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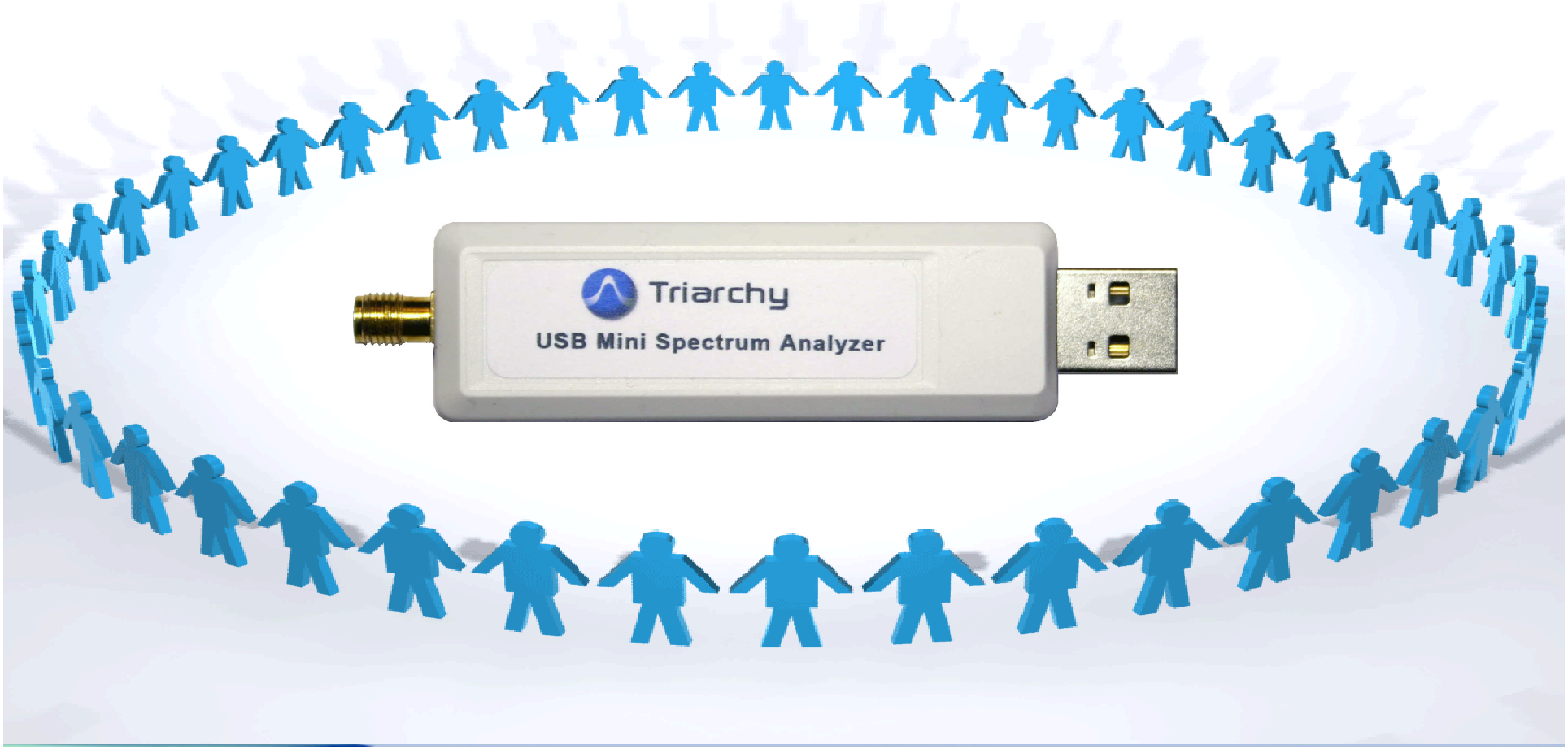
Zigbee signal testing with TSA5G35



