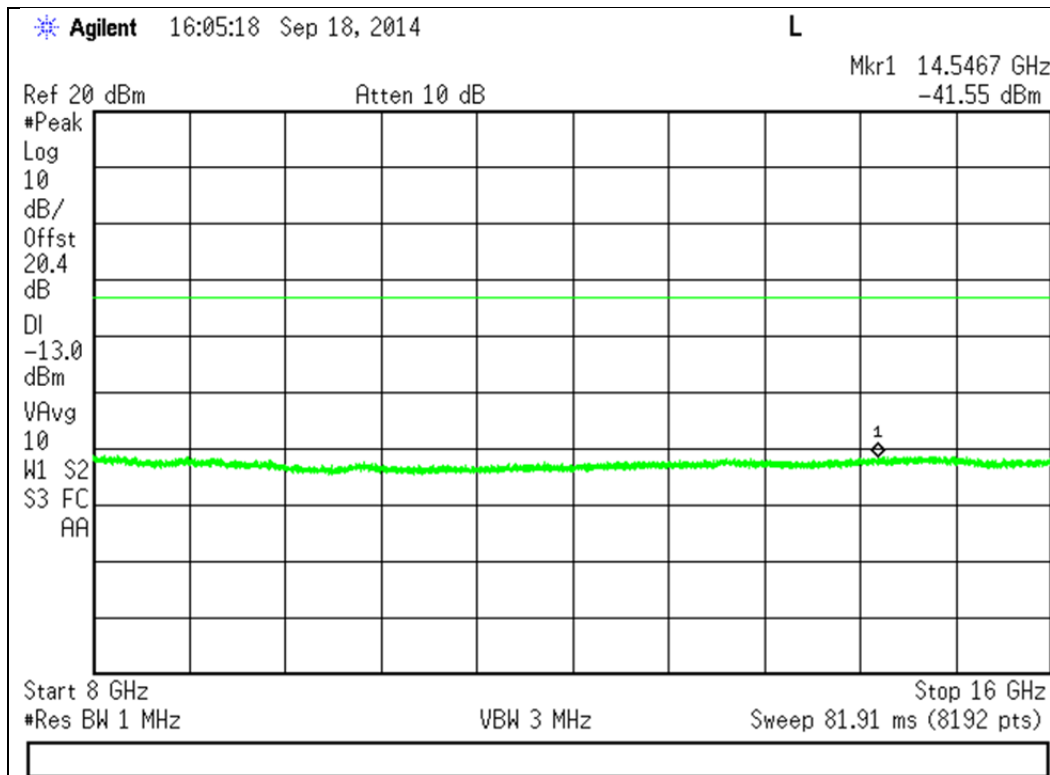
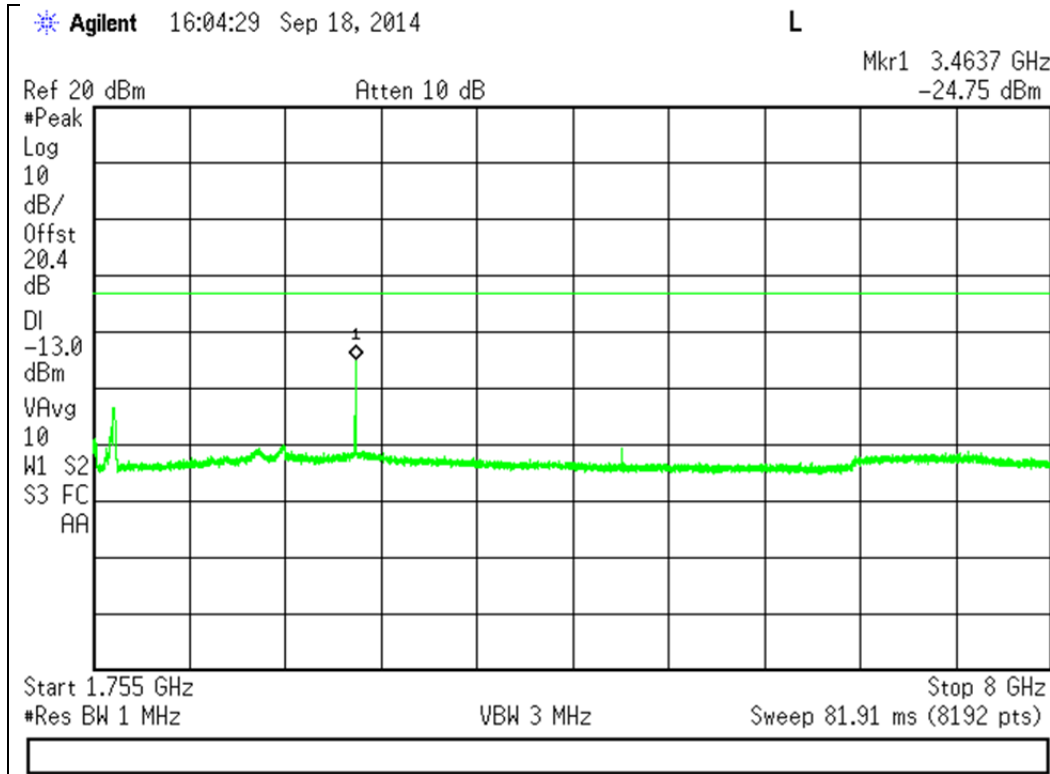


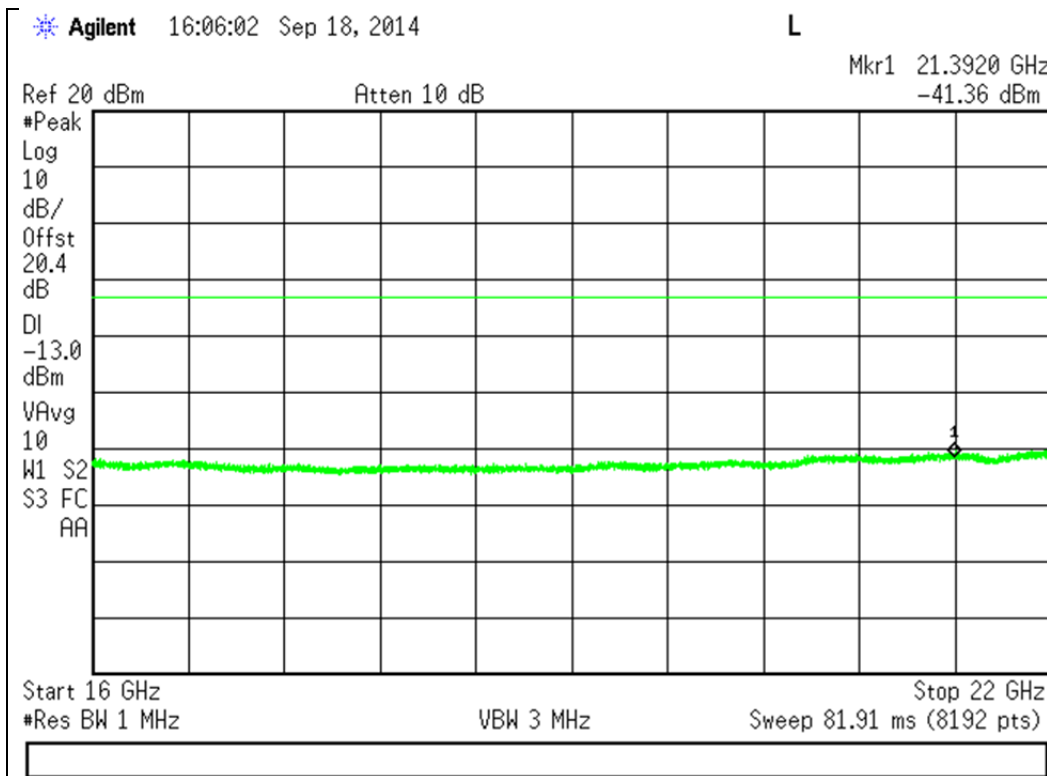


1710 - 1755 MHz Band (Cont)

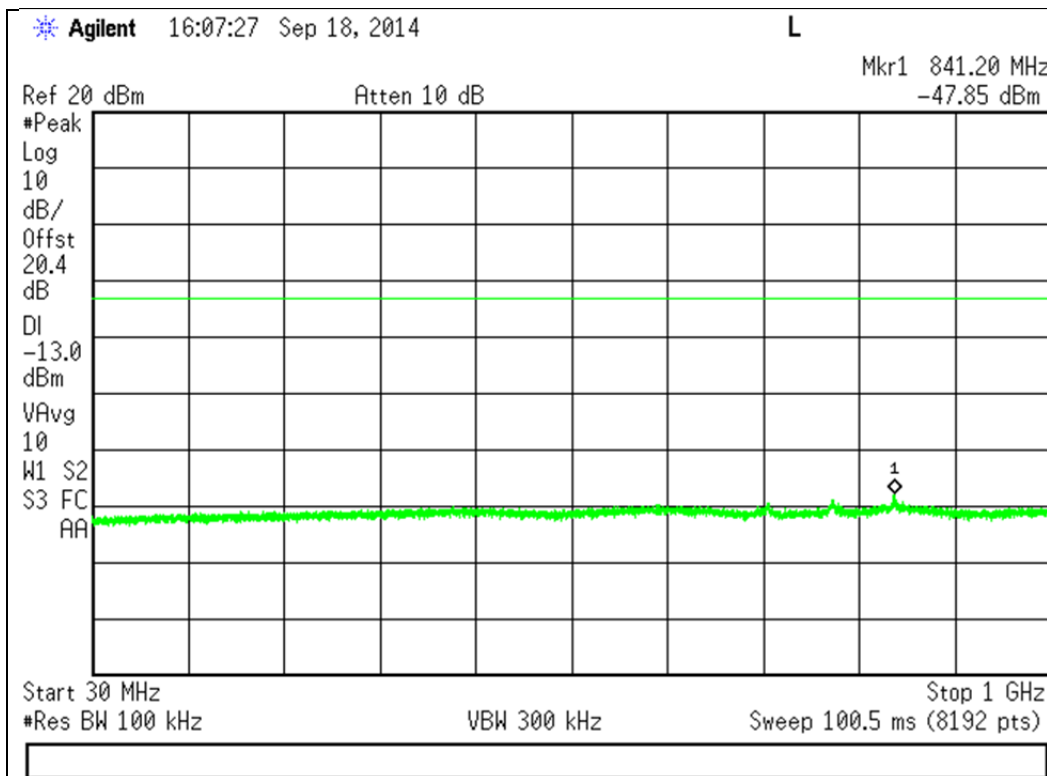




1710 - 1755 MHz Band (cont)

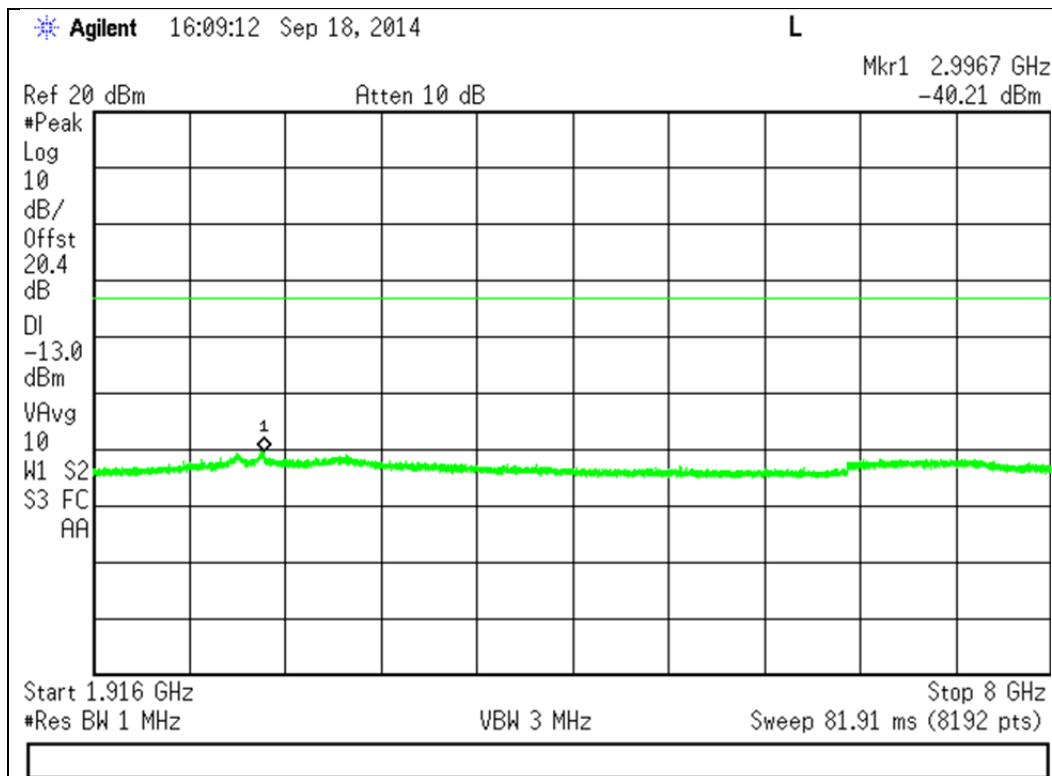
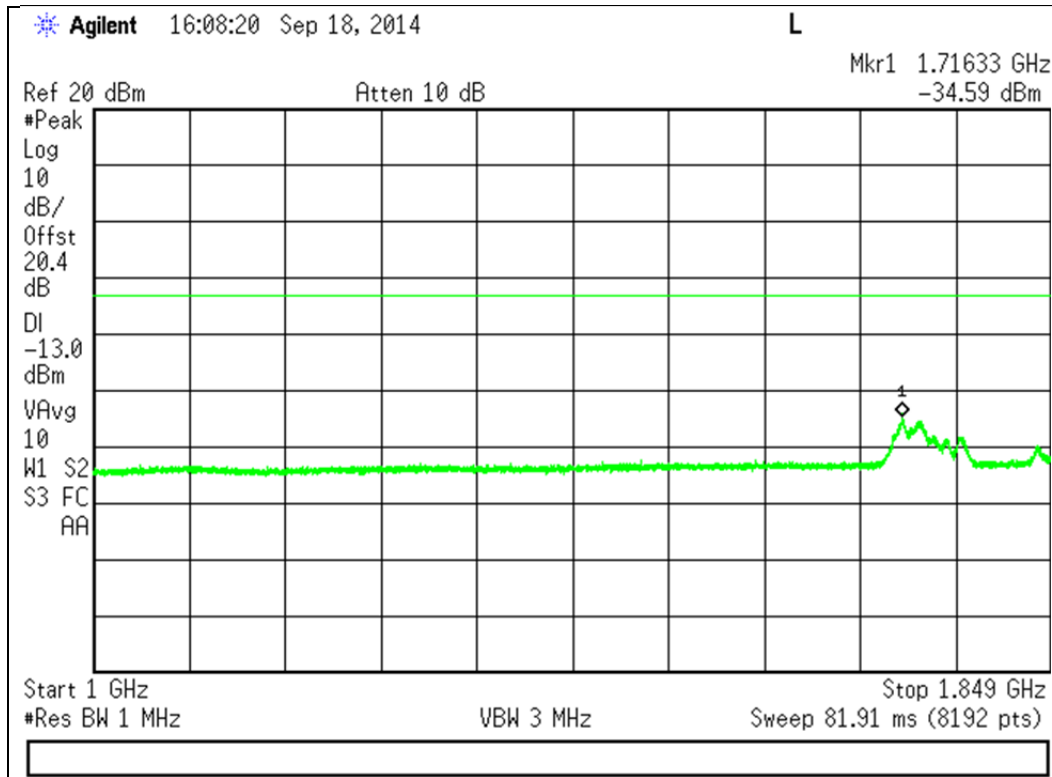


