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User Manual

Model name: WM05_AN
FCC ID: YAIWM05-AN

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[General Information]

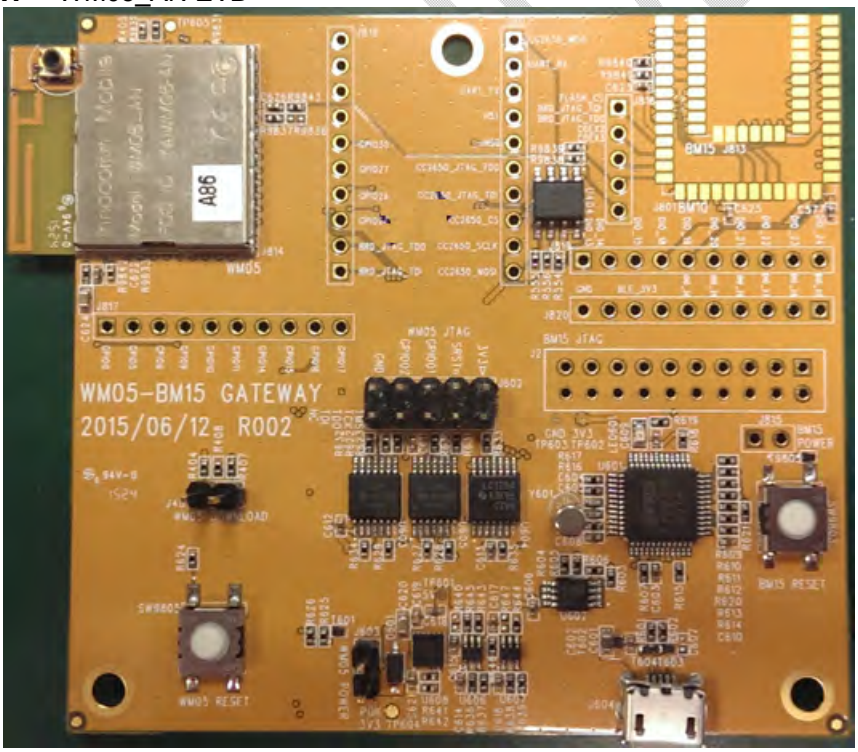
The WM05_AN Evaluation Module Kit contains two WM05_AN (TI CC3200) modules supported USB to UART interface which is prepared for WiFi performance testing purpose.

WM05_AN module provides excellent low power consumption with astonishing wireless connection range.

Part Number	WM05_AN
Photo	
Description	WiFi module
Size (mm)	20.5x24x2.3
Pin count	63
Mounting Method	SMD
Supply Voltage	2.5V ~ 3.6V
I/O	GPIO x23 Wifi connect to UART Interface