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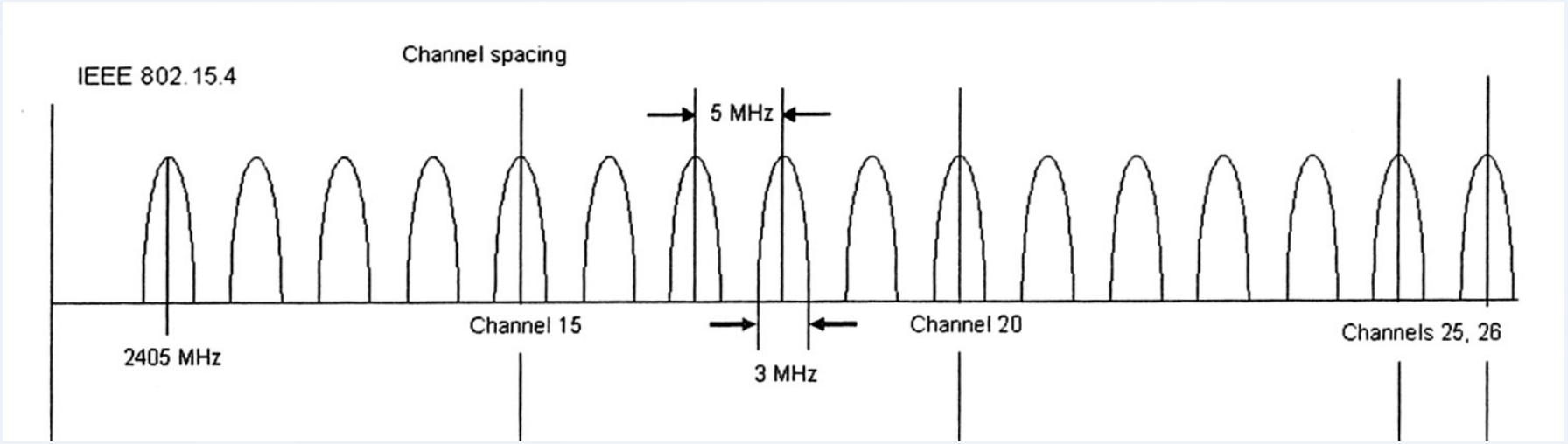
Zigbee channel frequencies



First channel in 2.4G ISM band is ch11, last channel is ch 26, total 16 channels.

Channel space is 5MHz

Zigbee signal bandwidth is 3MHz

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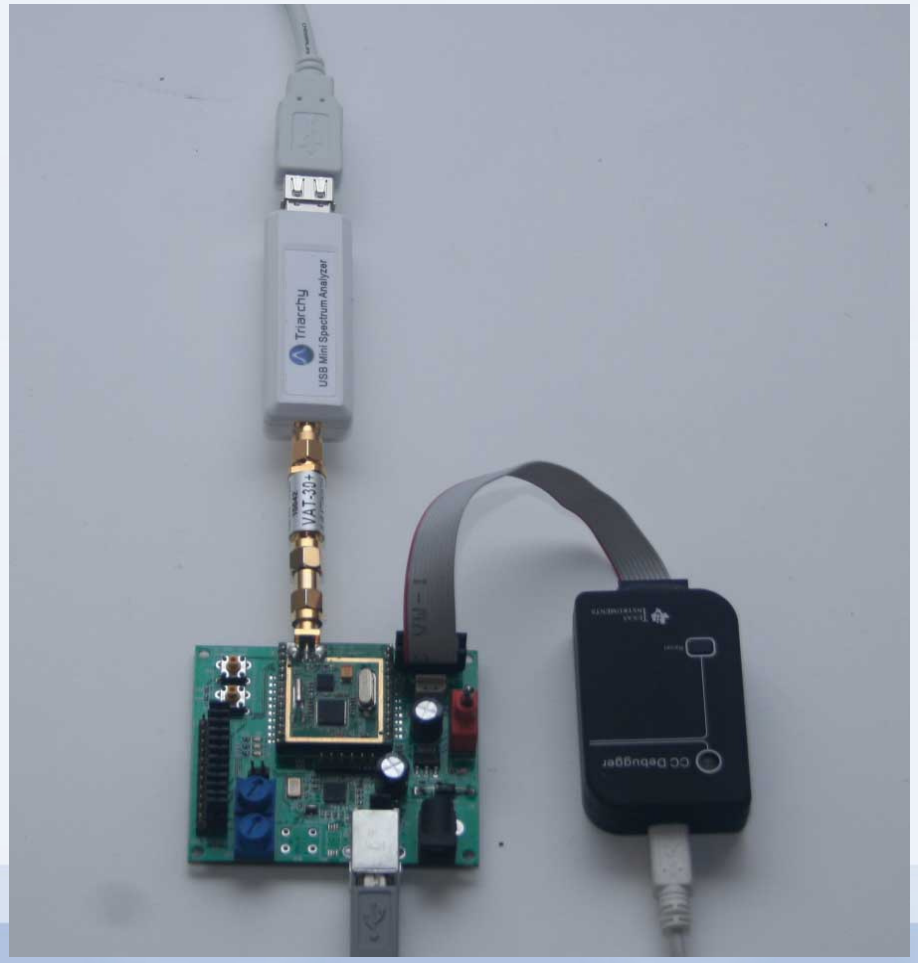
Zigbee module conductive testing

