Application Note :
Telink TLSR8232DK32 User Guide

AN-17121200-E2

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Brief：

This document is the user guide for Telink TLSR8232DK32 board.

TELINK SEMICONDUCTOR

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Bldg 3, 1500 Zuchongzhi Rd,
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Information:

For further information on the technology, product and business term, please contact Telink Semiconductor Company (www.telink-semi.com).

For sales or technical support, please send email to the address of:

telinkcnsales@telink-semi.com

telinkcnsupport@telink-semi.com

Revision History

Version	Major Changes	Date	Author
1.0.0	Initial release	2017/12	T.J.B., Cynthia
1.1.0	Updated to C1T125A30_V1.1.	2018/1	T.J.B., Cynthia

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1 Brief

This document presents guide on how to use Telink TLSR8232DK32 board, and applies to all engineers who want to develop TLSR8232-based applications.

1.1 Function

Telink TLSR8232DK32 board can be used for SDK development. Firmware can be directly downloaded to the TLSR8232DK32 board to be up and running.
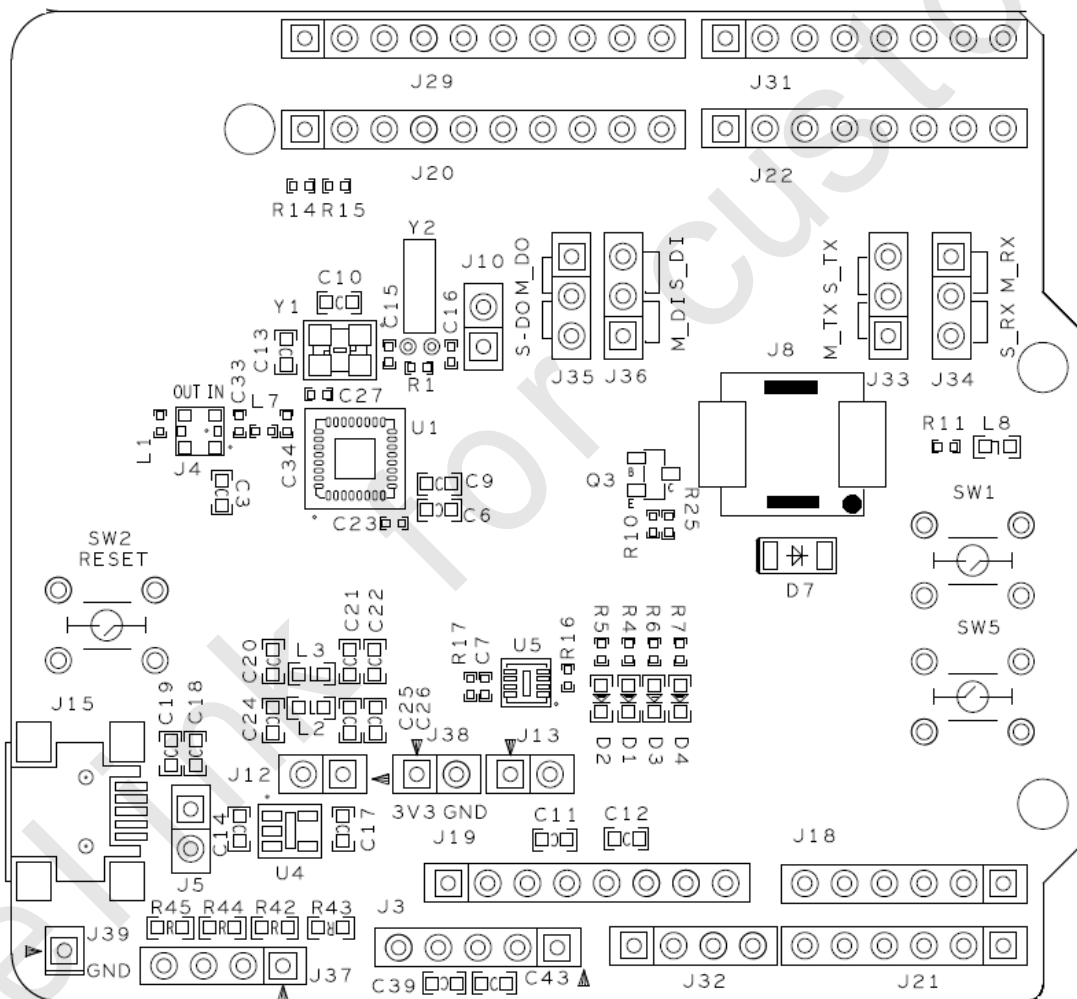
Top view
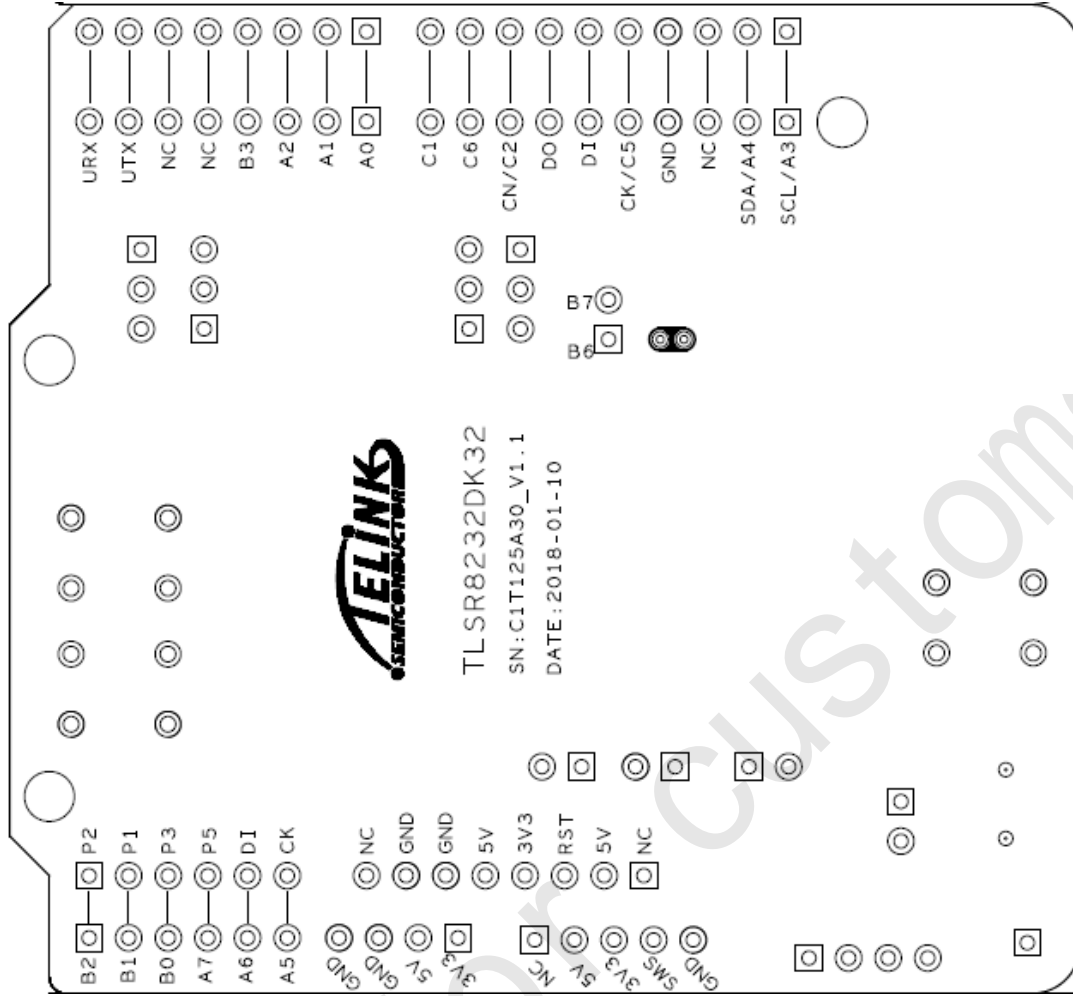
Bottom view

Figure 1   TLSR8232DK32 silkscreen

Figure 2   TLSR8232DK32 photo

For schematic of TLSR8232DK32 board, please refer to Appendix or the PDF document "C1T125A30_V1.1".