1850 - 1910 MHz Band



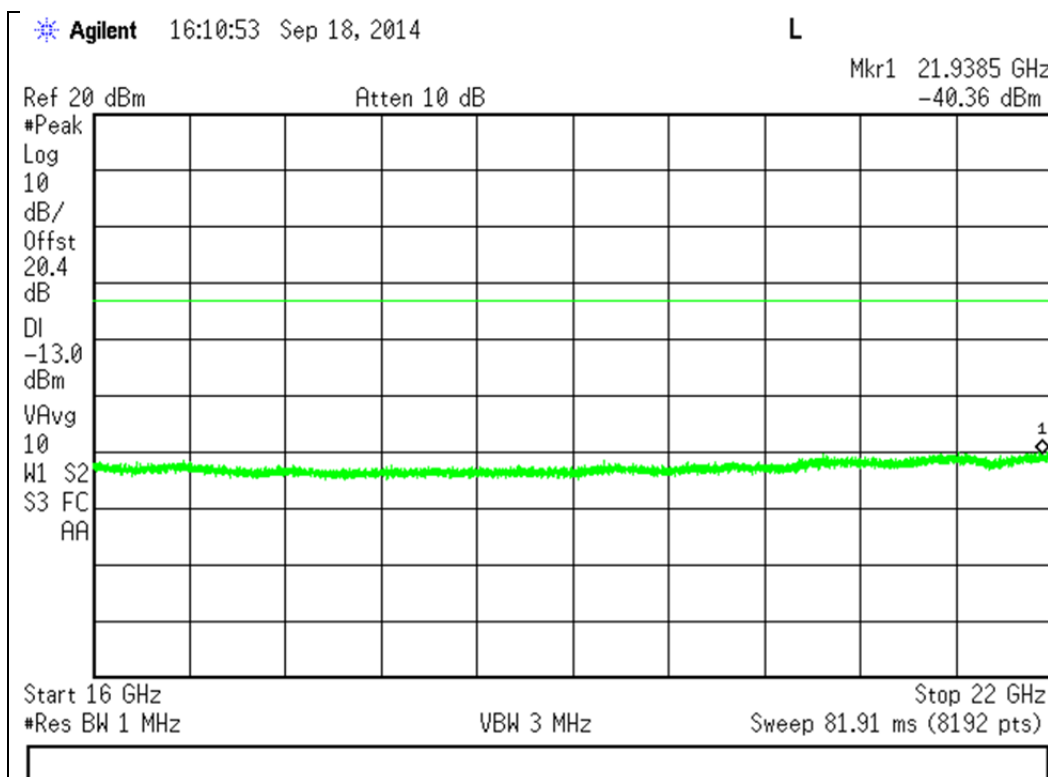
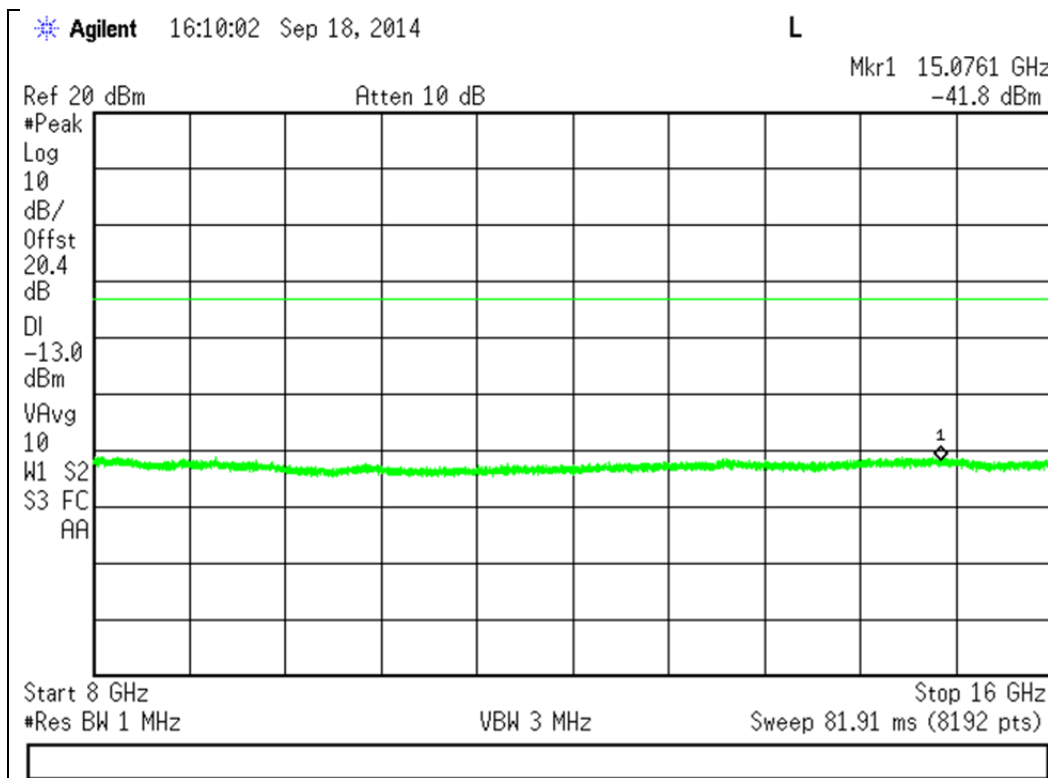


1850 - 1910 MHz Band (cont)





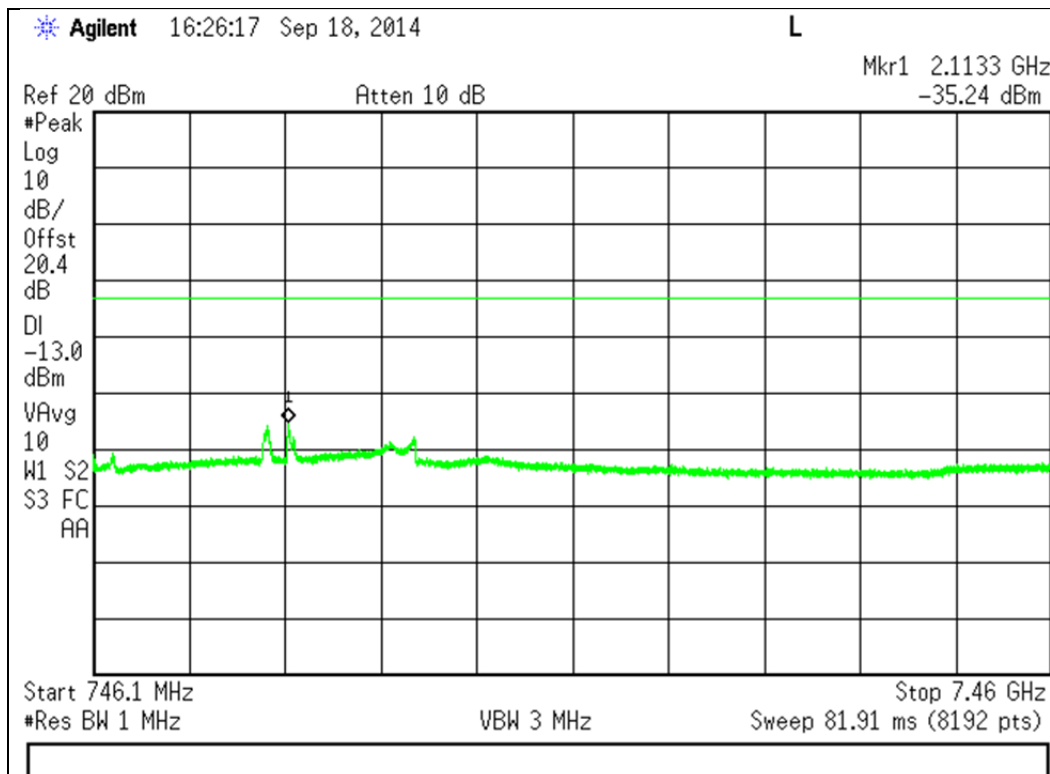
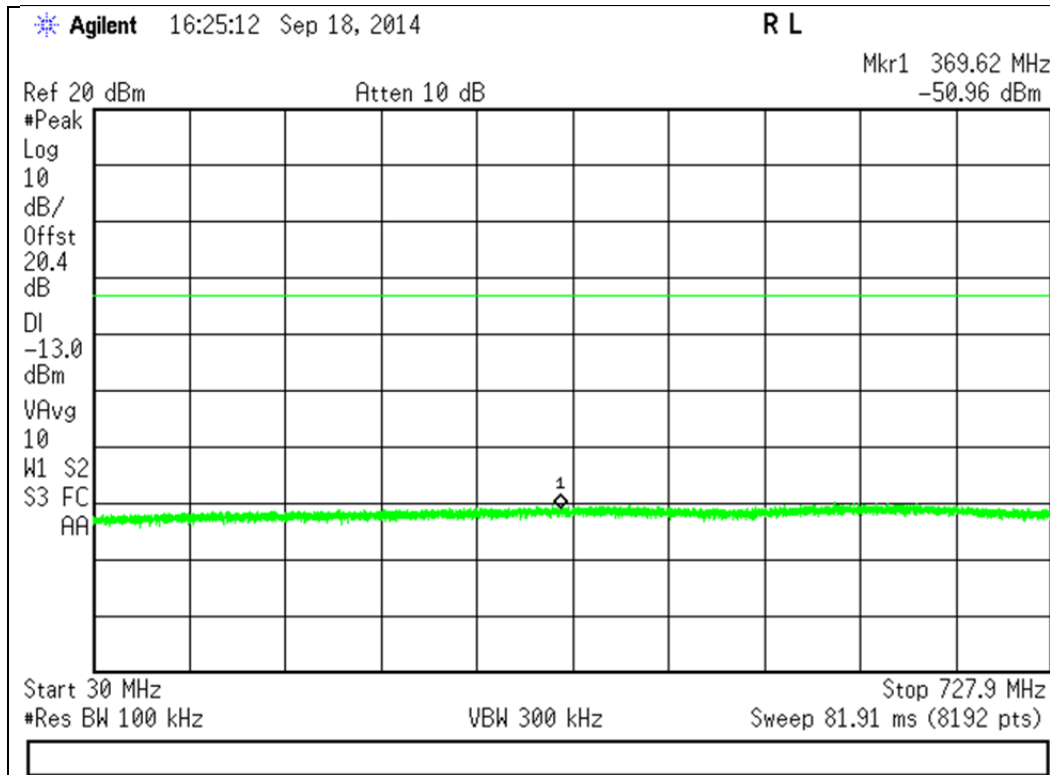
1850 - 1910 MHz Band (Cont)





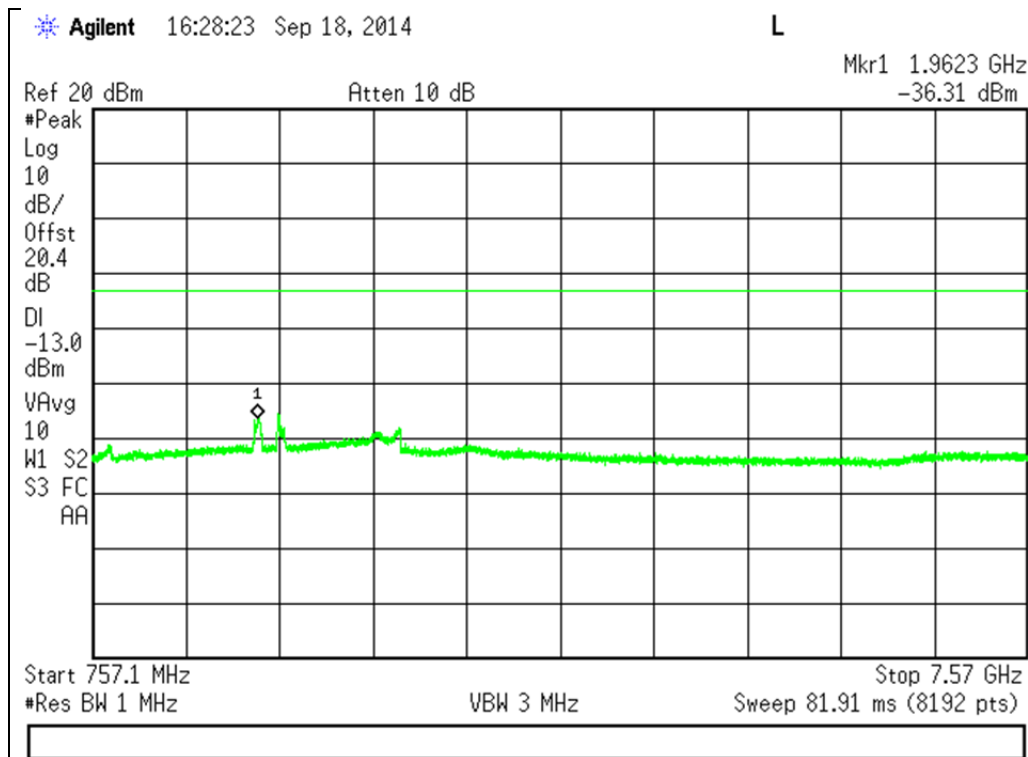
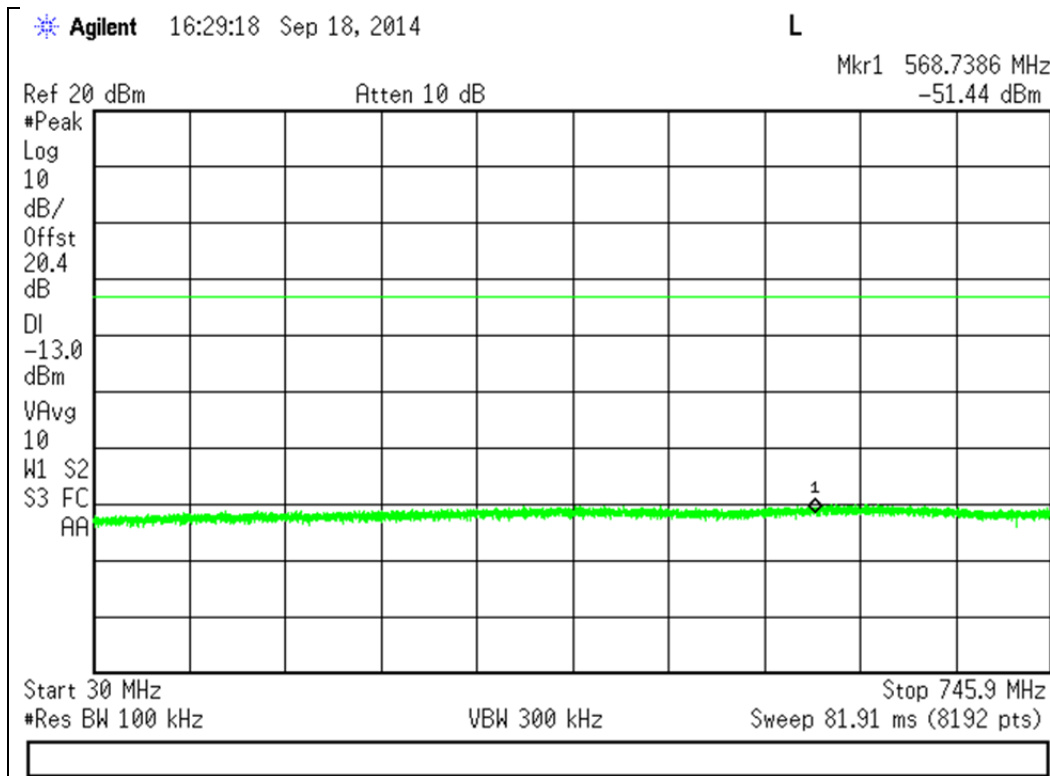
Downlink Test Plots

734 - 746 MHz Band



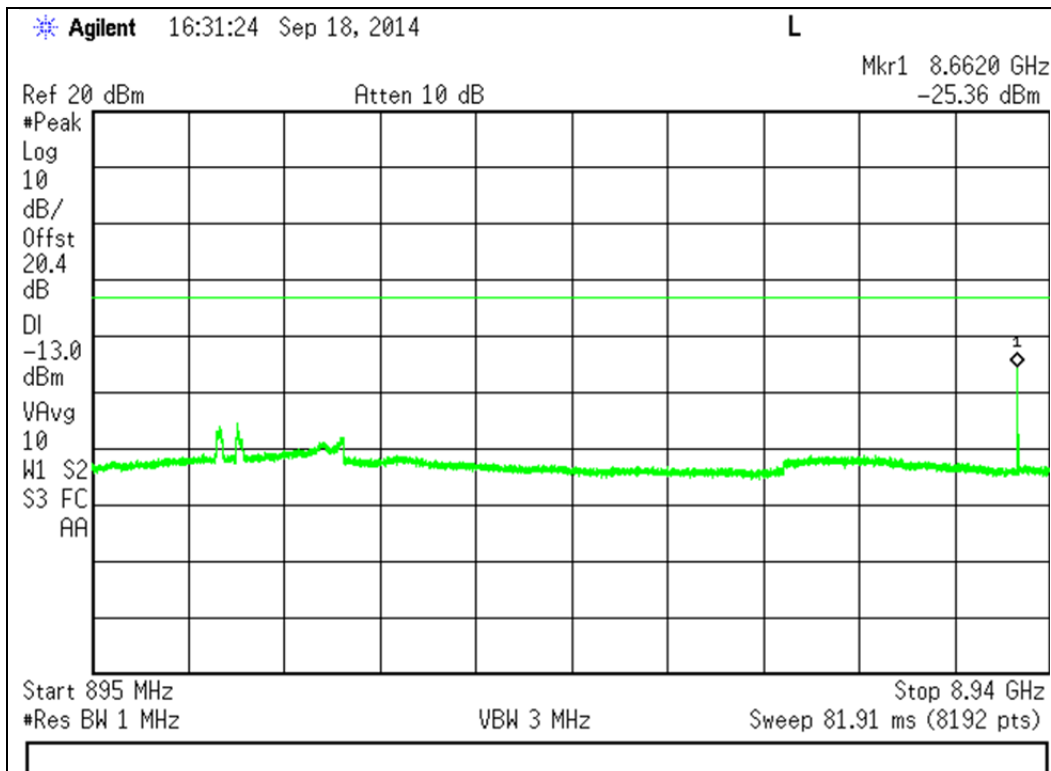
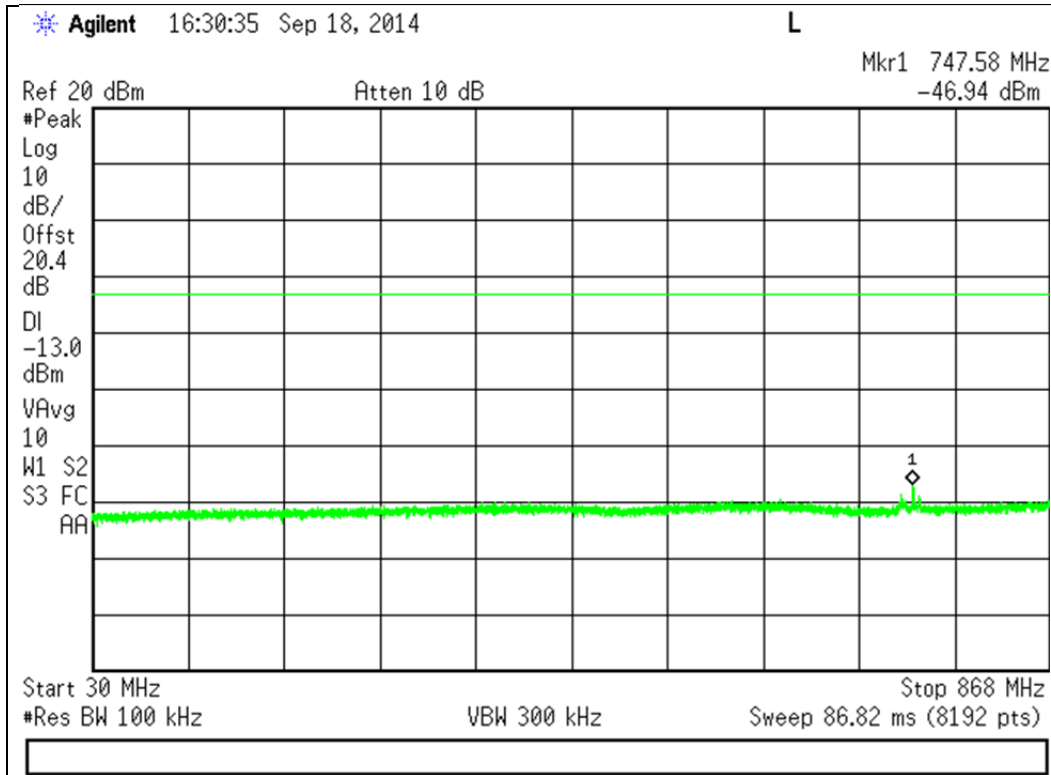


