CHIP723

RF RX sensitivity immunity report

版本 1.0

更新日期 20200107

目录

1. RF RX sensitivity immunity

1.1 Interference Mitigation testing

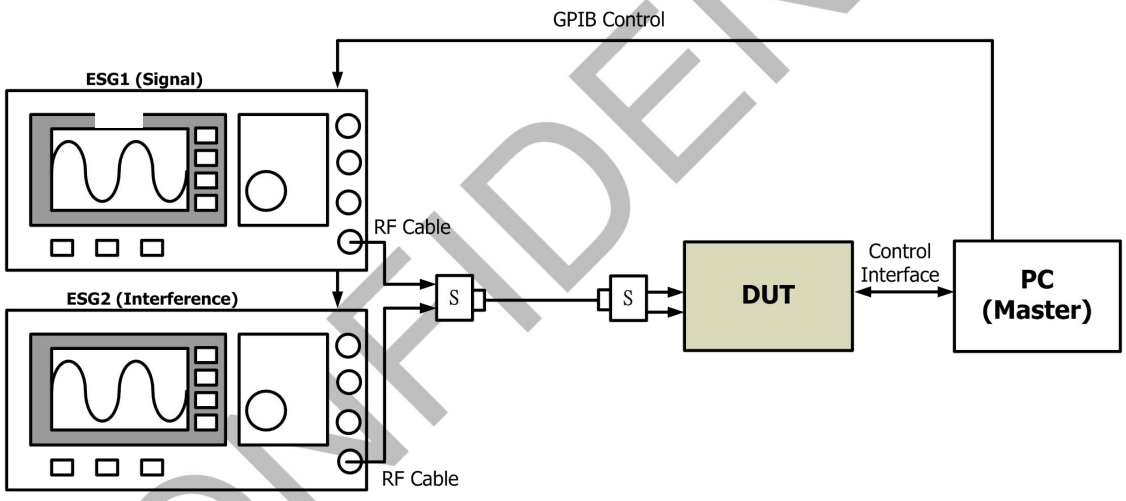
Brief Explanation:

Below mentioned test will help to evaluate chip performance in an environment with external interference. In order to mimic real world scenario, we have defined three test cases as explained in section below

Setup:

1. Block Diagram:

Ensure setup loss are correctly calibrated and taken into account before recording any readings



2. Steps:

a. Make connections as shown in the setup block diagram

b. Capture baseline readings with all noise source turned off

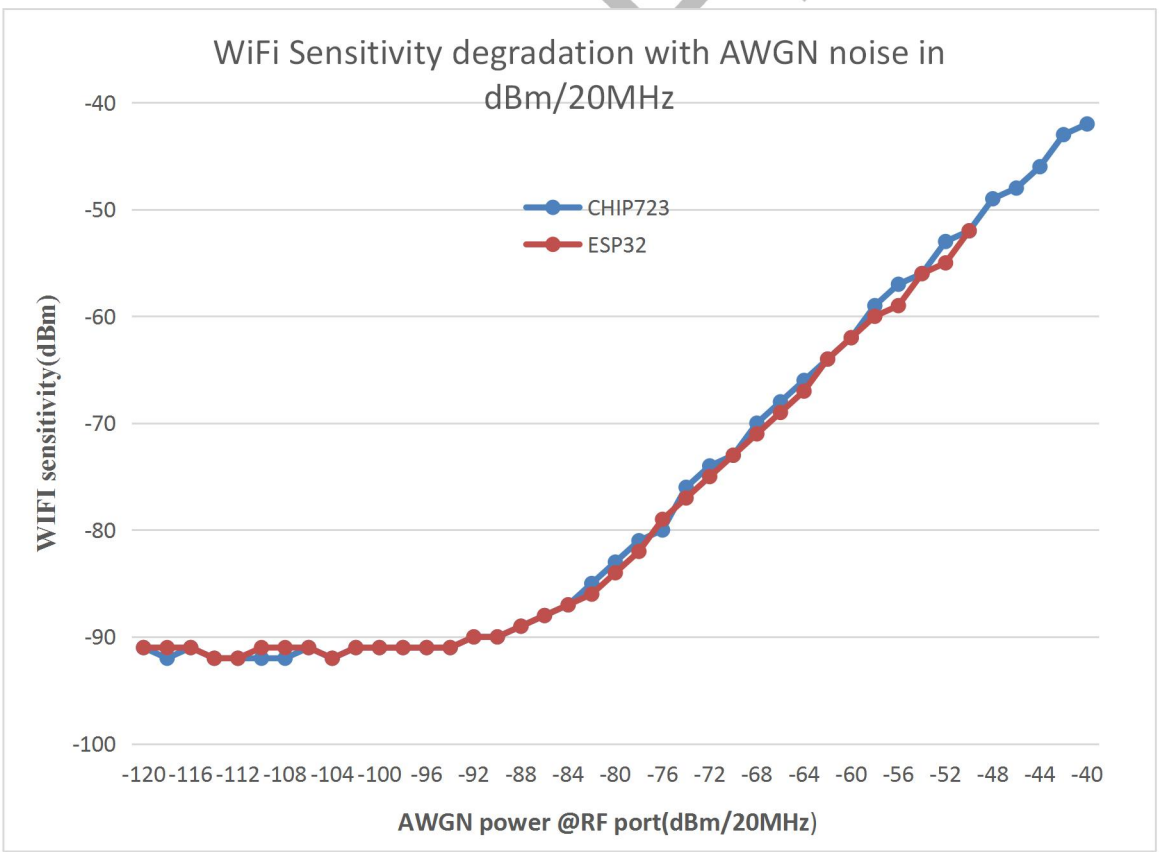
c. Measure Wi-Fi Rx sensitivity in presence of different noise sources defined in tests below