2 Pin Description

Table 1 TLSR8232DK32 pin description

J3	
1	NC
2	VBUS
3	DVDDIO
4	TL_SWS
5	GND
J4	
	RF Connector
J5	
	Connected to VBUS
J10	
1	PB6
2	PB7
J12 & J13	
	Connected to 3V3
J15 mini USB interface (Power supply and debug)	
1	VBUS
2	NC
3	TL_SWS
4~9	GND
J18 Arduino interface	
1	ADC0/PB2
2	ADC1/PB1
3	ADC2/PB0
4	ADC3/PA7
5	ADC4/PA6
6	ADC5/PA5
J19 Arduino interface	
1	NC
2	5V
3	RESET
4	3V3
5	5V
6	GND
7	GND
8	NC
J20 Arduino interface	
1	SCL_PA3
2	SDA_PA4

3	NC
4	GND
5	SCK_PC5
6	MISO_PC4 (As Master) / MISO_PC3 (As Slave)
7	MOSI_PC3 (As Master) / MOSI_PC4 (As Slave)
8	SS_PC2
9	PC6
10	PC1
J21	
1	PB2
2	PB1
3	PB0
4	PA7
5	PA6
6	PA5
J22 Arduino interface	
1	PA0
2	PA1
3	PA2
4	PB3
5	NC
6	NC
7	URX_PB5 (As Master) / URX_PB4 (As Slave)
8	UTX_PB4 (As Master) / UTX_PB5 (As Slave)
J29	
1	PA3
2	PA4
3	NC
4	GND
5	PC5
6	PC4
7	PC3
8	PC2
9	PC6
10	PC1
J31	
1	PA0
2	PA1
3	PA2
4	PB3
5	NC
6	NC

7	PB4
8	PB5
J32	
1	3V3
2	5V
3	GND
4	GND
J33	
	UTX Jumper
J34	
	URX Jumper
J35	
	SPI_MOSI Jumper
J36	
	SPI_MISO Jumper
J37	
1	100kohm external pull-up resistor
2	10kohm external pull-down resistor
3	1Mohm external pull-down resistor
4	50kohm external pull-down resistor
J38	
1	3V3
2	GND
J39	
	GND

3 Pin Connection Guide

3.1 Supply power for TLSR8232DK32

Three connection methods are supported to supply power for Telink TLSR8232DK32 board.

1. **Method 1:**

   Make sure a jumper cap is connected on J12 of TLSR8232DK32.

   Then connect J15 (miniUSB interface) with PC USB via an USB cable.

2. **Method 2:** Connect PIN3 and PIN5 of J3 with 3.3V and GND, respectively.

