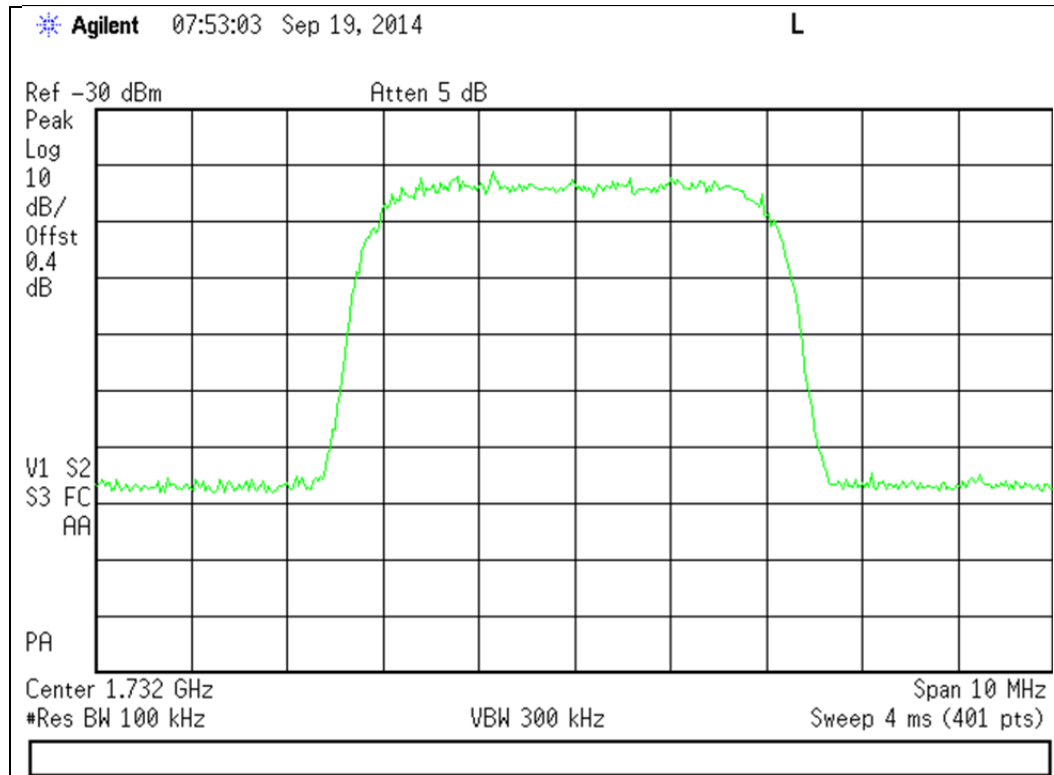


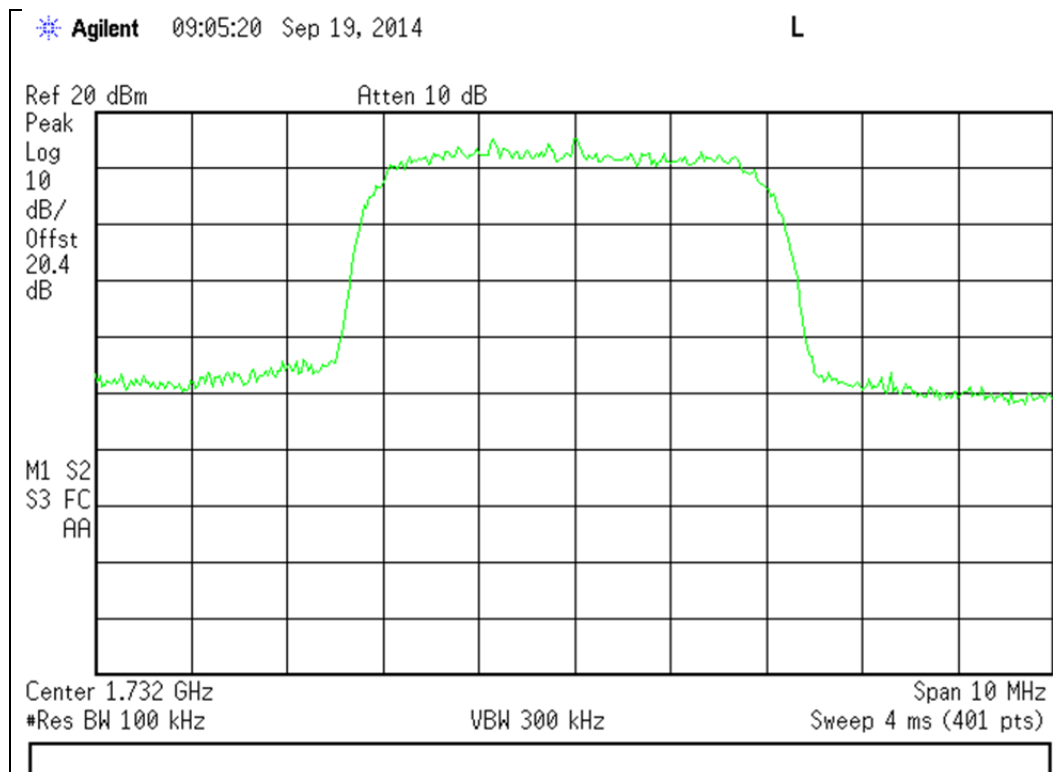


1710 - 1755 MHz Band

Input



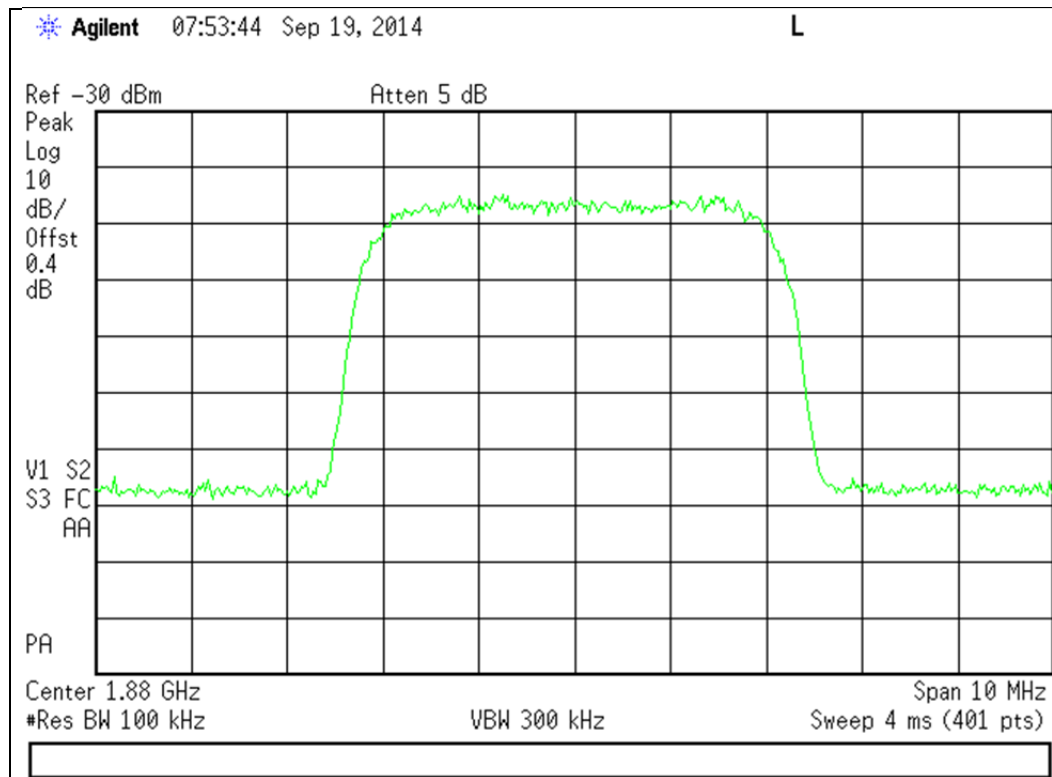
Output



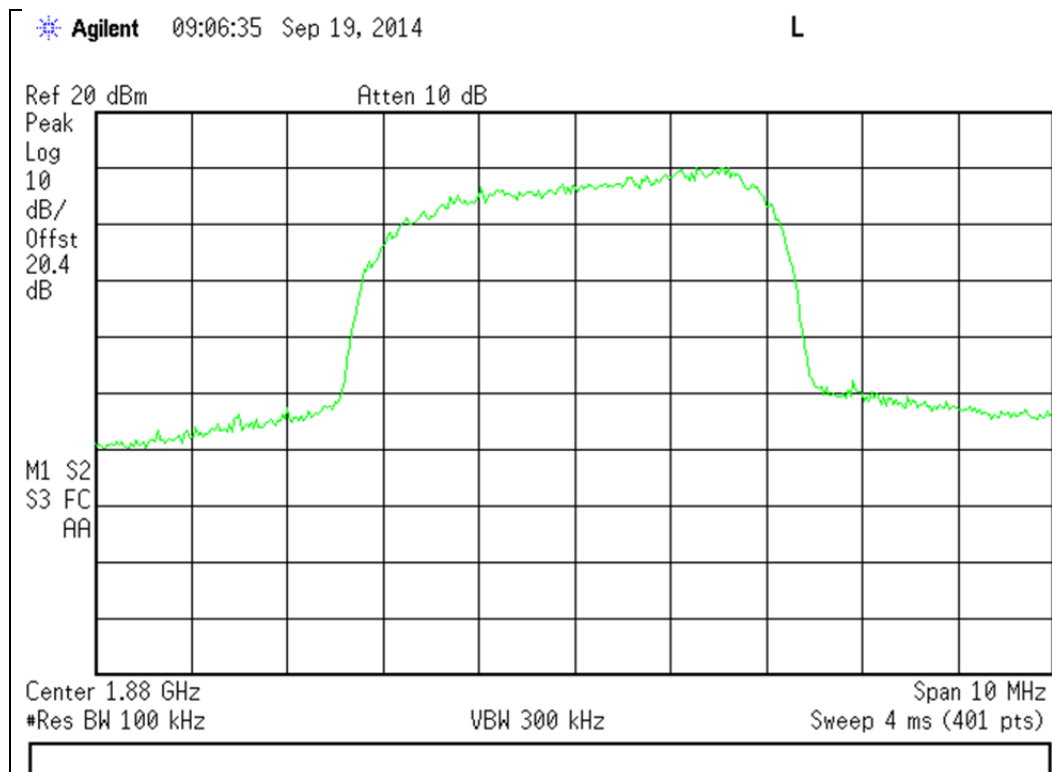


1850 - 1910 MHz Band

Input



Output

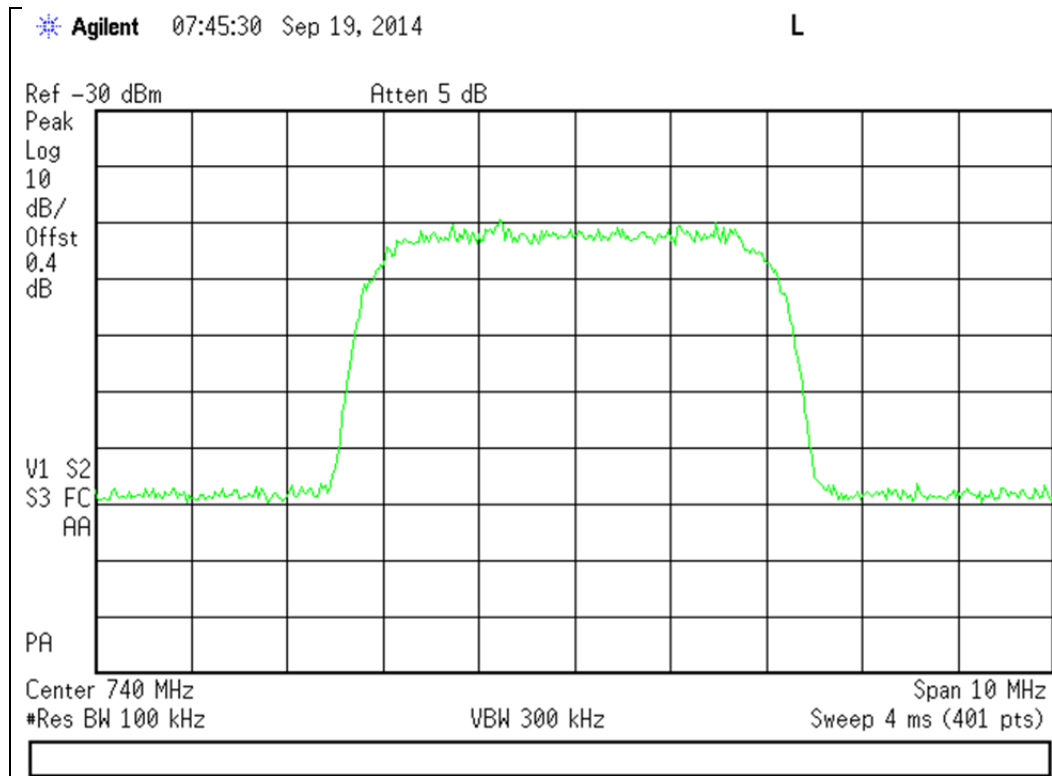




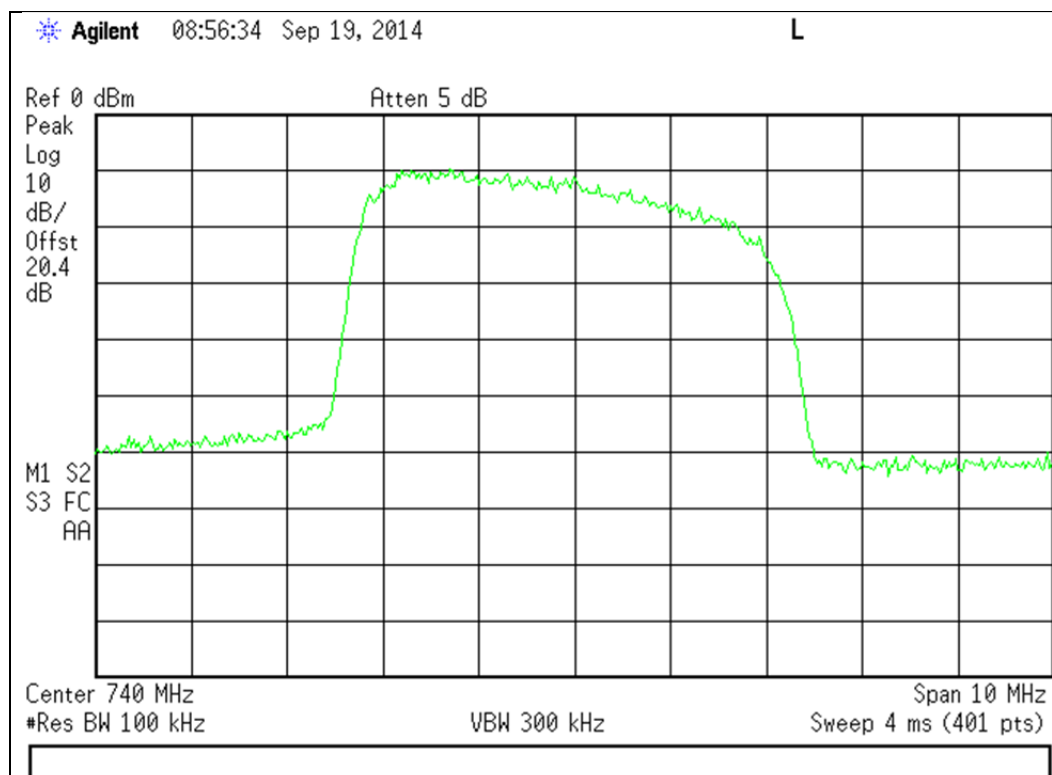
WCDMA Downlink Test Plots

734 - 746 MHz Band

Input



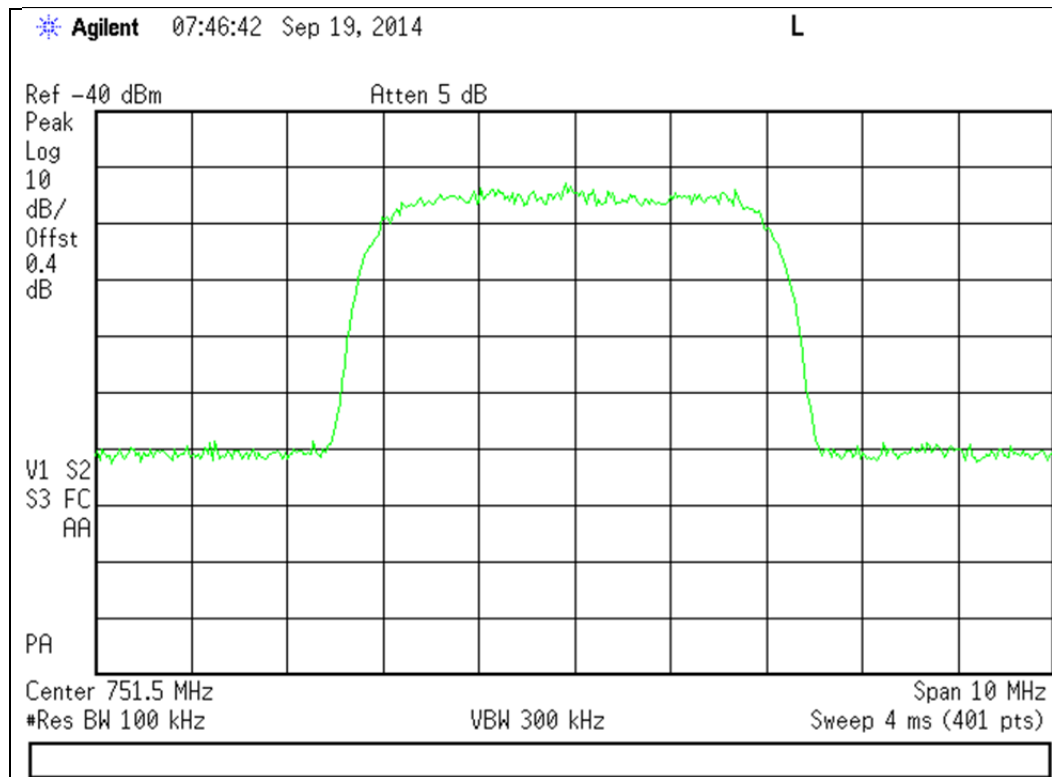
Output



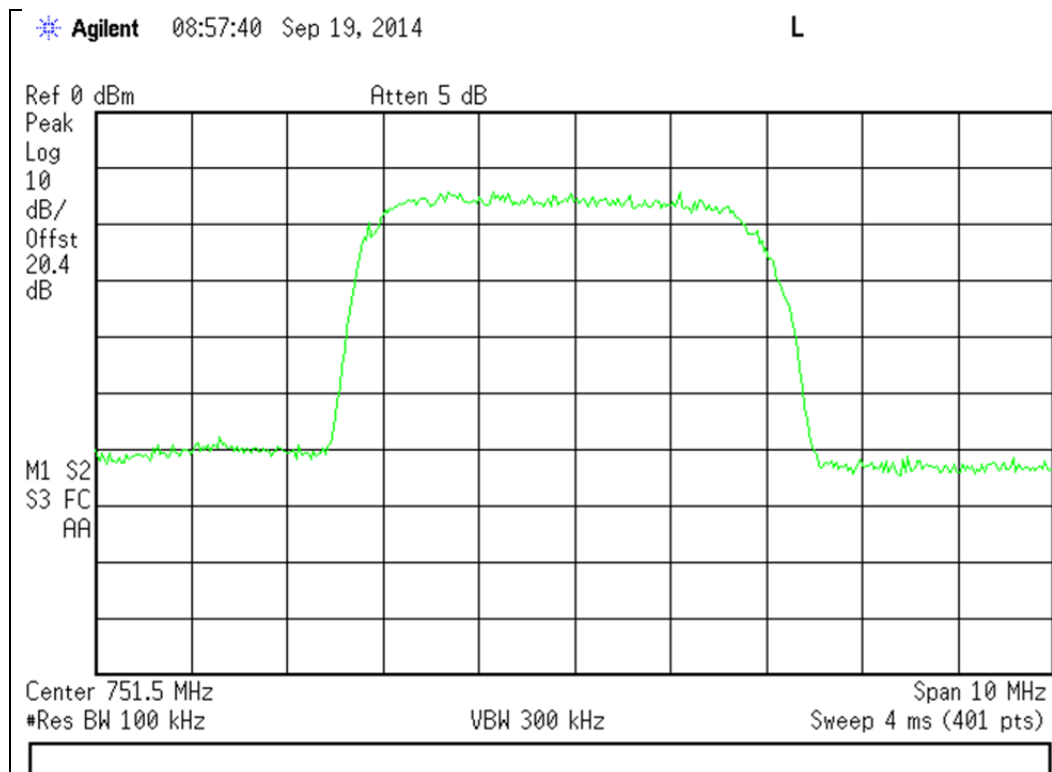


746 - 757 MHz Band

Input



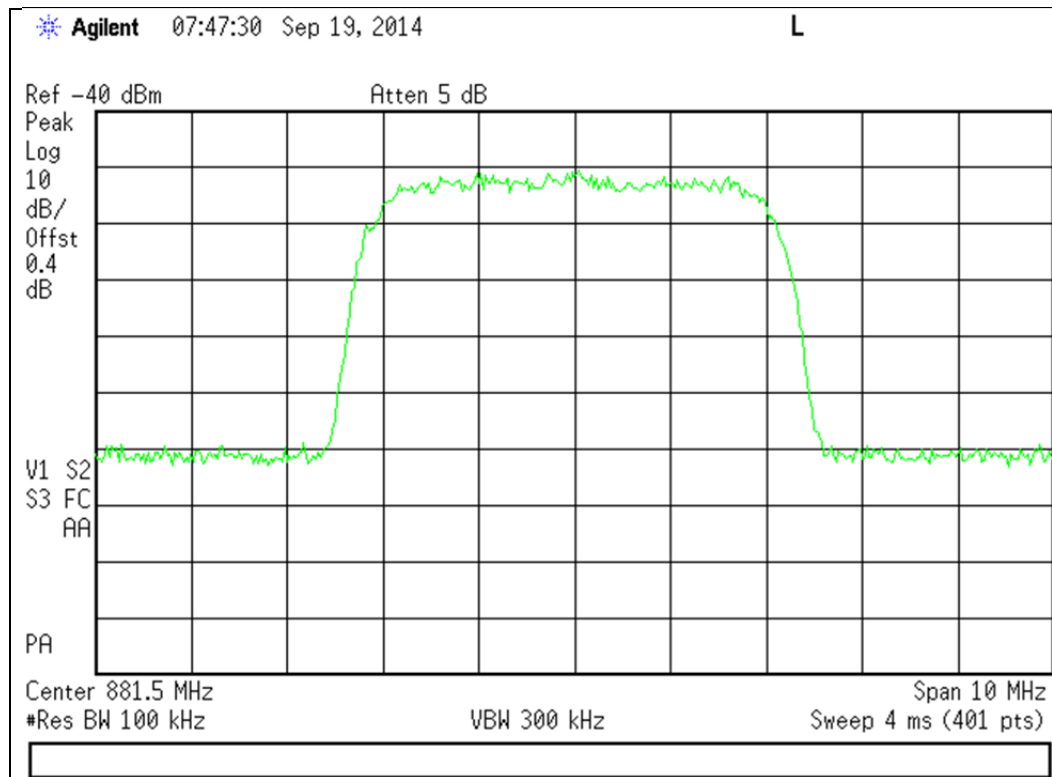
Output



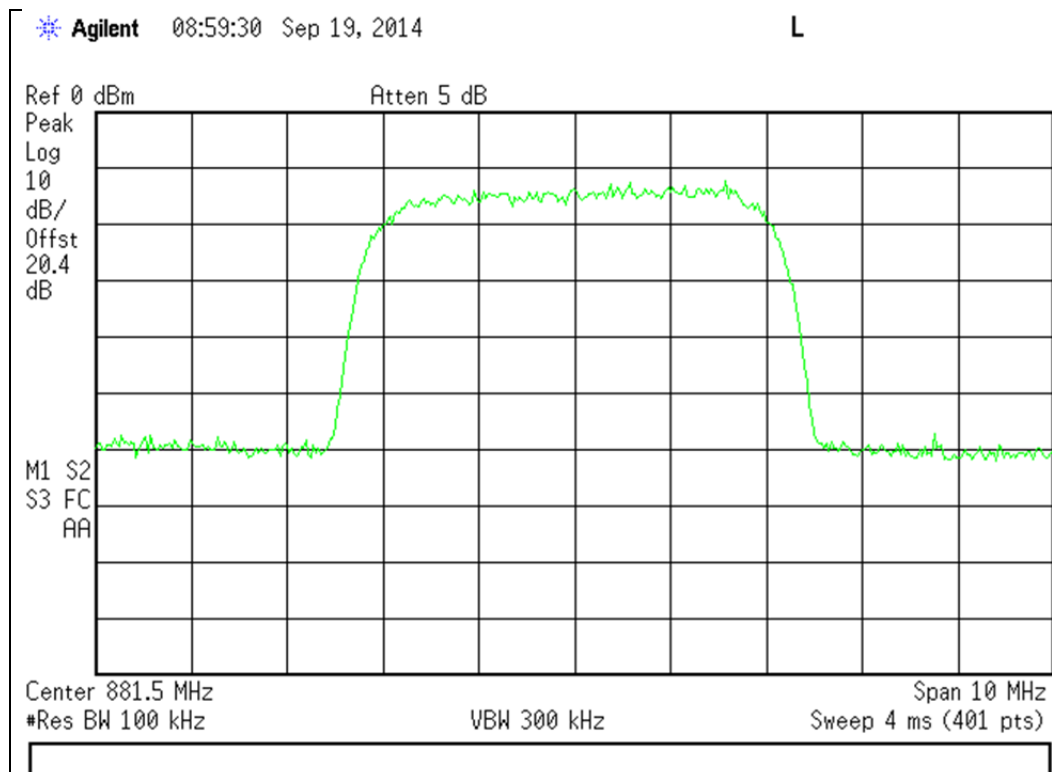


869 - 894 MHz Band

Input



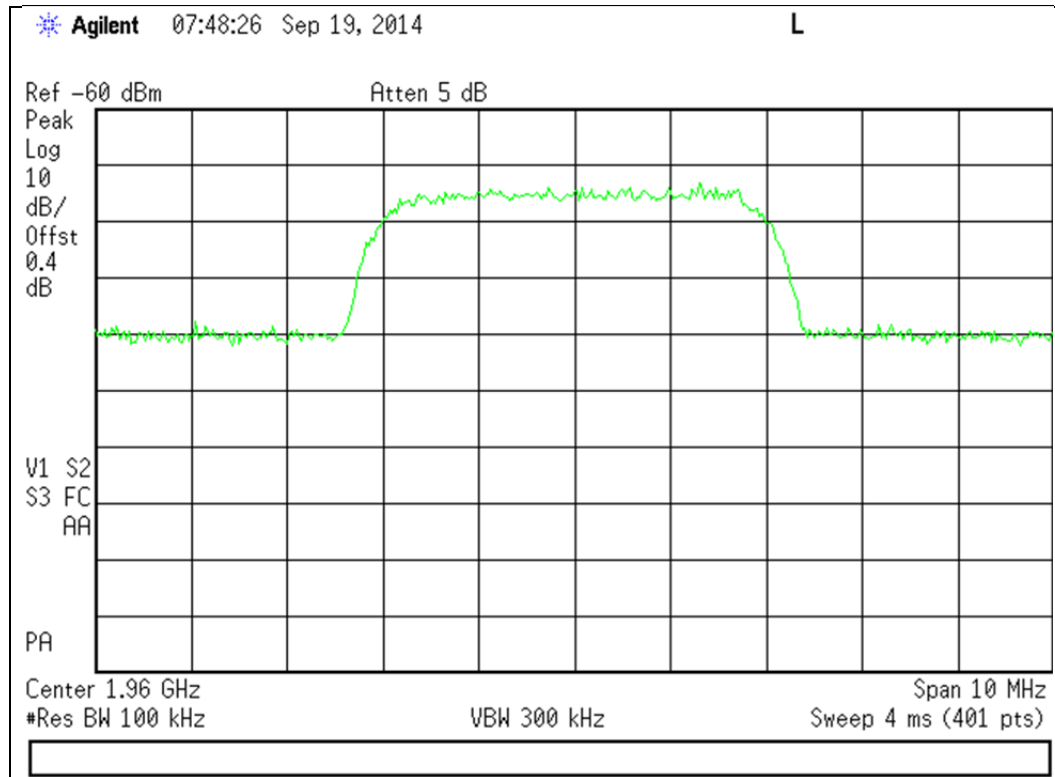
Output



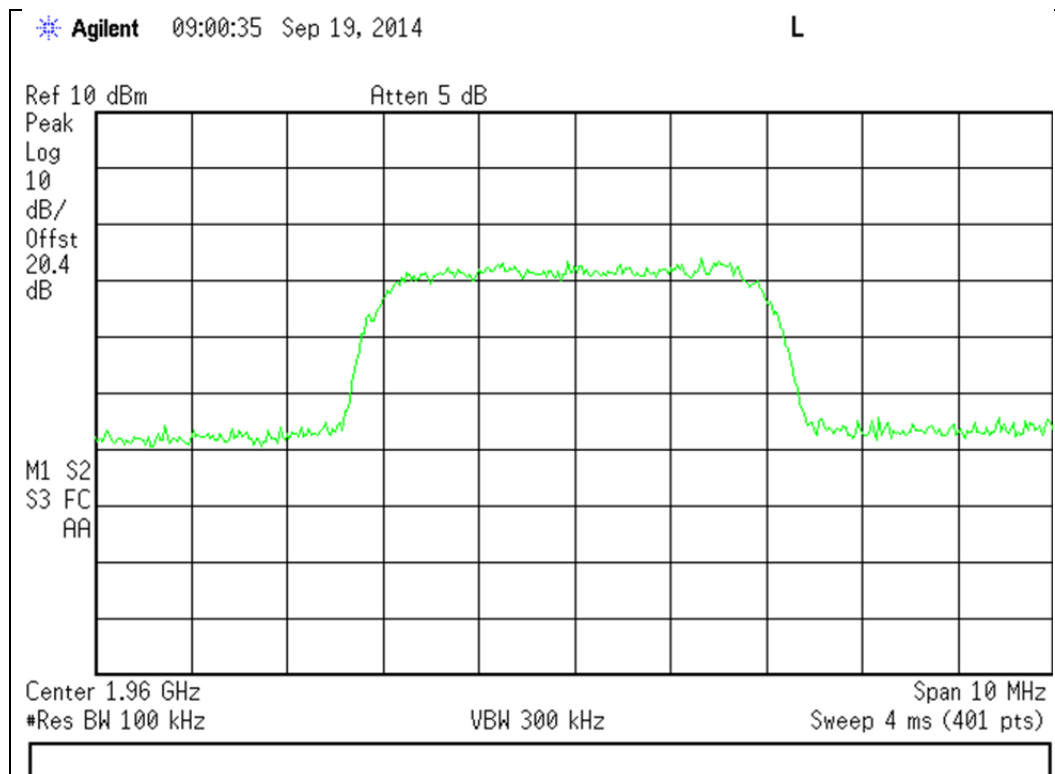


1930 - 1990 MHz Band

