DPS-64 card interference with MCE(4S/4M)

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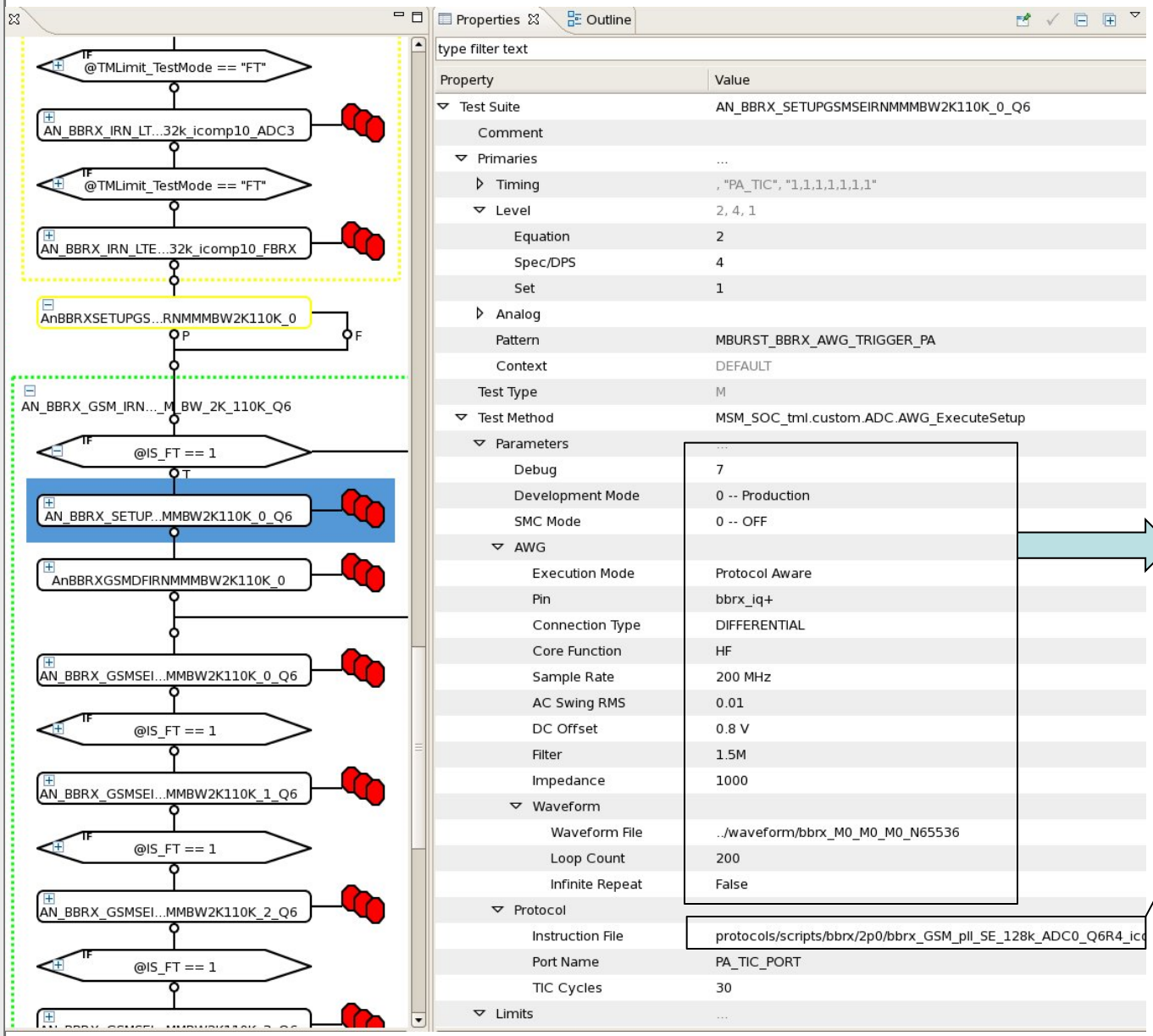
CONFIDENTIAL