Your package contains

1. WM05_AN EVB



2. 2 x software: USB driver & PC tool for performance test

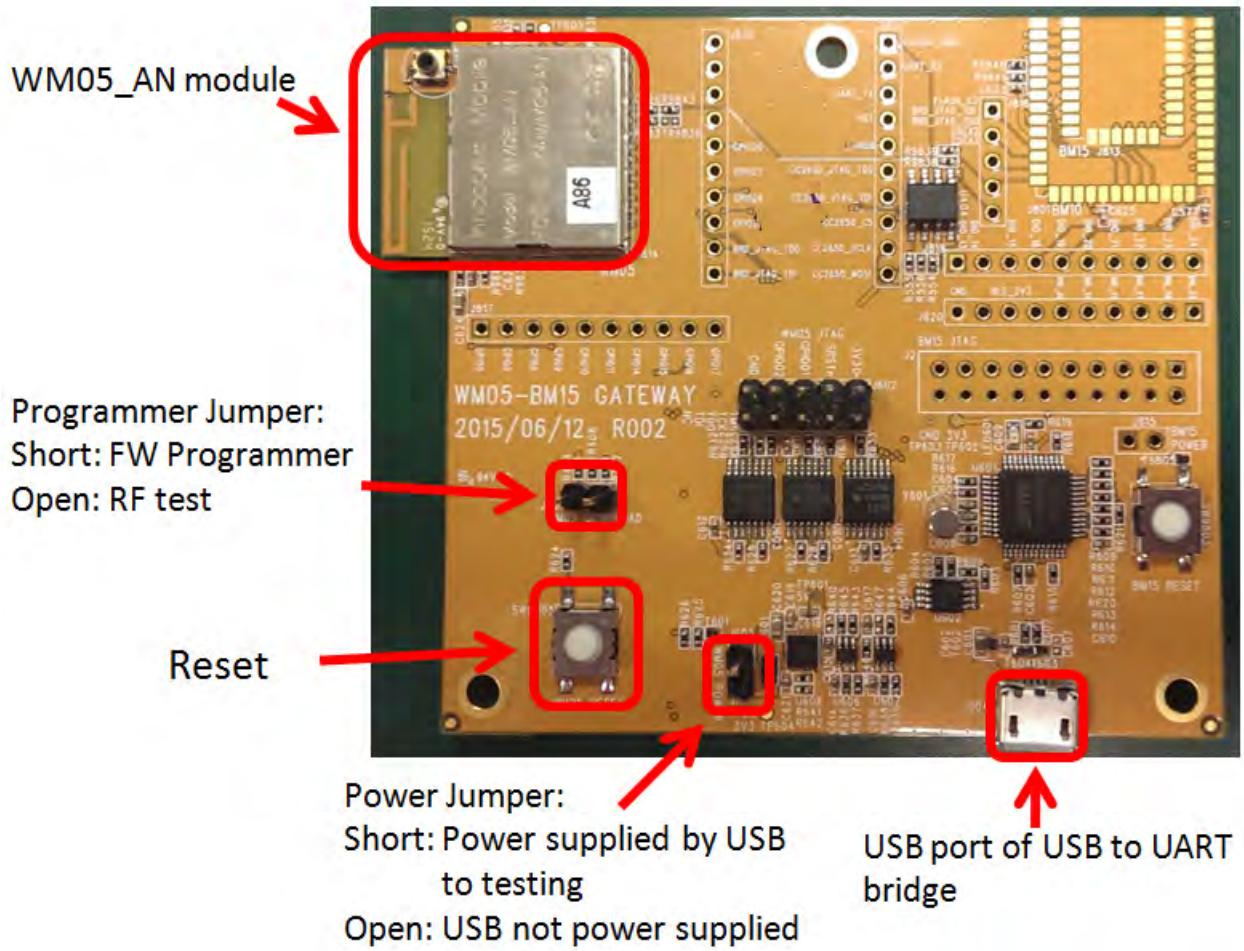
DENTIAL

EVB Drive

FTDI2232D

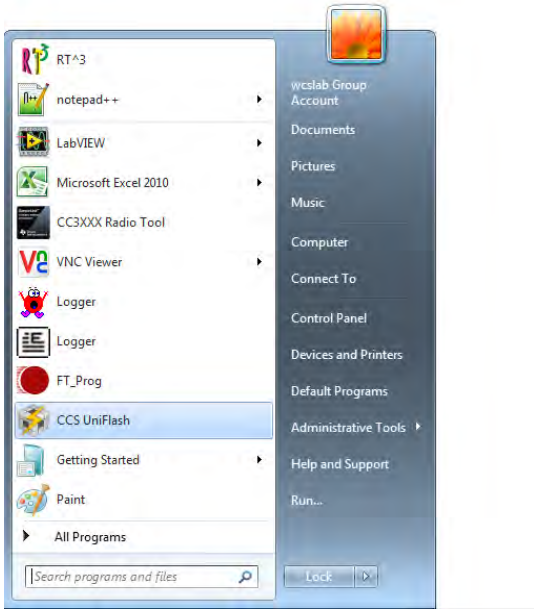
Uniflash:
http://www.ti.com/tool/uniflash
Radio Tool:
http://www.ti.com/tool/cc3xxxradiotest

[EVB]