Input



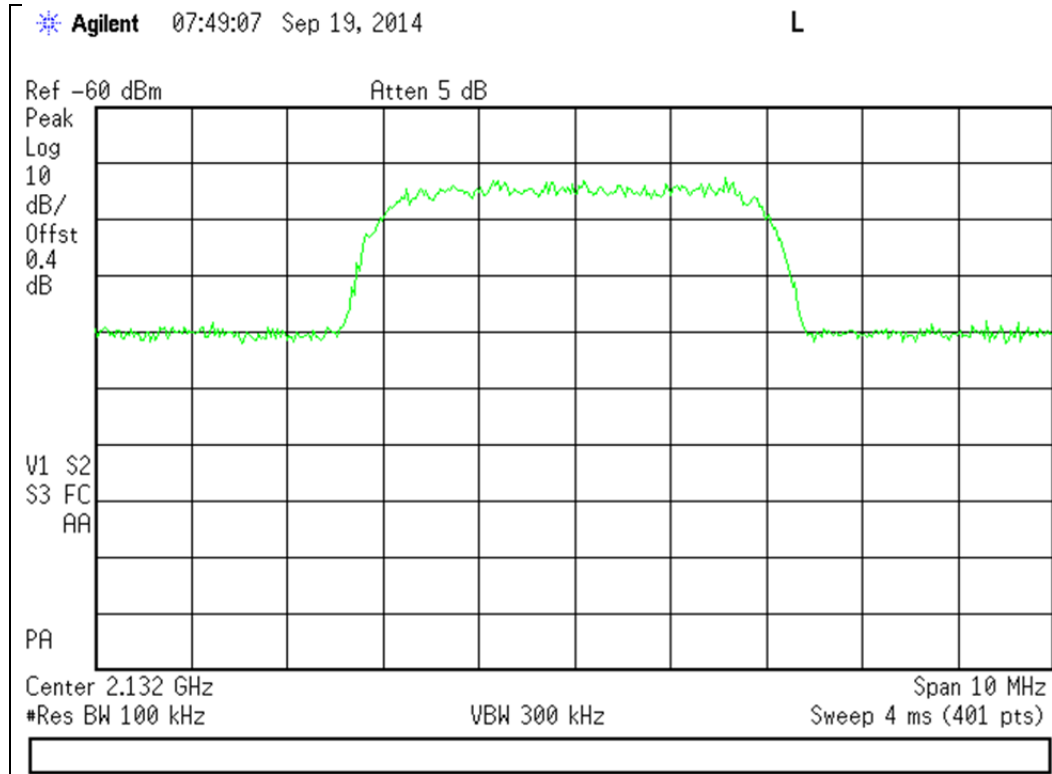
Output



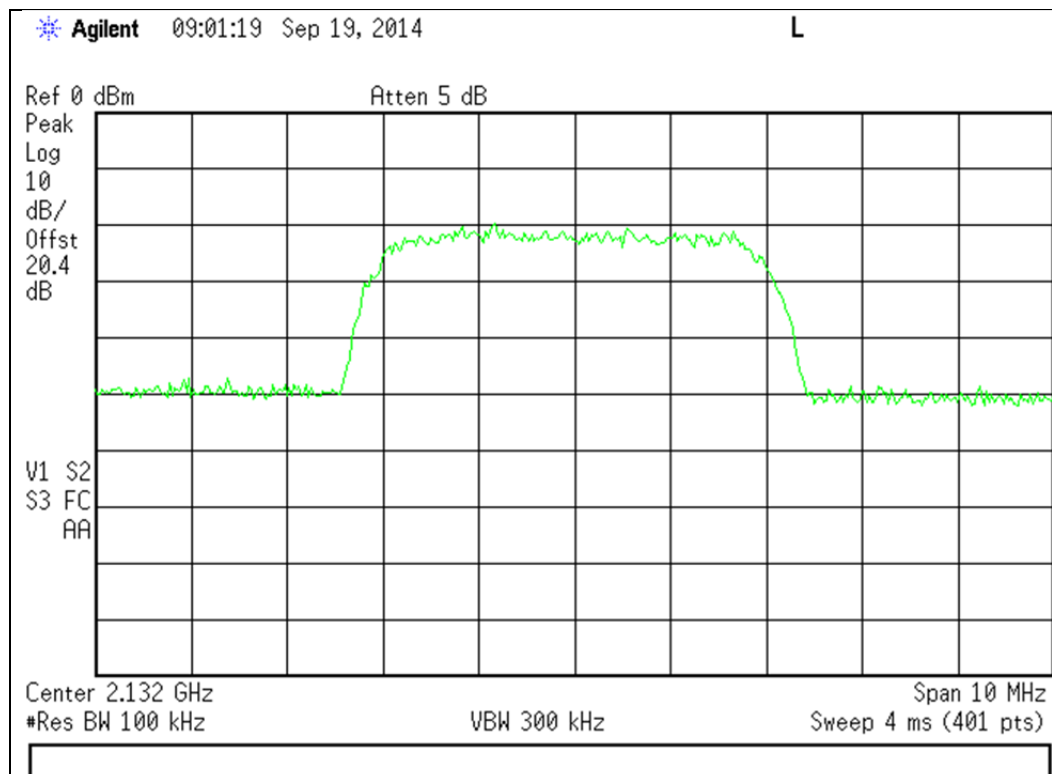


2110 - 2155 MHz Band

Input



Output





Oscillation Detection

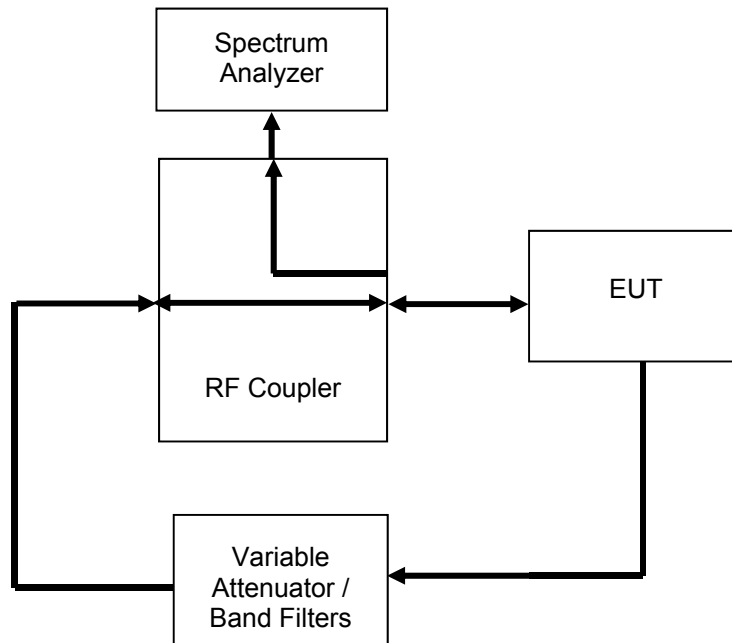
Name of Test: Oscillation Detection
Test Equipment Utilized: i00379, i00405, i00412

Engineer: Mike Graffeo
Test Date: 9/17/14

Test Procedure

The EUT was connected to a spectrum analyzer set for 0 Hz operation. The EUT uplink and downlink were fed back upon each other through a selectable band pass filter and variable attenuator. The EUT uplink and downlink were tested to ensure that the presence of oscillation was detected and that the EUT output turned off within 300 mS for the Uplink and 1 second for the Downlink and remained