1: TSA5G35 will be connected Zigbee module through 30 dB external attenuator.

2: Zigbee module is TR2401, it install on the demo board, CC debugger will connect to the demo board.

3: SmartRF Studio tool from TI will be used to control the Zigbee module.



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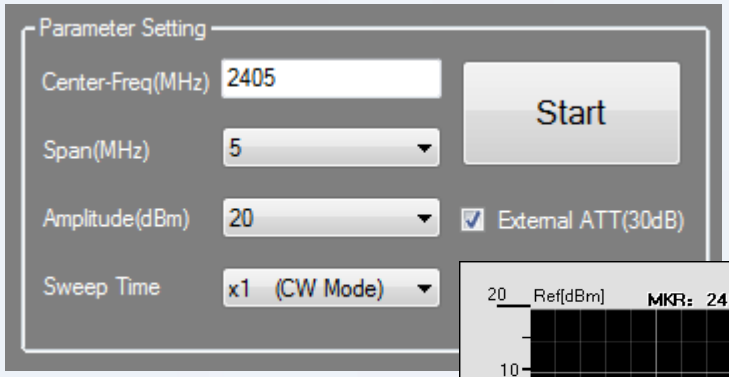
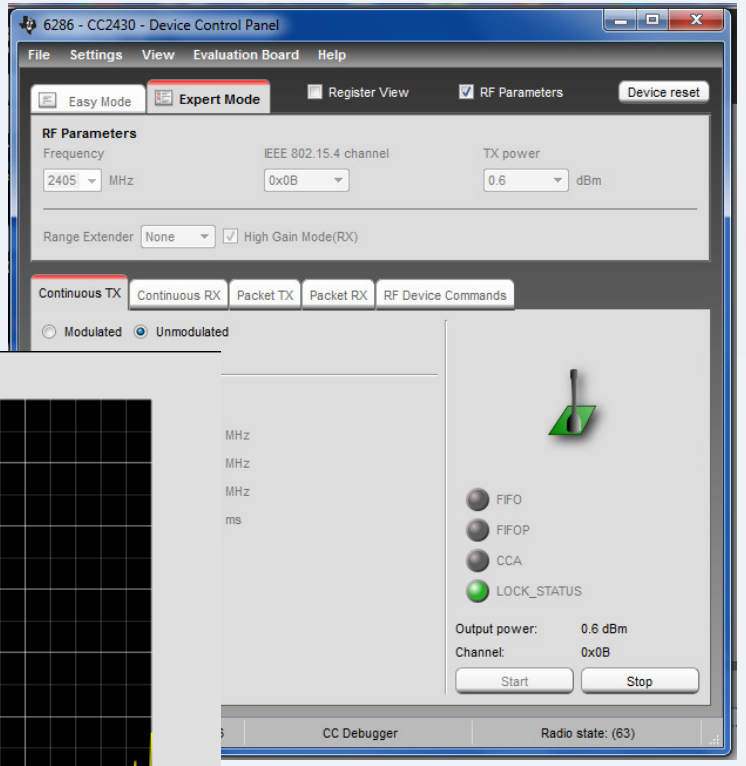
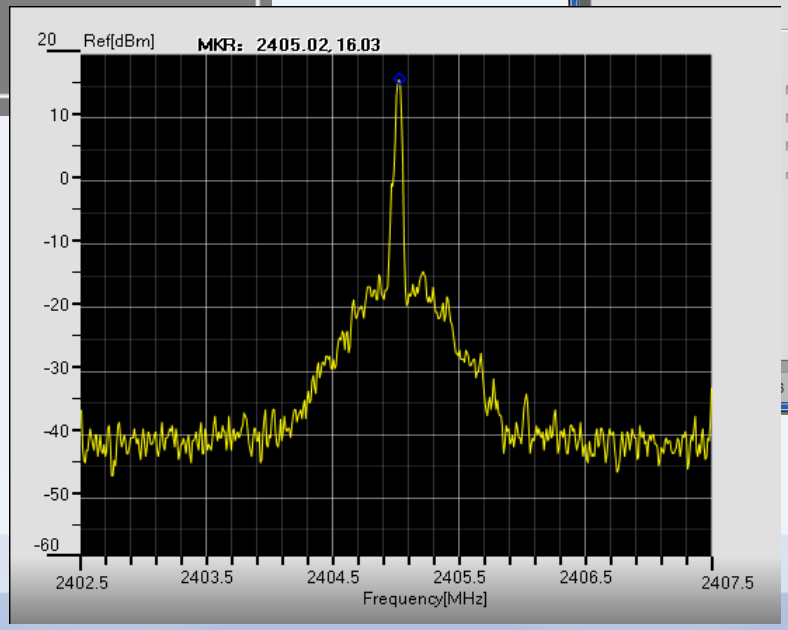
Zigbee module conductive testing