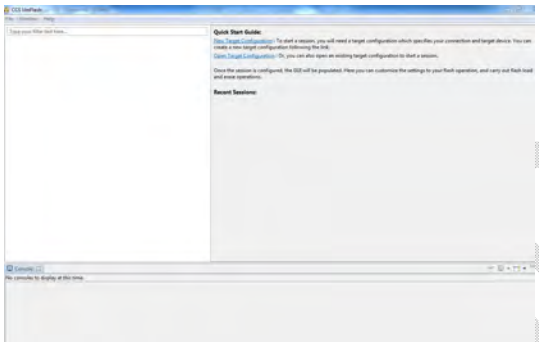


Uniflash (to flash applications):

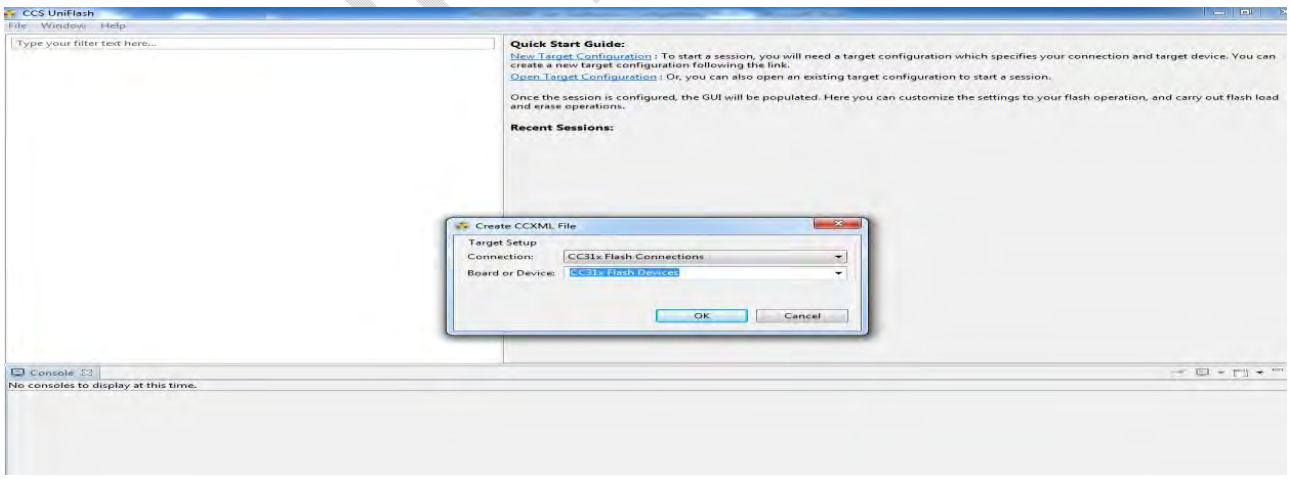
1. Please make sure programmer jumper is closed. Once Uniflash is installed (uniflash_cc3xxx_setup_3.2.0.00019.exe), invoke 'CCS UniFlash'.



2. 'CCS UniFlash' will open like below.