PRELIMINARY

BBRx_IRN Test Setup

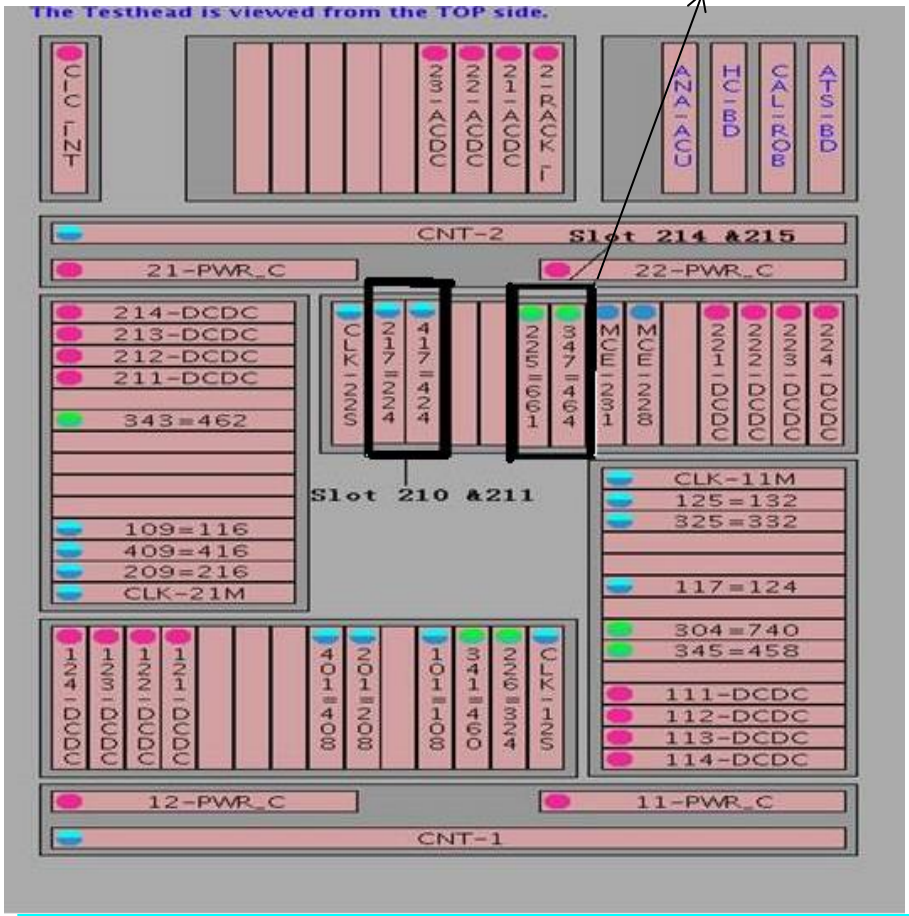


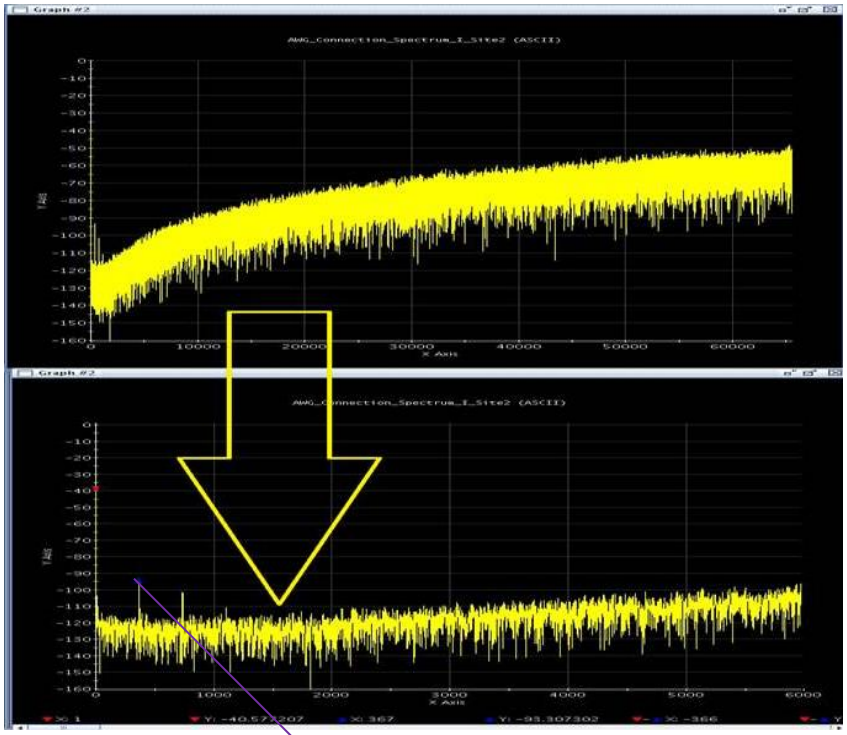
The AWG sources an DC signal 0.8V with Fs=200M into the device.