746 - 757 MHz Band



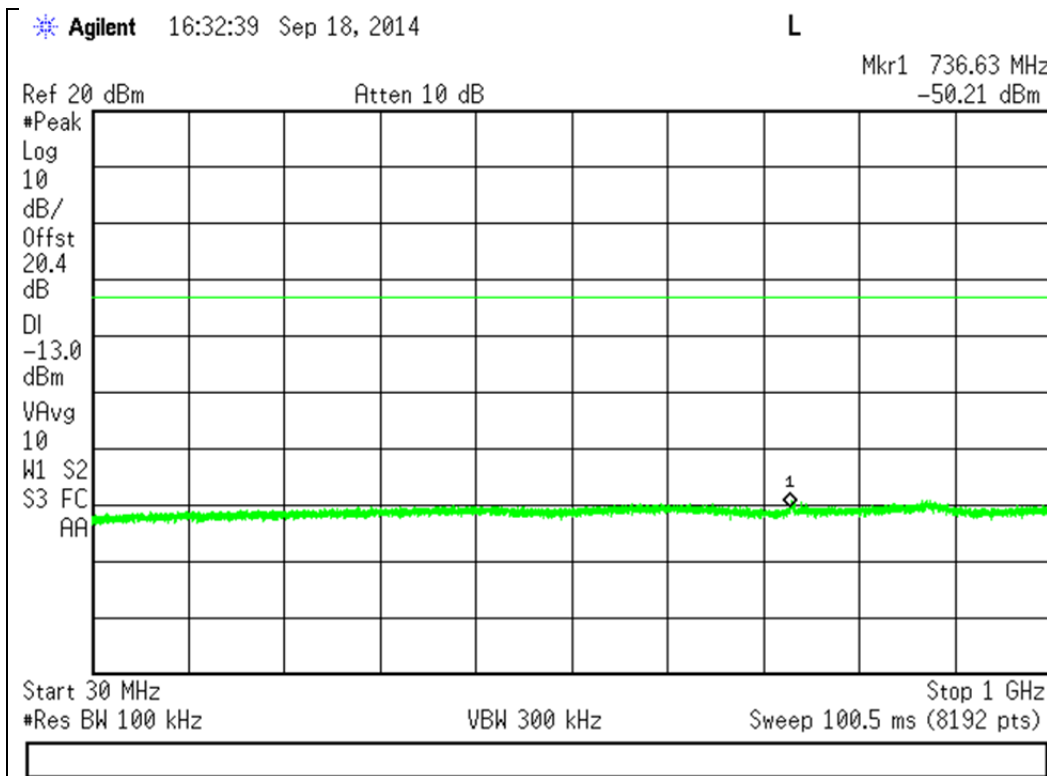


869 - 894 MHz Band

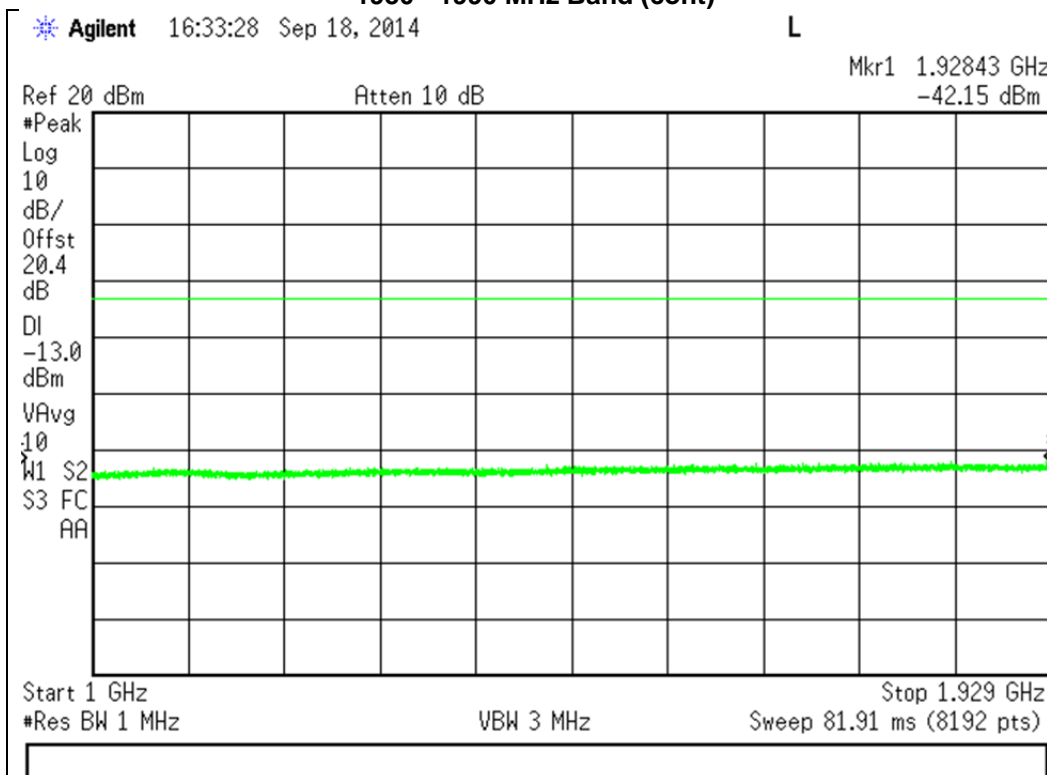




1930 - 1990 MHz Band

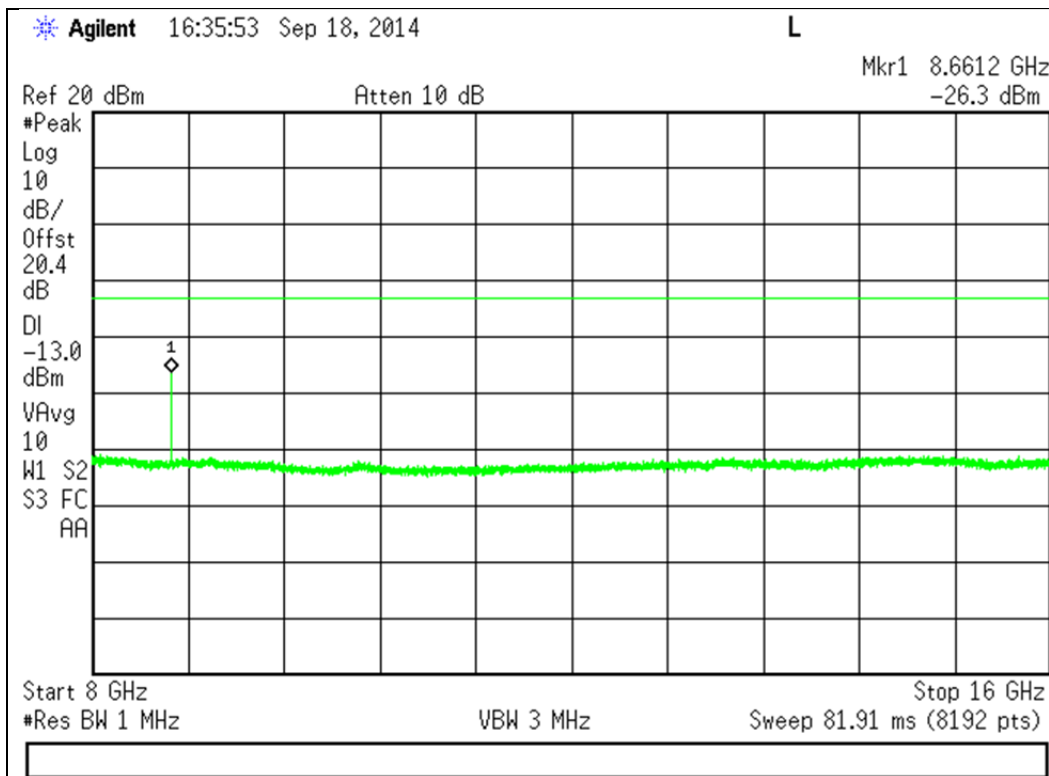
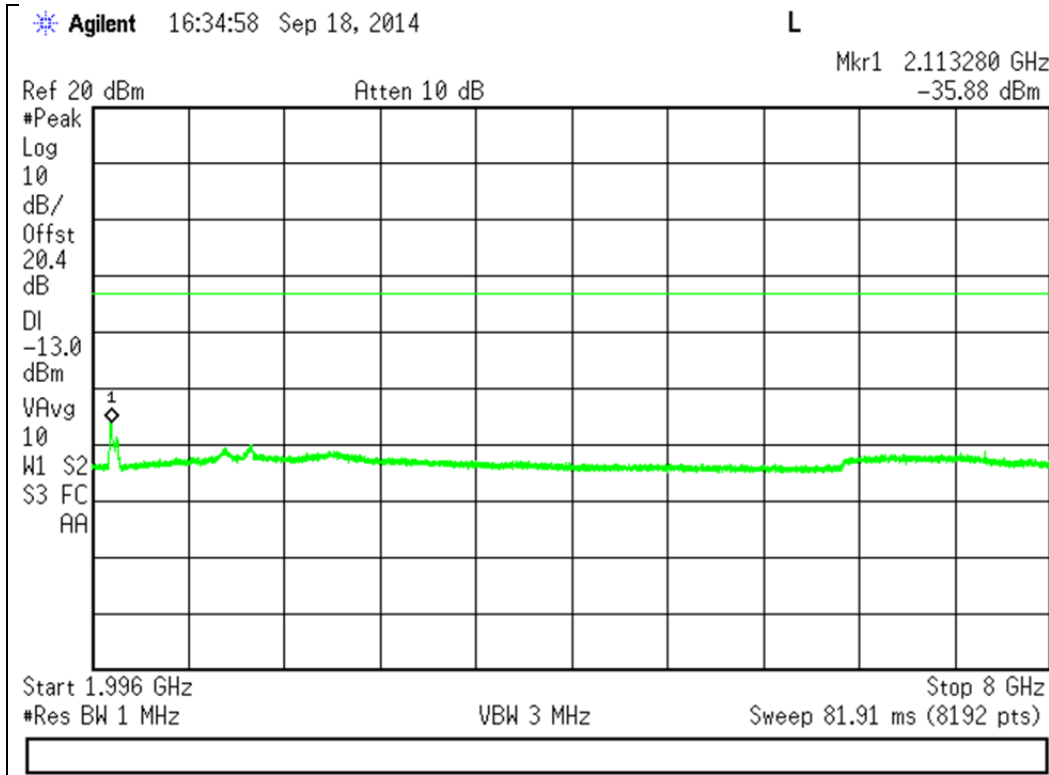


1930 - 1990 MHz Band (cont)



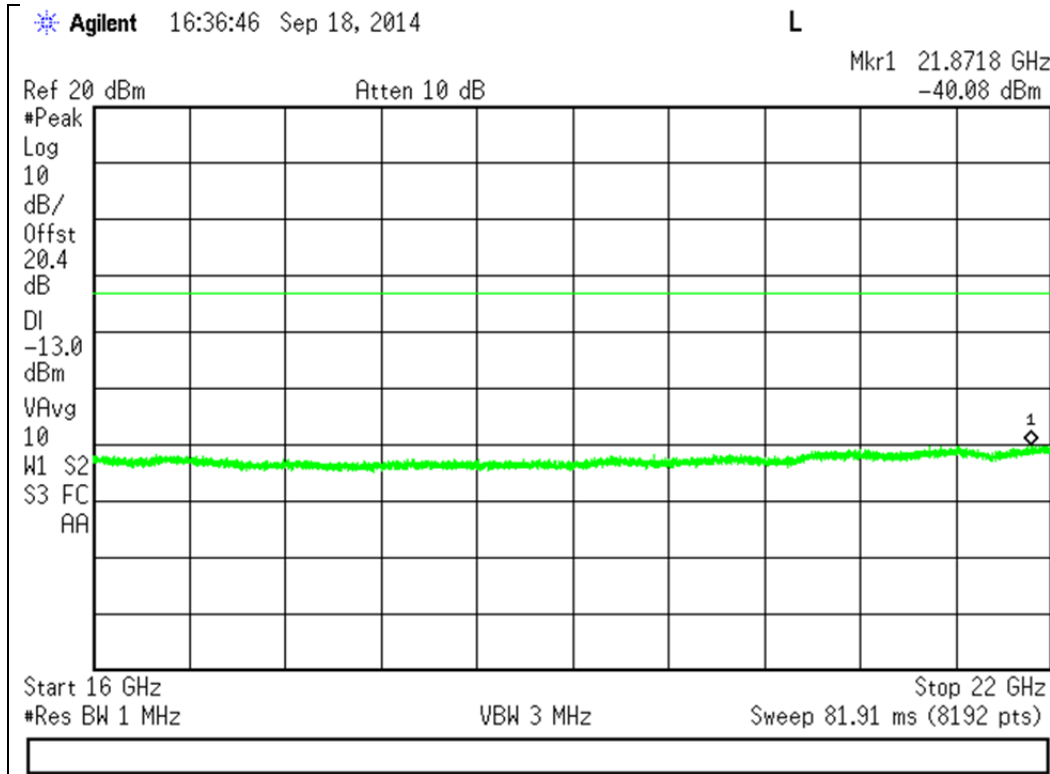


1930 - 1990 MHz Band (cont)

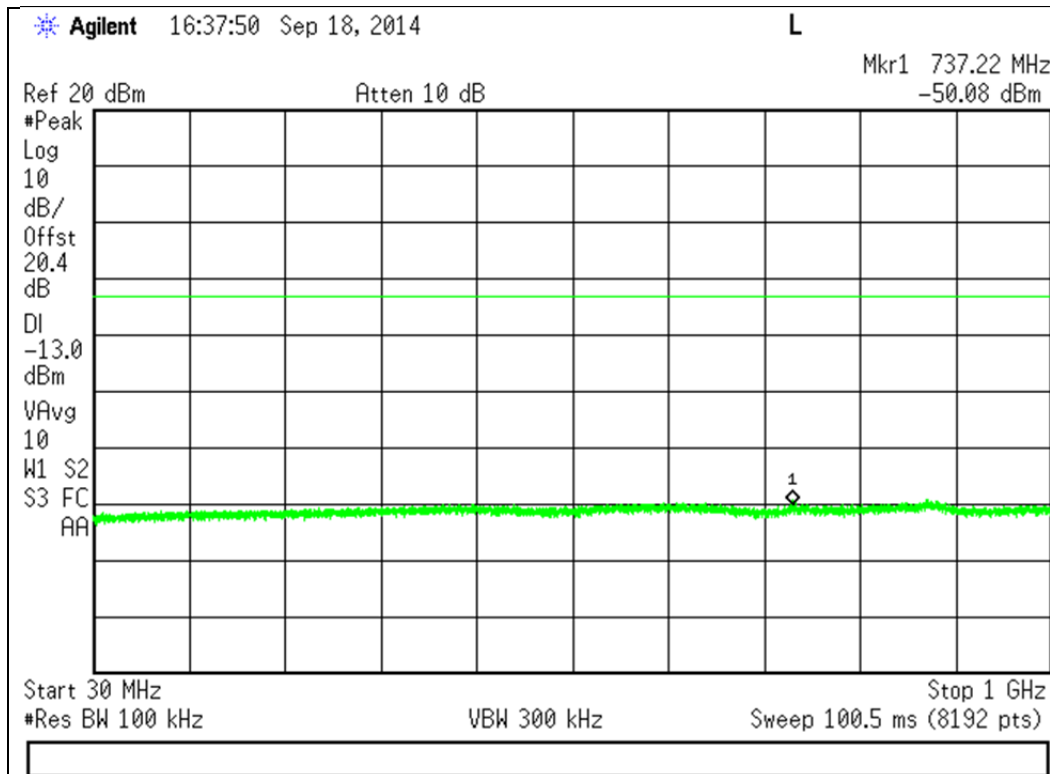




1930 - 1990 MHz Band (cont)