3. Go to 'New Target Configurations' and do the settings as shown below.



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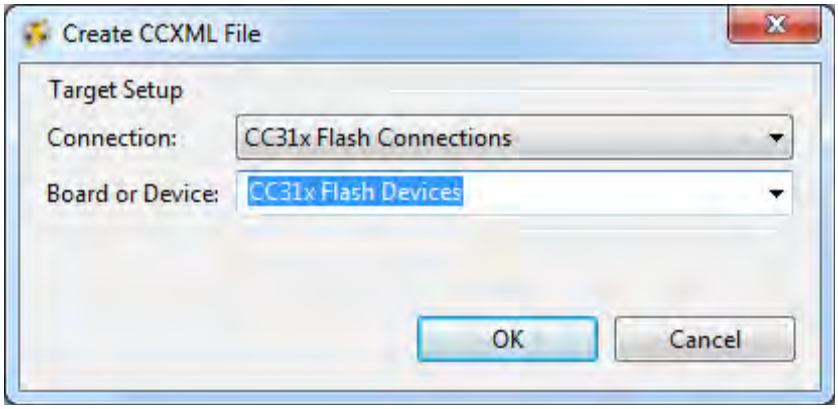
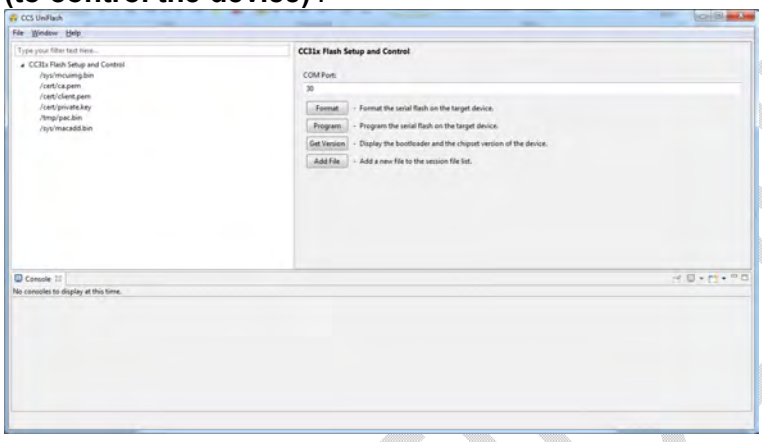
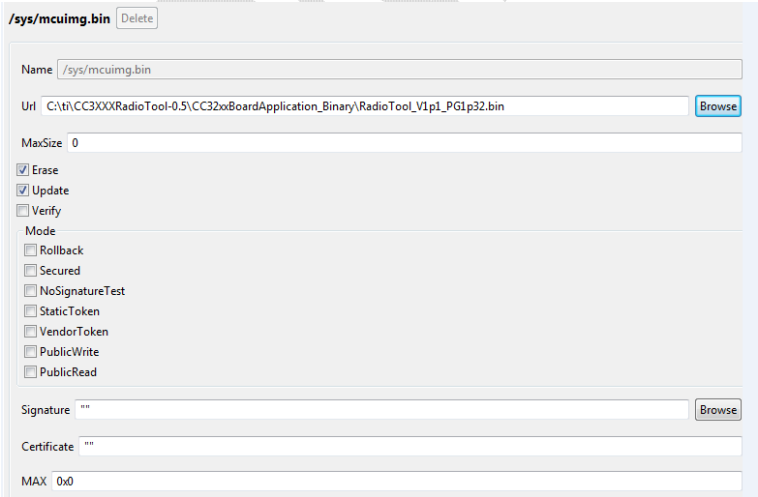


4. Select the correct COM port. For correct COM port please see the next section, '**Radio tool (to control the device)**'.



5. Click on /sys/mcuimg.bin and browse for required binary file
For example, flashing the launchpad with the 'Radio Tool Application', select the following binary available in the path shown below:
C:\ti\CC3XXXRadioTool-0.5\CC32xxBoardApplication_Binary\RadioTool_V1p1_PG1p32.bin
Check 'Erase' and 'Update'.