ADC channel 0 is programed to GSM mode. (Fs =38.4MHz)

BBRx IRN Test on Jambu

Tester head layout (before Swap): DPS64 is closed to MCE



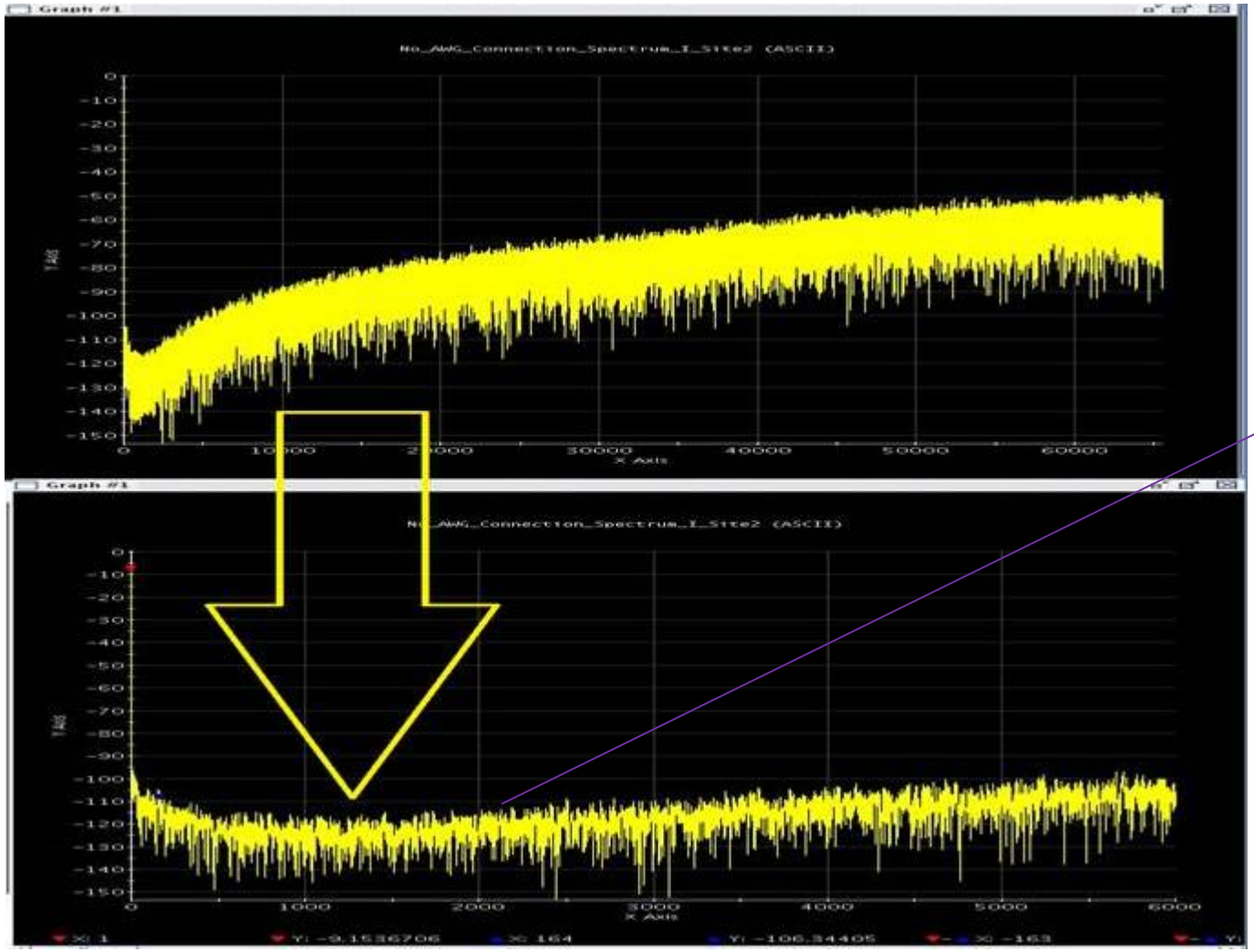


This suspicious tone(107.6KHz) will cause the following IRN test failure.

