HS-D100 User Manual

History

Version	Date
V1	April 28, 2013

HS-D100 solution is a small-size-IEEE 802.11n AP board which achieves a data rate up to 150Mbps. It is 3 times faster than the legacy IEEE 802.11g and cost much less, making it even more cost-effective. This product supports AP/client mode. It is ideal for multi-purpose installation to share wireless connection. By supporting WPA, WPA2, HS-D100 protects your data and privacy making air transmission safer.
This module could be mounted on system board like WiFi-HDD, WiFi-SDcard .

Chip Feature

The RT5350 SoC combines Ralink's IEEE 802.11n compliant 1T1R MAC/BBP/PA/RF, a high performance 360Mhz MIPS24KEc CPU core, an USB Host/device. With the RT5350, there are very few external components required for 2.4GHz 802.11n wireless products.

- Embedded 1T1R 2.4G COMS RF
- Embedded IEEE 802.11n 1T1R MAX/BBP with MLD enhancement.
- 150Mbps PHY data rate.
- WEP64/128, WPA, WPA2, WAPI engines.
- QOS – WMM, WMM power save
- Support IEEE 802.11h TPC
- USB2.0 Host/Device dual Mode x1
- Support boot from Flash.
- I/O: 3.3V I/O

HS-D100 Specification

- IEEE 802.11 b/g/n standards compliant.
- Wireless LAN: 1T1R mode.
- Antenna: iPEX connector.
- 14 pin Interface: VCC (3.3V)/GND, USBX1 (Host), GPIOs.
- Data rate: 802.11b, 802.11g, 802.11g
- Support WebDAV, Samba, iTunes Server, DLAN Server, HTTP Server.
- Support Mobile APP iOS and Android.
- File system support FAT32 and exFAT.
- Read and Write Performance: ~6MB/S @802.11n.

Connector Description

Figure 1: Top view of PCB Placement by Functions

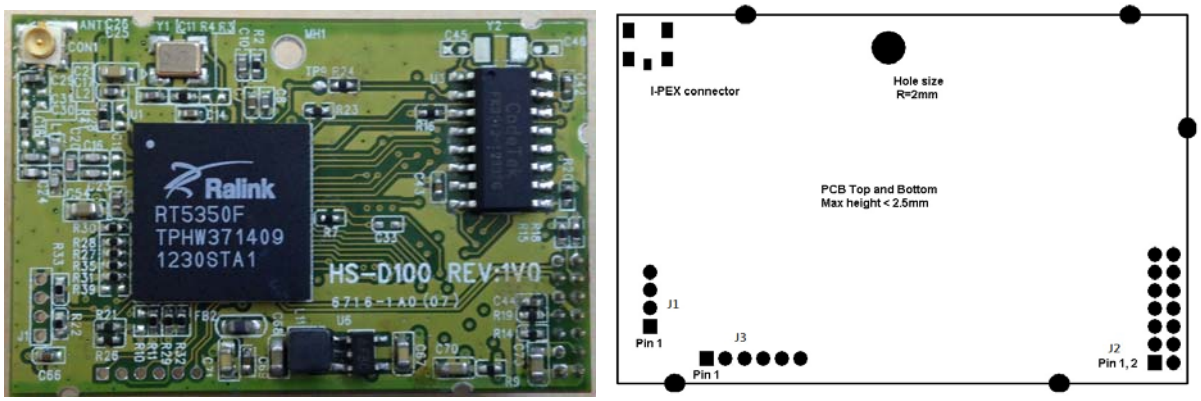
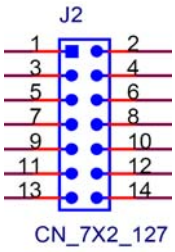
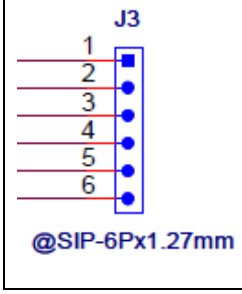
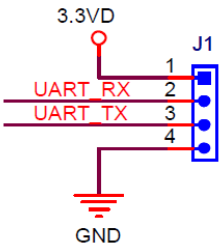


Figure 1

J2	NO	Description	NO	Description
	1	3.3V	2	3.3V
	3	GND	4	GPA0
	5	GPA2	6	GPA1
	7	RST_PBC	8	GND
	9	GND	10	WLAN_LED
	11	USB_DP	12	BDG_LED
	13	USB_DM	14	SYS_LED

J3: LAN Port	NO	Description
	1	LED
	2	TXn
	3	TXp
	4	GND
	5	RXn
	6	RXp

J1: COM Port	NO	Description
	1	3.3V
	2	RX
	3	TX
	4	GND

Step 1. Physical Device Connection and preparation

On the computer, install the USB driver.