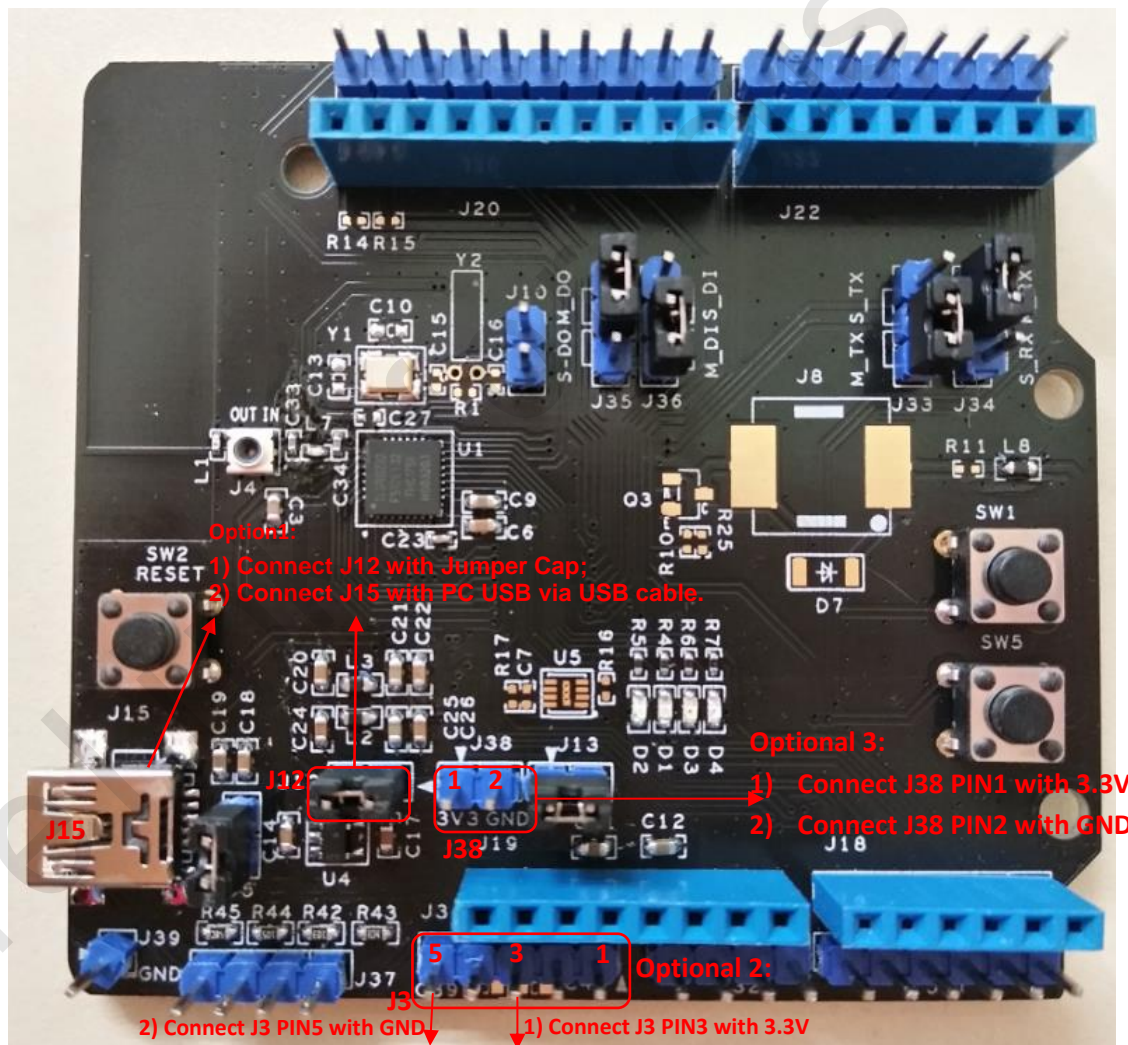3. **Method 3:** Connect PIN1 and PIN2 of J38 with 3.3V and GND, respectively.

Figure 3   Connection chart to supply power

3.2 Download Firmware into TLSR8232DK32

Two connection methods are supported to download firmware into Telink TLSR8232DK32 board.

1. **Method 1: Connect via USB**

   Make sure a jumper cap is connected on J12 of TLSR8232DK32.

   Connect J15 (miniUSB interface) with the USB interface of a burning key (i.e. burning EVK board) via an USB cable. The miniUSB interface of the burning key is connected with PC USB via an USB cable.