1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052100	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_IRN_I	@	Pass	***	59.0253 uV	***
1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052200	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_IRN_Q	@	Pass	***	61.2933 uV	***
1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052300	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_ORN_I	@	Pass	***	58.1606 uV	***
1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052500	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_ORN_Q	@	Pass	***	60.2523 uV	***
1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052400	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_ORN_IPJQ	@	Fail		1.00000 59.2157	
uV	40.0000								

BBRx IRN Test on Jambu

To make sure that the suspicious tone is from AWG, try to disconnect AWG sourcing, and didn't observed the tone.

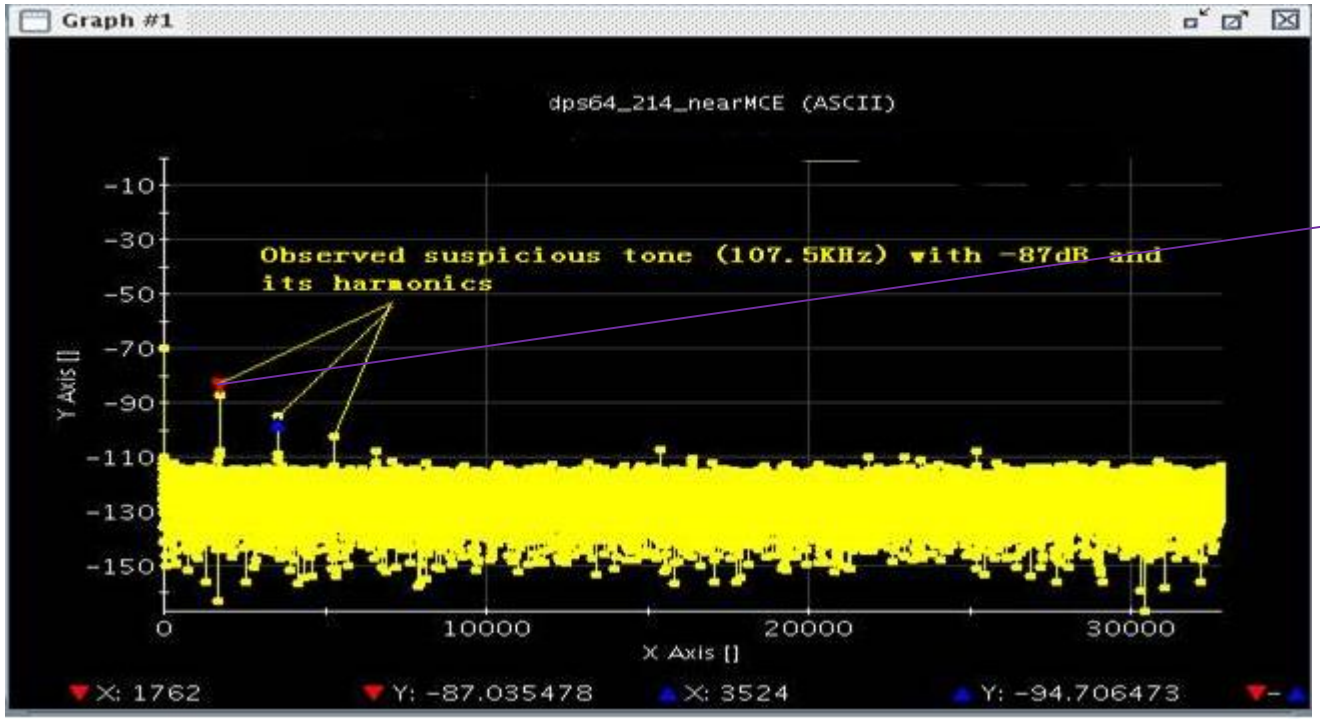


The noise floor is relatively higher as the input is floating, but cann't see the tone anymore.

