

# SKW77 High-Power WLAN Module Datasheet

## Document Information

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## 1 General Description

The SKW77 is a highly power wifi module, it compliant to 802.11 b/g/n Wi-Fi Solution for highly performance WLAN requiring up to +27dBm output power. The module requiring a external 3.3V power supply and a external 5.0V power supply .

The module based on the single chip MT7620A which integrates an 802.11n 2x2 MAC/BB/radio. It supports 802.11n operations up to 144 Mbps for 20 MHz and 300 Mbps for 40 MHz channel respectively, and IEEE 802.11b/g data rates.

The module support bridge mode and AP client mode and router mode

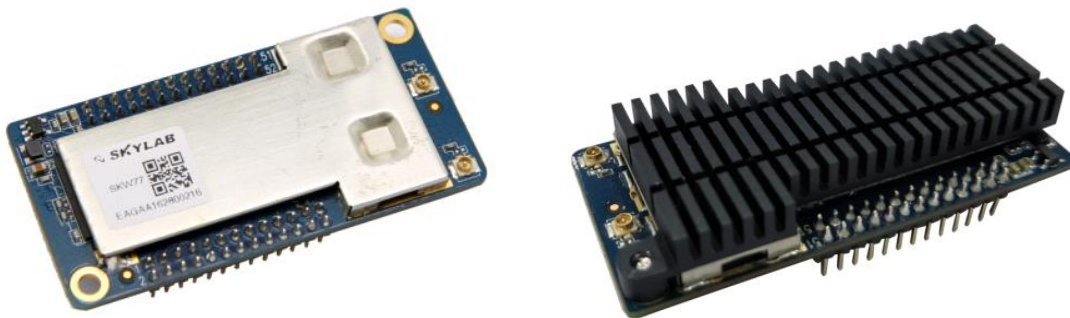


Figure 1: SKW77 Top View

## 2 Applications

- ◆ USB WiFi Camera PND (Portable Navigation Device)
- ◆ Wireless industrial data transmission over a long distance Mobile phone
- ◆ WiFi AP
- ◆ 3G/4G Wi-Fi Router
- ◆ WiFi Repeater
- ◆ Building Automation
- ◆ Drone

- ◆ Industry Control

### 3 Features

- ◆ Compliant to IEEE 802.11b/g/n Ultra high sensitivity: -165dBm
- ◆ 2T2R mode with support for a 300Mbps PHY data rate.
- ◆ Transmit power up to +28dBm
- ◆ Flash memory up to 128Mb.
- ◆ 2 LAN ports and 1 WAN port.
- ◆ Support USB 2.0 slave device for USB disk and USB 3G/4G dongle and USB camera
- ◆ Support SD card
- ◆ Support interface: I2S, UART lite, GPIO.
- ◆ Security: WEP64/128, TKIP, AES, WPA, WPA2, WAPI.
- ◆ Support Bridge/AP Client/Router mode.
- ◆ RoHS compliance meets environment-friendly requirement.
- ◆ 59.0mm(L) x 28.9mm(W) x 9.0mm(H) dimension.