off for 1 minute. A EUT with test software was utilized to ensure that the EUT only had a maximum of 5 attempts at restart from oscillation before permanently shutting off.

Test Setup





Uplink Detection Time Test Results

Frequency Band (MHz)	Measured Time (mS)	Limit (mS)	Result
704 - 716	226.6	300	Pass
776 - 787	226.6	300	Pass
824 - 849	284.4	300	Pass
1710 - 1755	181.1	300	Pass
1850 – 1910	200.4	300	Pass

Downlink Detection Time Test Results

Frequency Band (MHz)	Measured Time (mS)	Limit (mS)	Result
734 - 746	244.8	1000	Pass
746 - 757	269.5	1000	Pass
869 - 894	272.2	1000	Pass
1930 – 1990	222.8	1000	Pass
2110 - 2155	228.3	1000	Pass

Uplink Restart Time Test Results

Frequency Band (MHz)	Measured Time (S)	Limit (S)	Result
704 - 716	62.12	≥60	Pass
776 - 787	62.48	≥60	Pass
824 - 849	62.12	≥60	Pass
1710 - 1755	62.12	≥60	Pass
1850 – 1910	62.30	≥60	Pass



Downlink Restart Time Test Results

Frequency Band (MHz)	Measured Time (S)	Limit (S)	Result
734 - 746	62.30	≥60	Pass
746 - 757	62.30	≥60	Pass
869 - 894	62.30	≥60	Pass
1930 – 1990	62.48	≥60	Pass
2110 - 2155	62.12	≥60	Pass

Uplink Restart Count Test Results

Frequency Band (MHz)	Restarts	Limit	Result
704 - 716	4	≤5	Pass
776 - 787	4	≤5	Pass
824 - 849	4	≤5	Pass
1710 - 1755	4	≤5	Pass
1850 – 1910	4	≤5	Pass

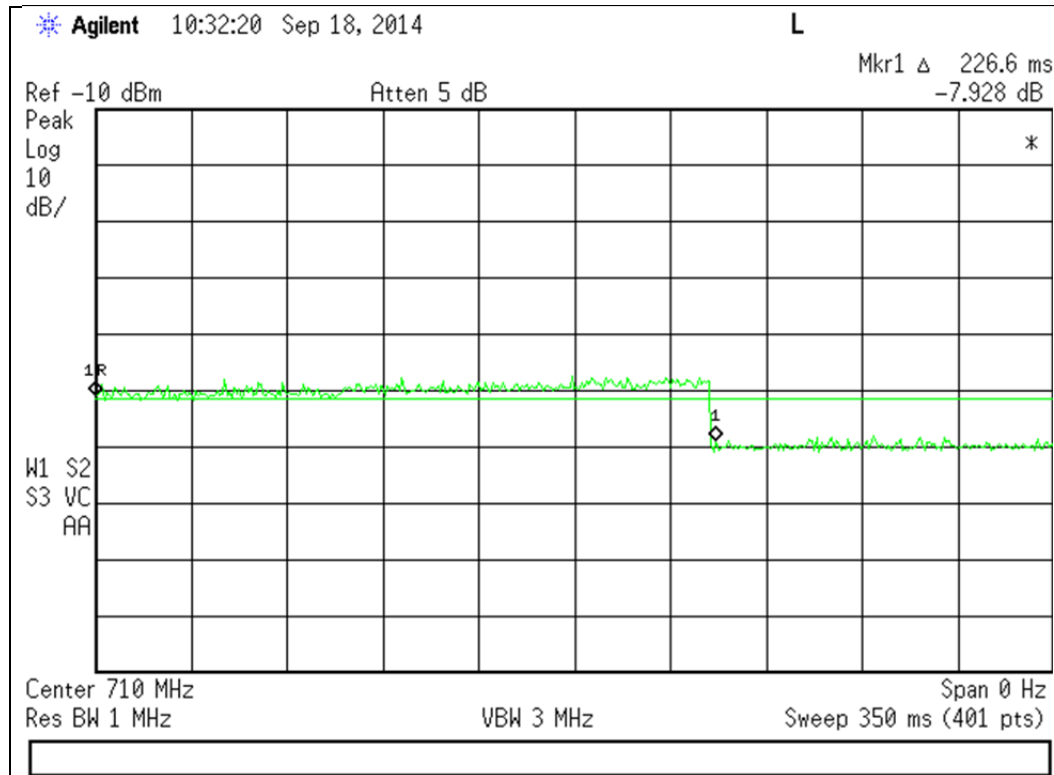
Downlink Restart Count Test Results

Frequency Band (MHz)	Restarts	Limit	Result
734 - 746	4	≤5	Pass
746 - 757	4	≤5	Pass
869 - 894	4	≤5	Pass
1930 – 1990	4	≤5	Pass
2110 - 2155	4	≤5	Pass