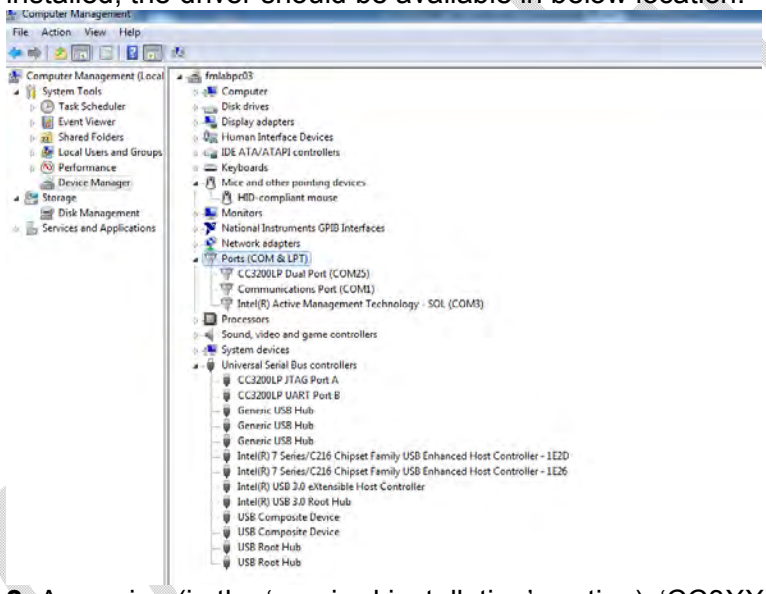


6. Go back to 'CC31x Flash Setup and Control' and click 'Program'

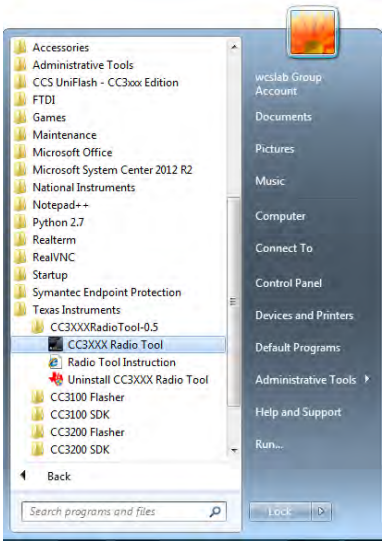
After programming the device remove programmer jumper. This removal is VERY important before any testing to be done.
Reset the board using the RESET push-button

- **Radio tool (to control the device):**

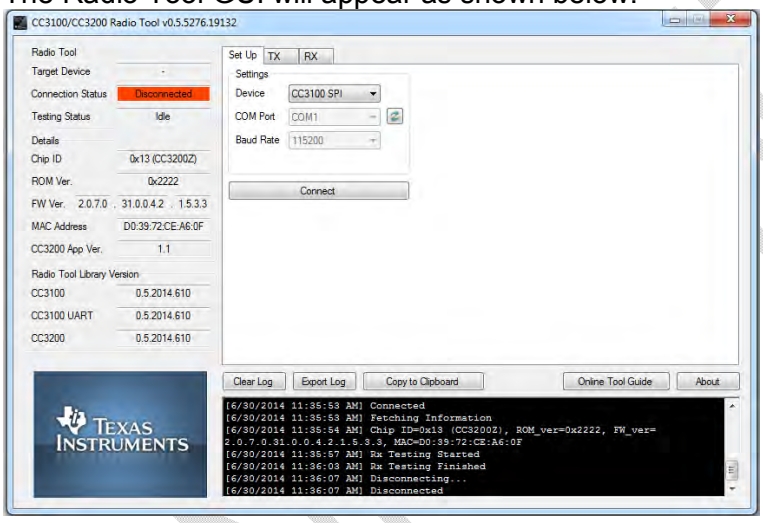
  1. Once the device is powered up (after connecting uUSB cable to 'power jumper'), one COM port should be enumerated in the device manger. Incase windows is not able to find the device drivers then the drivers need to be installed separately. With the SDK0.51 package installed, the driver should be available in below location.



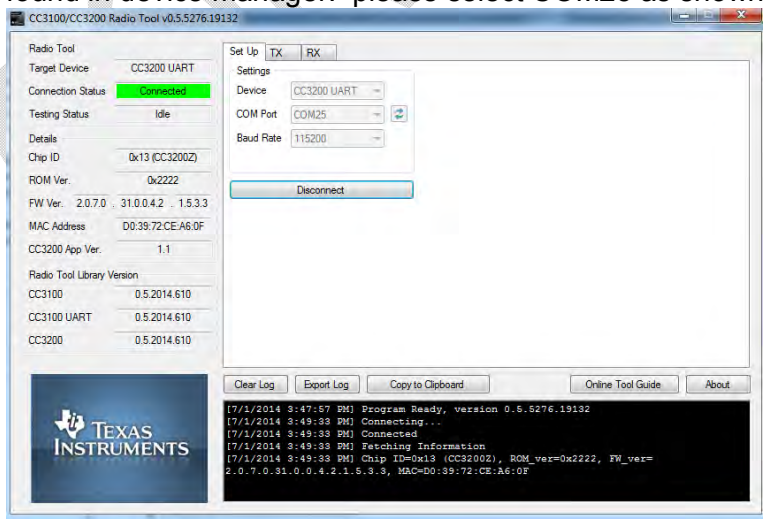
  2. Assuming (in the 'required installation' section), 'CC3XXXRadioTool-0_5.exe' is already installed, invoke 'CC3XXX Radio Tool' from 'All Programs -> Texas Instruments -> CC3XXXRadioTool-0.5 -> CC3XXX Radio Tool.'