## 4 Application Block Diagram

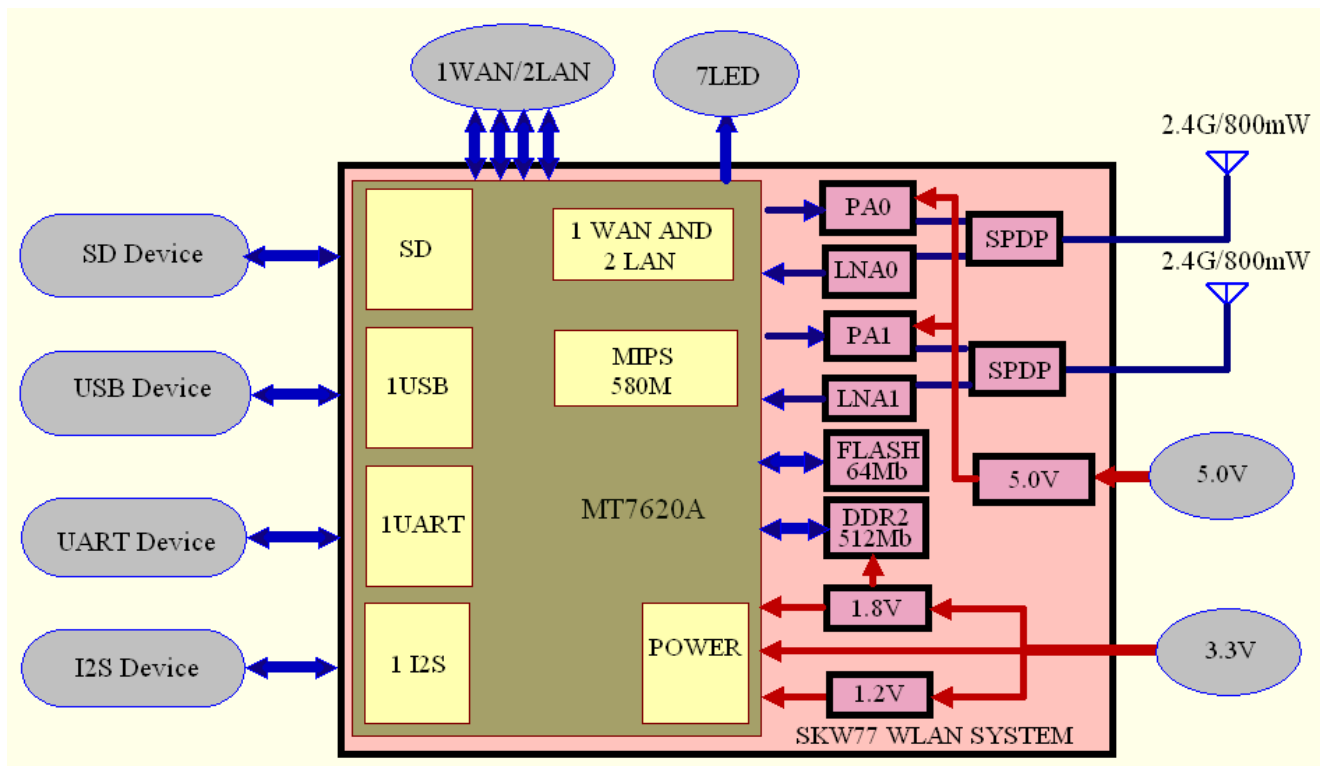


Figure 2: SKW77 Pin Package

## 5 Interfaces

### USB

The USB interface support USB slave devices for USB disk and USB 3G/4G dongle and USB camera.

### SD

SKW77 Pin Number	Pin Name	GPIO(2'b1X)	SD(2'b01)
5	SD_D2	GPIO#54	SD_D2
3	SD_D3	GPIO#55	SD_D3
4	SD_CMD	GPIO#51	SD_CMD
1	SD_CLK	GPIO#49	SD_CLK
8	SD_D0	GPIO#52	SD_D0
7	SD_D1	GPIO#53	SD_D1