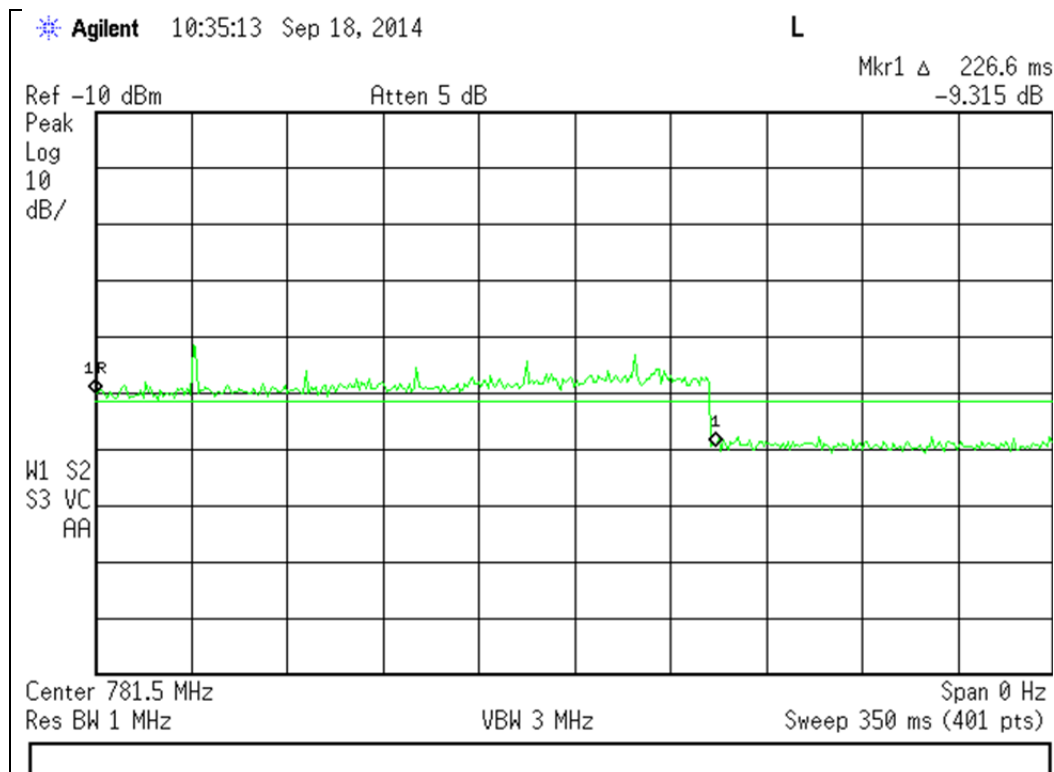


Uplink Detection Time Test Results

704 - 716 MHz Band

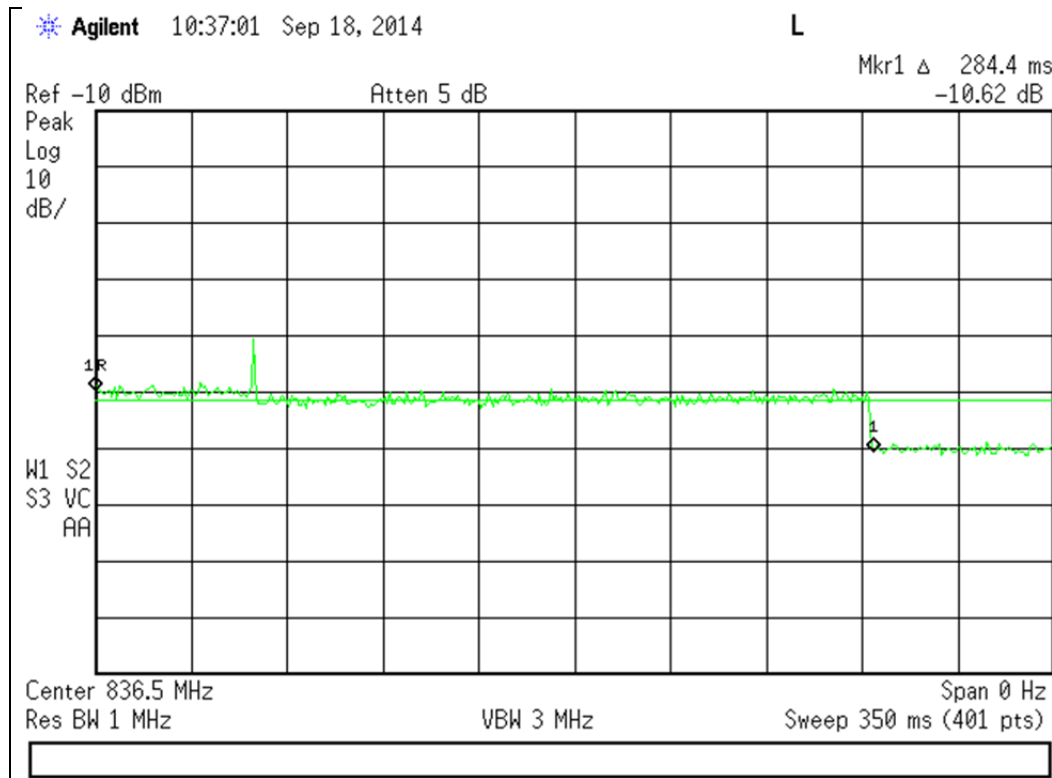


776 - 787 MHz Band

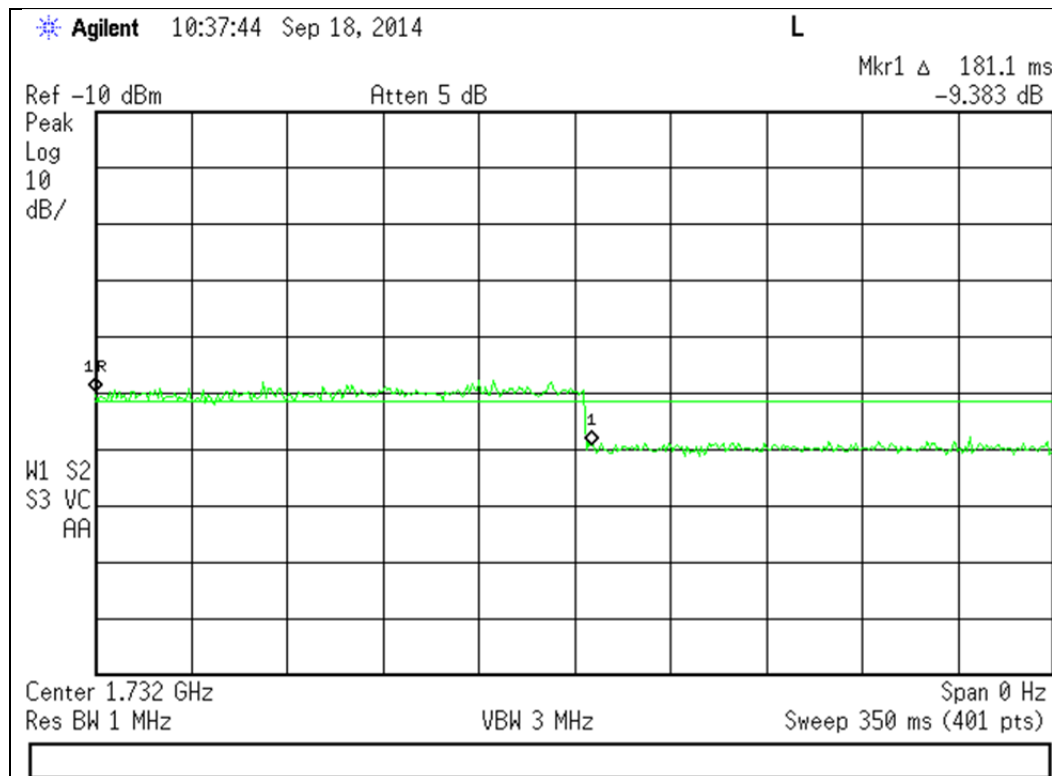




824 - 849 MHz Band

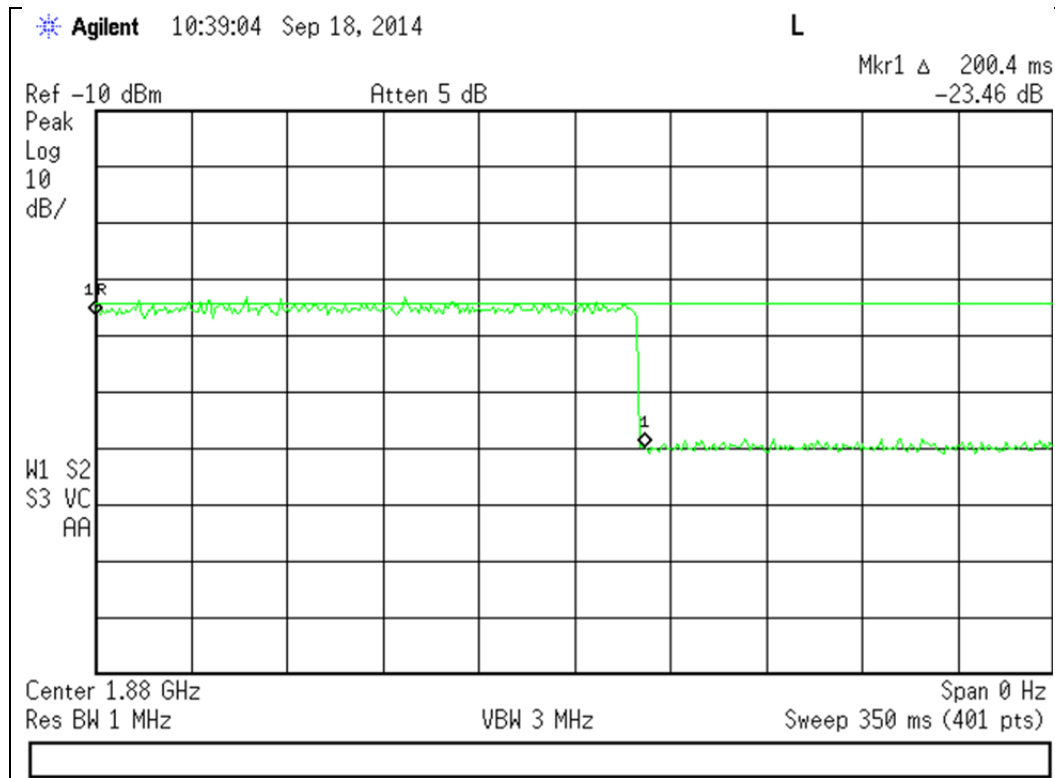


1710 - 1755 MHz Band



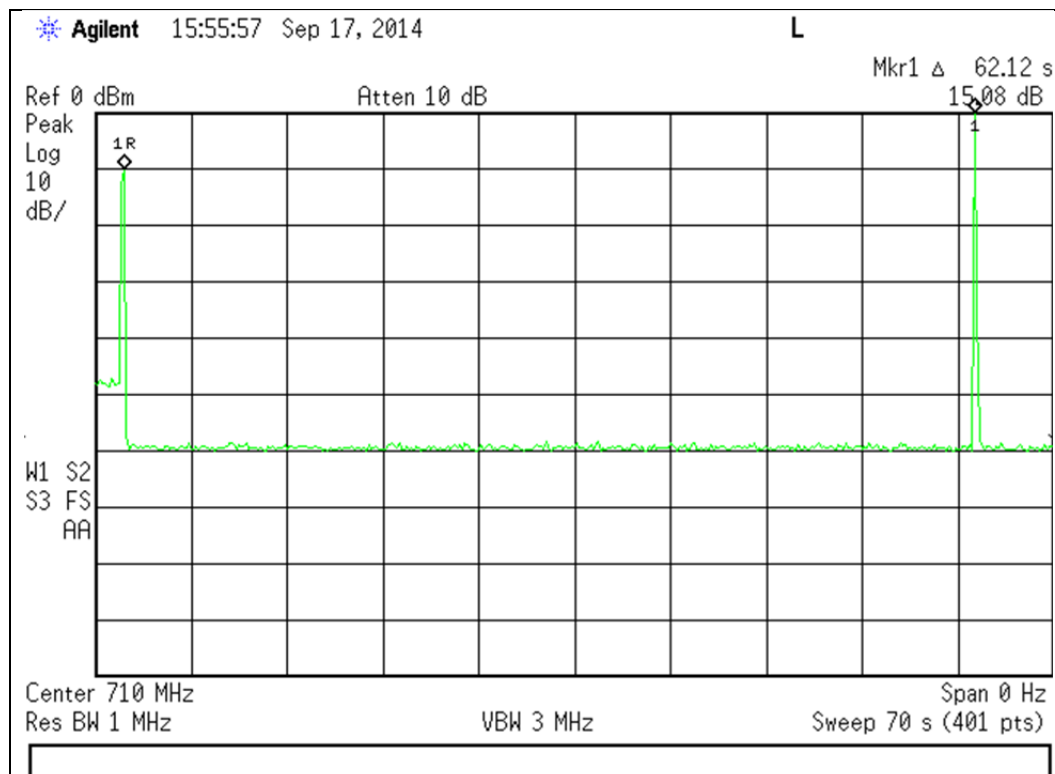


1850 - 1910 MHz Band



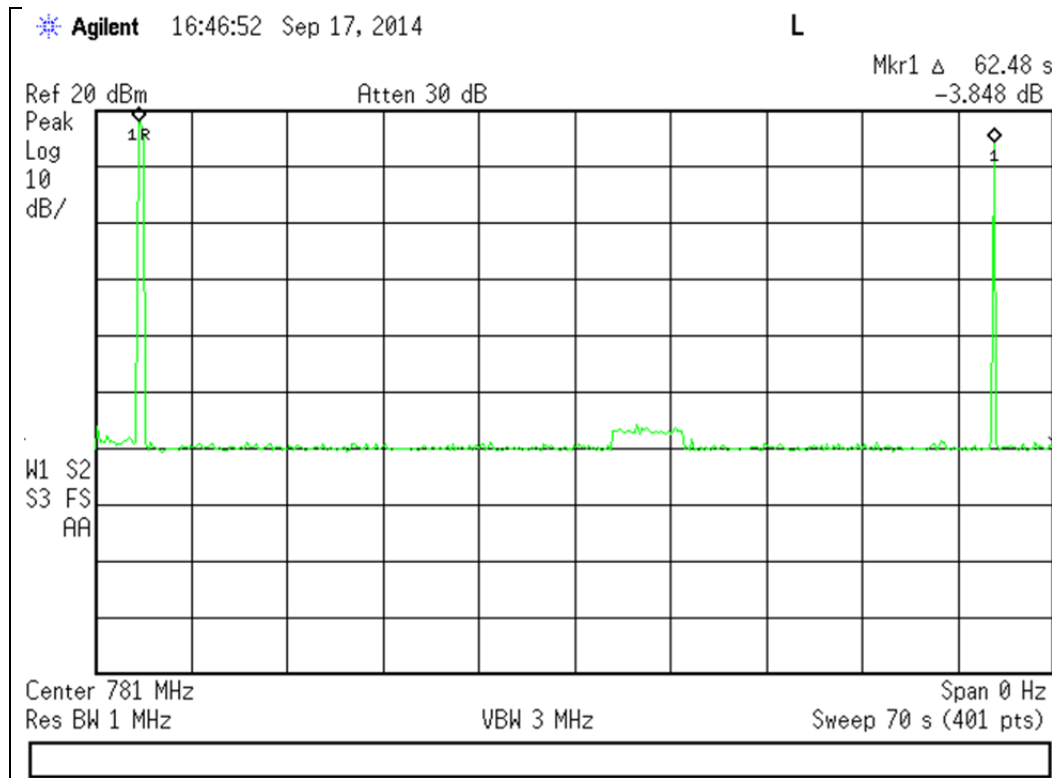
Uplink Restart Time Test Results

704 - 716 MHz Band