2. **Method 2: Connect via Swire**

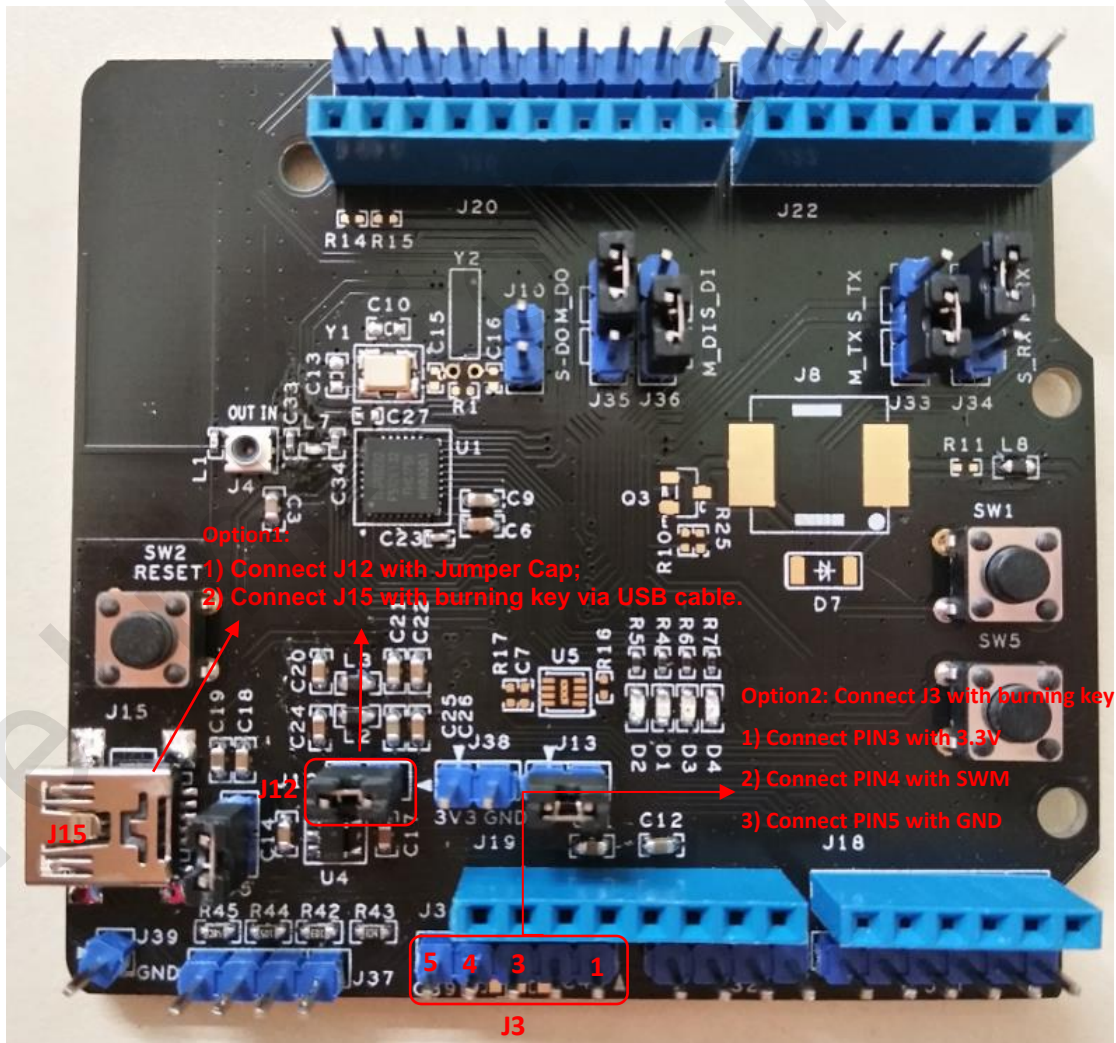   Connect PIN3, PIN4 and PIN5 of J3 with 3.3V, SWM and GND of a burning key, respectively.

Figure 4   Connection chart to download FW

3.3 Measure power-saving mode current for TLSR8232DK32

To measure current consumption of Telink TLSR8232DK32 board in deep sleep or suspend mode, please follow the connection steps below:

1) Remove jumper caps from J12 and J13 of TLSR8232DK32.

2) Connect anode (+) and cathode (-) of an amperemeter with anode (+) of 3.3V power supply and PIN2 of J12, respectively.