TSA5G35 parameter setting:







Zigbee module Carry singal measurement

Smart RF studio setting

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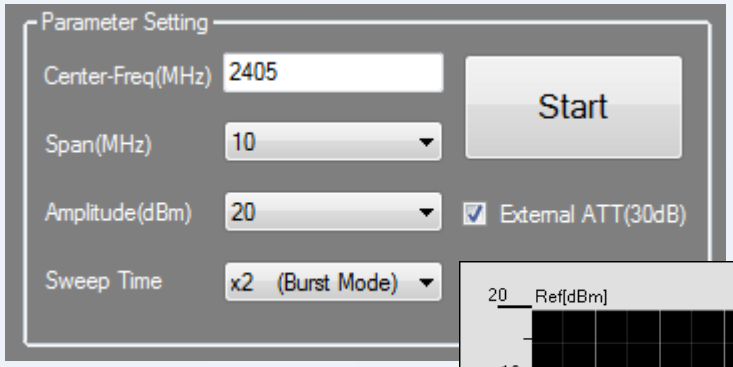
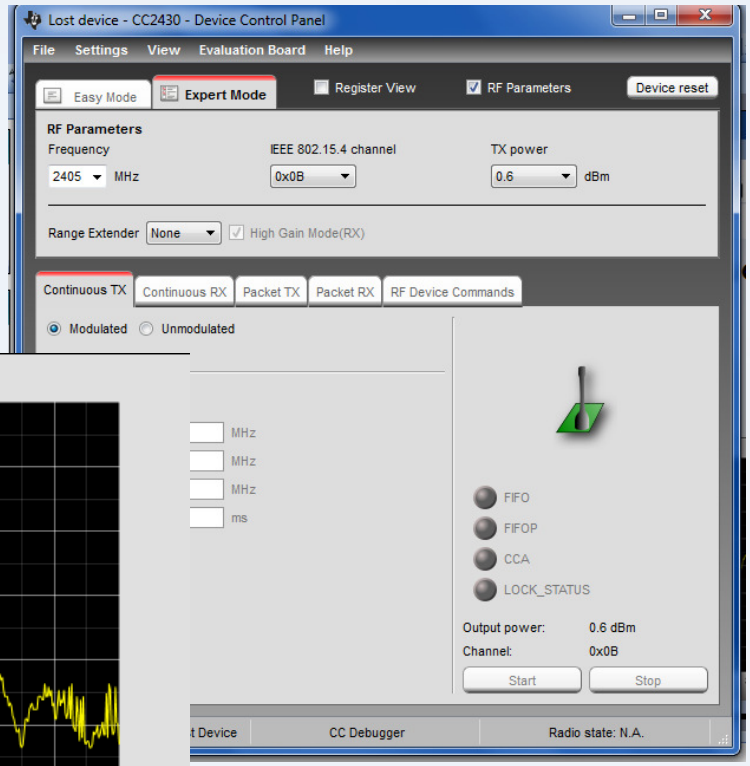
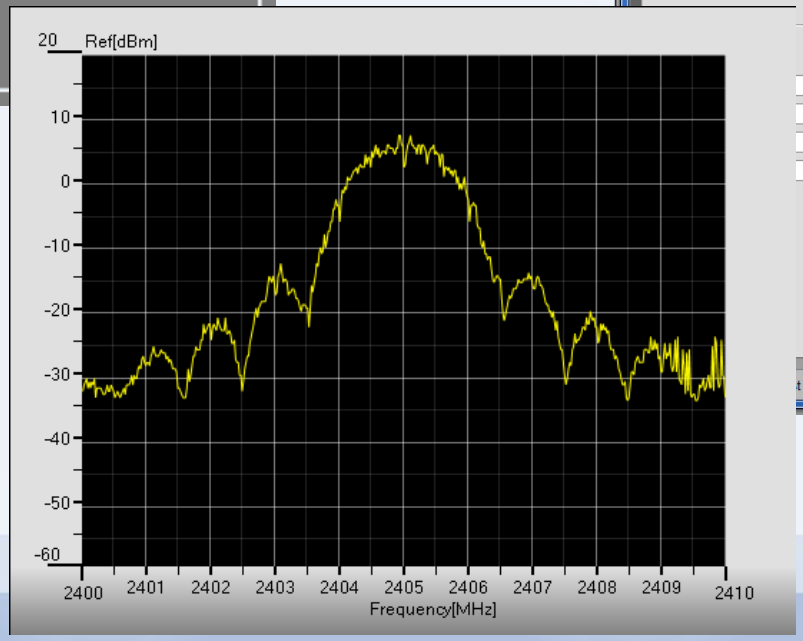
Zigbee module conductive testing