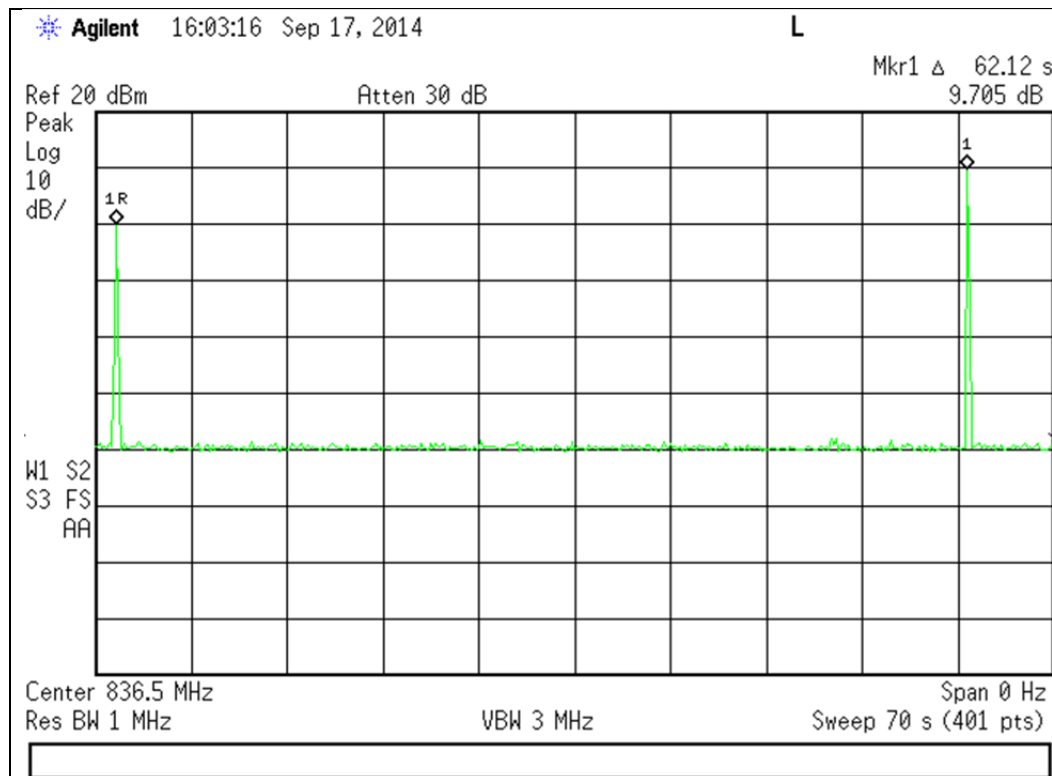




776 - 787 MHz Band

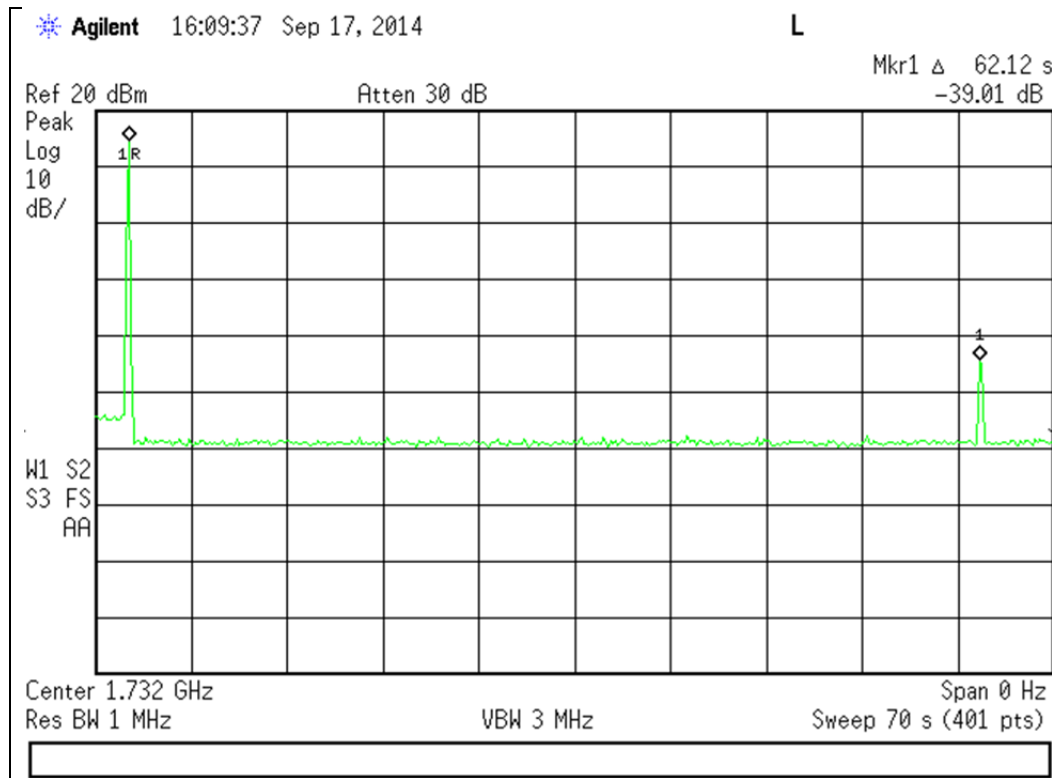


824 - 849 MHz Band

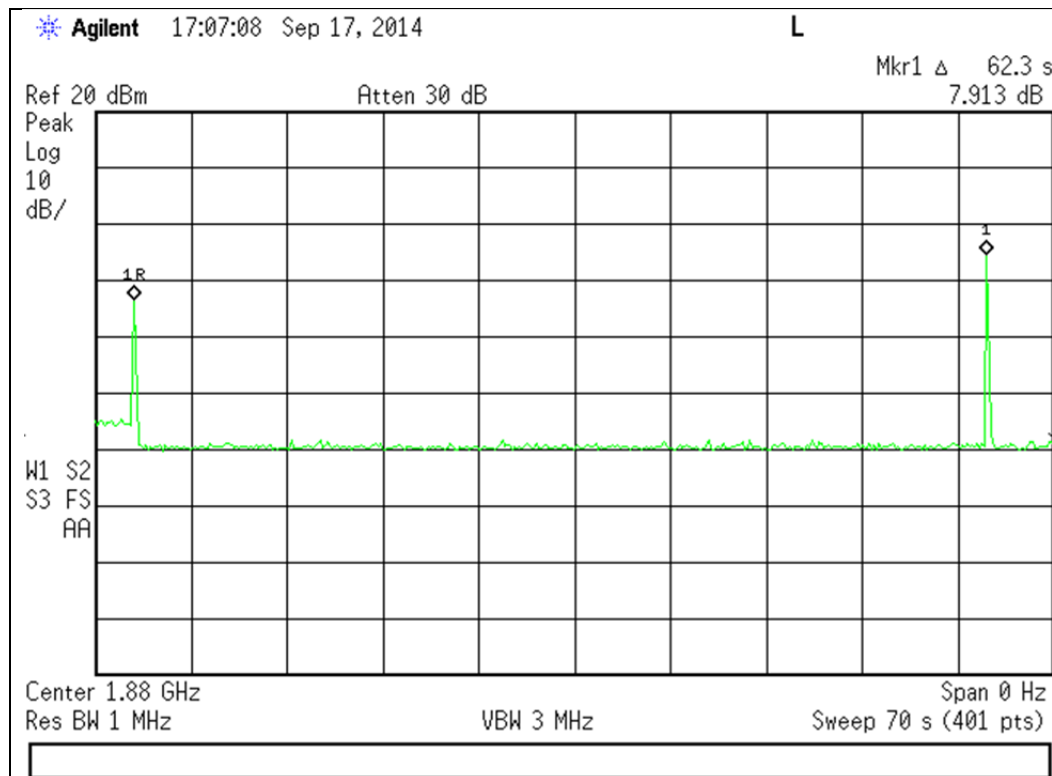




1710 - 1755 MHz Band



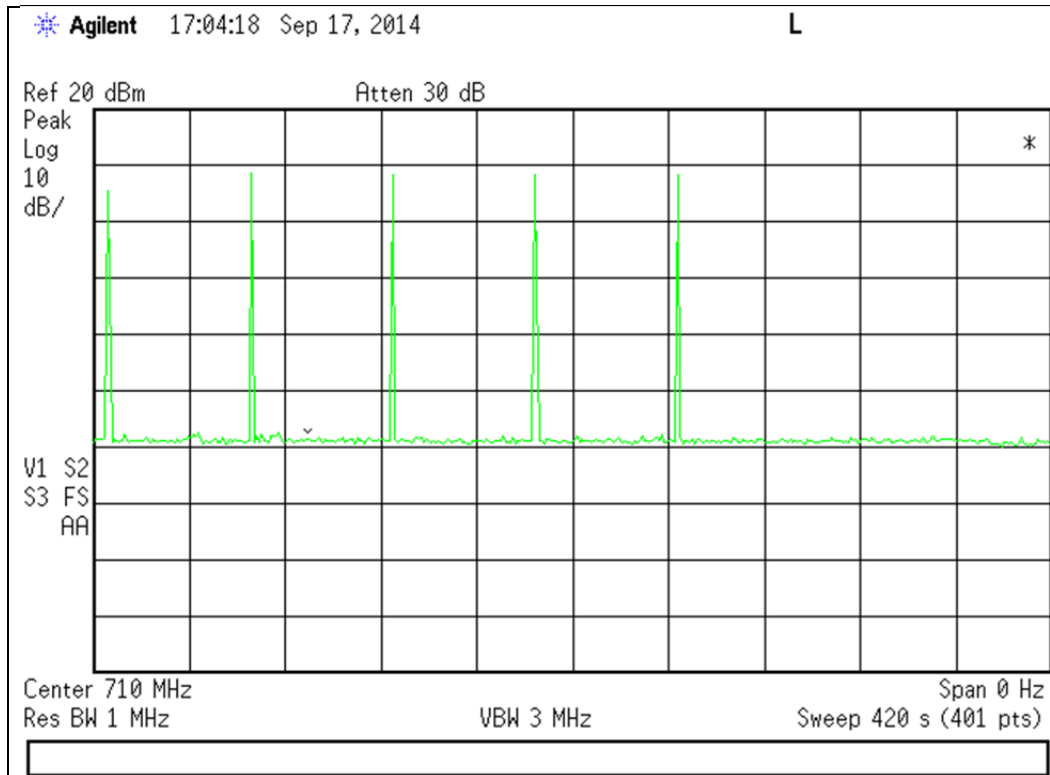
1850 - 1910 MHz Band



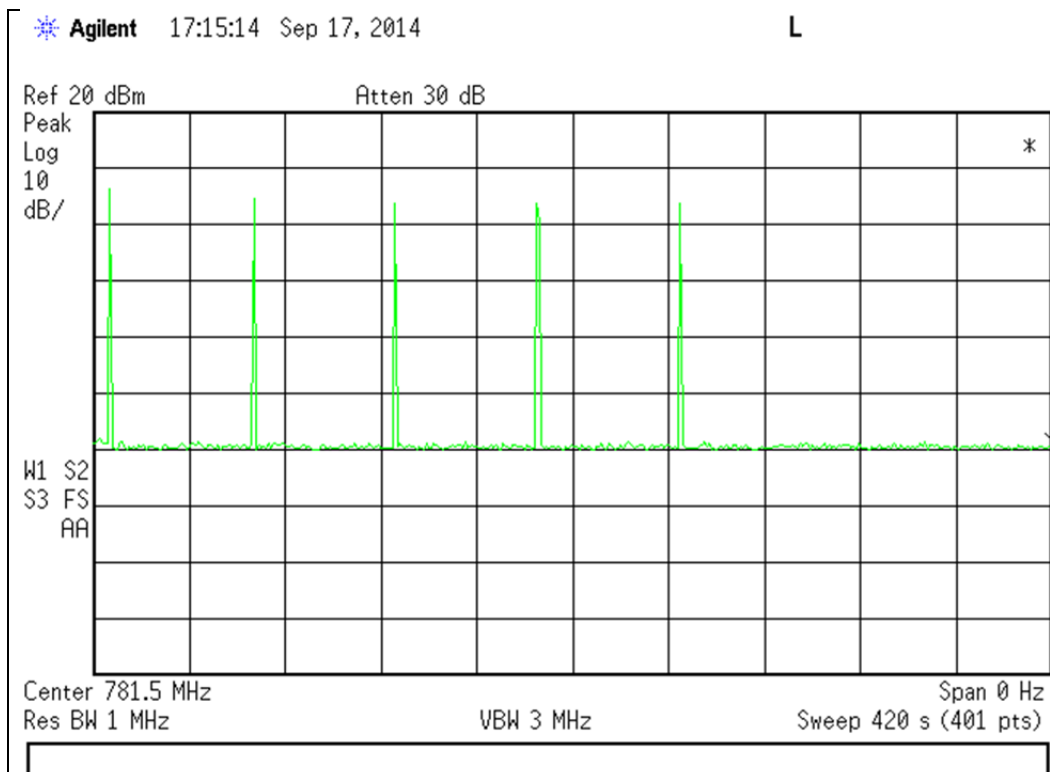


Uplink Restart Count Test Results

704 - 716 MHz Band

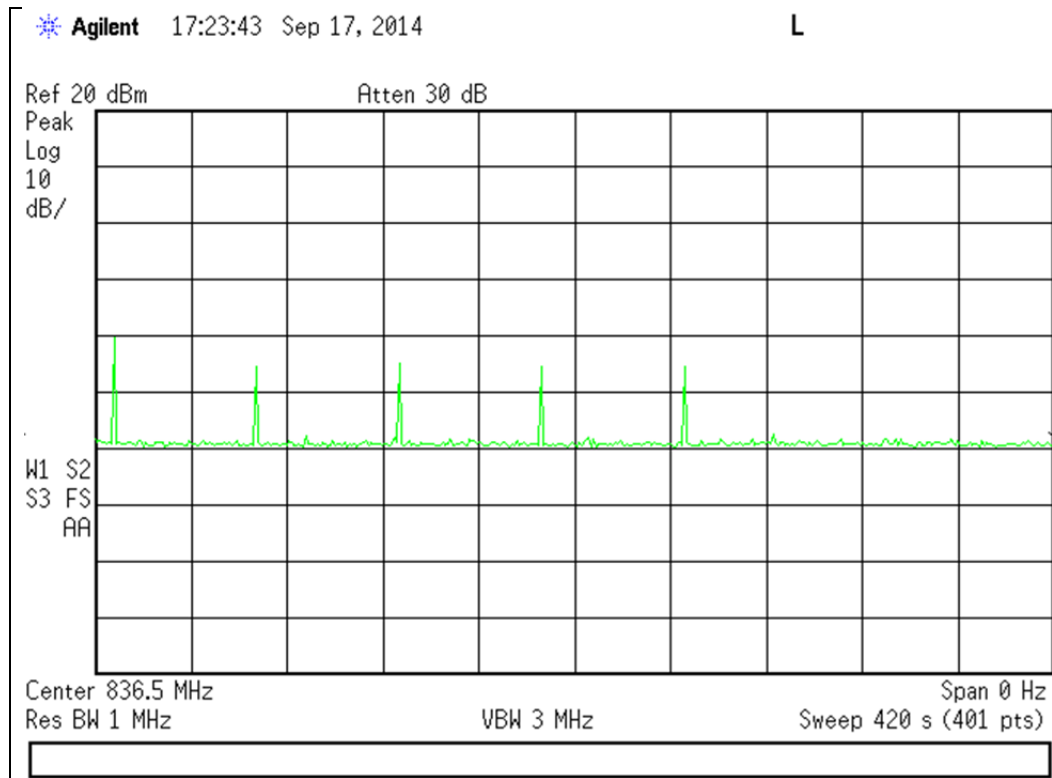


776 - 787 MHz Band

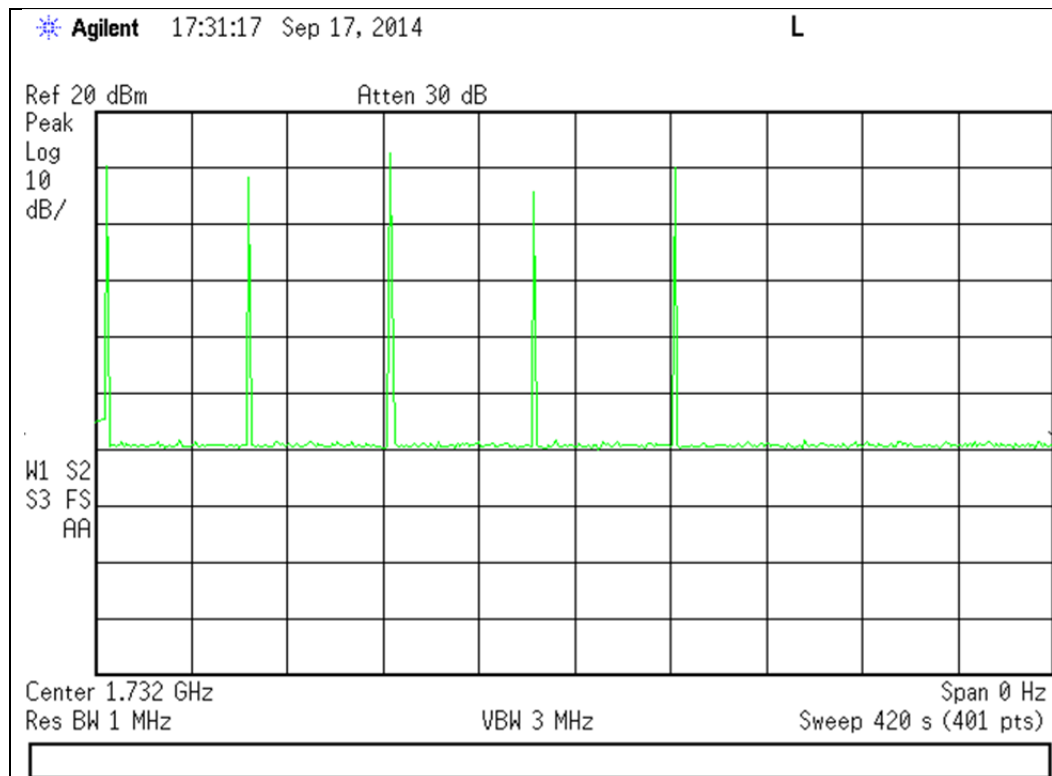




