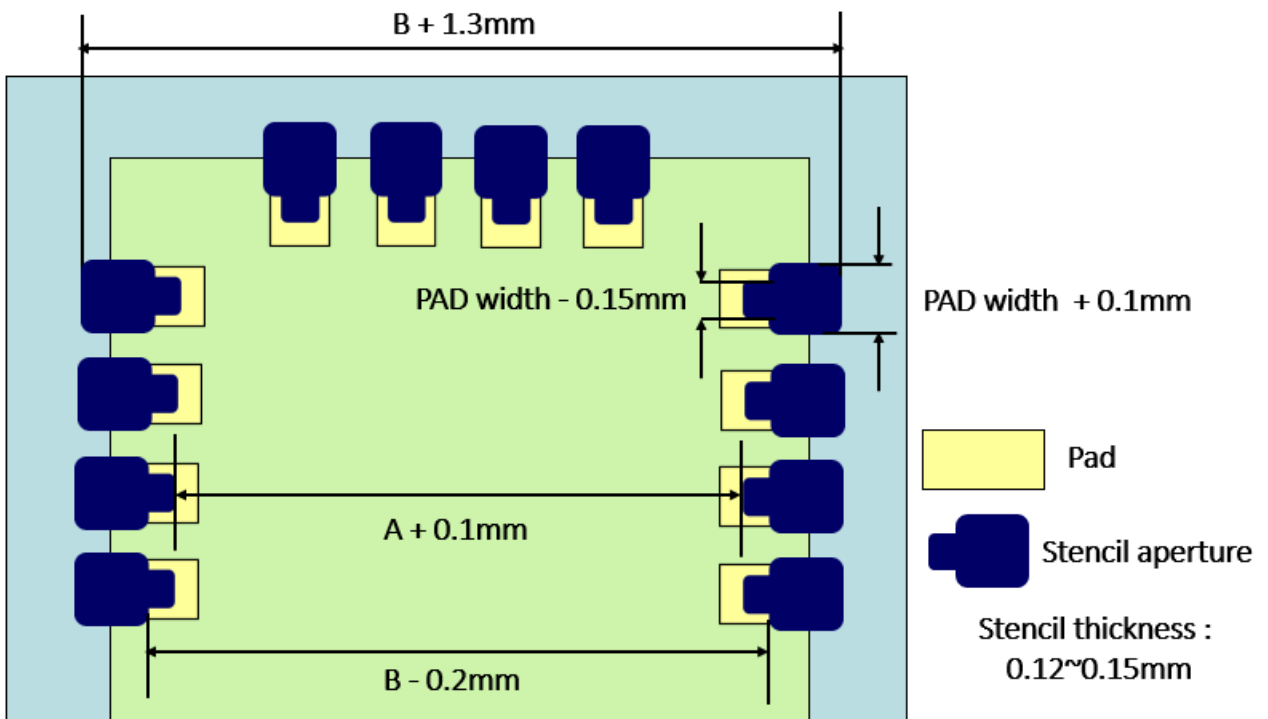
◆ MODULE DIMENSION



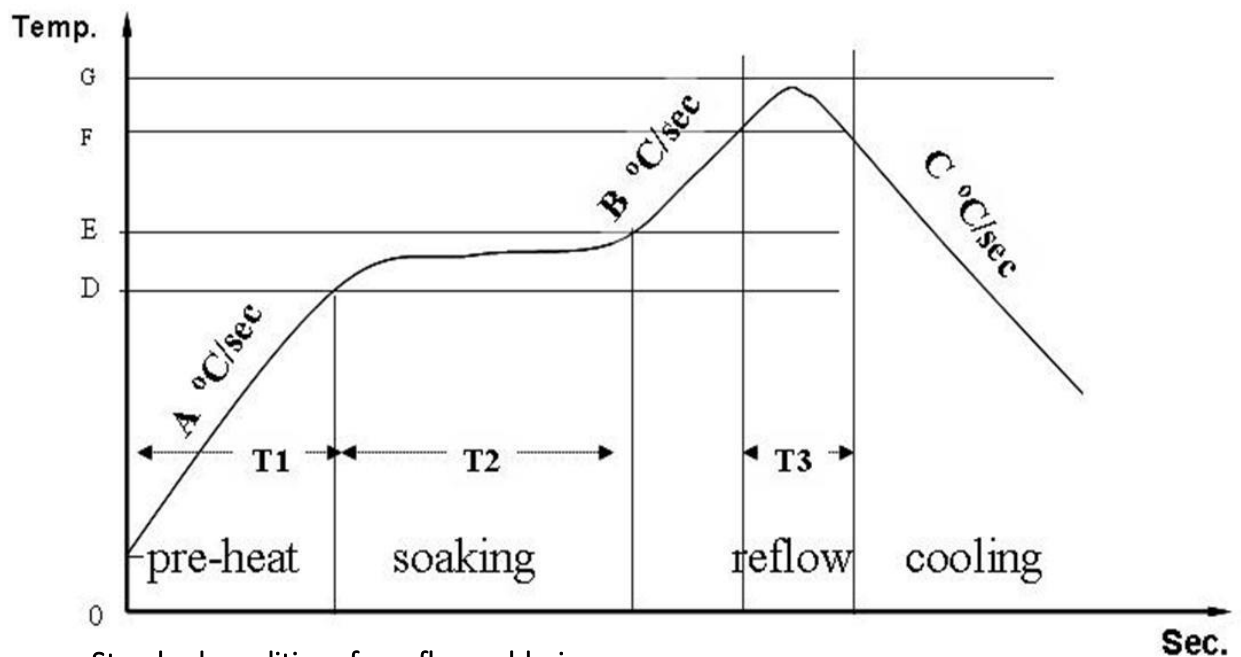
◆ **RECOMMENDED FOOTPRINT DIMENSION**



◆ **RECOMMENDED STENCIL DESIGN**



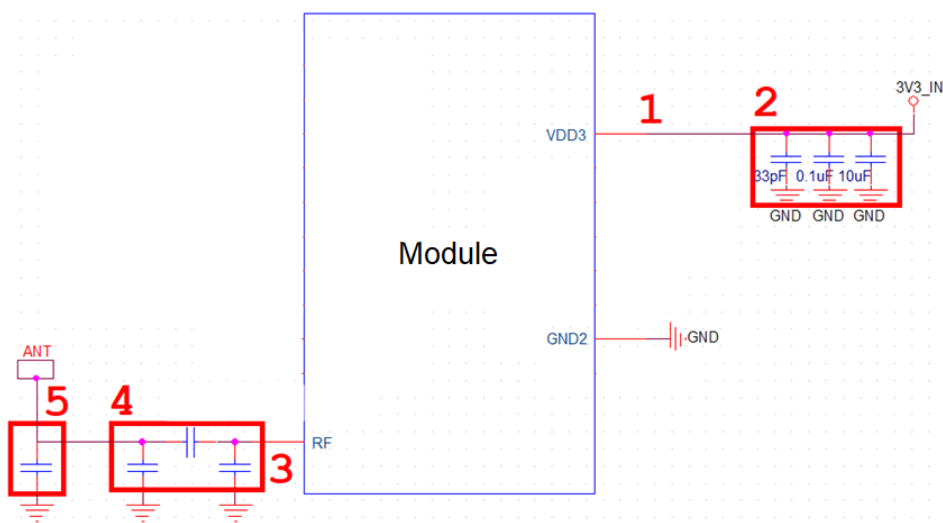
◆ **RECOMMENDED REFLOW PROFILE**



Standard conditions for reflow soldering:

- a. Pre-heating Ramp (A) (Initial temperature: 150°C): 1~2.5°C/sec;
- b. Soaking Time (T2) (150°C~180°C): 60sec~100sec;
- c. Peak Temperature (G): 230~250°C;
- d. Reflow Time (T3) (>220°C): 30~60 sec;
- e. Ramp-up Rate (B): 0~2.5°C/ sec;
- f. Ramp-down Rate (C): 1~3°C/ sec.

◆ **Additional Guidelines**



1. Power output routing width recommended more than 1mm.
2. Recommended to reserve capacitors to suppress ripple and noise.
3. RF output need routing with 50ohm impedance line.
4. Reserve the Pi-Matching for Antenna performance tuning.
5. Reserve the TVS for ESD protection. (Option)

PACKING SPEC

Do not put the middle in the top 20 pcs and the last of 60 pcs by one reel.

ITEM	P/N	DESCRIPTION	QTY
1	***	Product	1
2	5252000025KD	24MM Tape Reel	22.4m/1000
3	5253000003KD	24MM Reel cover	500m/22000
4	5250000003KD	Reel Disc 15	2/1000
5	5251000003KD	24 MM Reel Axes	1/1000
6	MM125	Reel bag label	3/1000