2	SD_CD	GPIO#50	SD_CD
6	SD_WP	GPIO#48	SD_WP

**Table5-1: SD pin share scheme**

**Note:** Controlled by the ND\_SD\_GPIO\_MODE register

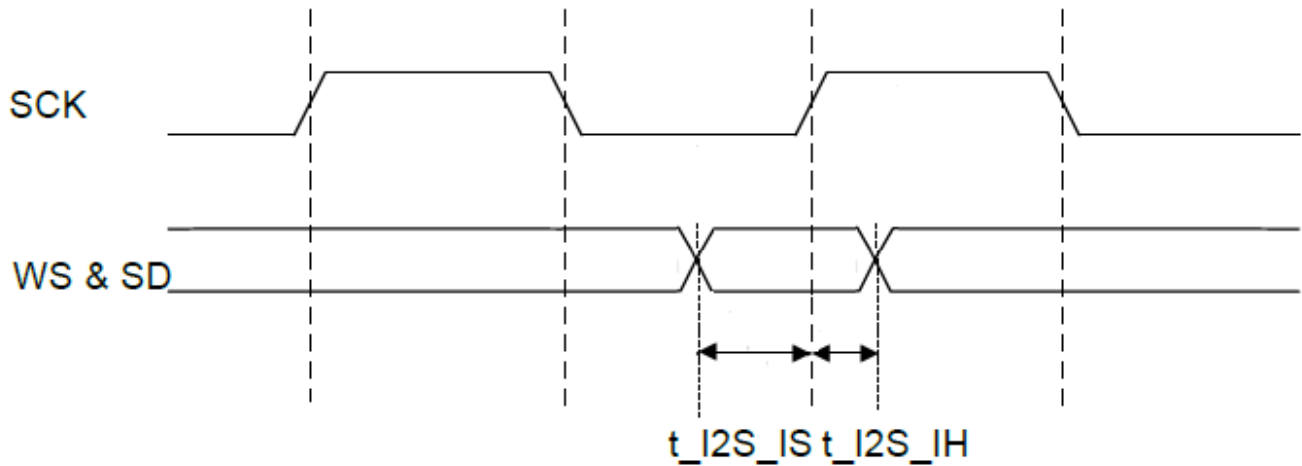
**I2S**

SKW77 Pin Number	Pin Name	GPIO	I2S
36	I2S_CLK	GPIO#07	I2S_CLK
37	I2S_WS	GPIO#08	I2S_WS
35	I2S_SDO	GPIO#09	I2S_SDO
38	I2S_SDI	GPIO#10	I2S_SDI

**Table5-2: I2S/PCM pin share scheme**

**Note:** Controlled UARTF\_SHARE\_MODE register

**Receiver**



**Transmitter**

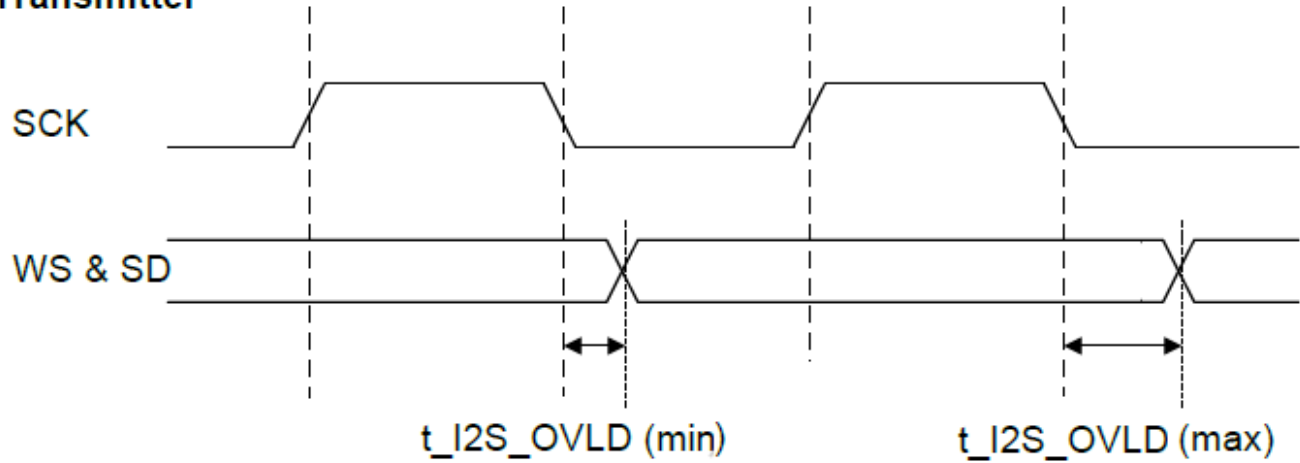


Figure 3: I2S Timing

Symbol	Description	Min	Max	Unit
$t_{I2S\_IS}$	Setup Time for I2S input(data & WS)	3.5		ns
$t_{I2S\_IH}$	Hold Time for I2S input(data & WS)	0.5		ns
$t_{I2S\_OVLD}$	I2S_CLK to I2S output(data & WS) valid	2.5	10	ns

Table5-3: I2S Interface Diagram Key

**UARTS lite**

The module support 2UART:

SKW77 Pin Number	Pin Name	GPIO	UART	Pin Share
31	UART_TXD0	GPIO#15	UART0_TXD	UART0(For Debug)
32	UART_RXD0	GPIO#16	UART0_RXD	
37	UART_TXD1	GPIO#8	UART1_TXD	UART1
38	UART_RXD1	GPIO#10	UART1_RXD	

Table5-4: UART pin share scheme

**WAN/LAN**

The SKW77 module integrates 3-port 10/100Mbps fast Ethernet switch.



