

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

Prepared By: Stephen Fu

CONFIDENTIAL

PRELIMINARY

The screenshot displays the Advantest test setup interface. On the left is a test flowchart with various components including decision diamonds (e.g., `@TMLimit_TestMode == "FT"`), test blocks (e.g., `AN_BBRX_IRN_LT...32k_icomp10_ADC3`), and a highlighted block `AN_BBRX_SETUPGS...RNMMBW2K110K_0`. On the right is a 'Properties' table for the selected test suite.

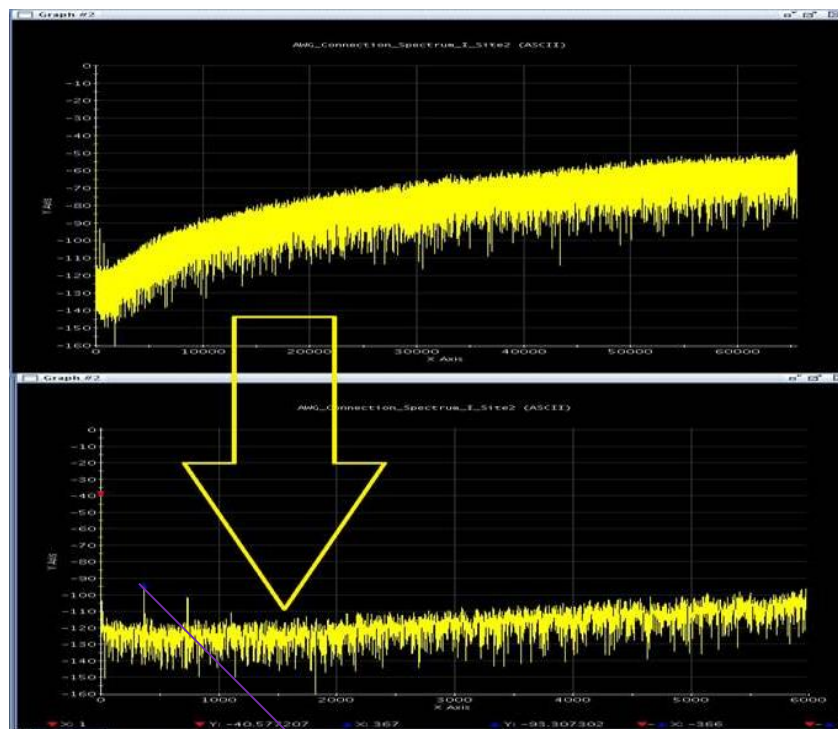
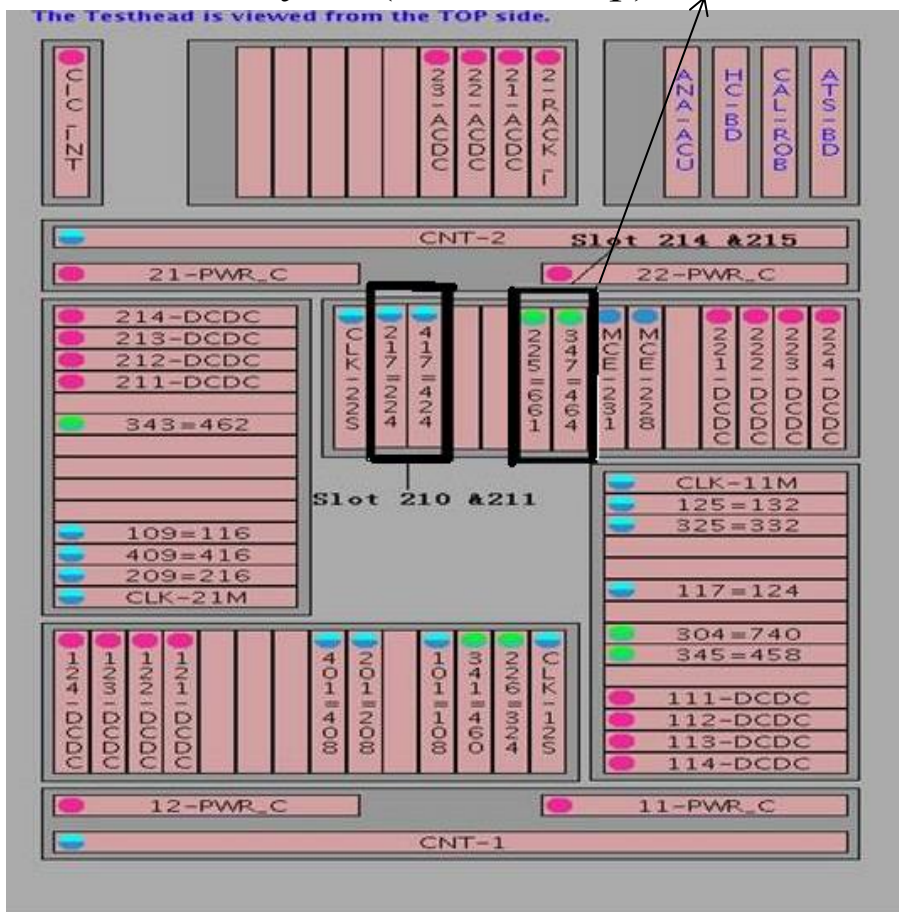
Property	Value
Test Suite	AN_BBRX_SETUPGSMEIRNMMMBW2K110K_0_Q6
Comment	
Primaries	...
Timing	,"PA_TIC", "1,1,1,1,1,1,1"
Level	2, 4, 1
Equation	2
Spec/DPS	4
Set	1
Analog	
Pattern	MBURST_BBRX_AWG_TRIGGER_PA
Context	DEFAULT
Test Type	M
Test Method	MSM_SOC_tml.custom.ADC.AWG_ExecuteSetup
Parameters	...
Debug	7
Development Mode	0 -- Production
SMC Mode	0 -- OFF
AWG	
Execution Mode	Protocol Aware
Pin	bbbx_iq+
Connection Type	DIFFERENTIAL
Core Function	HF
Sample Rate	200 MHz
AC Swing RMS	0.01
DC Offset	0.8 V
Filter	1.5M
Impedance	1000
Waveform	
Waveform File	../waveform/bbrx_M0_M0_M0_N65536
Loop Count	200
Infinite Repeat	False
Protocol	
Instruction File	protocols/scripts/bbrx/2p0/bbrx_GSM_pll_SE_128k_ADC0_Q6R4_icd
Port Name	PA_TIC_PORT
TIC Cycles	30
Limits	...