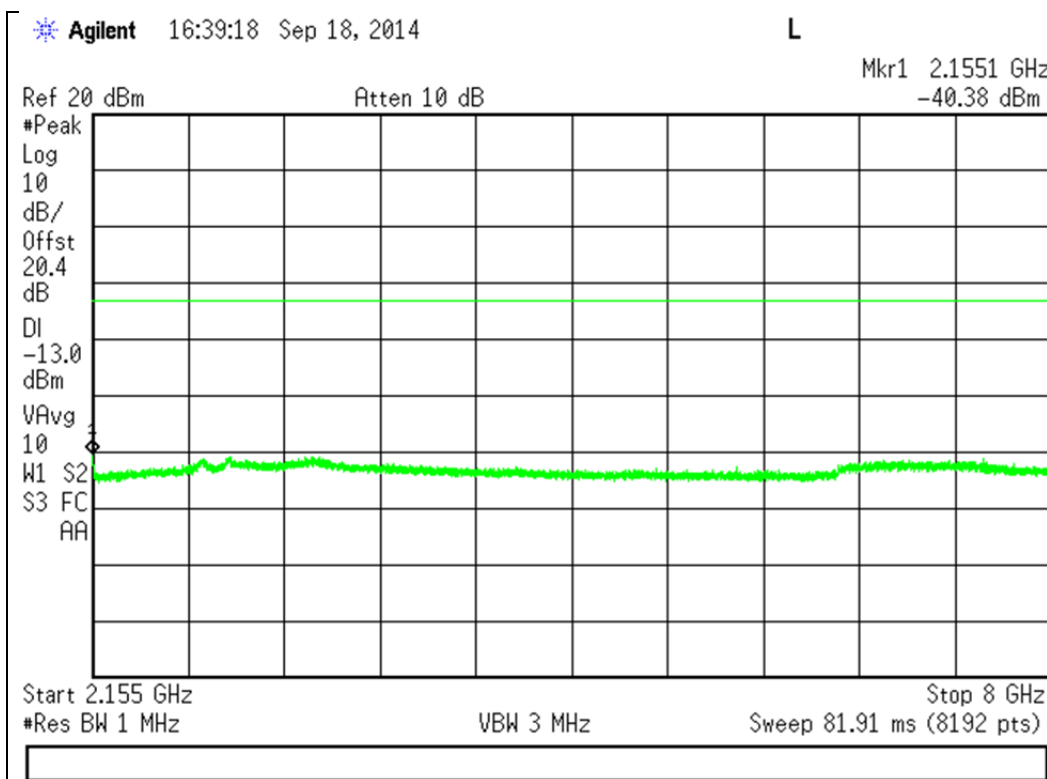
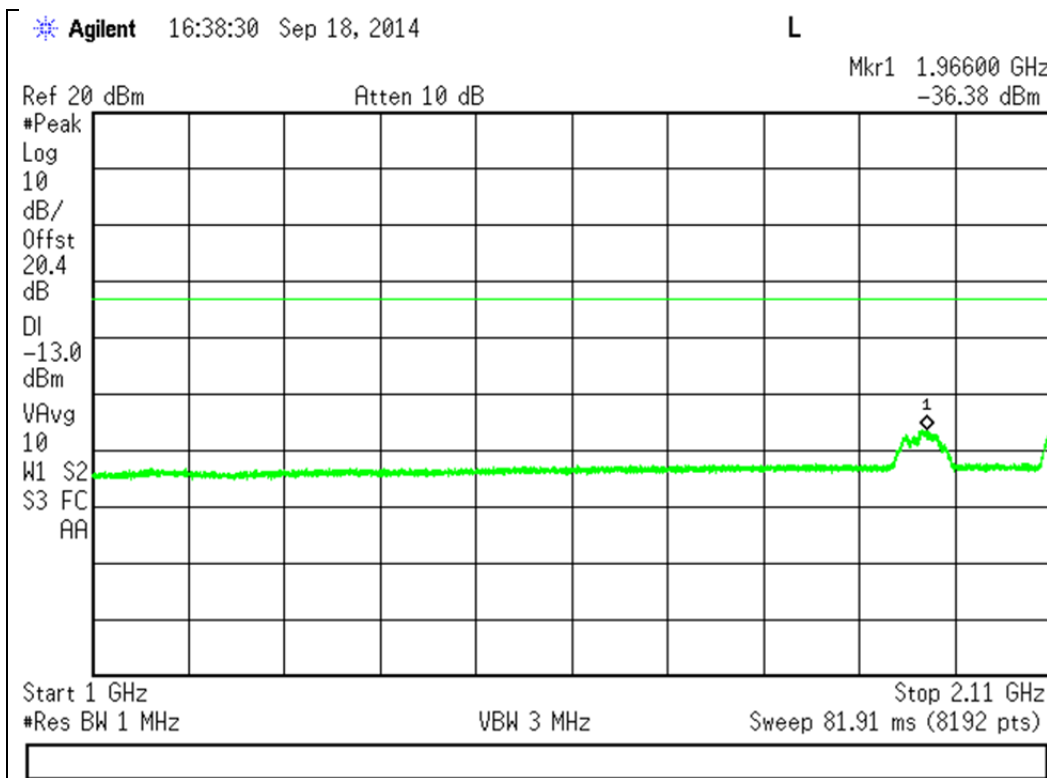


2110 - 2155 MHz Band



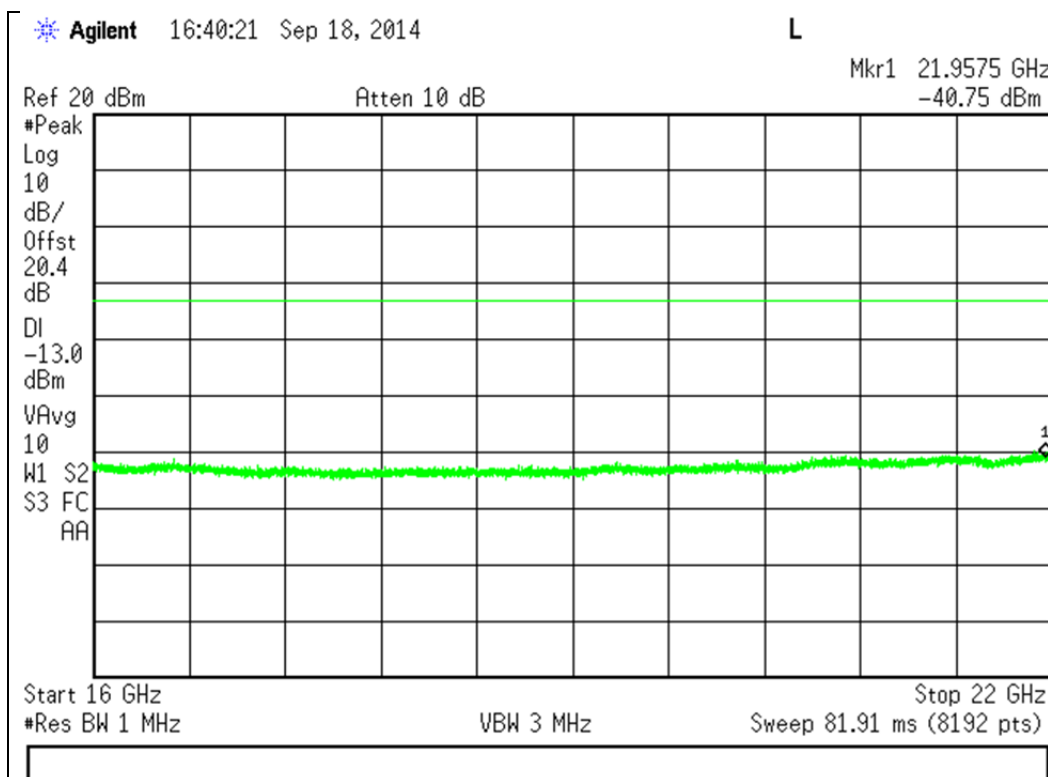
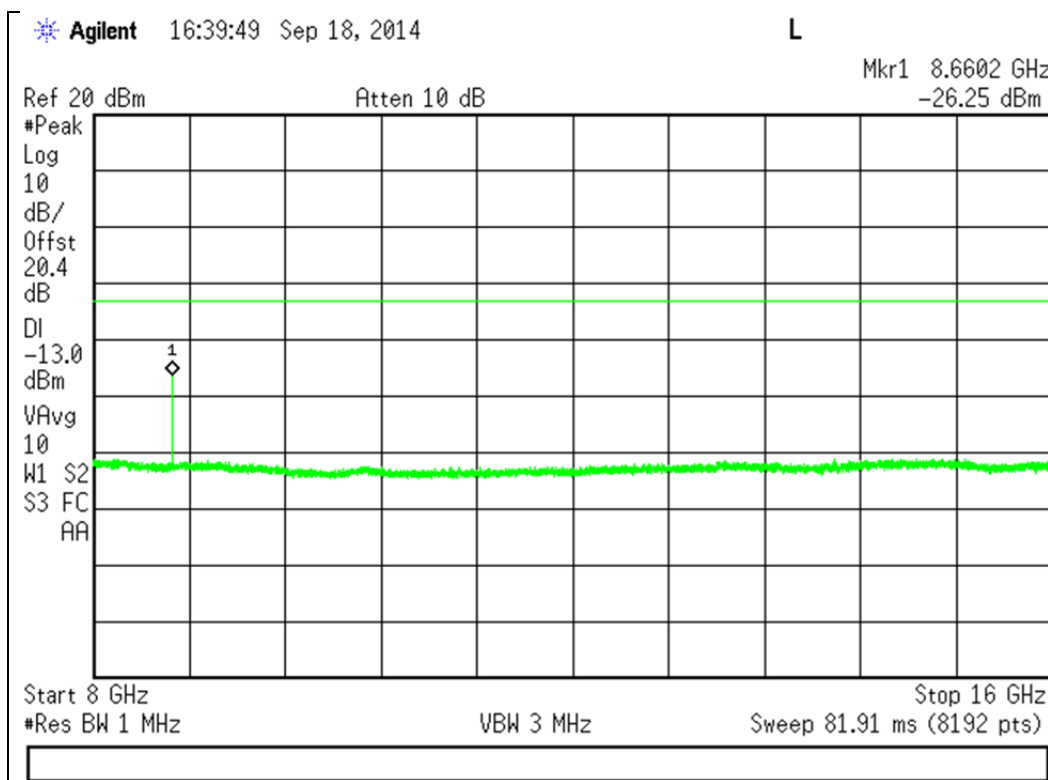


2110 - 2155 MHz Band (cont)



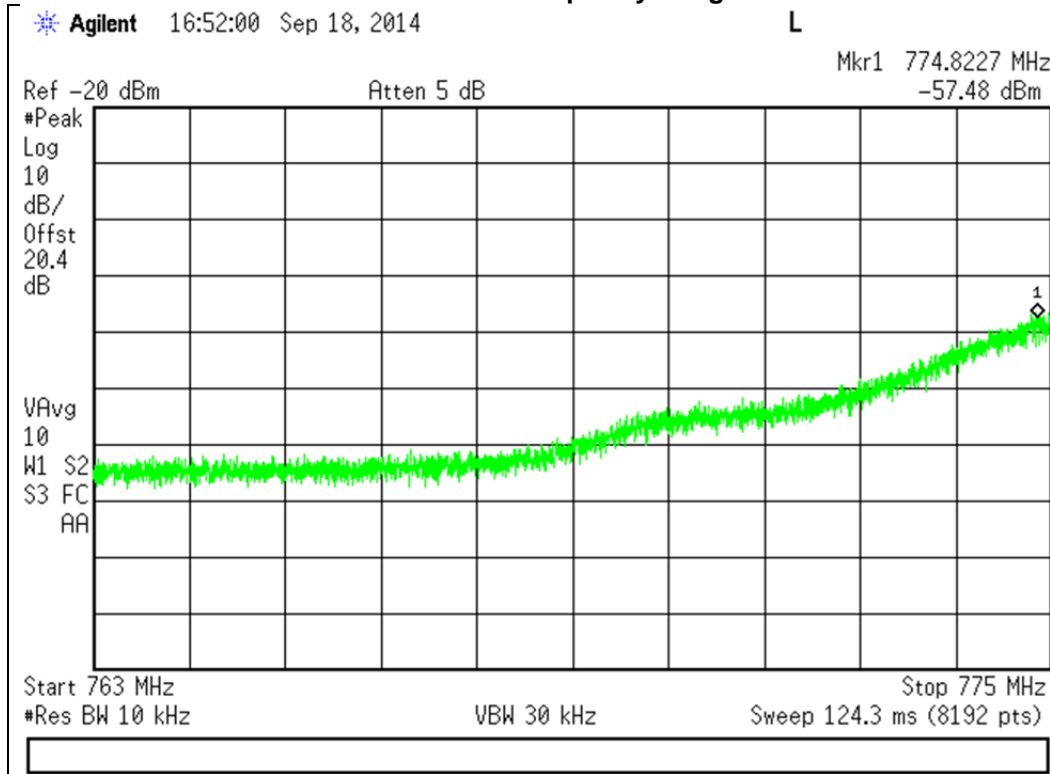


2110 - 2155 MHz Band (cont)