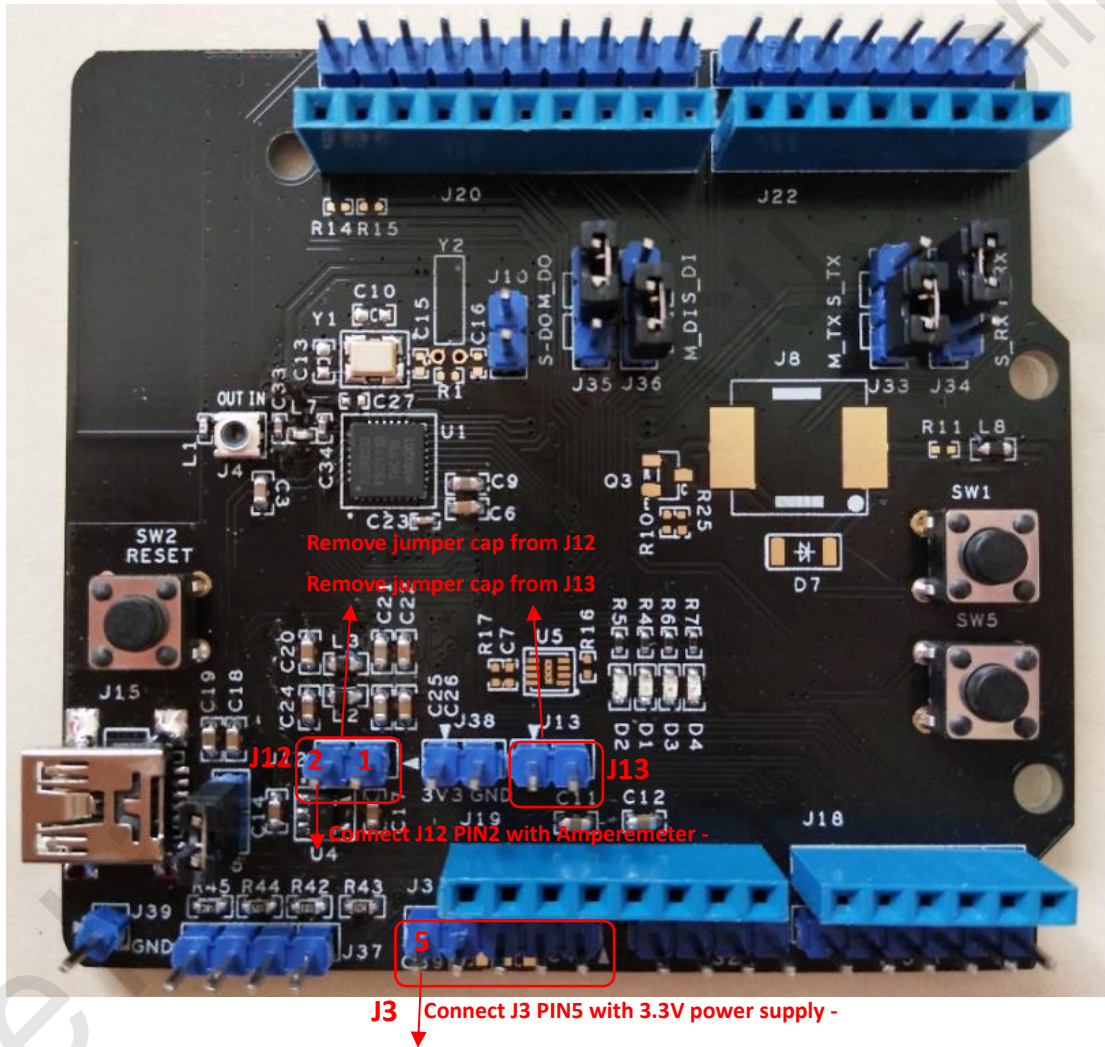3) Connect cathode (-) of the 3.3V power supply with PIN5 of J3.