The AWG sources an DC signal 0.8V with  $F_s=200\text{M}$  into the device.

ADC channel 0 is programed to GSM mode. ( $F_s = 38.4\text{MHz}$ )

# BBRx IRN Test on Jambu

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



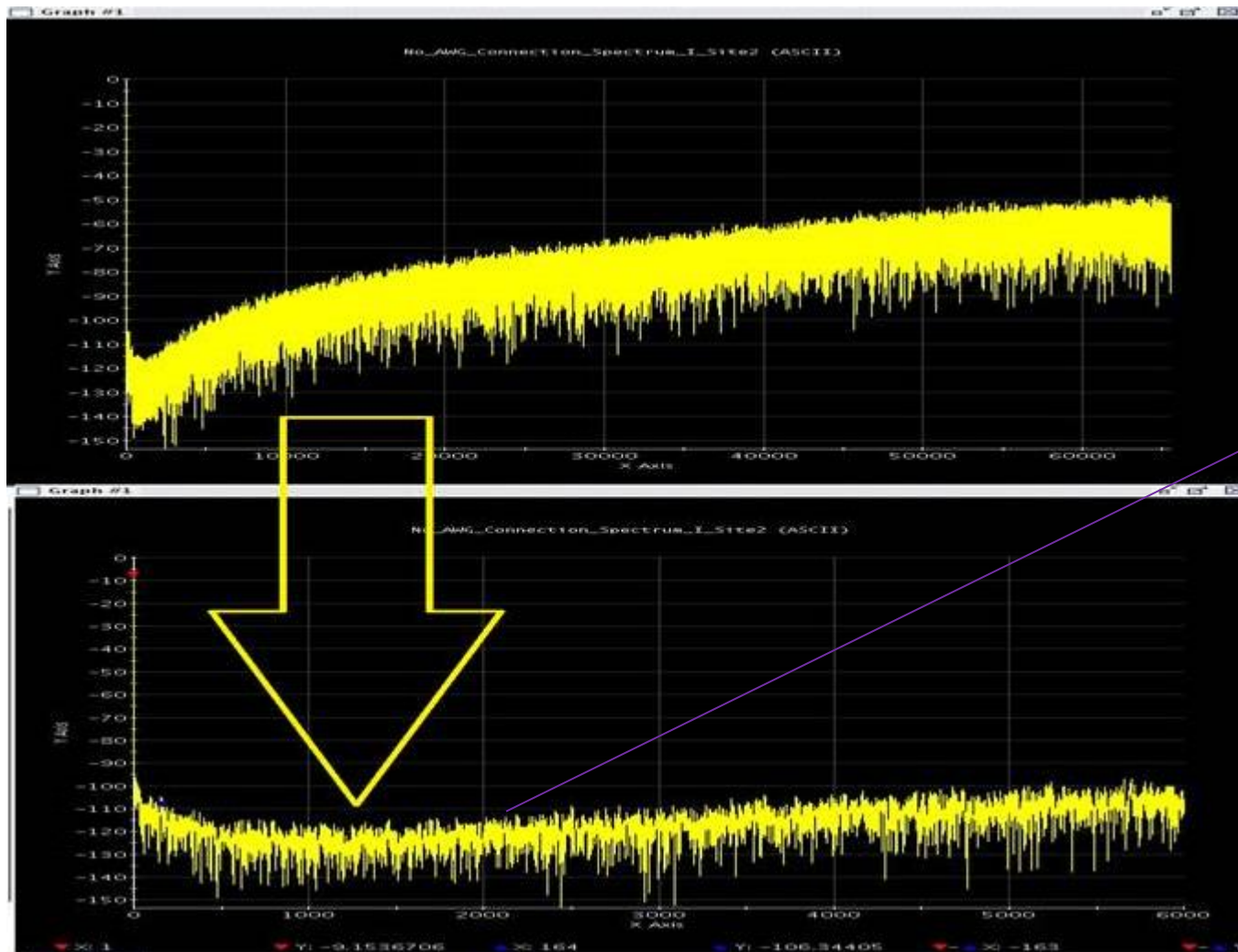
This suspicious tone(107.6KHz) will cause the following IRN test failure.

1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052100	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_IRN_I	@	Pass	***	59.0253 uV	***
1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052200	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_IRN_Q	@	Pass	***	61.2933 uV	***
1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052300	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_ORN_I	@	Pass	***	58.1606 uV	***
1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052500	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_ORN_Q	@	Pass	***	60.2523 uV	***
1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052400	AN_BBRX_GSMSEIRNMMBW2K110K_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.