TSA5G35 parameter setting:





Zigbee module modulated singal measurement



Smart RF studio setting

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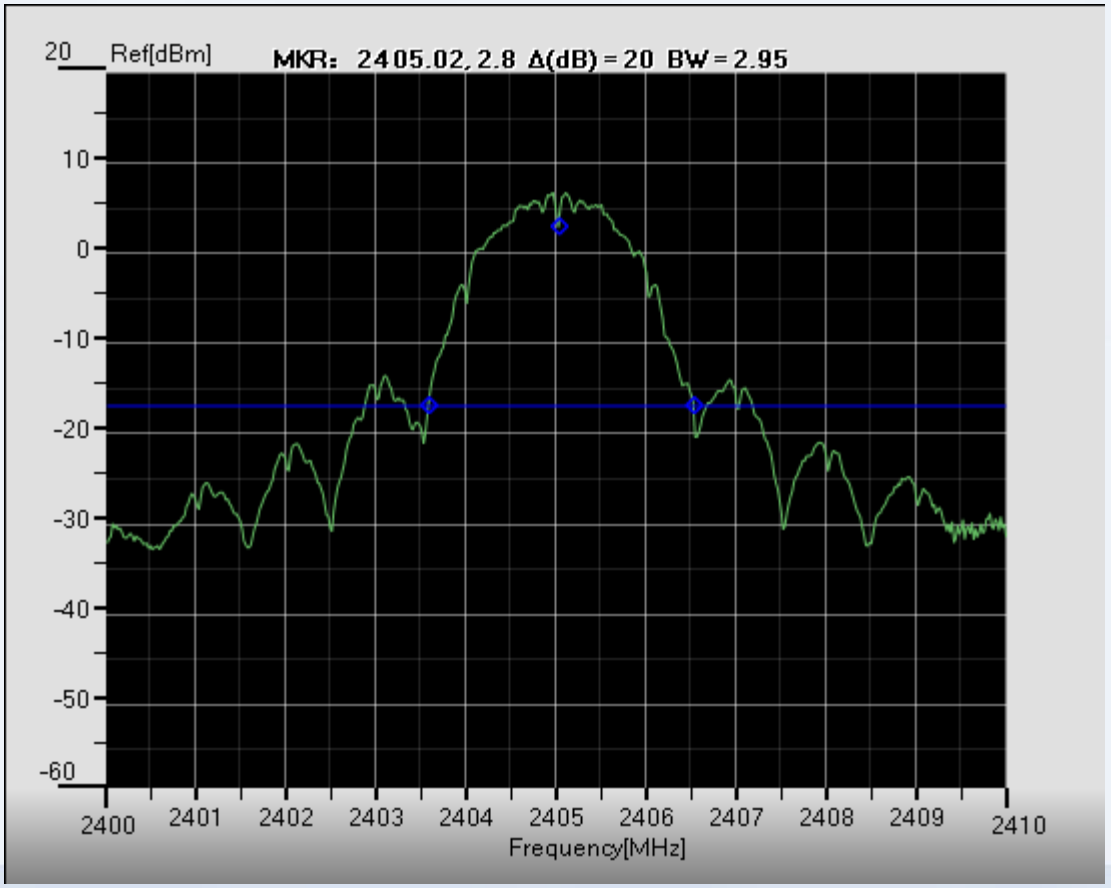
Zigbee module conductive testing