Select data rate (11a/g) **6Mbps**

NOTE: For below mentioned tests (1, 2 and 3) please run either Rx sensitivity (preferred) or Throughput test

1.2 Rx sensitivity immunity to AWGN noise

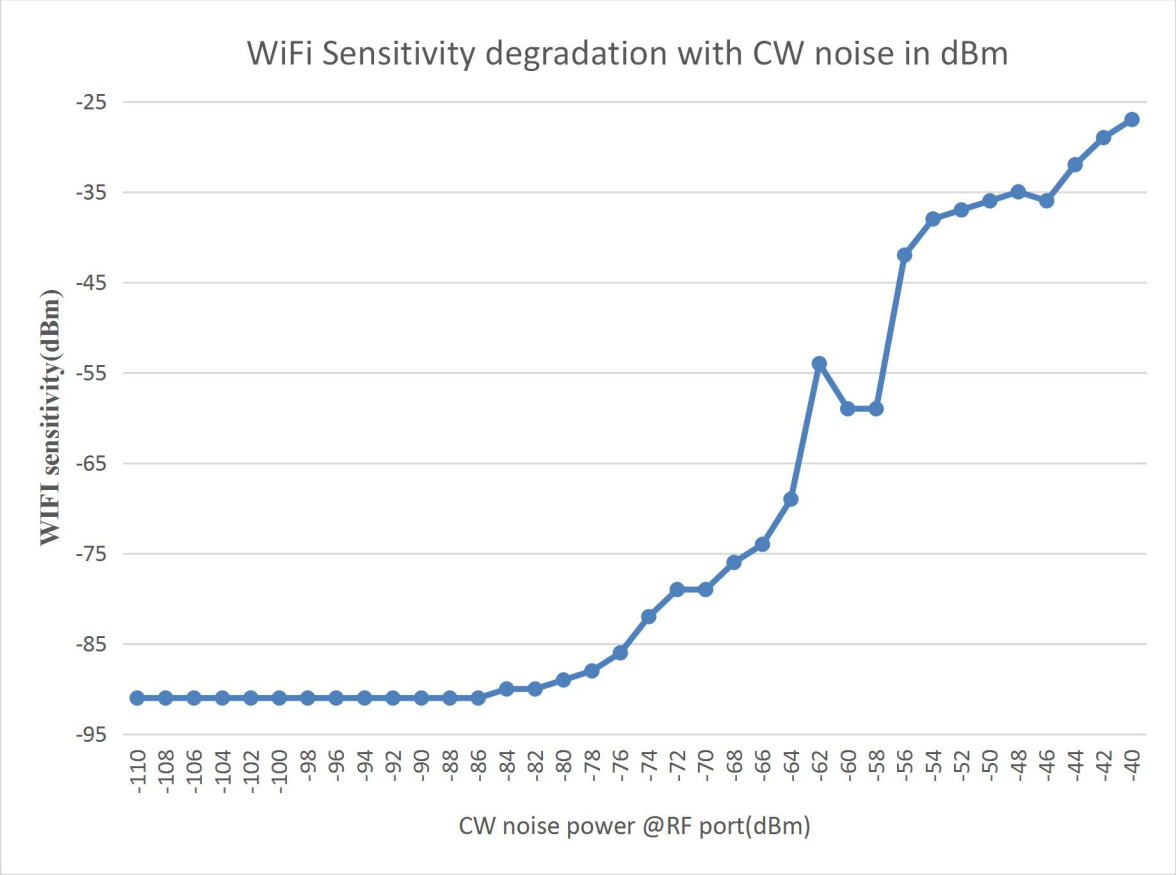
- Enable AWGN noise source for 2437 (CH6) MHz for VHT20
- Select AWGN noise level start point 5dB lower than the measured baseline sensitivity (i.e. w/o noise source). Add path loss from equipment to DUT (ensure calculations are based on 20MHz) and plot AWGN noise on X-axis and Rx sensitivity on Y-axis
- Sweep AWGN noise in an increment of at most 5dB steps and measure Wi-Fi sensitivity at CH-6 respectively
- **CHIP723 & ESP32 result** : CHIP723 Wi-Fi sensitivity immunity to AWGN noise is the same as ESP32.