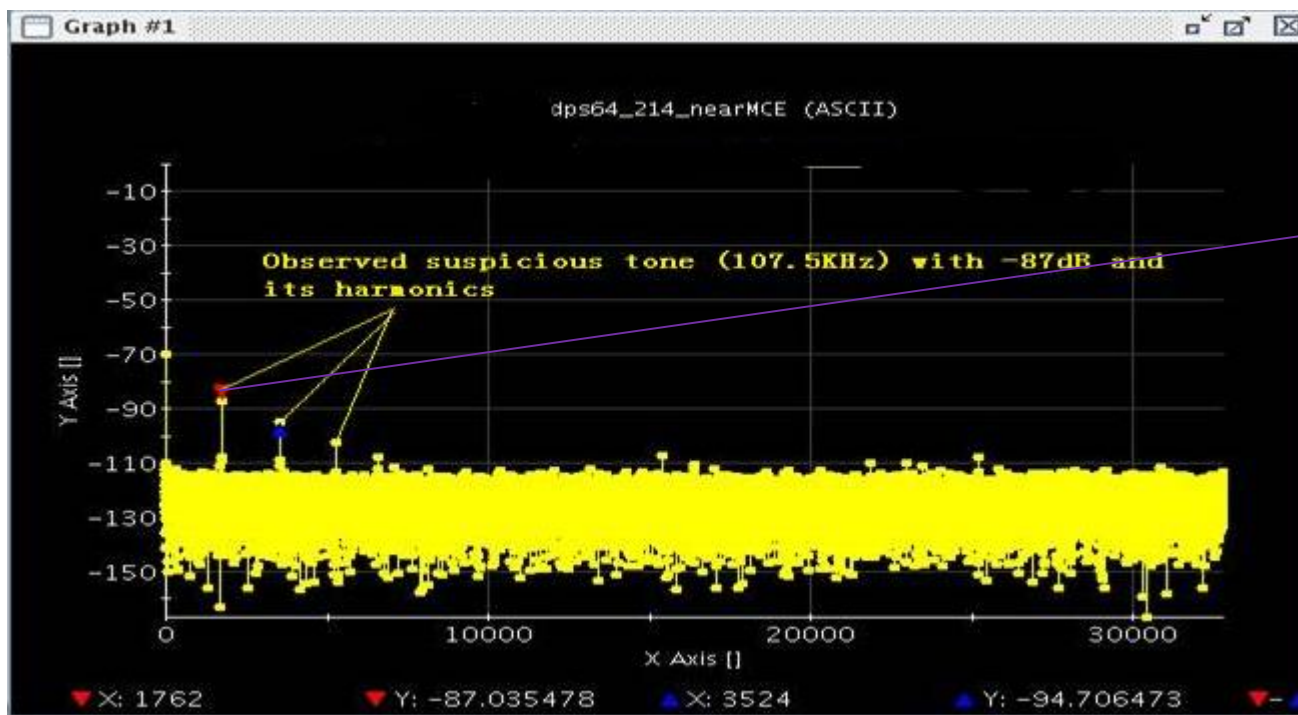


The noise floor is relatively higher as the input is floating, but can't see the tone anymore.

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.