824 - 849 MHz Band

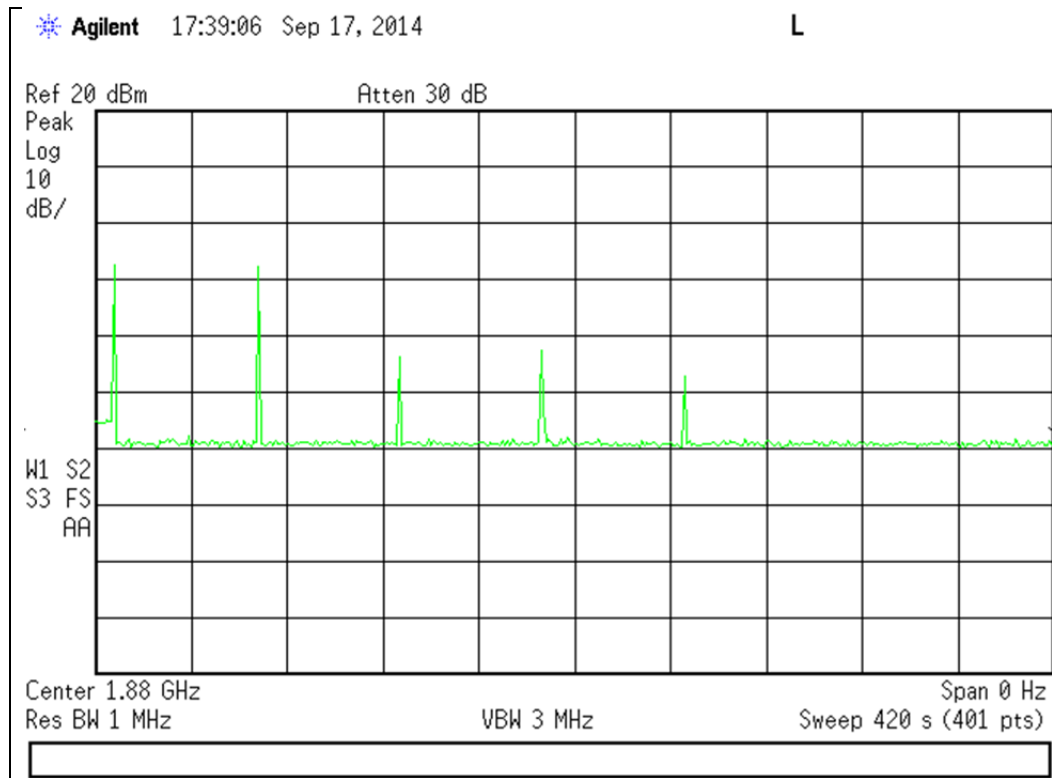


1710 - 1755 MHz Band



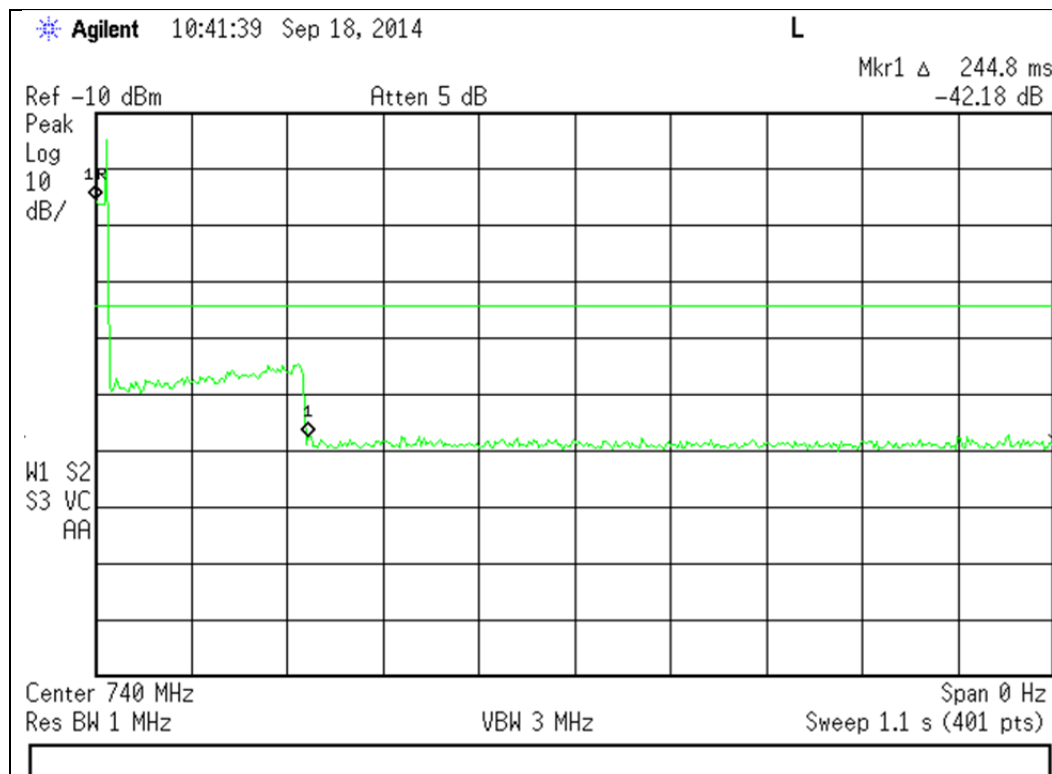


1850 - 1910 MHz Band



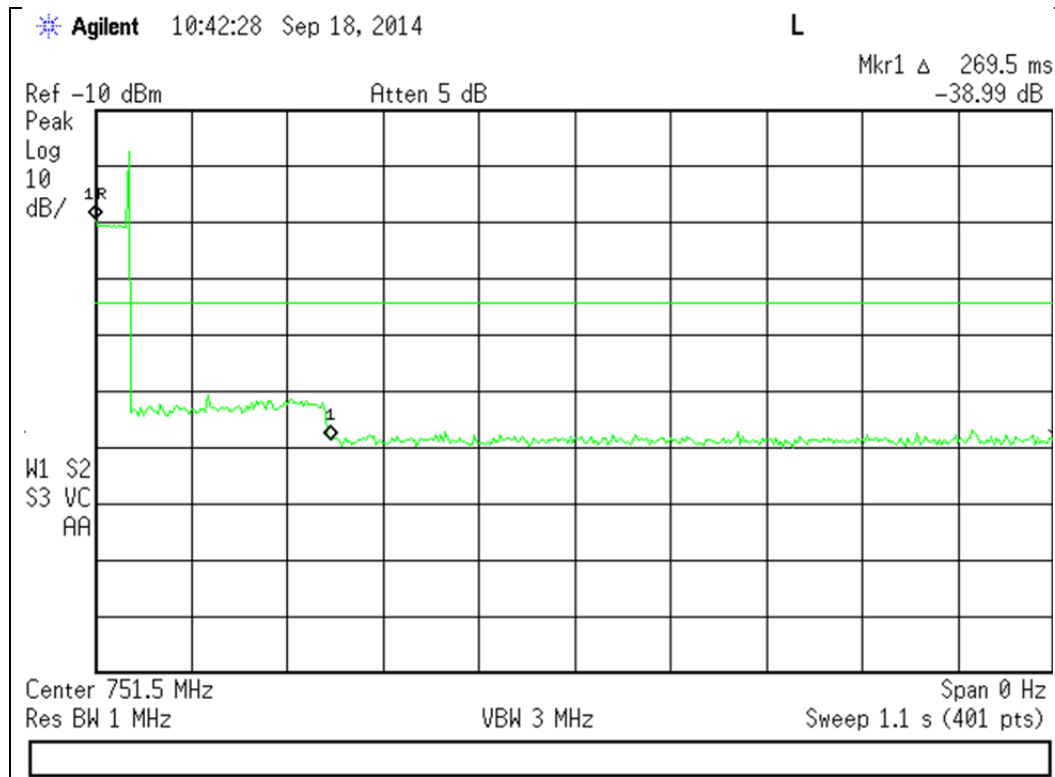
Downlink Detection Time Test Results

734 - 746 MHz Band

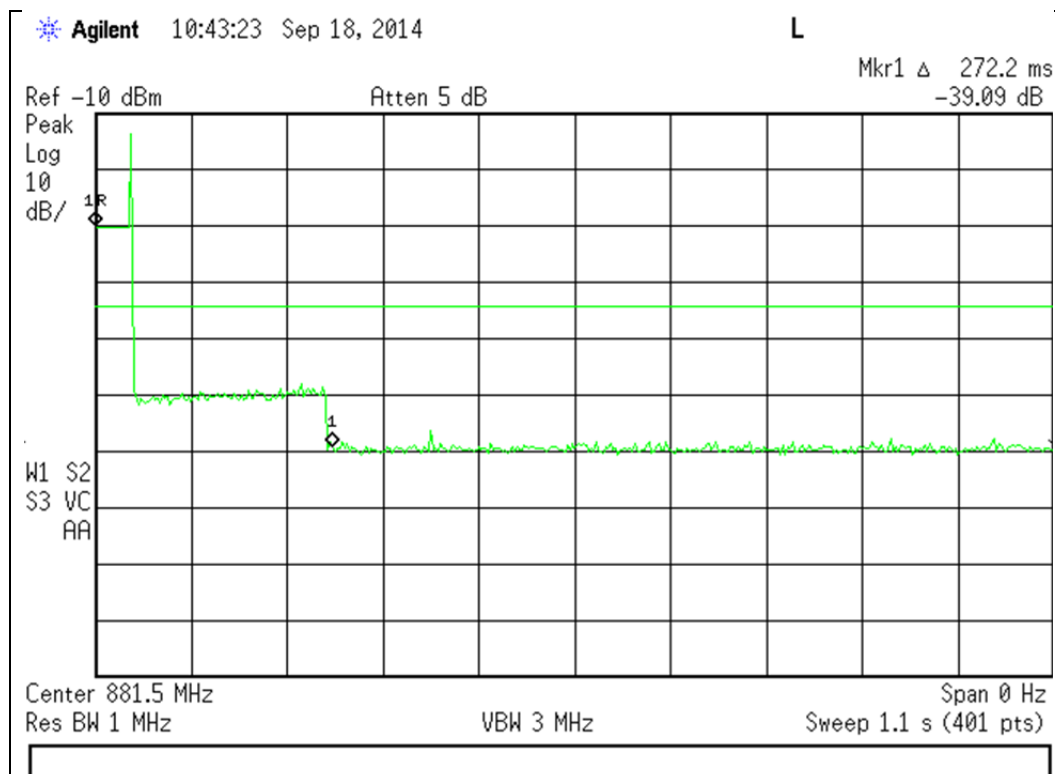




746 - 757 MHz Band



869 - 894 MHz Band





Agilent 10:44:31 Sep 18, 2014 L

Ref -10 dBm Atten 5 dB Mkr1 Δ 222.8 ms
Peak Log 10 dB/ -0.525 dB *

1R 1

W1 S2
S3 VC
AA