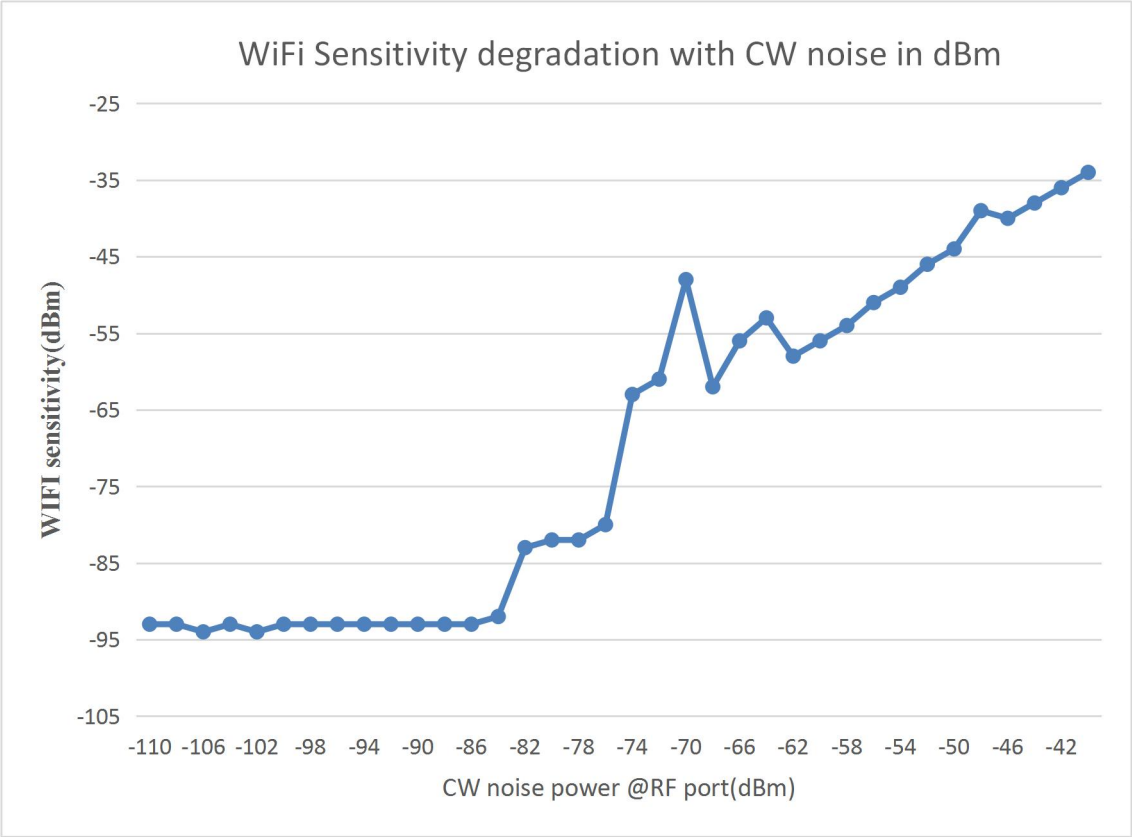
1.3 Rx sensitivity immunity to CW jammer

- Set CW generator frequency to 2440 (In-band Jammer @ CH 6)
- Add path loss from equipment to DUT, plot CW noise power on X-axis and Rx sensitivity on Y-axis
- Sweep CW power in steps of at most 5dB
- **CHIP723 & ESP32 result** : CHIP723 Wi-Fi sensitivity immunity to CW noise is better than ESP32

CHIP723 result:



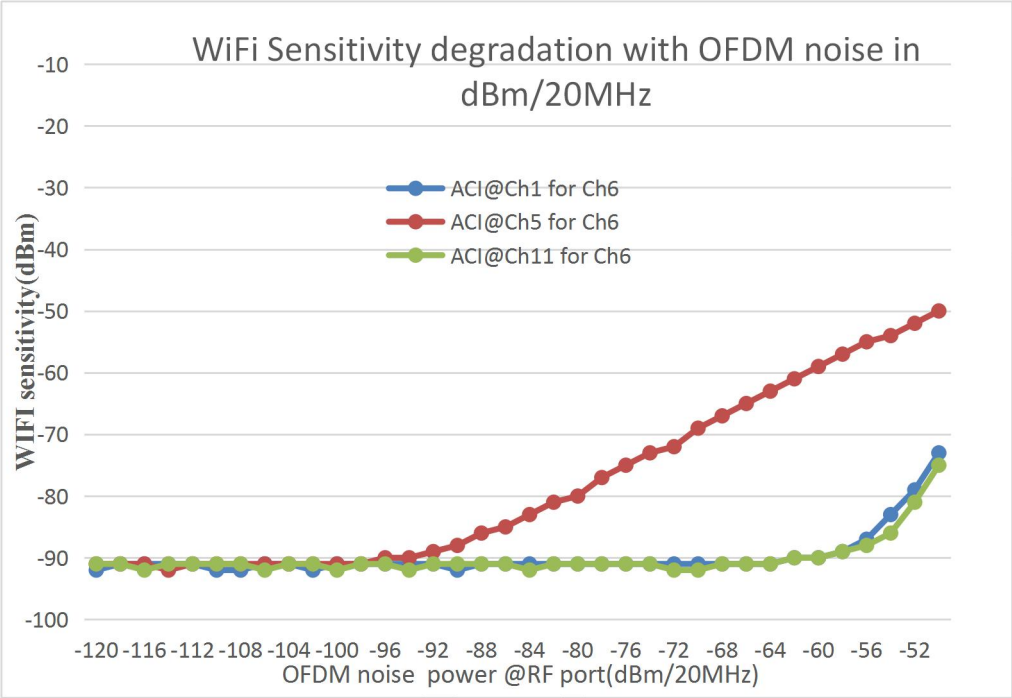
ESP32 result：



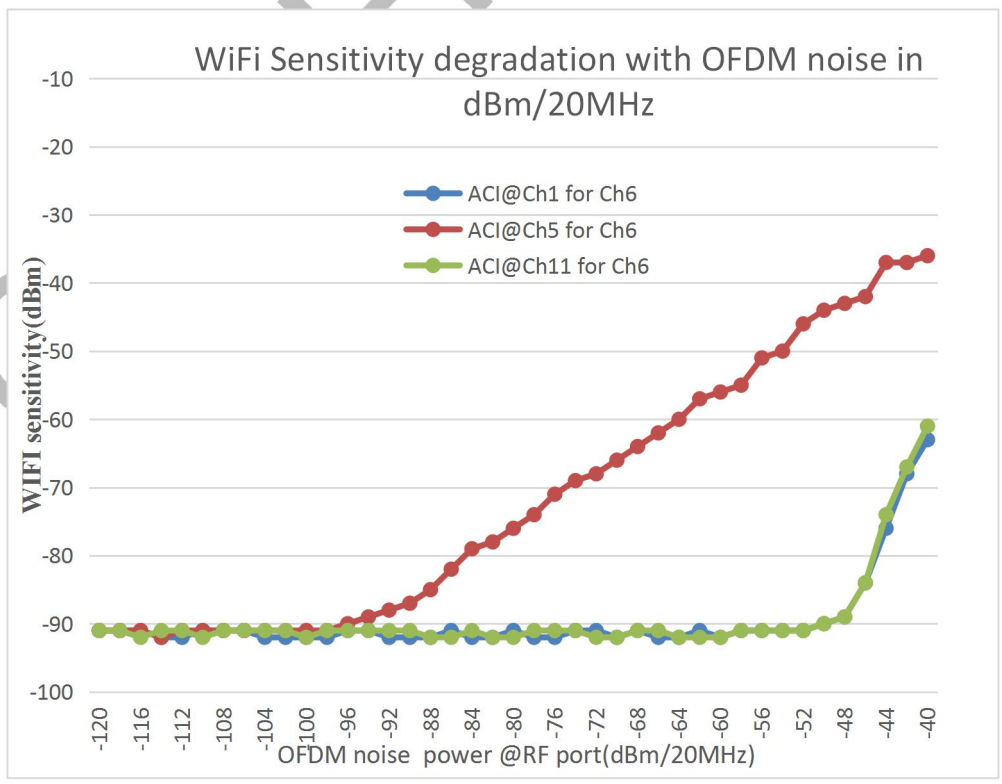
1.4 Rx sensitivity immunity to Wi-Fi (adjacent channel rejection)