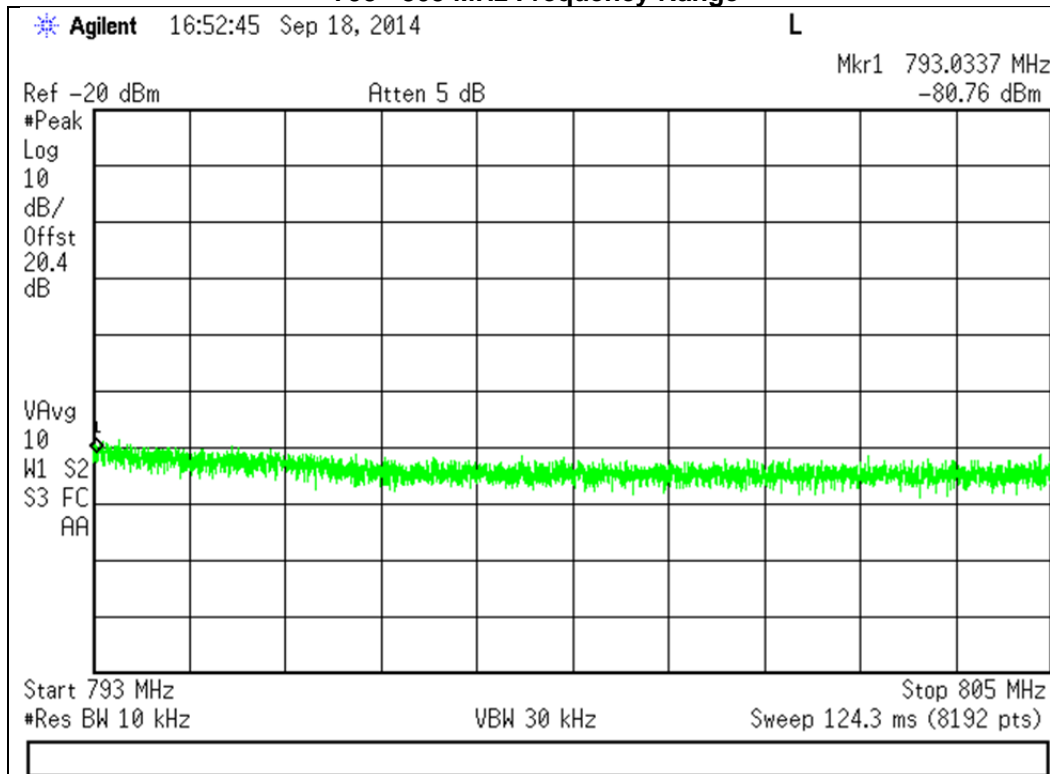




776 – 787 MHz Uplink Test Plots for the 763 - 775 MHz Frequency Range



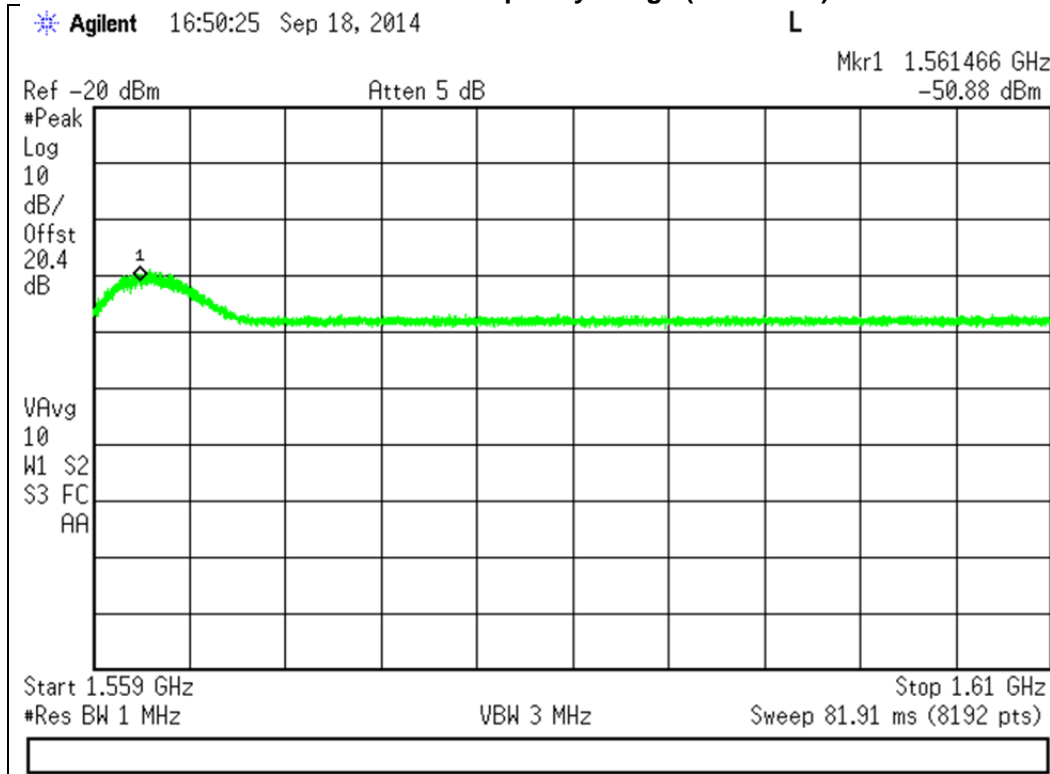
793 - 805 MHz Frequency Range



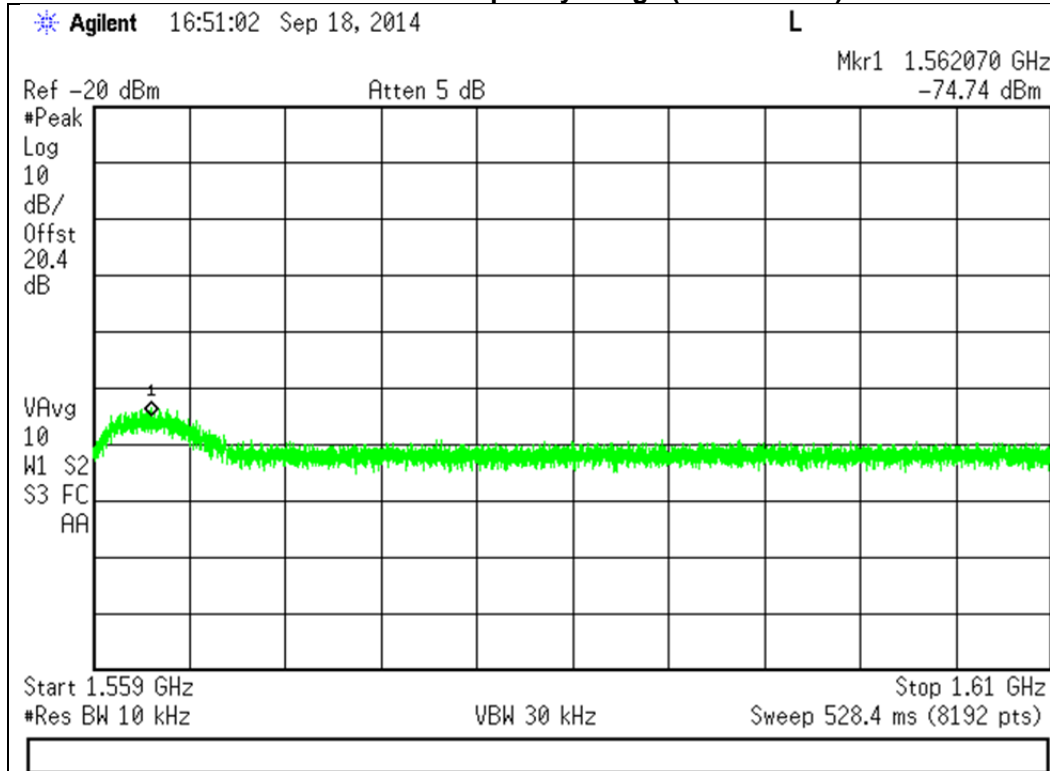


776 – 787 MHz Uplink Test Plots for the

1559 - 1610 MHz Frequency Range (Wideband)

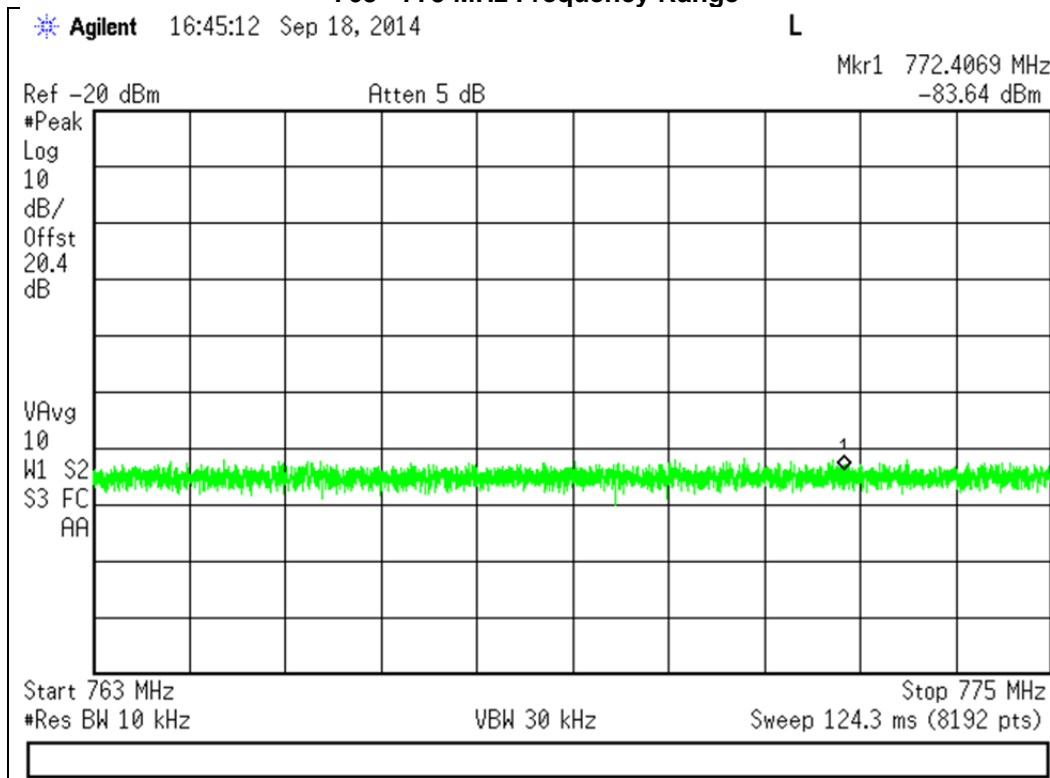


1559 - 1610 MHz Frequency Range (Narrowband)

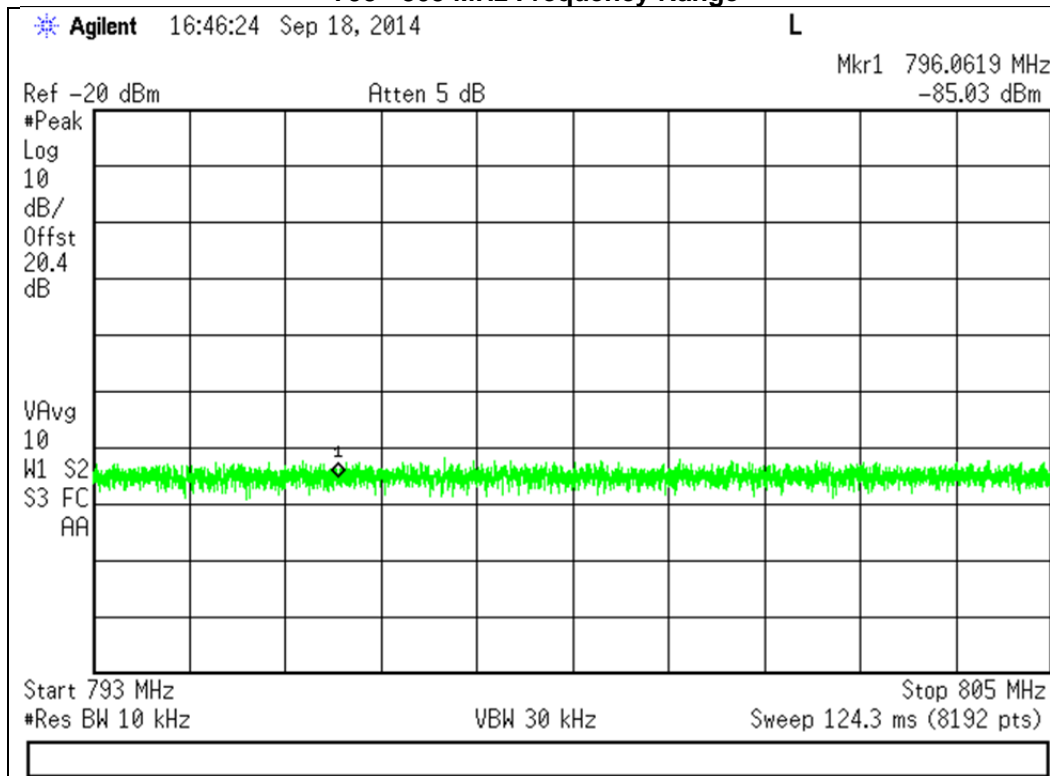




746 – 757 MHz Downlink Test Plots for the 763 - 775 MHz Frequency Range

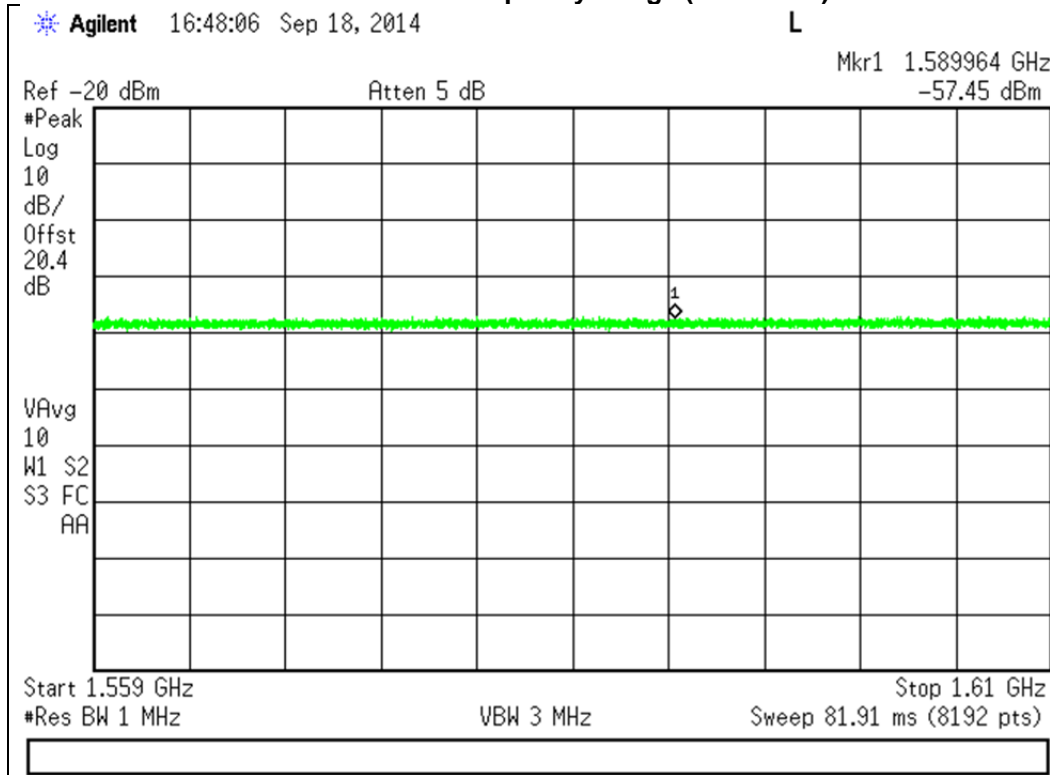


793 - 805 MHz Frequency Range

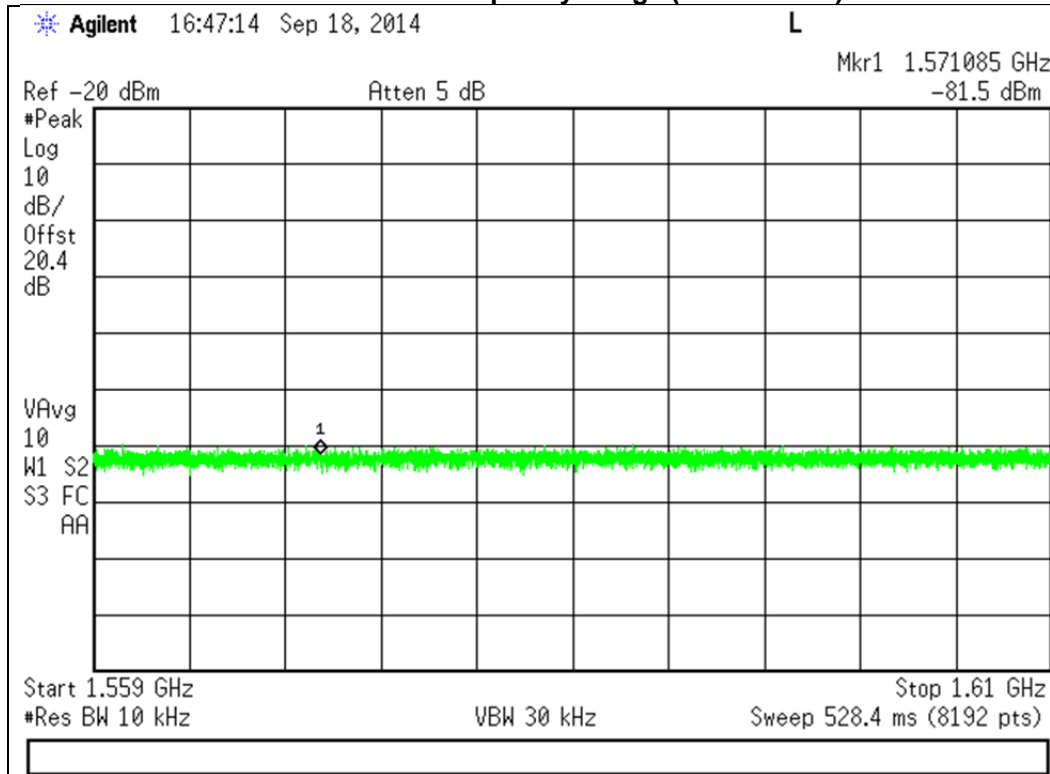




746 – 757 MHz Downlink Test Plots for the 1559 - 1610 MHz Frequency Range (Wideband)



1559 - 1610 MHz Frequency Range (Narrowband)





Noise Limits

Name of Test: Noise Limits
Test Equipment Utilized: i00379, i00405, i00412

Engineer: Mike Graffeo
Test Date: 9/16/14

Test Procedure

The EUT was connected to a spectrum analyzer through an attenuator with the losses being input into the spectrum analyzer as a combination of reference level offset and correction factor as necessary to ensure that accurate readings were obtained. A series of three tests were performed: the maximum uplink and downlink noise, the variable noise for the uplink and downlink in the presence of a downlink signal, and the variable uplink noise timing. The detailed procedures from KDB 935210 D03 Wideband Consumer Signal Booster Measurement Guidance DR04-41516c were followed.