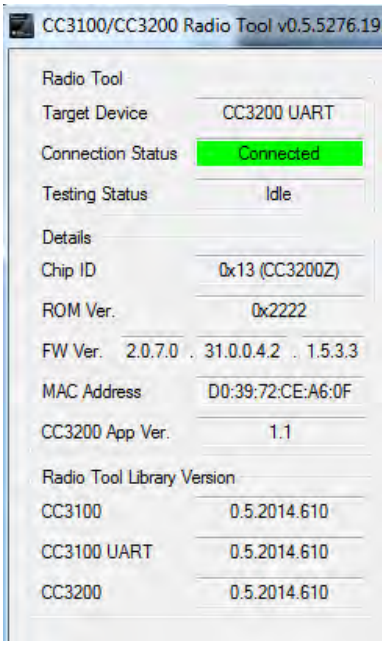
The Radio Tool GUI will appear as shown below.



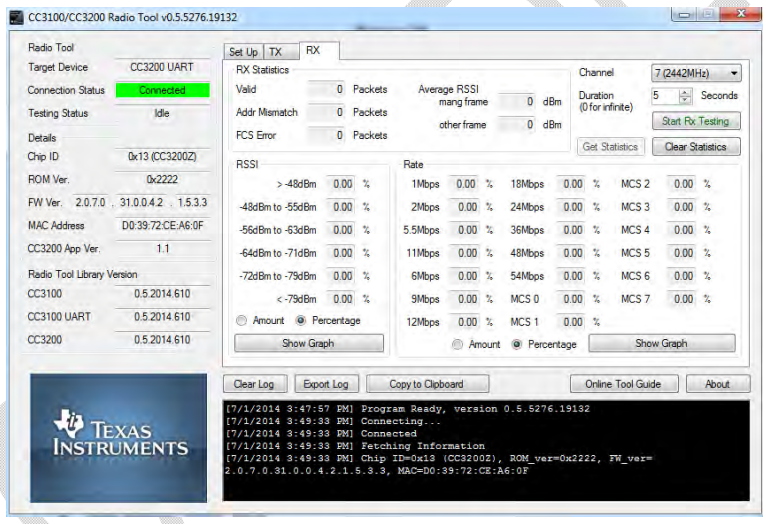
3. For CC3200 module launchpad, select CC3200 UART as 'Device'. Select the COM port found in device manager. please select COM25 as shown below. Click 'Connect'.



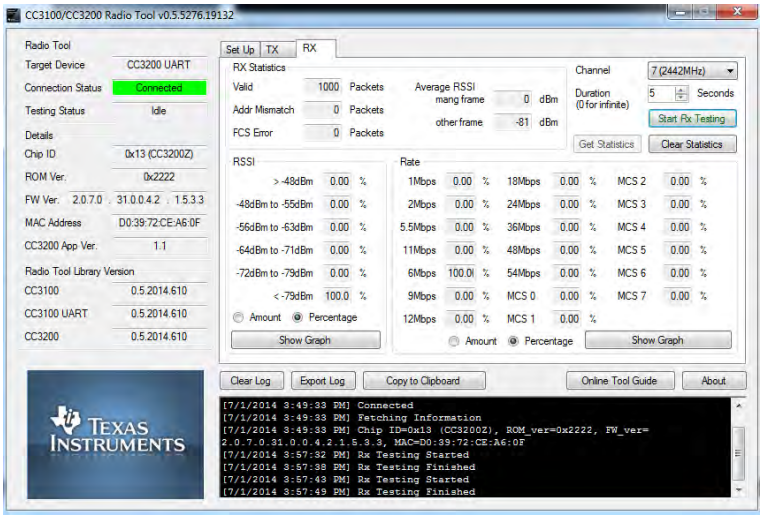
4. Once the device is connected, the GUI would show 'Chip ID', 'ROM Ver', 'FW Ver' and 'MAC Address'