The average curve will be more smooth and easy to measurement.

Use “mark to notch” to pick up center frequency. Frequency=2405.02MHz

Signal level after modulation is 7dBm.

The signal bandwidth is 2.95MHz



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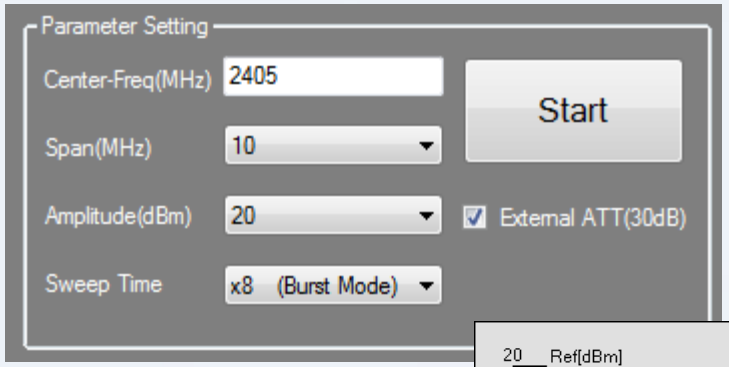
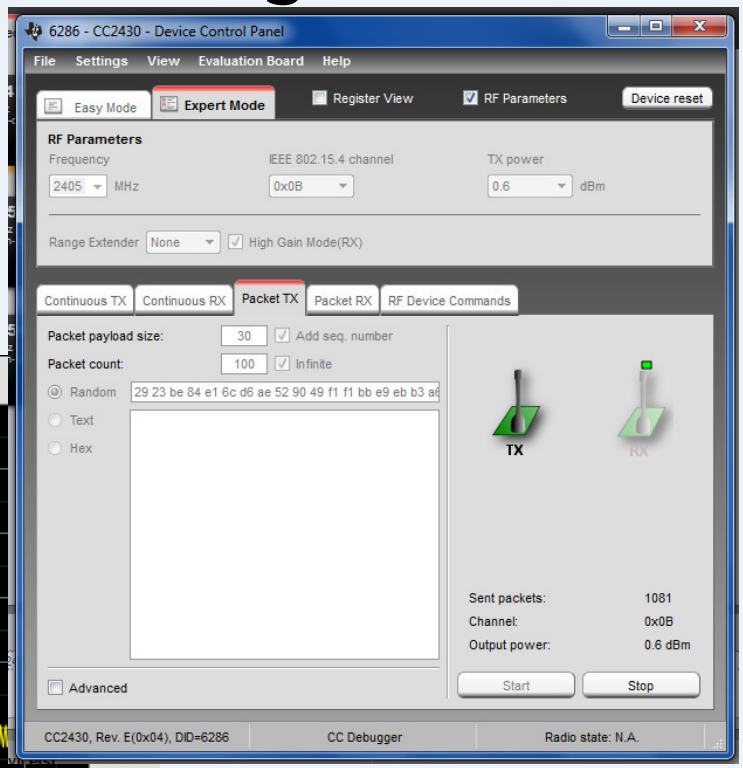
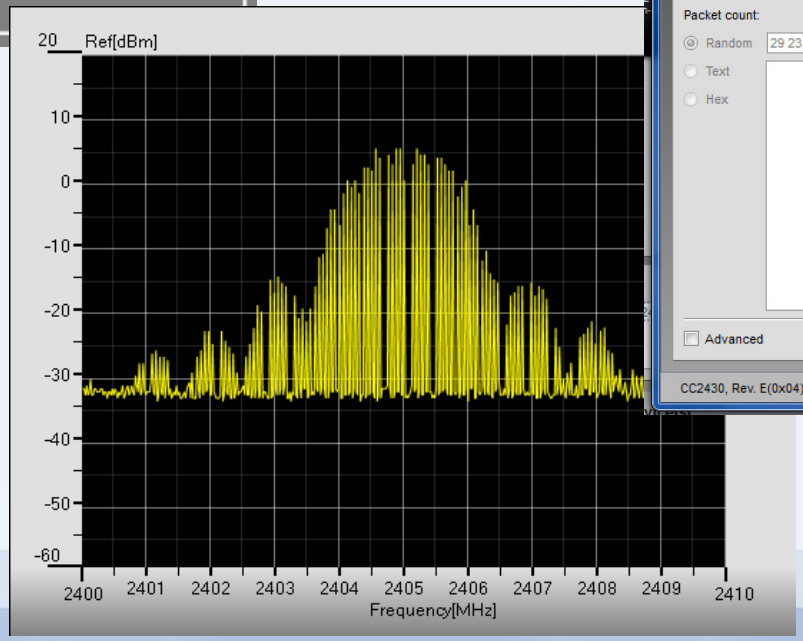
Zigbee module conductive testing