- Select ACI channels to be 2412MHz (CH1), then 2462MHz (CH11) and finally 2432MHz (CH 5). Measure sensitivity at 2437MHz (CH6).
- Select noise level start point 5dB lower than the measured baseline sensitivity (i.e. w/o noise source).
- Sweep OFDM adjacent channel power in steps of at most 5dB.
- Add path loss from equipment to DUT (ensure calculations are based on 20MHz) and plot OFDM noise on X-axis and Rx sensitivity on Y-axis.
- **CHIP723 & ESP32 result** : CHIP723 Wi-Fi sensitivity immunity to adjacent channel rejection is better than ESP32 on CH1 and CH6.

CHIP723 result:



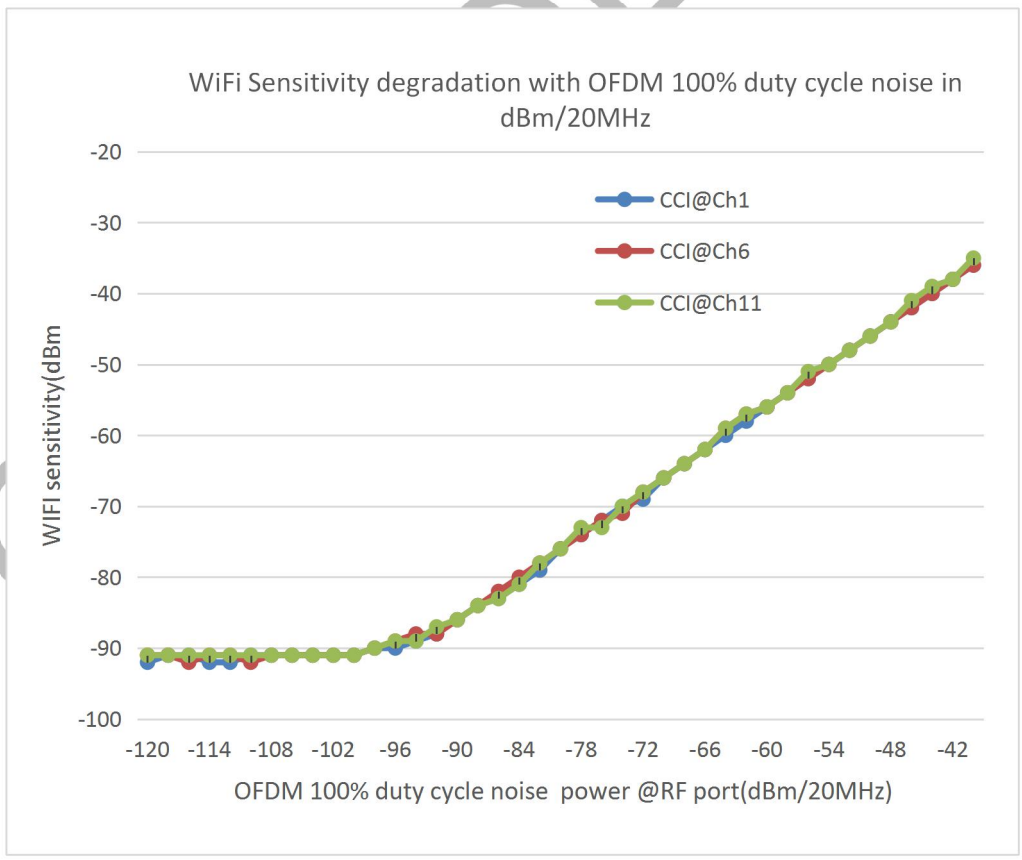
ESP32 result：



1.5 Rx sensitivity immunity to Wi-Fi (Co-channel rejection)

- Set equipment to generate OFDM packets at 2437MHz (CH 6) one at a time with 100% duty cycle
- Select noise level start point 5dB lower than the measured baseline sensitivity (i.e. w/o noise source).
- Sweep OFDM adjacent channel power in steps of at most 5dB.
- Add path loss from equipment to DUT (ensure calculations are based on 20MHz) and plot OFDM noise on X-axis and Rx sensitivity on Y-axis.
- **CHIP723 & ESP32 result** : CHIP723 Wi-Fi sensitivity immunity to CW noise is the same as ESP32

CHIP723 result:



ESP32 result：