## 6 Module Specifications

Hardware Features			
<b>Model</b>	SKW77		
<b>Antenna Type</b>	IPEX connector		
<b>Chipset solution</b>	MT7620A		
<b>Voltage</b>	3.0-3.6V for VDD_3.3V, 4.5-5.5V for VDD_5.0V		
<b>Dimentions(LxW)</b>	59mm*28.9mm		
Wireless Features			
<b>Wireless Standards</b>	IEEE 802.11n, IEEE 802.11g, IEEE 802.11b		
<b>Frequency Range</b>	2.400GHz--2.4835GHz		
<b>Data Rates</b>	IEEE 802.11 b Standard Mode: 1,2,5.5,11Mbps		
	IEEE 802.11g Standard Mode: 6,9,12,18,24,36,48,54Mbps		
	IEEE 802.11n : 130Mbps @ HT20		
	300Mbps @ HT40		
<b>Receiver Sensitivity</b>	HT40 MCS7 : -67dBm@10% PER(MCS7)		
	HT20 MCS7 : -73dBm@10% PER(MCS7)		
	54M: -76dBm@10% PER		
	11M: -91dBm@ 8% PER		
<b>Modulation Technique</b>	802.11 Legacy b/g		
	DSSS (DBPSK, DQPSK, CCK)		
	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)		
<b>Wireless Security</b>	WPA/WPA2, WEP, TKIP, and AES		
<b>Transmit Power</b>	IEEE 802.11n: 25dBm @HT40 MCS7		
	25dBm@HT20 MCS7		
	IEEE 802.11g: 27dBm		
	IEEE 802.11b: 29dBm		
<b>Work Mode</b>	Router/AP/Repeater		
Others			
<b>Certification</b>	CE, FCC, RoHS		
<b>Power Consumption@25°C</b>	Status	Average/mA	MAX/mA
	Continuous Tx	740@+27dBm	1600

	@VDD_5.0		
	Continuous Tx @VDD_3.3V	270@+28dBm	300
	Note: 1) 5.0 V power supply is recommended to use 2A DC-DC regulator; 3.3 V power supply is recommended to use 500mA DC-DC regulator. 2) The maximum current consumption would be impacted by radiation environment and the driver mechanism		
<b>Environment</b>	Operating Temperature: -20°C~70°C		
	Storage Temperature: -40°C~125°C		
	Operating Humidity: 10%~90% non-condensing		
	Storage Humidity: 5%~90% non-condensing		

## 7 Module Pinout and Pin Description

Module Pinout:

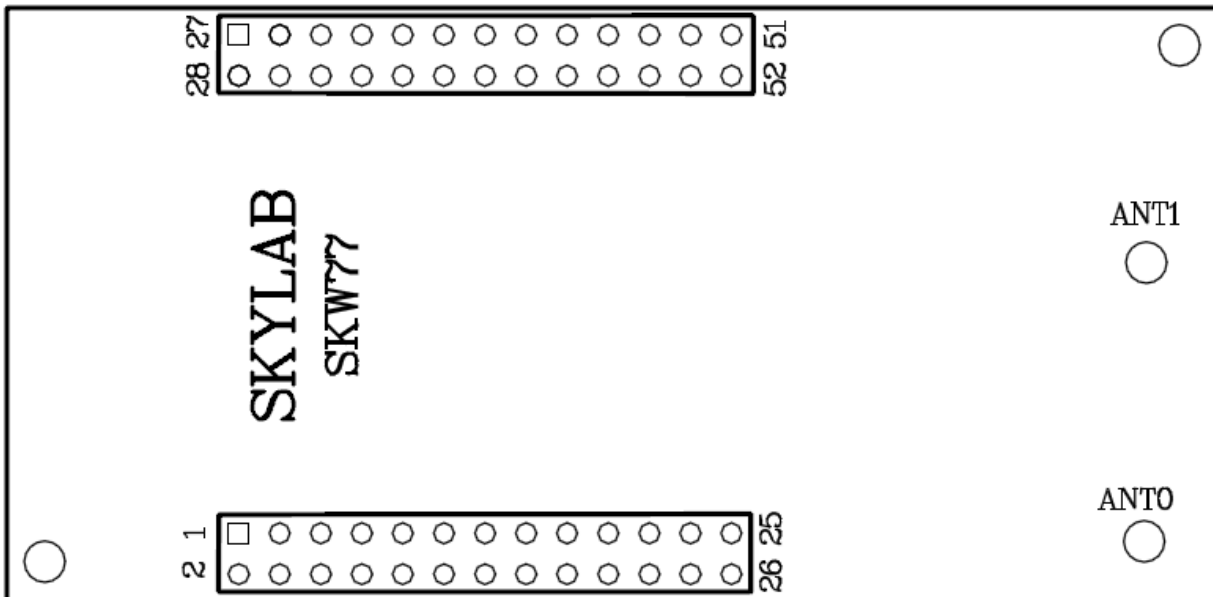


Figure 4: SKW77 Pin Package

1	SD_CLK	SD clock.
2	SD_CD	SD card detection.
3	SD_D3	SD data line3.
4	SD_CMD	SD Command line.
5	SD_D2	SD data line2.
6	SD_WP	SD write protect.
7	SD_D1	SD data line1.
8	SD_D0	SD data line0.
9	GND	GROUND
10	GND	GROUND
11	WAN_PORT0_RX+	10/100 PHY WAN port #0 RXP
12	WAN_PORT0_RX-	10/100 PHY WAN port #0 RXN
13	WAN_PORT0_TX+	10/100 PHY WAN port #0 TXP
14	WAN_PORT0_TX-	10/100 PHY WAN port #0 TXN
15	LAN_PORT1_TX+	10/100 PHY port #1 TXP
16	LAN_PORT1_TX-	10/100 PHY port #1 TXN
17	LAN_PORT1_RX+	10/100 PHY port #1 RXP
18	LAN_PORT1_RX-	10/100 PHY port #1 RXN
19	LAN_PORT2_RX+	10/100 PHY port #2 RXP
20	LAN_PORT2_RX-	10/100 PHY port #2 RXN
21	LAN_PORT2_TX+	10/100 PHY port #2 TXP
22	LAN_PORT2_TX-	10/100 PHY port #2 TXN
23	GND	GROUND
24	GND	GROUND
25	USB -	USB signal, carries USB data to and from the USB 2.0 PHY
26	USB +	USB signal, carries USB data to and from the USB 2.0 PHY
27	VDD_3.3V	3.3V input, recommended voltage 3.3V,Min3.0V, MAX 3.6V
28	VDD_3.3V	3.3V input, recommended voltage 3.3V,Min3.0V, MAX 3.6V
29	GND	GROUND
30	GND	GROUND
31	UART_TX	UART Serial Data Output, GPIO#15
32	UART_RX	UART Serial Data Input, GPIO#16
33	GND	GROUND
34	GND	GROUND
35	I2S_SDO	IIS Data Output, GPIO#9.
36	I2S_SCLK	IIS clock. In master mode the pin data direction is set output, in

		slave mode it is set to input, GPIO#7
37	I2S_WS/TXD	IIS Channel Selection. In master mode the pin data direction is set output, in slave mode it is set to input/ UART Serial Data Output, GPIO#8.
38	I2S_SDI/RXD	IIS Data Input/UART Serial Data Input, GPIO#10.
39	WPS_CONFIG	Module WPS Input(Active Low Status), GPIO#12.
40	RESET_CONFIG	Module Reset Input(Active Low Status), GPIO#13.
41	WP_LED	WPS LED, GPIO#39
42	GND	GROUND
43	LINK4_LED	LAN4_LED, GPIO#40
44	LINK3_LED	LAN3_LED, GPIO#44
45	LINK2_LED	LAN2_LED, GPIO#43
46	LINK1_LED	LAN1_LED, GPIO#42
47	LINK0_LED	WAN_LED, GPIO#41
48	WL_AN_LED	WLAN LED, GPIO#72
49	GND	GROUND
50	GND	GROUND
51	VDD_5.0V	5.0V input, recommended voltage 5.0V,Min4.5V, MAX 5.5V
52	VDD_5.0V	5.0V input, recommended voltage 5.0V,Min4.5V, MAX 5.5V