TSA5G35 parameter setting:



Packet signal is not continuous waveform, it shall reduce the sweep time to pick up more signal within each frame measurement



Set Zigbee into the packet Tx mode

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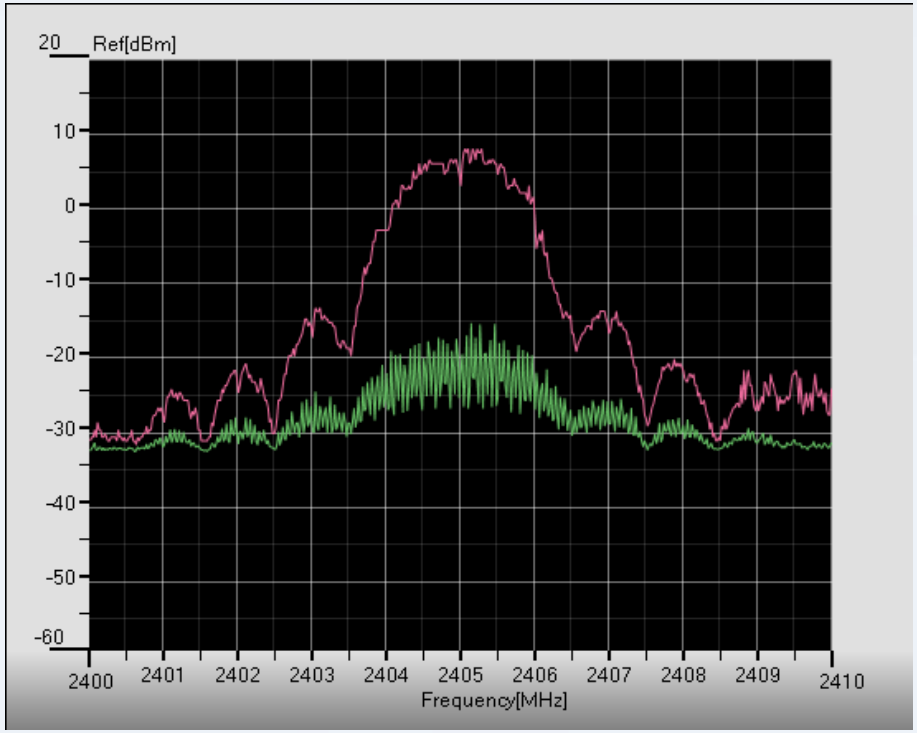
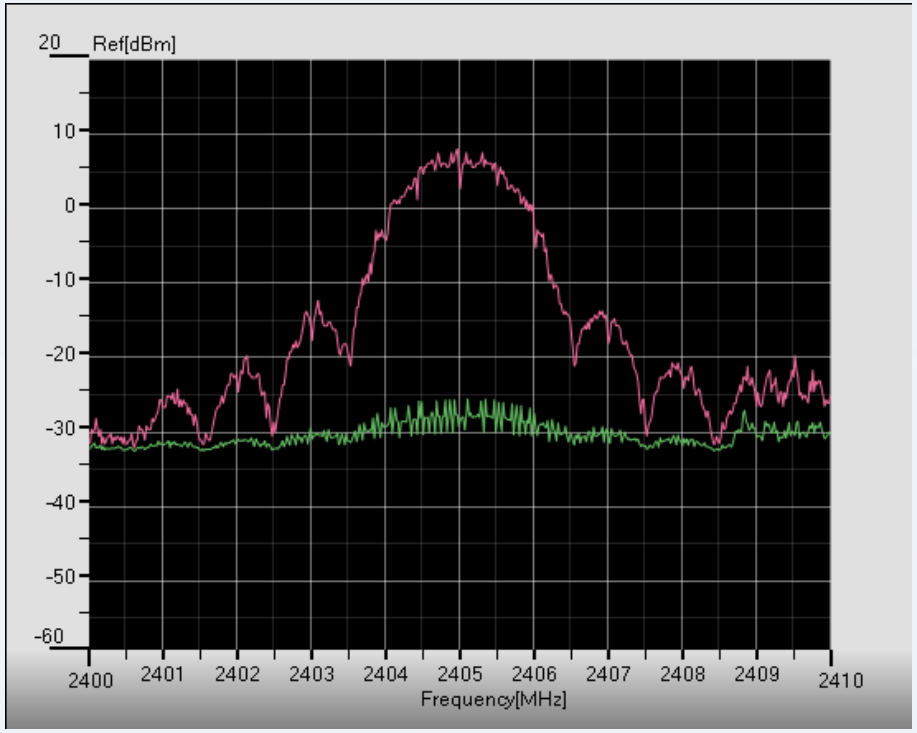
Zigbee module conductive testing





Payload data is 30, frame repeat rate will be fast, average curve will be high

Payload data is 120, frame repeat rate will be slow, average curve will be low