Figure 5 Connection chart to test sleep current

3.4 Test RF signal for TLSR8232DK32

To test RF signal for Telink TLSR8232DK32 board, the J4 should be connected with a spectrum analyzer via a RF cable (supplied by Telink).
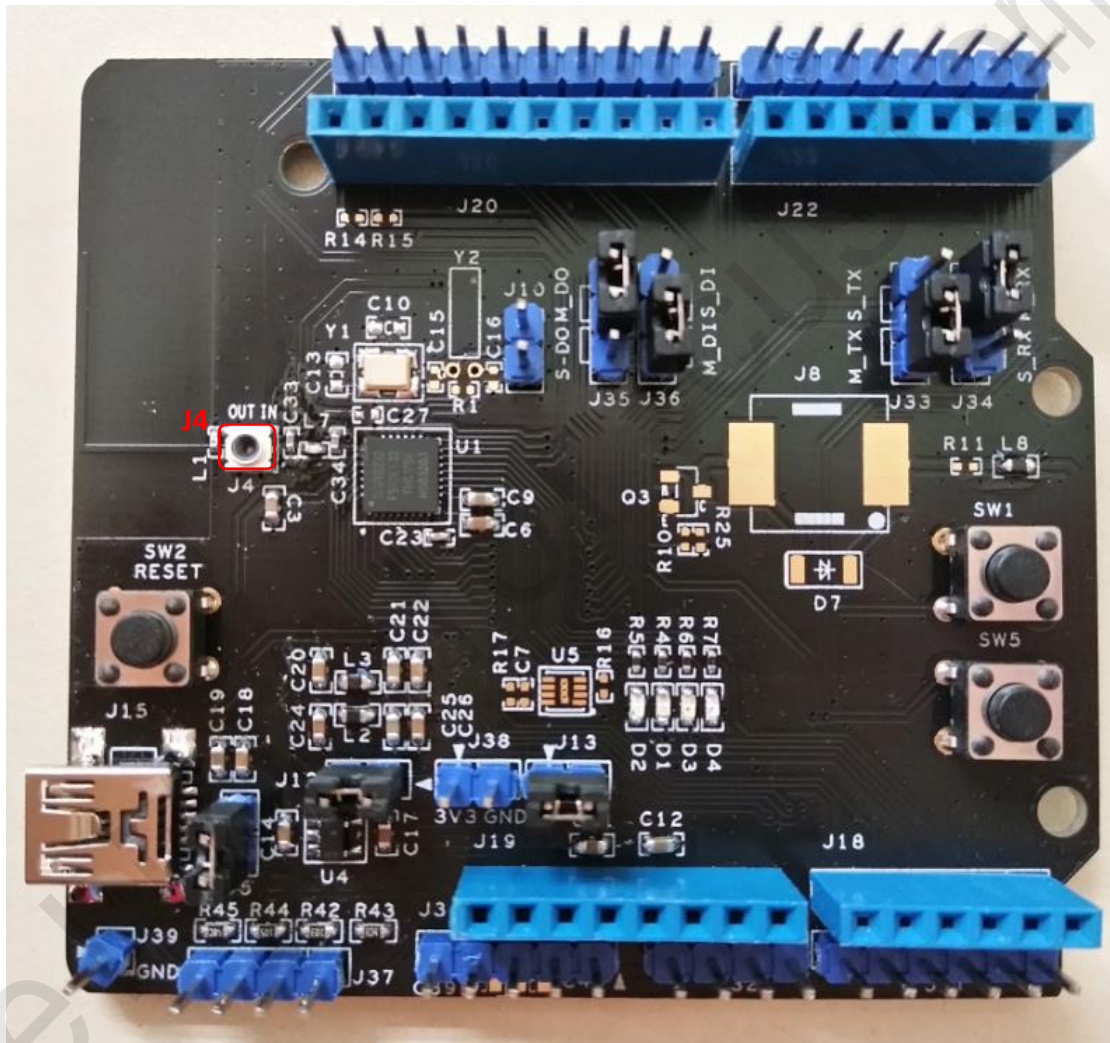

Figure 6   Connection chart to test RF signal

3.5 Test GPIOs for TLSR8232DK32

Since all GPIOs of Telink TLSR8232DK32 board are already connected to corresponding pins of headers including J3, J10 (if PB6 and PB7 are not used as external 32kHz crystal output and input), J21, J29 and J31 (please refer to Table 1 or the schematic), user can directly test GPIO signals on header pins.

3.6 Arduino interface

Telink TLSR8232DK32 board is compatible with Arduino standard interface, which adopts single-column direct-in female headers (J18, J19, J20, J22) with pin distance of 2.54mm. The TLSR8232DK32 can be used for development in the following two cases:

1) By default, the TLSR8232DK32 acts as Host control board by connecting it with Arduino shield daughter board. In this case, it's needed to connect four jumper caps with PIN1 and PIN2 of J33, PIN1 and PIN2 of J34, PIN1 and PIN2 of J35, as well as PIN1 and PIN2 of J36.

2) The TLSR8232DK32 can also act as Arduino shield daughter board in combination with Arduino Host control board. In this case, it's needed to connect four jumper caps with PIN2 and PIN3 of J33, PIN2 and PIN3 of J34, PIN2 and PIN3 of J35, as well as PIN2 and PIN3 of J36.

FCC statement:
This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 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 your authority to operate the equipment.