7	701A000008YD	30G Dryer	1/1000
8	515300099437	10%-60% Humidity Indicator Card	1/1000
9	5230000518ZD	24 Plastic strip	1/1000
10	5011000102ZD	AL Bag Anti-Static	1/1000
11	50910010073D	Caution label	1/1000
12	50910009253D	ESD caveat	1/1000
13	50300008621D	Pizza box	1/1000
14	50300008341D	Carton	1/4000
15	MM108	Carton Label	1/4000
	5220000003ED	封箱胶带	3.67/4000

A3	UN11	SCALE	SHEET	MODEL No.	WSL305S	
	MM	FREE	1 of 1	PART NAME	DUMMY PACKAGE	
APPROVED	CHECKED	DESIGNED	PART No.	REV	A1	
Bing Li	Zhen Liu			光寶科技股份有限公司 LITE-ON TECHNOLOGY CORP.		
				2018.08.01		

DEG	ANGLE			
DIM	A	B	C	D
0-5	±0.02	±0.05	±0.10	0°-50° ±0.1°
5-10	±0.03	±0.10	±0.15	31°-40° ±0.05°
10-50	±0.10	±0.15	±0.20	61°-80° ±0.05°
50-100	±0.15	±0.20	±0.25	
100	±0.15	±0.20	±0.25	

◆ CHANGE LIST

Rev	Date	Author	Change List
V1.0	2018.07.20	Kaysa Lee	Preliminary
V1.1	2018.09.25	Kaysa Lee	Add Reflow profile Add Packing Spec Add Model suffix H3 for 923MHz configuration
V1.2	2018.10.18	Kaysa Lee	Update recommended footprint/stencil design
V1.3	2019.03.06	Kelly Hsu	Modify Supply Voltage and Operating Voltage
V1.4	2019.03.29	Kelly Hsu	Add High Band Frequency range Add High Band Sample photo
V1.5	2019.04.18	Kelly Hsu	Add Additional Guidelines