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Zigbee module radiation testing

1: TSA5G35 will be connected with 2.4G whip antenna.

2: Zigbee module connect with 2.4G antenna too, two antenna distance will be 10mm

3: SmartRF Studio tool from TI will be used to control the Zigbee module.

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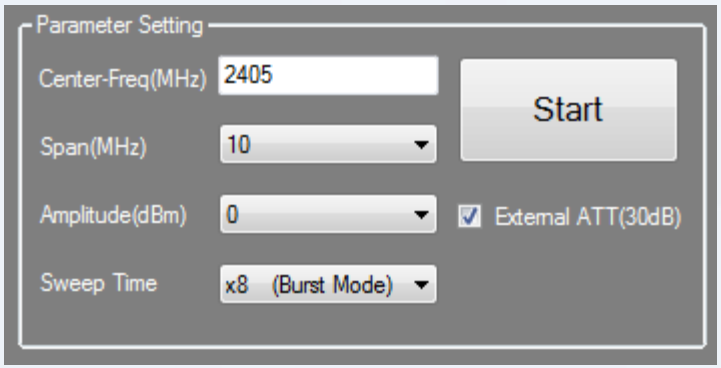
Zigbee module radiation testing

TSA5G35 parameter setting:



The signal level drop to 0dBm, if the antenna move far away, the signal level will drop a lot.