## 8 PCB Footprint and Dimensions

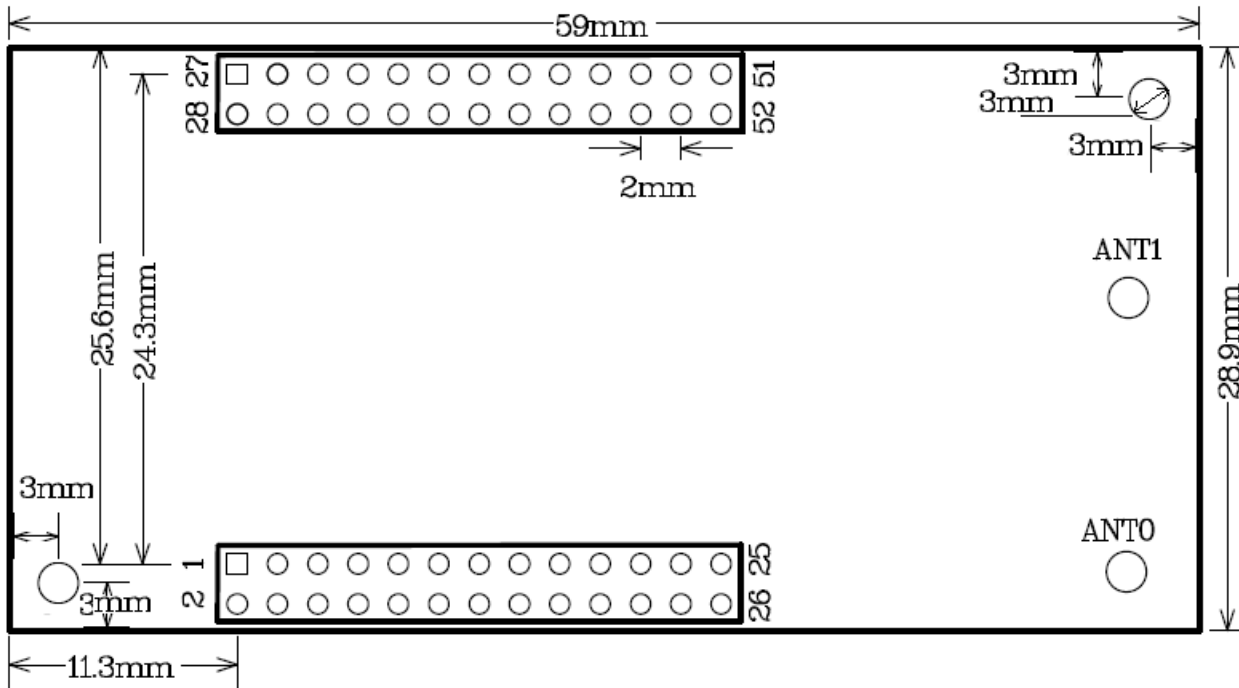


Figure 5: SKW77 Recommend PCB Footprint

## 9 Electrical Characteristics

### a) Absolute Maximum Ratings

Parameter	Condition	Min	Typ.	Max.	Unit
Storage temperature range		-40		125	°C
ESD Protection	VESD	/		2000	V
Supply voltage	VDD_3.3V	0		3.6	V
Supply voltage	VDD_5.0V	0		5.5	V
Voltage on any I/O pin		-0.3		3.63	V

Table9-1: Absolute Maximum Ratings

### b) Recommended Operation Ratings

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Extended temp. range	TA	-20		55	°C

Power Supply	VDD_3.3V	3.0	3.3	3.6	V
Power Supply	VDD_3.3V	4.5	5.0	5.5	V
Input Low Voltage	VIL	-0.3		0.8	V
Input High Voltage	VIH	2		3.63	V

**Table9-2: Operating Conditions**

**c) Measurement Conditions**

System state	Current (Typ.)@3.3V
Standby	180 mA
Transmit (2.4g; +27 dBm @ 11g 54Mbps)	740 mA
Transmit (2.4g; +29 dBm @ 11b 11Mbps.)	1560 mA

**Table9-3: Power Consumption in Different States**

## 10 Ordering Information

Module No.	Antenna Connector Type	SPI Flash Size
SKW77_E8	IPEX Connector	8M Bytes
SKW77_E16	IPEX Connector	16M Bytes

## 11 Contact Information

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