Noise Limit = $-102.5 + 20 * \text{Log}_{10}(\text{midband of UL})$

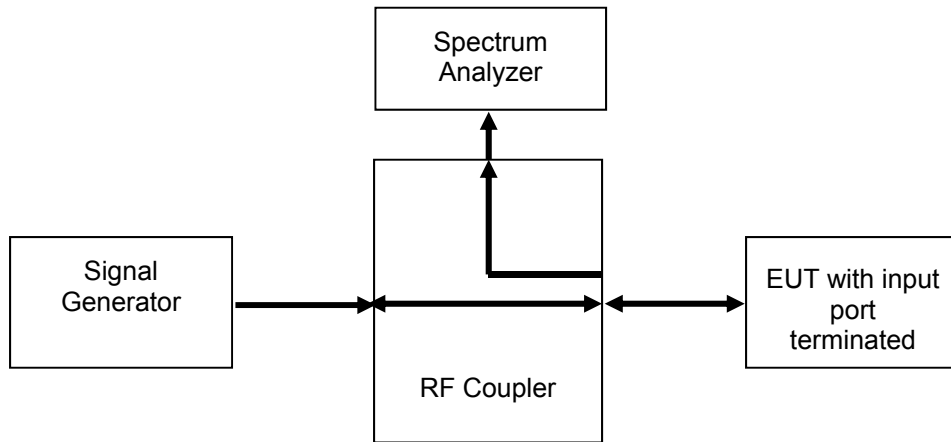
Variable Noise = $-103 \text{ dBm/MHz-RSSI}$

Test Setup

Maximum Noise Power



Variable Uplink Noise Power and Timing



Variable Downlink Noise Power and Timing





Maximum Uplink Noise Test Results

Frequency Band (MHz)	Measured Noise (dBm)	Limit (dBm)	Margin (dB)	Result
704 - 716	-50.28	-45.5	-4.8	Pass
776 - 787	-48.51	-44.6	-3.9	Pass
824 - 849	-46.46	-44.1	-2.4	Pass
1710 - 1755	-40.68	-37.7	-3.0	Pass
1850 - 1910	-39.9	-37.0	-2.9	Pass

Maximum Downlink Noise Test Results

Frequency Band (MHz)	Measured Noise (dBm)	Limit (dBm)	Margin (dB)	Result
734 - 746	-48.46	-45.5	-3.0	Pass
746 - 757	-48.48	-44.6	-3.8	Pass
869 - 894	-50.33	-44.1	-6.3	Pass
1930 - 1990	-43.14	-37.0	-6.1	Pass
2110 - 2155	-42.33	-37.7	-4.6	Pass

Uplink Noise Timing Test Results

Frequency Band (MHz)	Measured Timing (mS)	Limit (Seconds)	Result
704 - 716	227.20	3.0	Pass
776 - 787	229.70	3.0	Pass
824 - 849	234.80	3.0	Pass
1710 - 1755	227.20	3.0	Pass
1850 - 1910	227.20	3.0	Pass



Variable Uplink Noise Limit Test Results
704 - 716 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-59.0	-45.5	-50	-4.5
-58.0	-45.5	-50	-4.5
-57.0	-46.0	-50	-4.0
-56.0	-47.0	-50	-3.0
-55.0	-48.0	-50	-2.0
-54.0	-49.0	-51	-2.0

776 - 787 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-61.0	-44.6	-48	-3.4
-60.0	-44.6	-48	-3.4
-59.0	-44.6	-48	-3.4
-58.0	-45.0	-48	-3.0
-57.0	-46.0	-49	-3.0
-56.0	-47.0	-50	-3.0

824 - 849 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-62.0	-44.0	-46	-2.0
-61.0	-44.0	-46	-2.0
-60.0	-44.0	-46	-2.0
-59.0	-44.0	-46	-2.0
-58.0	-45.0	-46	-1.0
-57.0	-46.0	-47	-1.0

1710 - 1755 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-71.0	-37.7	-41	-3.3
-70.0	-37.7	-41	-3.3
-69.0	-37.7	-41	-3.3
-68.0	-37.7	-41	-3.3
-63.0	-40.0	-42	-2.0
-62.0	-41.0	-42	-1.0

1850 - 1910 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-63.0	-40.0	-42	-2.0
-62.0	-41.0	-43	-2.0
-79.0	-37.0	-39	-2.0
-78.0	-37.0	-39	-2.0
-77.0	-37.0	-39	-2.0
-76.0	-37.0	-39	-2.0



Variable Downlink Noise Limit Test Results

734 - 746 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-53.0	-50.0	-59.0	-9.0
-52.0	-51.0	-60.0	-9.0
-64.0	-45.5	-50.0	-4.5
-67.0	-45.5	-49.0	-3.5
-66.0	-45.5	-49.0	-3.5
-65.0	-45.5	-49.0	-3.5

746 - 757 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-57.0	-46.0	-54.0	-8.0
-56.0	-47.0	-55.0	-8.0
-62.0	-44.6	-49.0	-4.4
-65.0	-44.6	-48.0	-3.4
-64.0	-44.6	-48.0	-3.4
-63.0	-44.6	-48.0	-3.4

869 - 894 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-57.0	-46.0	-55.0	-9.0
-56.0	-47.0	-56.0	-9.0
-65.0	-44.0	-50.0	-6.0
-64.0	-44.0	-50.0	-6.0
-63.0	-44.0	-50.0	-6.0
-62.0	-44.0	-50.0	-6.0

1930 - 1990 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-66.0	-37.0	-53.0	-16.0
-65.0	-38.0	-54.0	-16.0
-73.0	-37.0	-46.0	-9.0
-76.0	-37.0	-45.0	-8.0
-75.0	-37.0	-45.0	-8.0
-74.0	-37.0	-45.0	-8.0

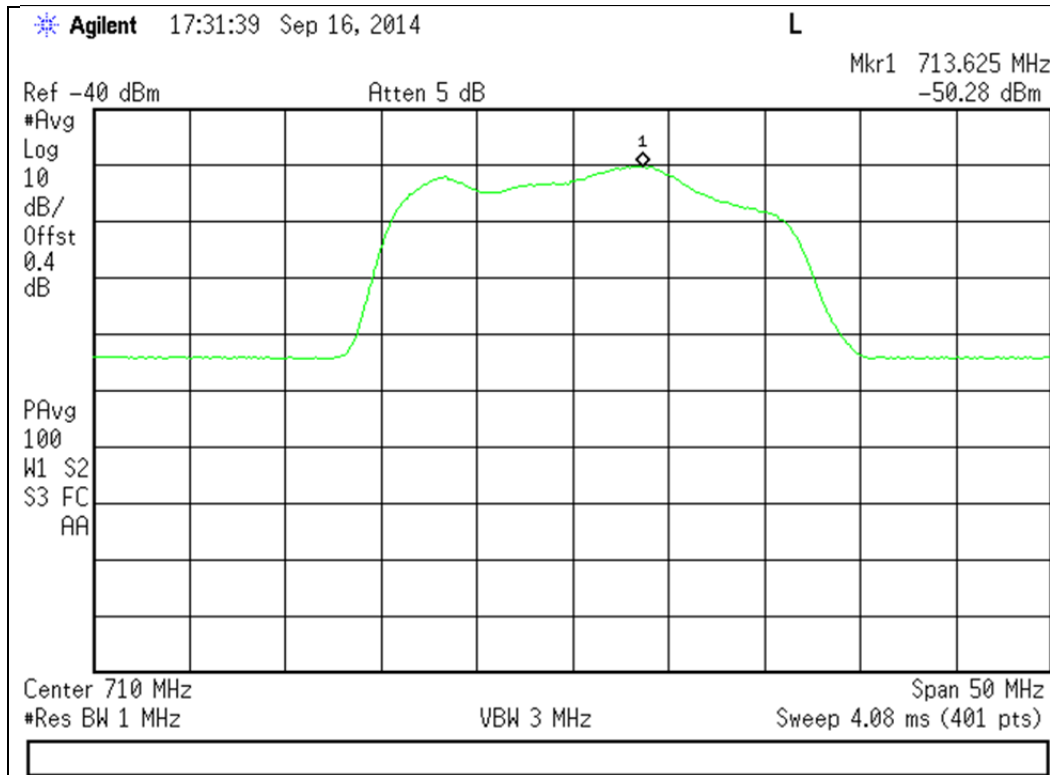
2110 - 2155 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-57.0	-46.0	-59.0	-13.0
-56.0	-47.0	-60.0	-13.0
-76.0	-37.7	-42.0	-4.3
-75.0	-37.7	-42.0	-4.3
-74.0	-37.7	-42.0	-4.3
-73.0	-37.7	-43.0	-5.3