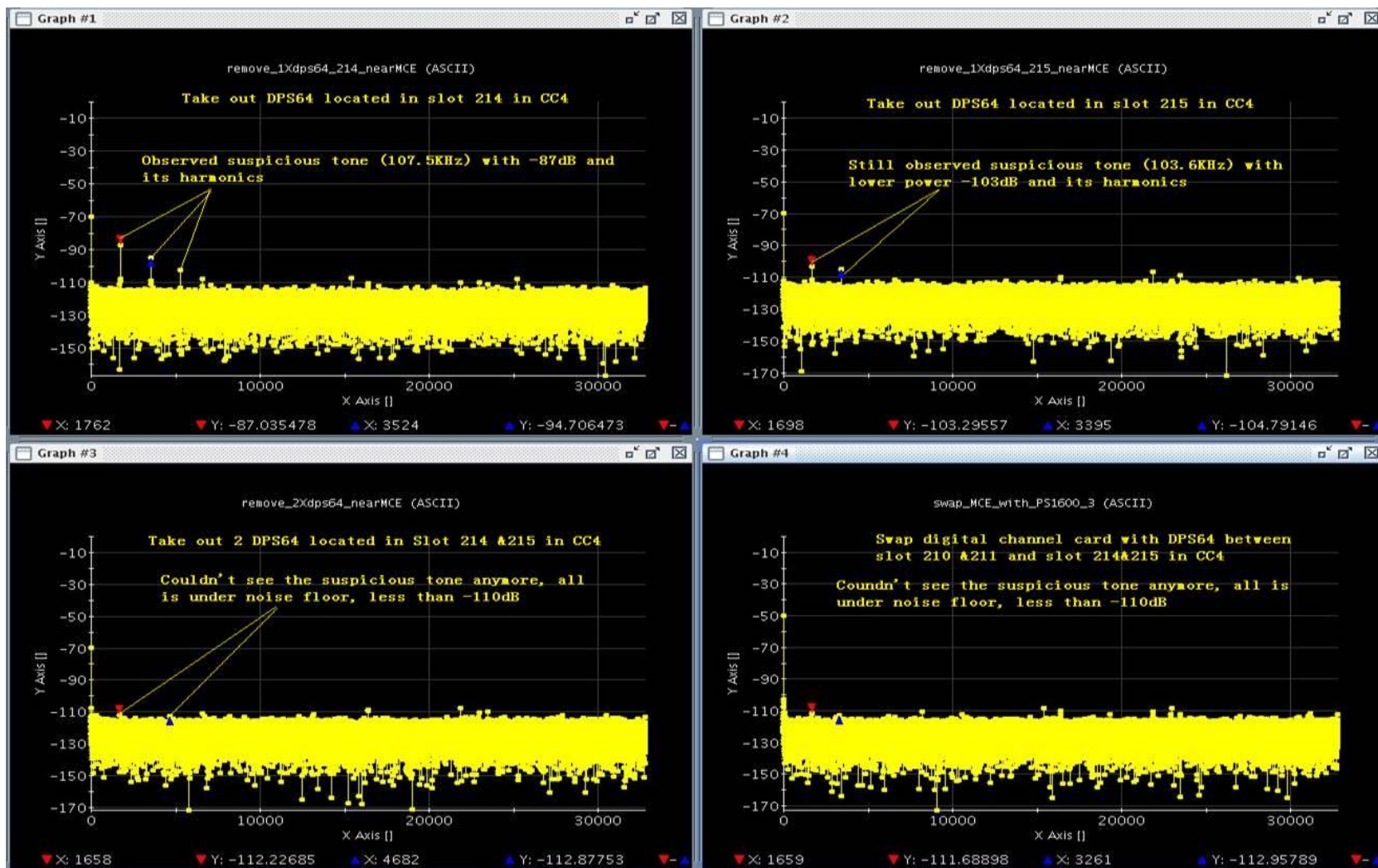
2, Create the same analog set for AWG: sources an DC signal 0.8V with  $F_s=200\text{M}$ . Digitizer capture  $F_s = 4\text{M}$ .

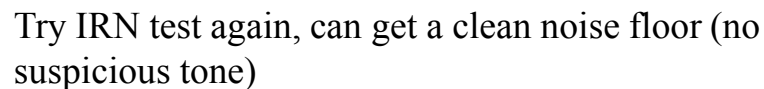
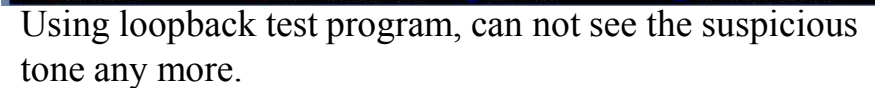


Without device, still can capture the suspicious tone and its harmonics.



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





1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052100	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_IRN_I_0	Pass	***	28.3959 uV	***	
1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052200	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_IRN_Q_0	Pass	***	28.8254 uV	***	
1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052300	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_ORN_I_0	Pass	***	28.0462 uV	***	
1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052500	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_ORN_Q_0	Pass	***	28.3998 uV	***	
1	1	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6	301052400	AN_BBRX_GSMSEIRNMMBW2K110K_0_Q6_ADC0_ORN_IPJQ_0	Pass	1.00000	28.2235 uV	40.0000	

Four systems: Mabololo(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.  
[\[SOTrack\] \(QCOM-794\) DPS-64 card interference with MCE](#)



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