5. For RX measurements go to 'RX' tab of the Radio Tool GUI. Select the channel intended and set the duration (example 5secs). Click 'Start RX Testing' and after 5 secs, the statistics will appear in the GUI.



6. Example: With 6OFDM packets at -82dBm (when the sensitivity is -89dBm) at channel 2442M, when 1000 packets are received, the statistics shown on the GUI would be as shown below.



The steps are similar to other rates as well.
For TX measurements go to 'TX' tab. Before starting TX operations following settings need to be done on the GUI.

- TX Mode: Select 'Packetized'
- Rates: Select the modulation rates want to transmit
  - o 11b: 1, 2, 5.5 and 11 Mbps
  - o 11g: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps
  - o 11n: MCS0 to MCS7
- Channel: Select the channel of transmission. Channel 1 (2412M) to channel 13 (2472M)
- Data Pattern: Select 'All 0'
- Power: '0' for max power level the device can transmit at. Always use power level "0" for emission testing in order to verify the max power level settings.
- Preamble: Select 'Long'
- Override CCA: Should be unchecked
- Size: 100 Bytes (for 11b rates), 1000 Bytes (for 11g rates) and 1000 Bytes (for 11n rates)
- Delay: 100msec
- Tone: 0
- Amount: 0

7. Once the above setting are done, start TX by clicking 'Start Tx Testing'

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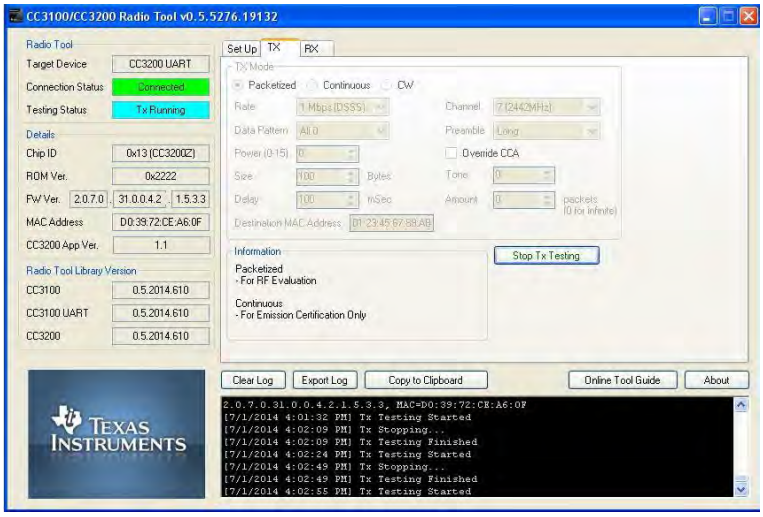
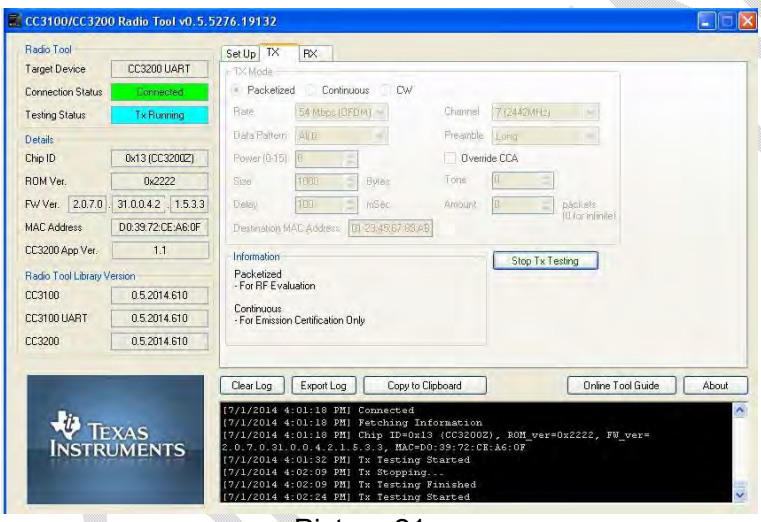