Analog loopback test on Jambu

Create a simple analog loop back test program which can easily capture the tone without any device.
1, Need to create analog loop back circuit (from AWG unit to Digitizer unit), no digital pins and DPS pins are required for this test. use soft trigger for AWG and Digitizer in the source code.

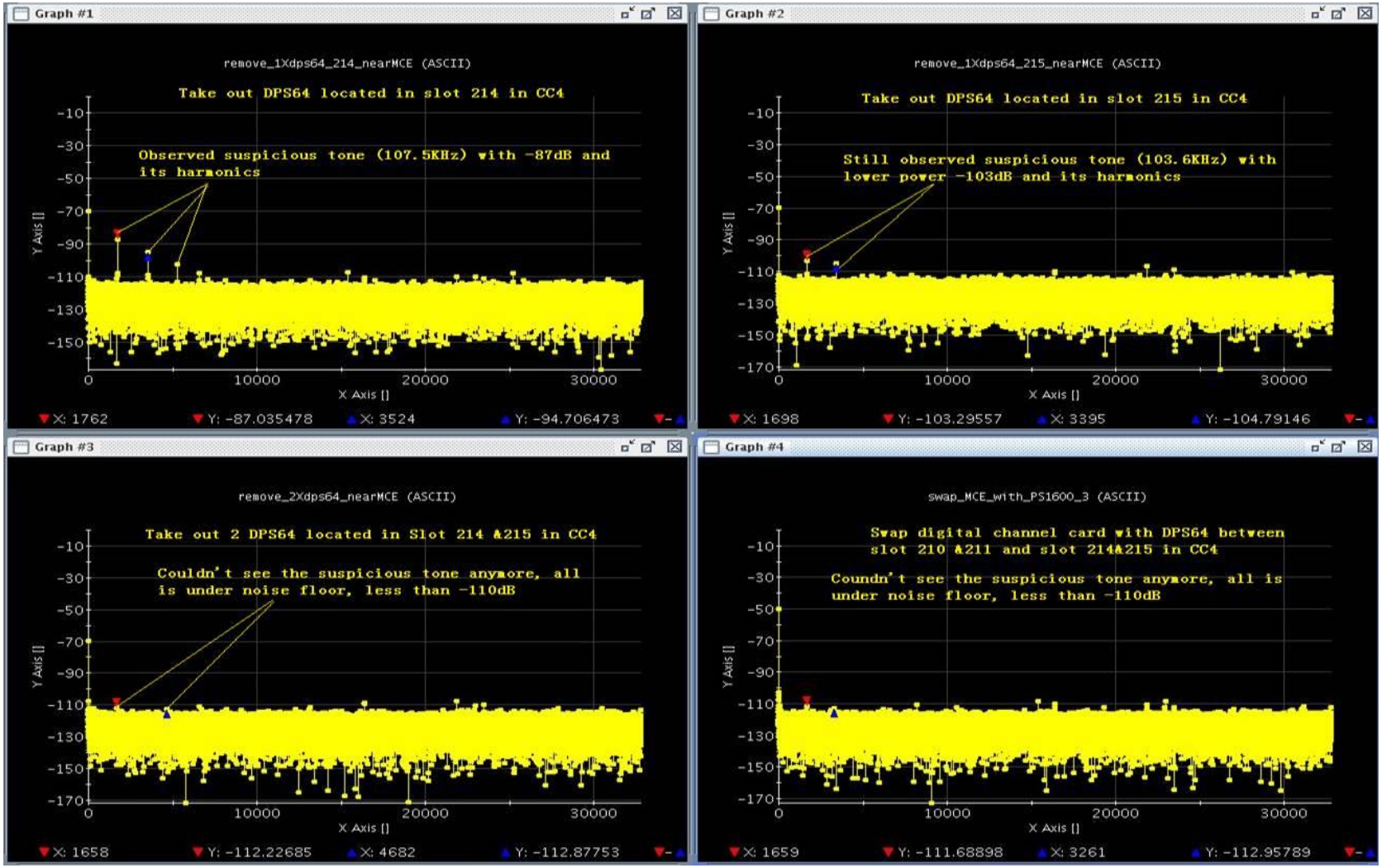
2, Create the same analog set for AWG: sources an DC signal 0.8V with Fs=200M. Digitizer capture Fs = 4M.



Without device, still can capture the suspicious tone and its harmonics.