Connect this computer and the testing jig with the USB cable provided.

In the device manager of the computer system select and double click on the device virtual COM port. The similar screen will pop up as shown in Figure 2. Then enter the settings.

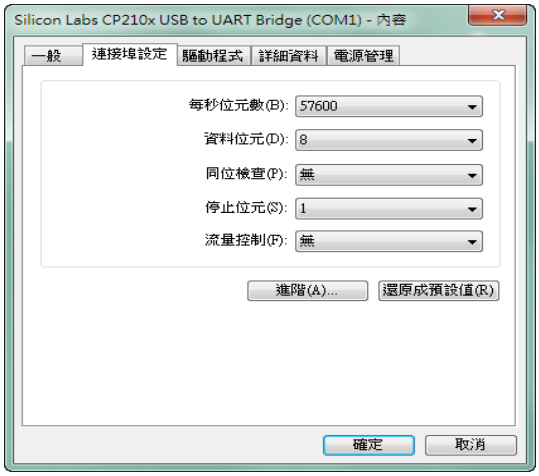


Figure 2

Baud rate= 57600

Data bits= 8

Parity= none

Stop bits = 1

Flow control = none

Step 2.

Execute the portable TeraTerm emulator (TTPRO313) from the same PC and enter the same settings we have just given to the PC Virtual COM interface above.

When done move on to Step 3.

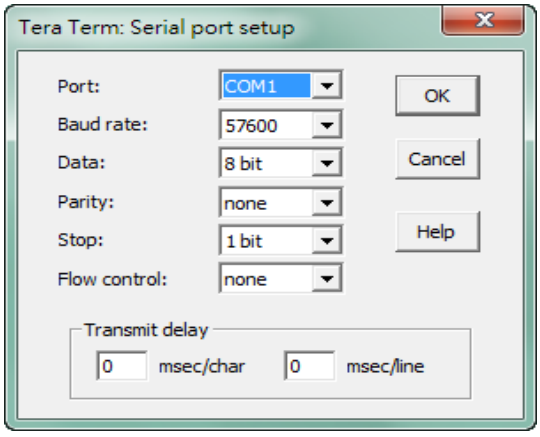


Figure 3

Step 3. Run commands on the WIFI module

Once the WIFI module is powered up, connection setup will run automatically which can be observed from TeraTerm screen as they scrolling up. Once the setup is done your screen should look something similar to the figure bellow.

You have completed setting up the testing jig. The jig is ready to run the command refer to the next page.