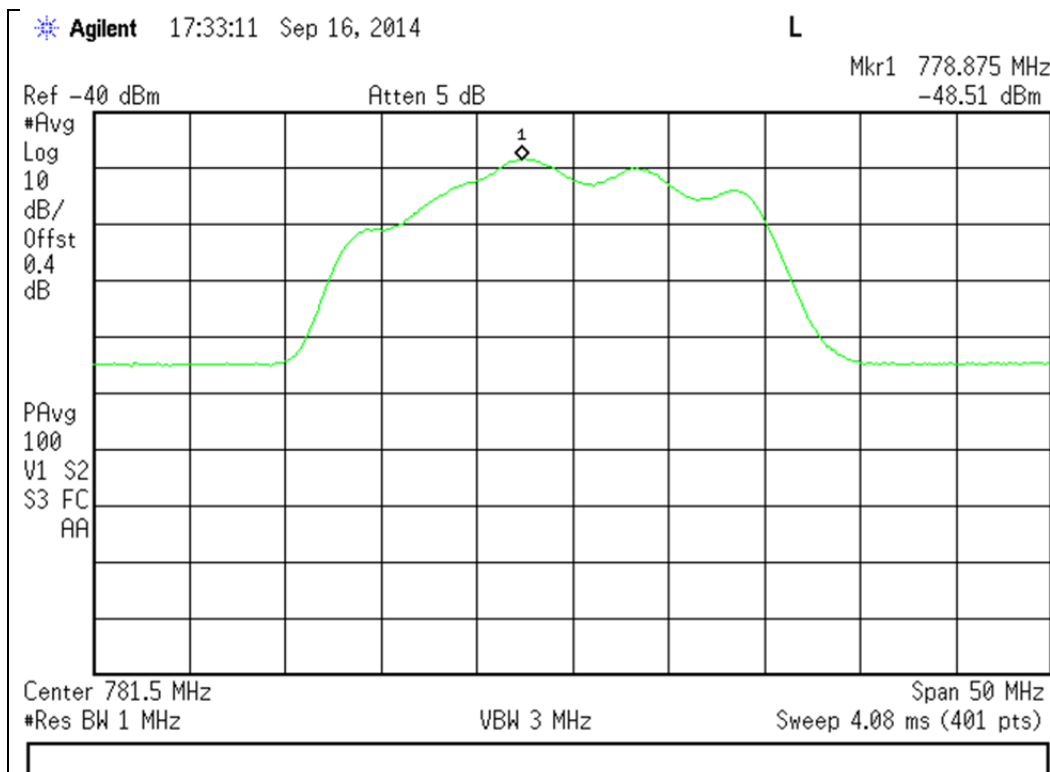


Maximum Uplink Noise Test Plots

704 - 716 MHz Band

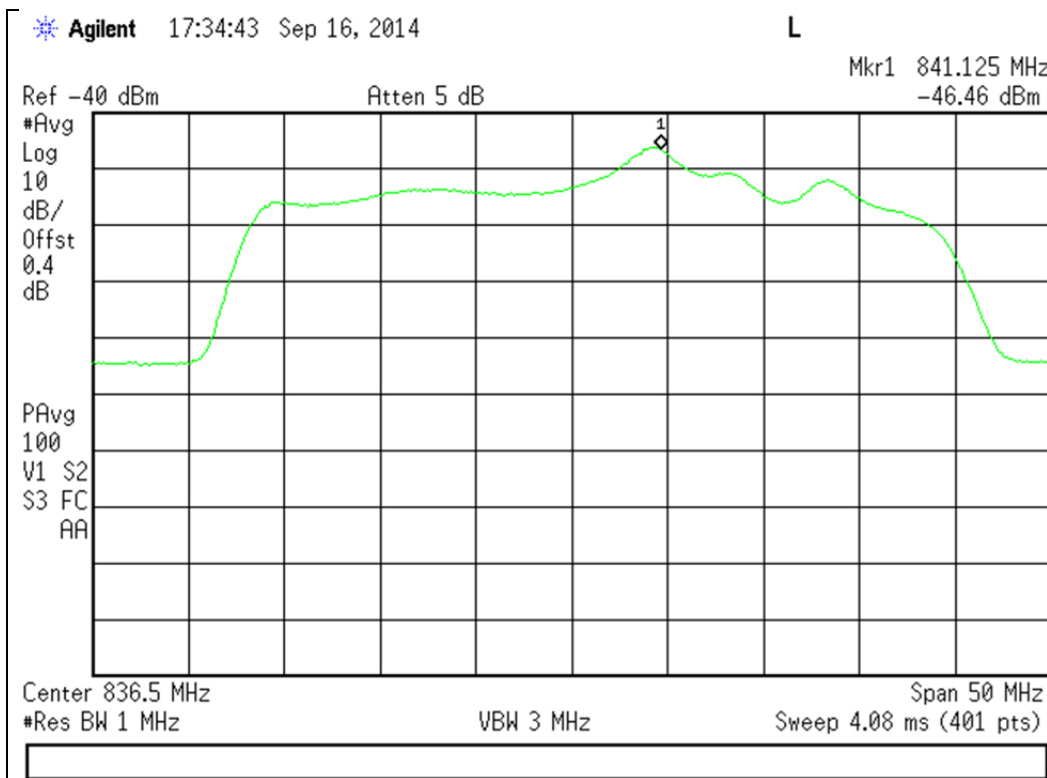


776 - 787 MHz Band

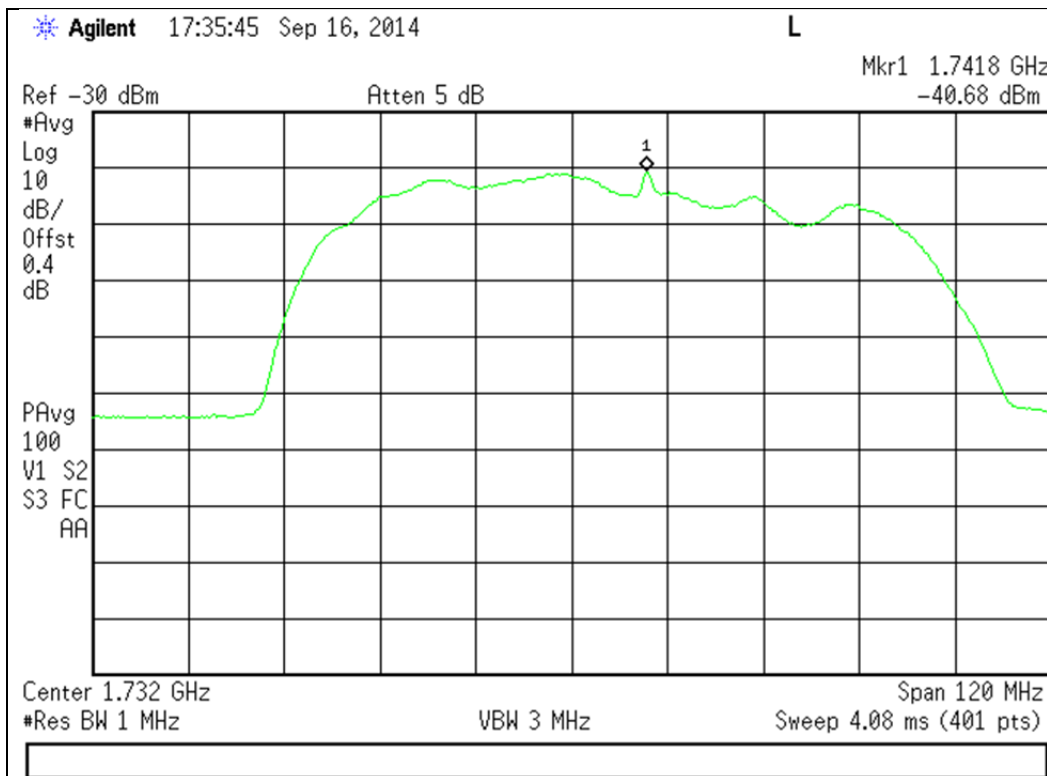




824 - 849 MHz Band

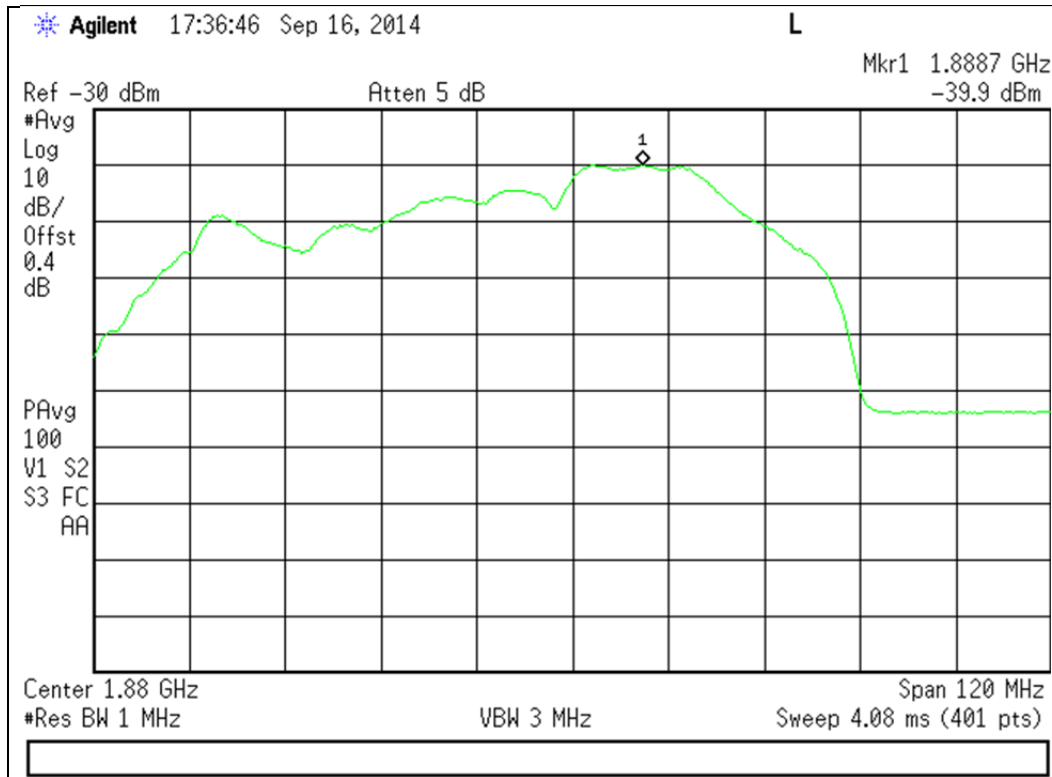


1710 - 1755 MHz Band



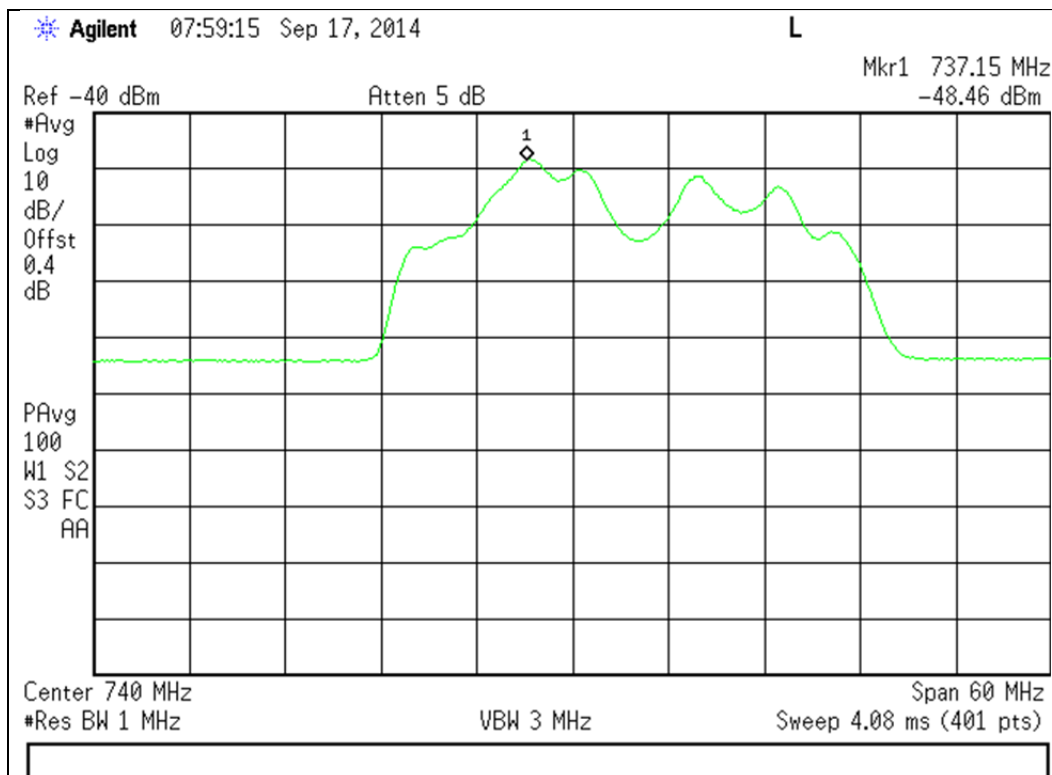


1850 - 1910 MHz Band



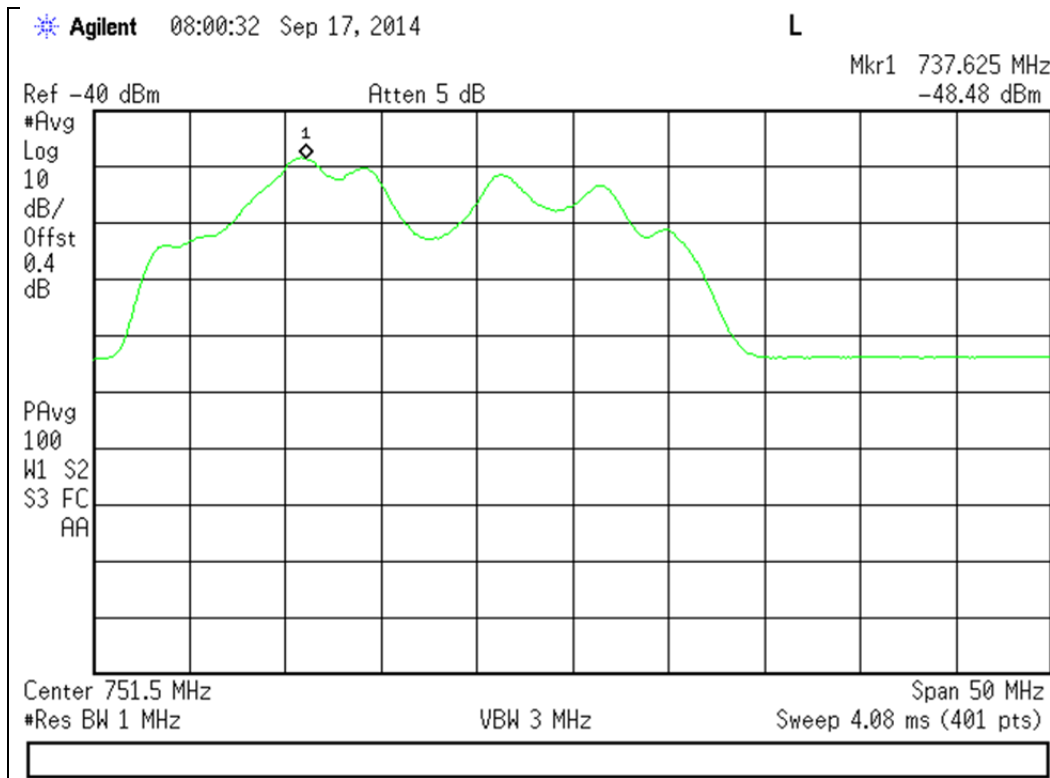
Maximum Downlink Noise Test Plots

734 - 746 MHz Band

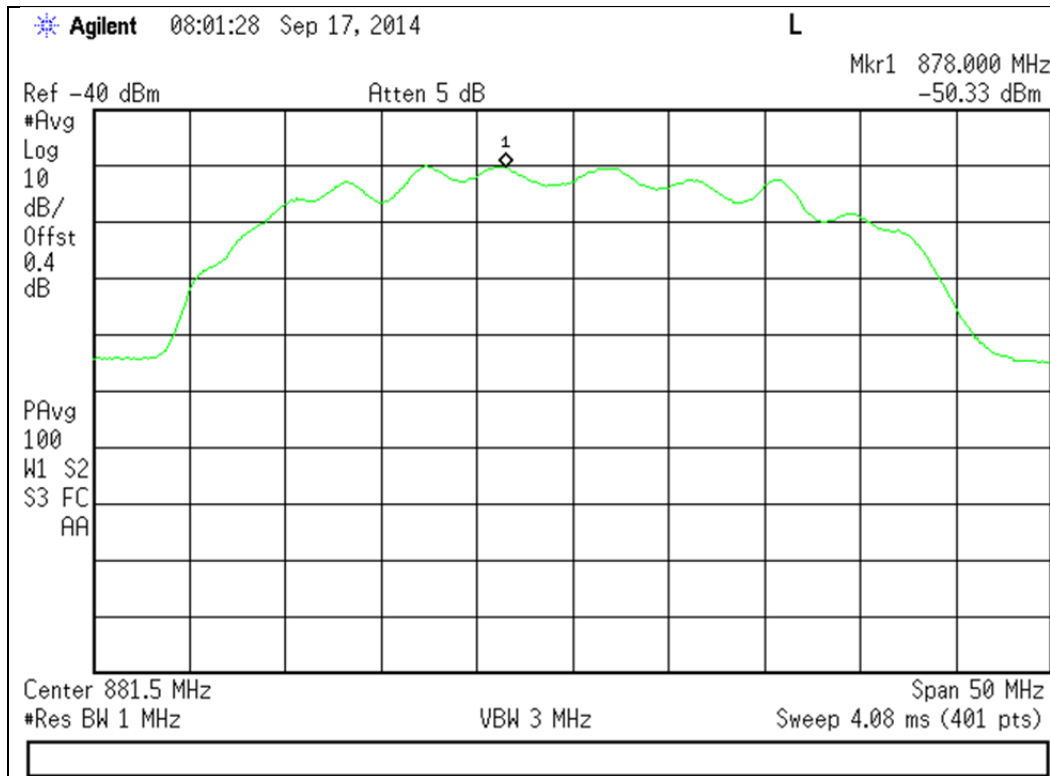




746 - 757 MHz Band

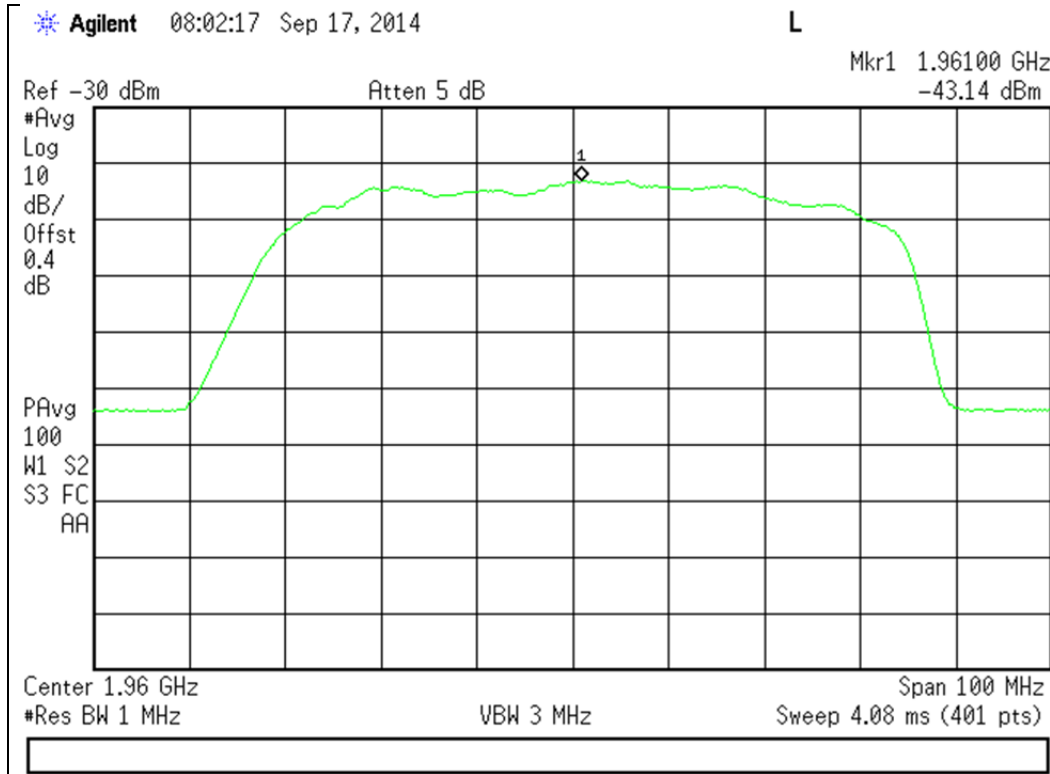


869 - 894 MHz Band

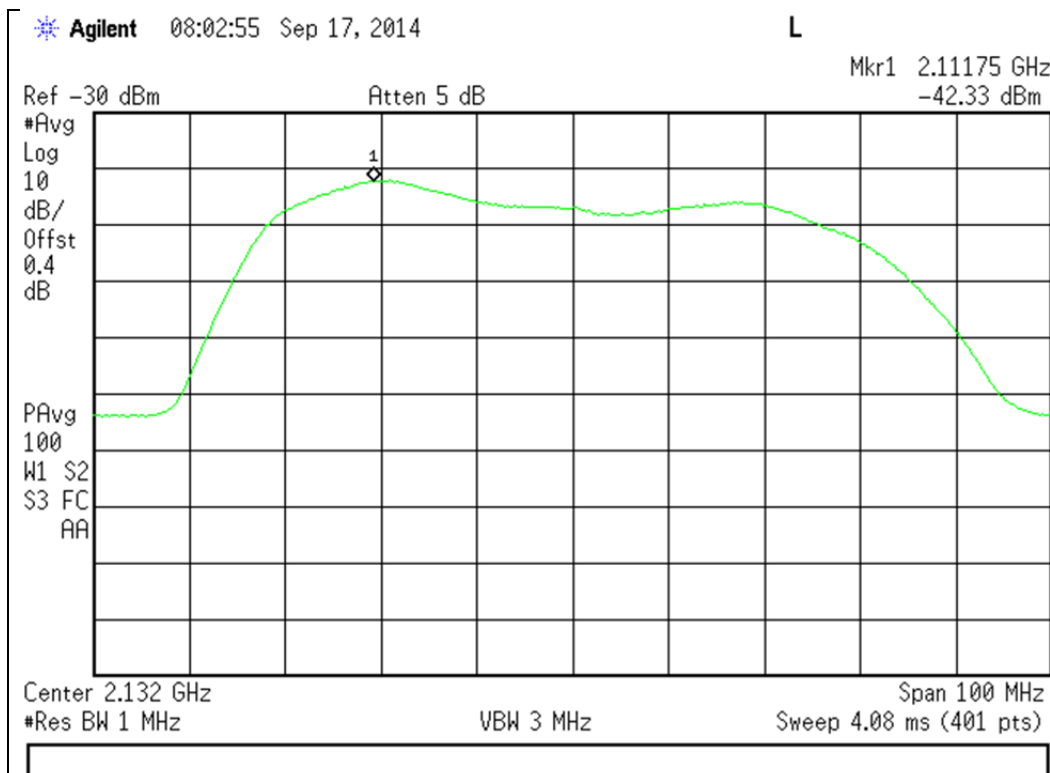




1930 - 1990 MHz Band



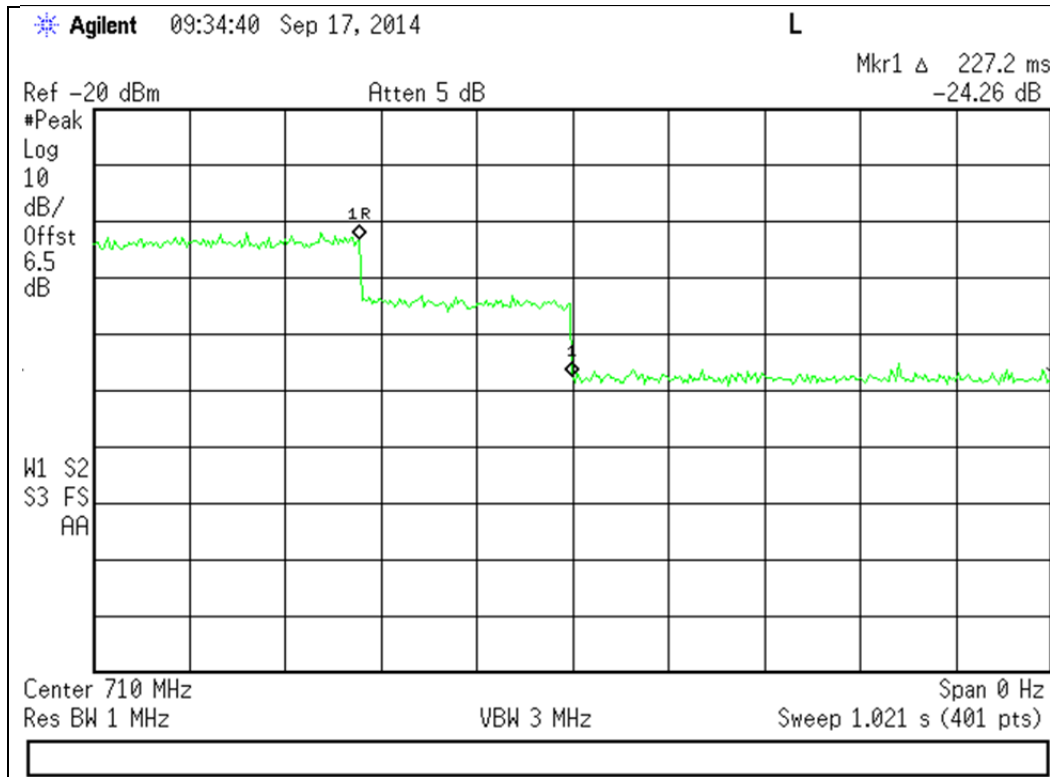
2110 - 2155 MHz Band



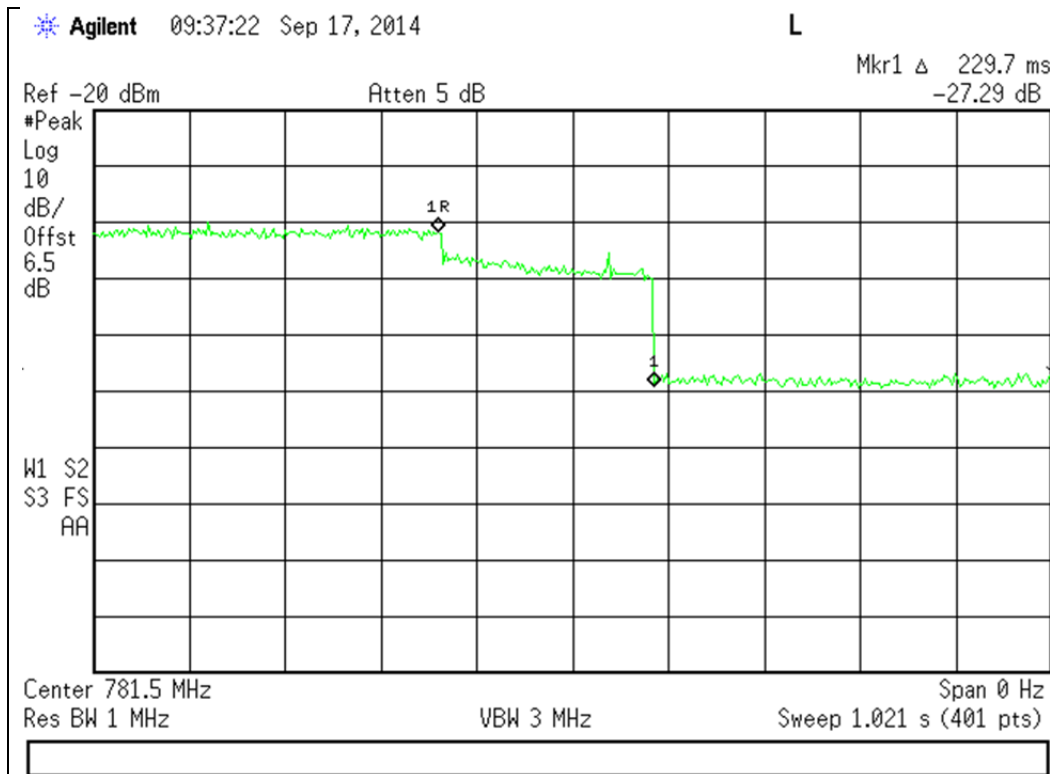


Uplink Noise Timing Test Plots

704 - 716 MHz Band

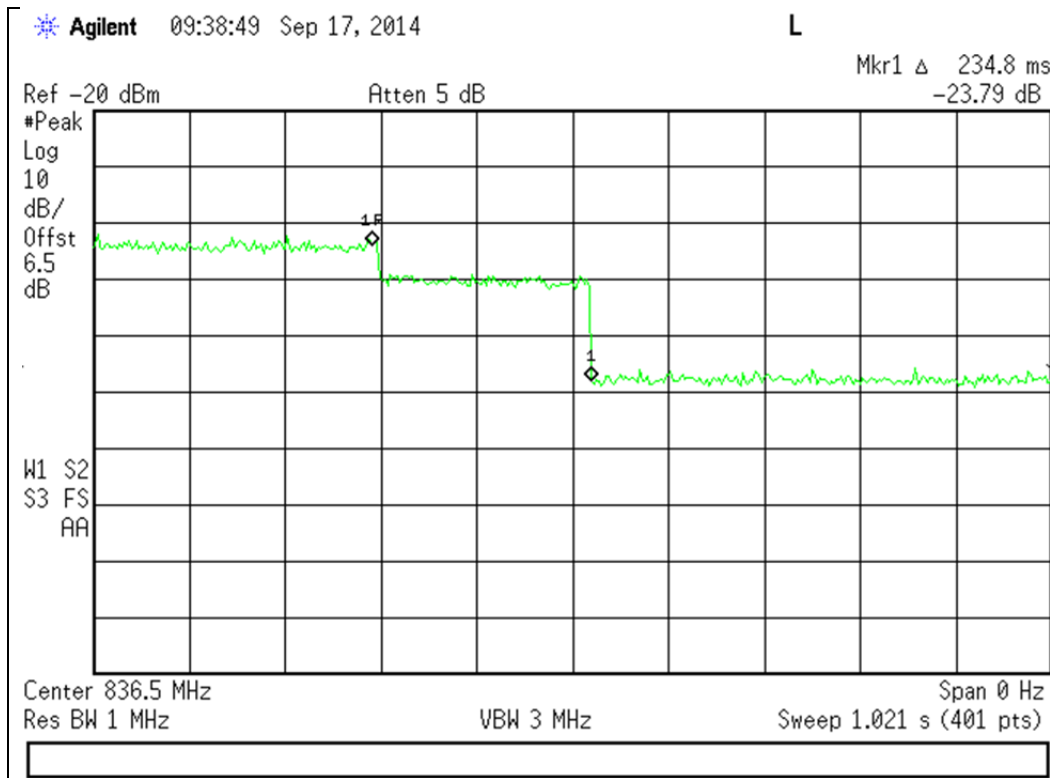


776 - 787 MHz Band

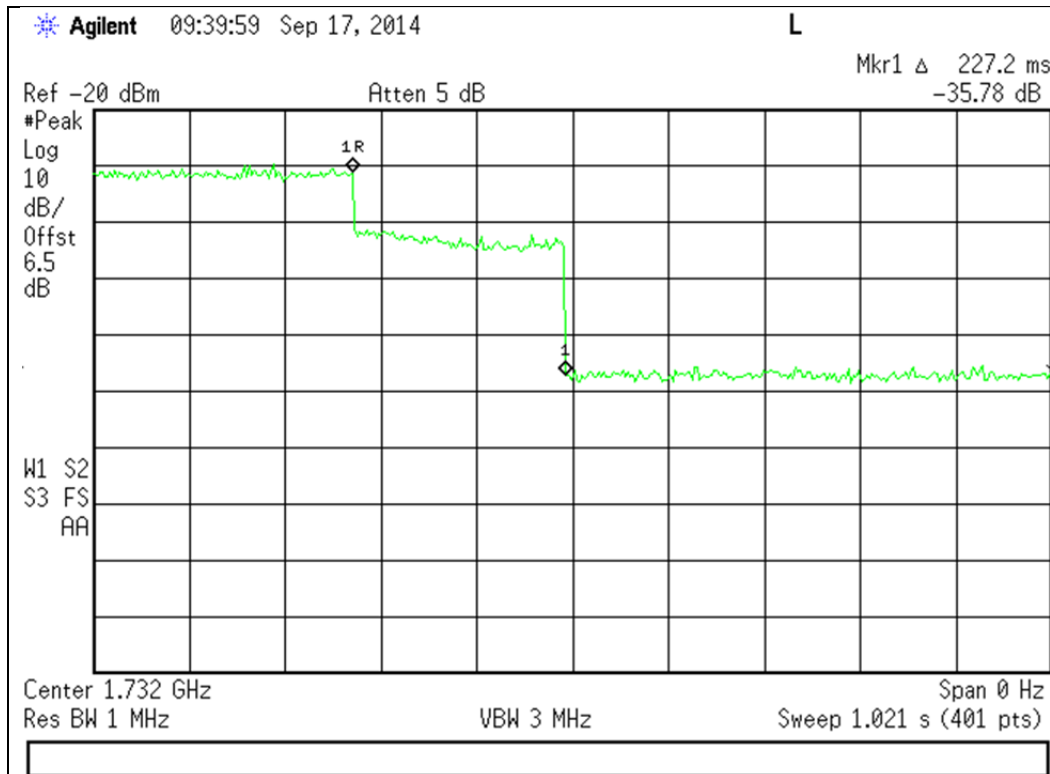




824 - 849 MHz Band

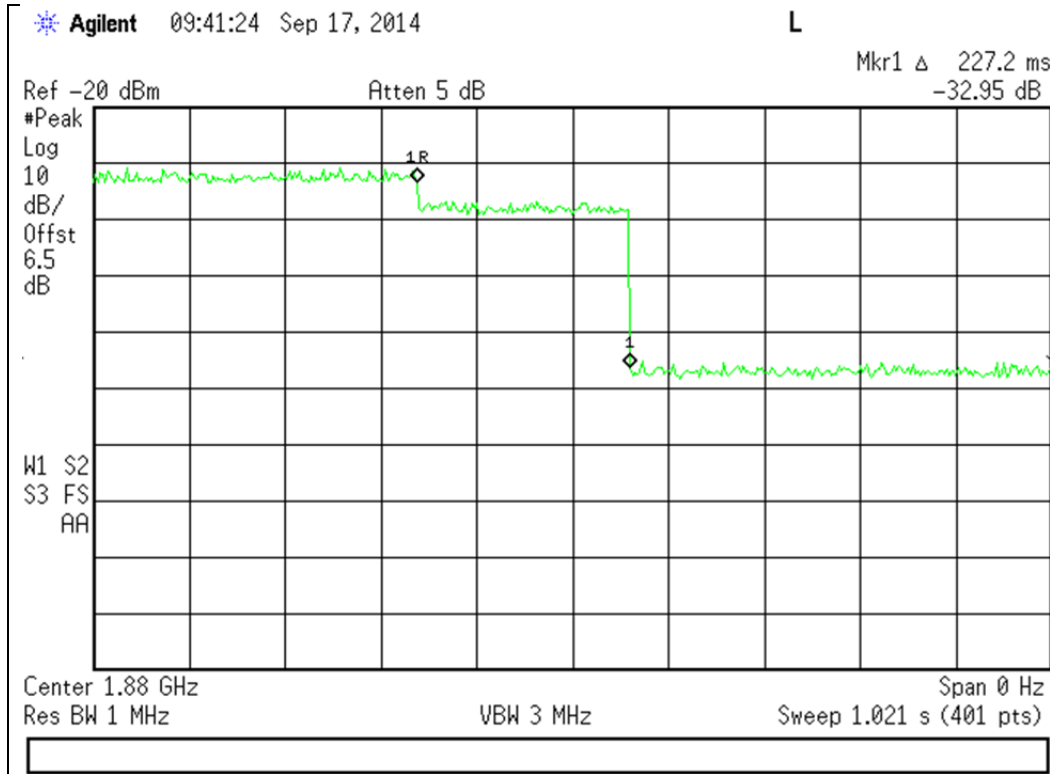


1710 - 1755 MHz Band





1850 - 1910 MHz Band





Uplink Inactivity

Name of Test: Uplink Inactivity