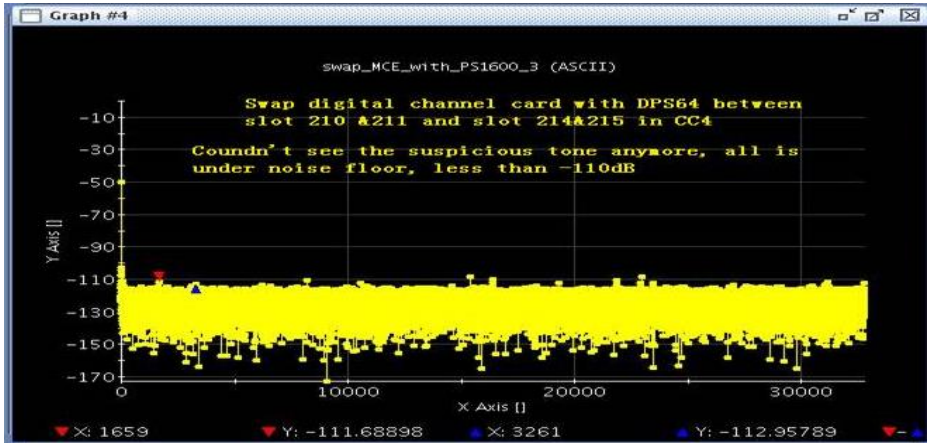
Troubleshooting on Jambu

Try to isolate the root cause of this suspicious tone. Capture the waveform spectrum when changing DPS64 location.(Using loopback test program)



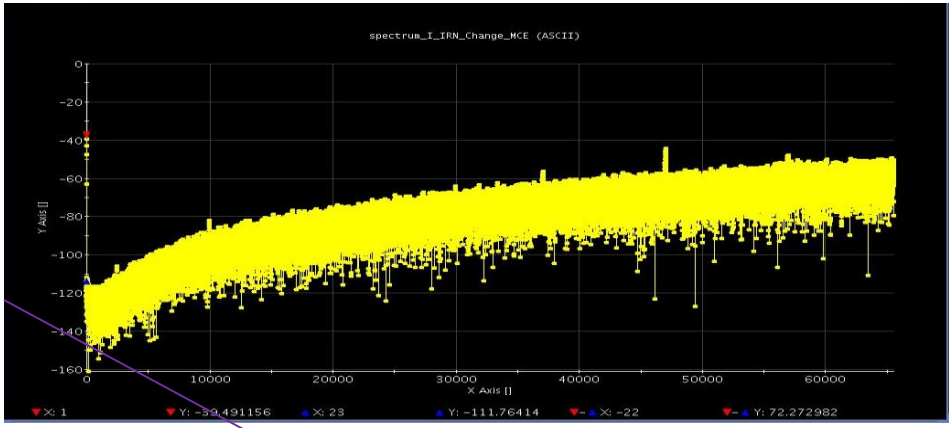
Change the layout of Jambu

Tester head layout (after Swap): DPS64 is away from to MCE (still in the same card cage)



Using loopback test program, can not see the suspicious tone any more.

Try IRN test again, can get a clean noise floor (no suspicious tone)



1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052100	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_IRN_I @	Pass	*** 28.3959 uV	***		
1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052200	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_IRN_Q @	Pass	*** 28.8254 uV	***		
1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052300	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_ORN_I @	Pass	*** 28.0462 uV	***		
1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052500	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_ORN_Q @	Pass	*** 28.3998 uV	***		
1	1	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6	301052400	AN_BBRX_GSMSEIRNMMMBW2K110K_0_Q6_ADC0_ORN_IPJQ @	Pass	1.00000	28.2235 uV	40.0000	

Experiment on other Systems

Four systems: Mabolo(SG), Arena3(SG), Yuzu(SG), Brut(SD)
(the DPS boards and MCE are separate in tester head)
IRN test is passing, Couldn't observe the suspicious tone.

Three systems: Jambu(SG), Zandra(SD), Harpo(SD)
(the DPS board is close to MCE in tester head)
IRN test is failing on Jambu and Zandra, Can capture the suspicious tone .
Need to verify it on Harpo.

CR has been filed to address this issue for R&D to isolate the root cause.
[SOCtrack] (QCOM-794) DPS-64 card interference with MCE

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