Picture 20

If to change channel or modulation rate please first click ‘Stop TX testing’. If Change To new channel or modulation rate is OK, Please click ‘Start Tx Testing’

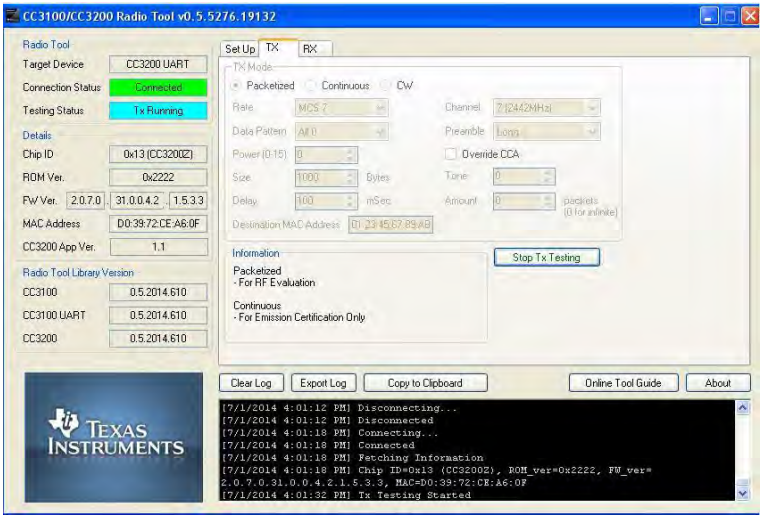
TX -> change settings -> start TX sequence to be followed.

Picture 20: Example of 11b (1DSSS) transmission at channel 7(2442MHz)



Picture 21

Picture 21: Example of 11g (54OFDM) transmission at channel 7(2442MHz)



Picture 22

Picture 22: Example of 11n (MCS7) transmission at channel 7(2442MHz)

[Software application development]

Development support

- The CC3200 includes a set of tools and documentation to help the user during the development phase.
- **PinMux Tool:** The CC3200 device uses pin multiplexing extensively to accommodate the large number of peripheral functions in the smallest possible package. The PinMux tool is a utility used to select the appropriate pin multiplexing configuration that meets the end application requirements. The PinMux tool makes it easy to understand the various pin multiplexing options and enables the best configuration to be chosen without error.
- **Radio Tool:** The SimpleLink radio tool is a utility for operating and testing the CC3200 chipset designs during development of the application board. The CC3200 device has an auto-calibrated radio that enables easy connection to the antenna without requiring expertise in radio circuit design.
- **Uniflash Flash Programmer:** The Uniflash flash programmer utility allows end users to communicate with the SimpleLink device to update the serial flash. The easy GUI interface enables flashing of files (including read-back verification option), storage format (secured and nonsecured formatting), version reading for boot loader and chip ID, and so on.

Supported profiles & sample applications

1. Cloud Connectivity
2. Home Automation
3. Home Appliances
4. Access Control
5. Security Systems
6. Smart Energy
7. Internet Gateway
8. Industrial Control
9. Smart Plug and Metering
10. Wireless Audio
11. IP Network Sensor Nodes

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Federal Communication Commission Interference 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.

This 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 generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does 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 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 experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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This device is intended only for OEM integrators under the following conditions:

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as **2** conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling
This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: YAIWM05-AN. The grantee's FCC ID can be used only when all FCC compliance requirements are met.

Manual Information To the End User
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.
The end user manual shall include all required regulatory information/warning as show in this manual.

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