Engineer: Mike Graffeo

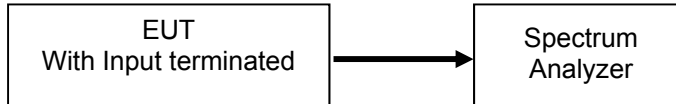
Test Equipment Utilized: i00379

Test Date: 9/17/14

Test Procedure

The EUT was connected directly to a spectrum analyzer set to operate in the center of the EUT operational uplink and downlink bands. The span was set to 0 Hz with a sweep time of 330 seconds and MAX HOLD operation. The EUT was powered on and the time for the uplink to return to an inactive state was measured using the DELTA MARKER method to ensure that it was less than 300 seconds. The noise level after the return to an inactive state was less than -70 dBm/MHz.

Test Setup



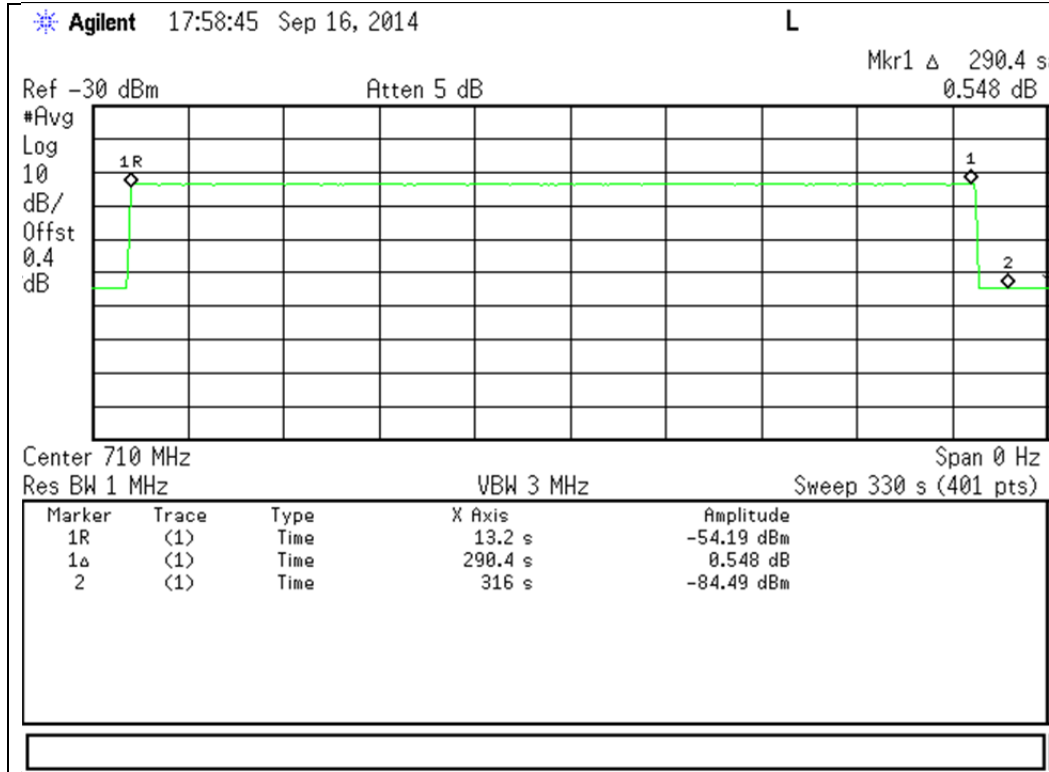
Uplink Test Results

Frequency Band (MHz)	Measured Time (Seconds)	Limit (Seconds)	Result
704 - 716	290.4	300	Pass
776 - 787	290.4	300	Pass
824 - 849	291.2	300	Pass
1710 - 1755	291.2	300	Pass
1850 - 1910	290.4	300	Pass

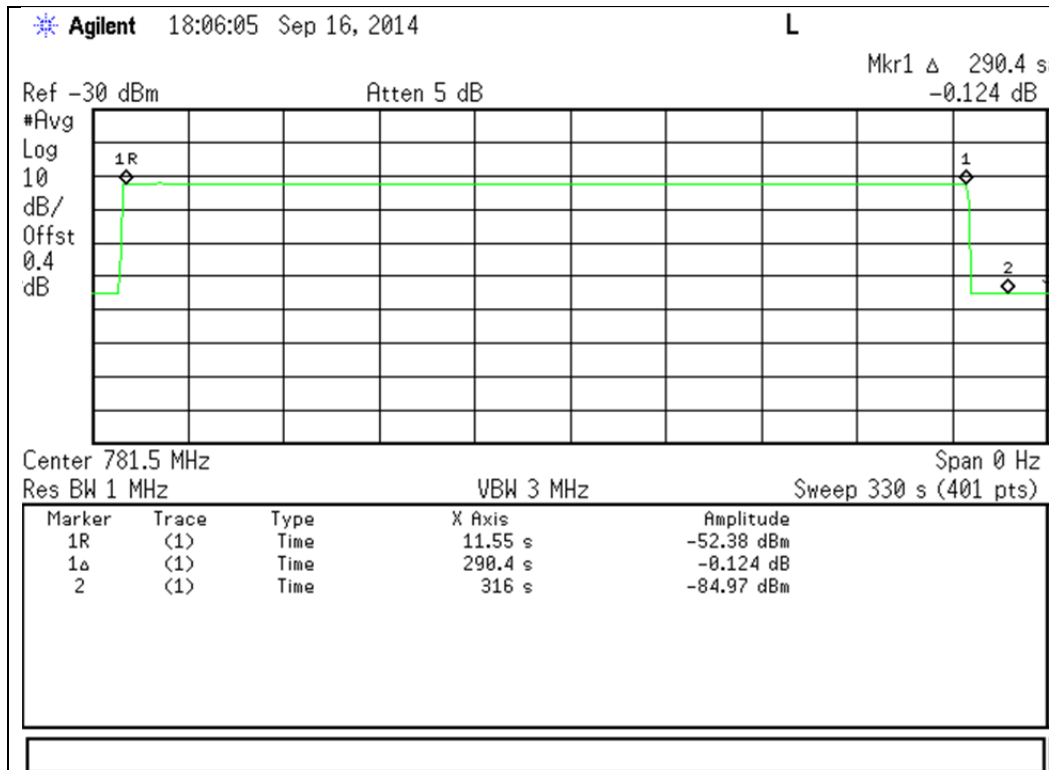


Uplink Inactivity Test Results

704 - 716 MHz

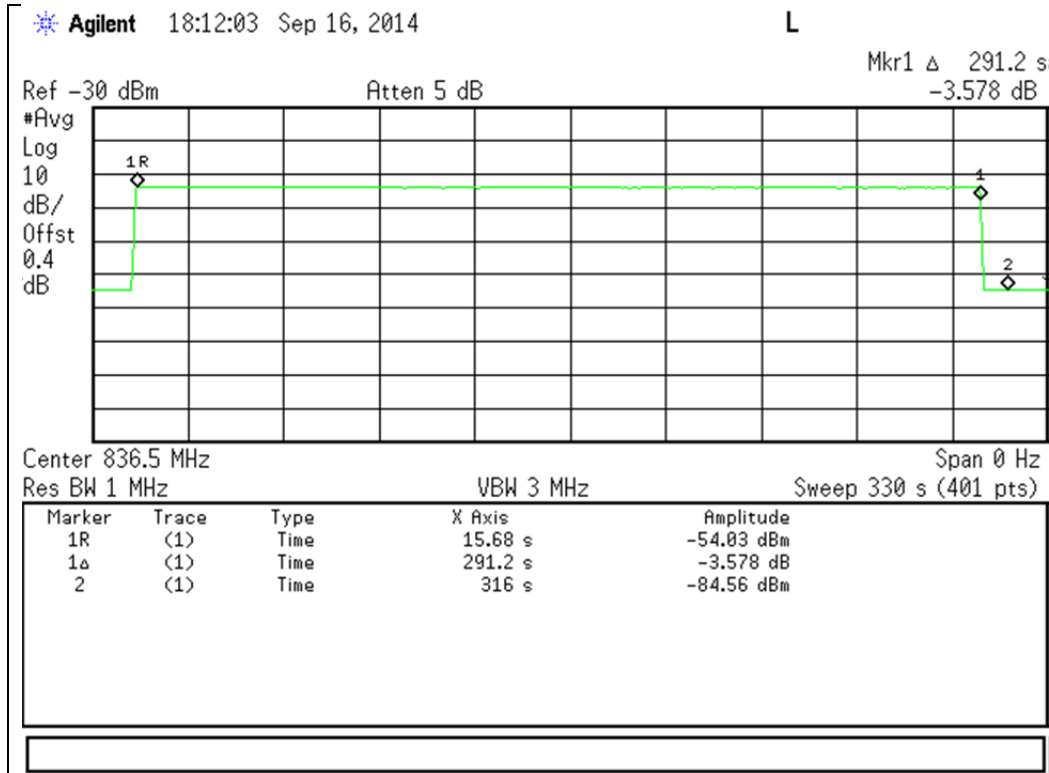


776 - 787 MHz





824 - 849 MHz



1710 - 1755 MHz