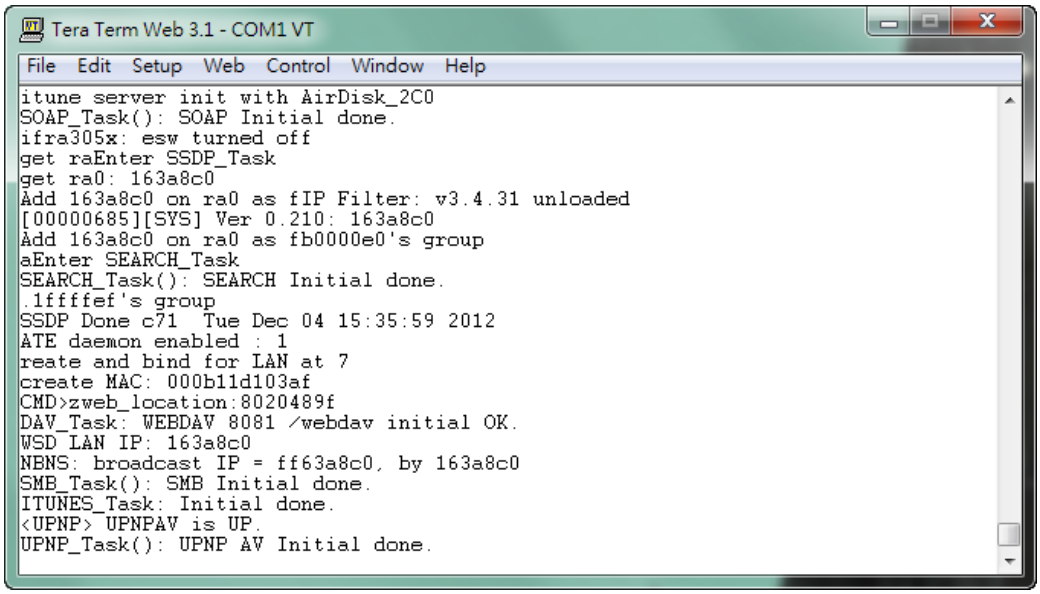


Figure 4

Console command

We are able to either key in the commands or copy and paste them into the console to run WIFI testing for certification. Below is the supported command list.

```
iwpriv ra0 set ATE=ATESTART
iwpriv ra0 set ATEDA=FF:FF:FF:FF:FF:FF
iwpriv ra0 set ATESA=00:0C:43:25:66:40
iwpriv ra0 set ATEBSSID=11:22:33:44:55:66
iwpriv ra0 set ATETXGI=0
iwpriv ra0 set ATETXLEN=1024
iwpriv ra0 set ATETXCNT=9999999
iwpriv ra0 set ATETXANT=1
iwpriv ra0 set ATECHANNEL=2
iwpriv ra0 set ATETXMODE=1
iwpriv ra0 set ATETXMCS=7
iwpriv ra0 set ATETXBW=0
iwpriv ra0 set ATETXPOW0=10
iwpriv ra0 set ATETXFREQOFFSET=20
iwpriv ra0 set ATE=TXFRAME
```

Appendix

Command set meanings

1. Set ATE actions.

Value:

ATESTART	- Start ATE function and stop station function.
ATESTOP	- Stop ATE function and start station function.
TXCONT	- Start continuous TX, for power mask.
TXCARR	- Start carrier test, for frequency calibration.
TXFRAME	- Transmit frame, for EVM.
RXFRAME	- Continuous RX, for PER/FER.

1.1 ATEDA

Set ATE frame header destination address.

Value:

xx:xx:xx:xx:xx:xx ; hex

1.2 ATESA

Set ATE frame header source addr.

Value:

xx:xx:xx:xx:xx:xx ; hex

1.3 ATEBSSID

Set ATE frame header BSSID.

Value:

xx:xx:xx:xx:xx:xx ; hex

1.4 ATECHANNEL

Set ATE Channel, deimal.

Value:

802.11b/g: 1 ~ 14 depends on CountryRegion setting

1.5 ATETXPOW0

Set ATE Tx power for Antenna 1.

Value:

0 ~ 31	; 2.4GHz, deimal
-7 ~15	; 5.5GHz, deimal

1.6 ATETXPOW1

Set ATE Tx power for Antenna 2.

Value:

0 ~ 31 ; 2.4GHz, decimal

-7 ~15 ; 5.5GHz, deimal

1.7 ATETXFREQOFFSET

Set ATE RF frequency offset.

Value:

0 ~ 63 ; unit: 2KHz, decimal

1.8 ATETXLEN

Set ATE frame length.

Value:

24 ~ 2312 ; decimal

1.9 ATETXCNT

Set ATE frame Tx count.

Value:

1 ~ ; 32-bit, decimal

1.10 ATETXMODE (Refer to TxMode)

Set ATE Tx Mode.

Value:

0:	CCK	802.11b
1:	OFDM	802.11g
2:	HT_MIX	802.11b/g/n
3:	Green Field	802.11n

1.11 ATETXBW (Refer to TxMode)

Set ATE Tx and Rx Bandwidth.

Value:

0: 20MHz

1: 40MHz

1.12 ATETXGI (Refer to TxMode)

Set ATE Tx Guard Interval.

Value:

0: Long

1: Short

1.13 ATETXMCS (Refer to TxMode)

Set ATE Tx MCS type.

Value:

0 ~ 15

1.14 ATETXANT

Set ATE TX antenna.

Value:

0: All

1: Antenna one

2: Antenna two

1.15 ATERXANT

Set ATE RX antenna.

Value:

0: All

1: Antenna one

2: Antenna two

3: Antenna three

The OEM integrator has to be aware of not to providing information to end users regarding how to install or remove this RF module in the user manual of the end product. The user manual which is provided by OEM integrators for end users must include the following information in a prominent location.

"To comply with FCC RF exposure compliance requirements, the antenna user for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

Label for the end product must include "Contains FCC ID: SRN-HS-D100"or "A RF transmitter inside, FCC ID: SRN-HS-D100"

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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.

FCC RF Radiation Exposure Statement:
1.This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2.This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Notice : The changes or modifications not expressly approved by th e party Responsible for compliance could void the user ’s authority to operate the equipment.

IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or th e device could result in the device exceeding the RF exposure requirements and void user ’s authority to operate the device.

The Federal Communication Commission Radio Frequency Interference Statement includes the following paragraph:

The equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment gener ates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communication. However, there is no grantee that interference will not occur in a particular insta llation. If this equipment dose cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on , the user is encouraged 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 experie nced radio/TV technician for help.

FCC RF Radiation Exposure Statement:
1.This Transmitter must not be co- located or operating in conjunction with any other antenna or transmitter.
2.This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.