Center 1.96 GHz Span 0 Hz
Res BW 1 MHz VBW 3 MHz Sweep 1.1 s (401 pts)

Agilent 10:45:27 Sep 18, 2014 L

Ref -10 dBm Atten 5 dB Mkr1 Δ 228.3 ms
Peak Log 10 dB/ -8.373 dB *

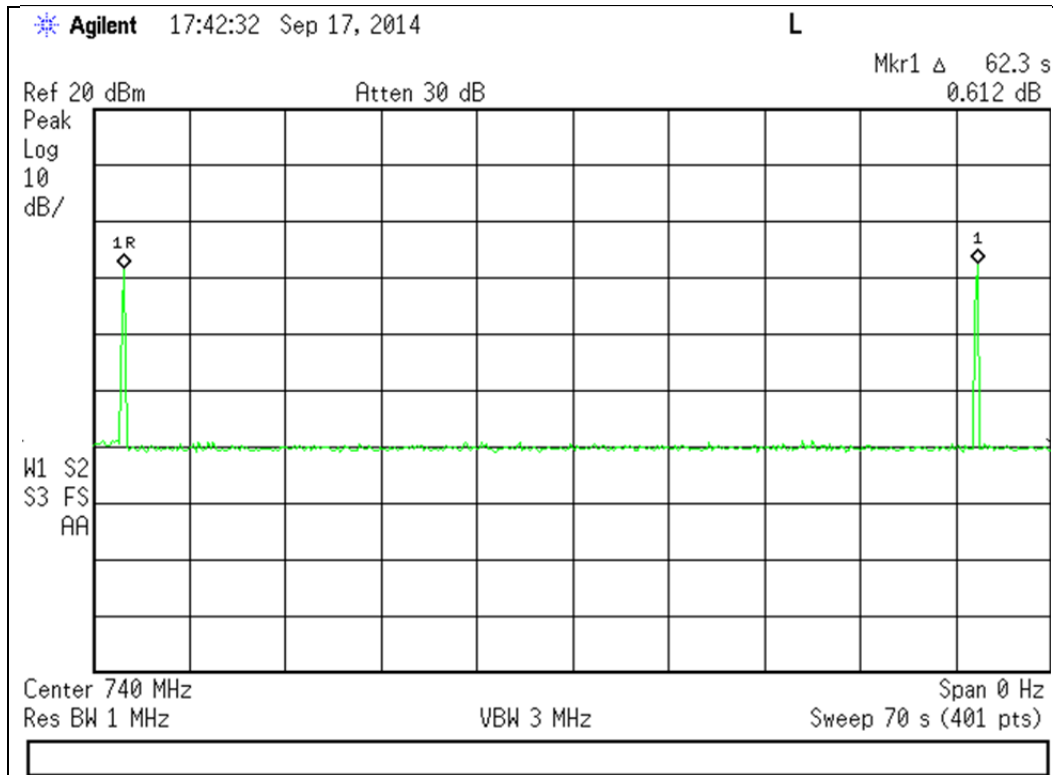
W1 S2
S3 VC
AA

Center 2.132 GHz Span 0 Hz
Res BW 1 MHz VBW 3 MHz Sweep 1.1 s (401 pts)

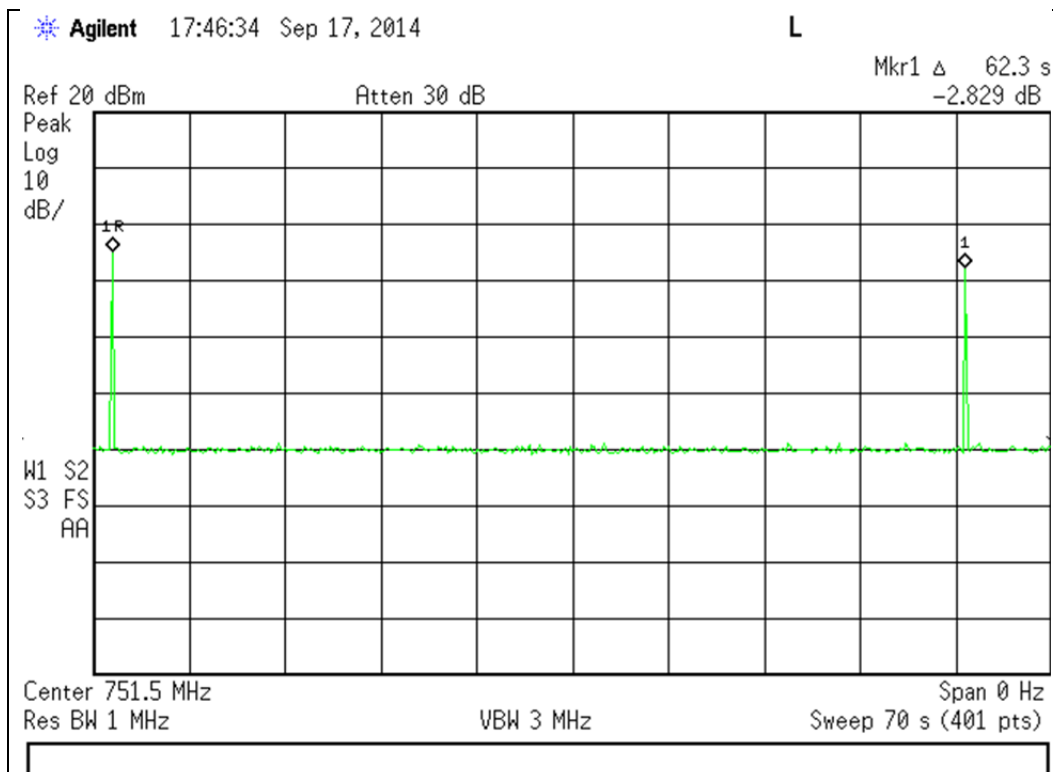


Downlink Restart Time Test Results

734 - 746 MHz Band

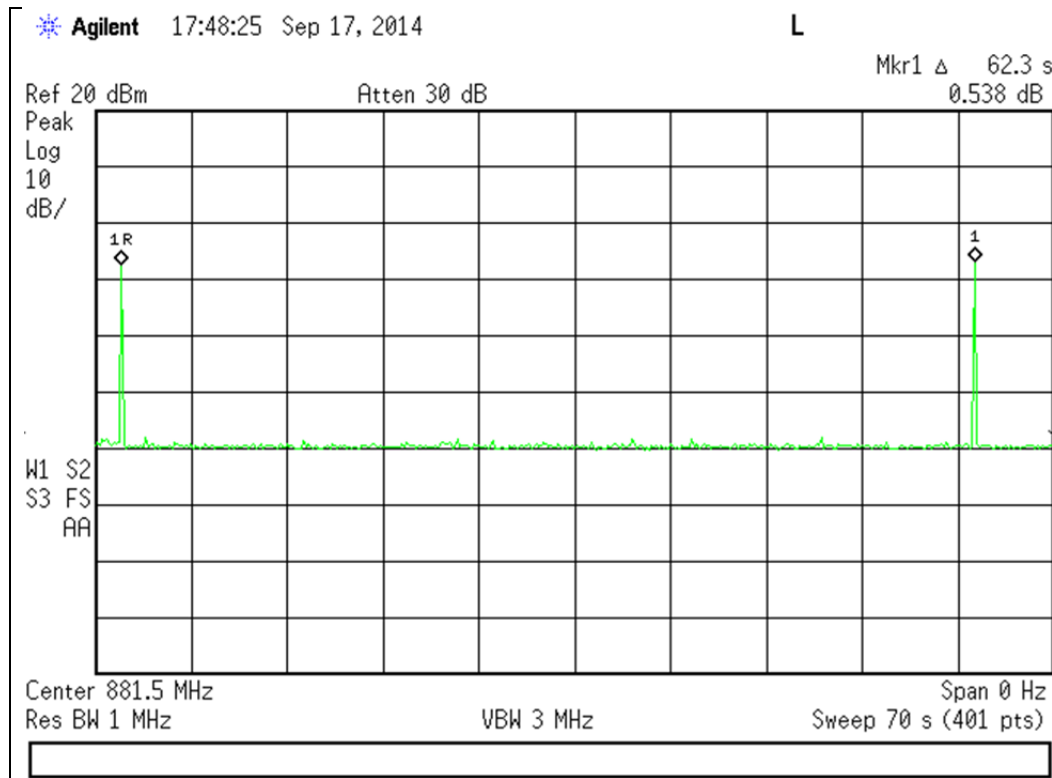


746 - 757 MHz Band

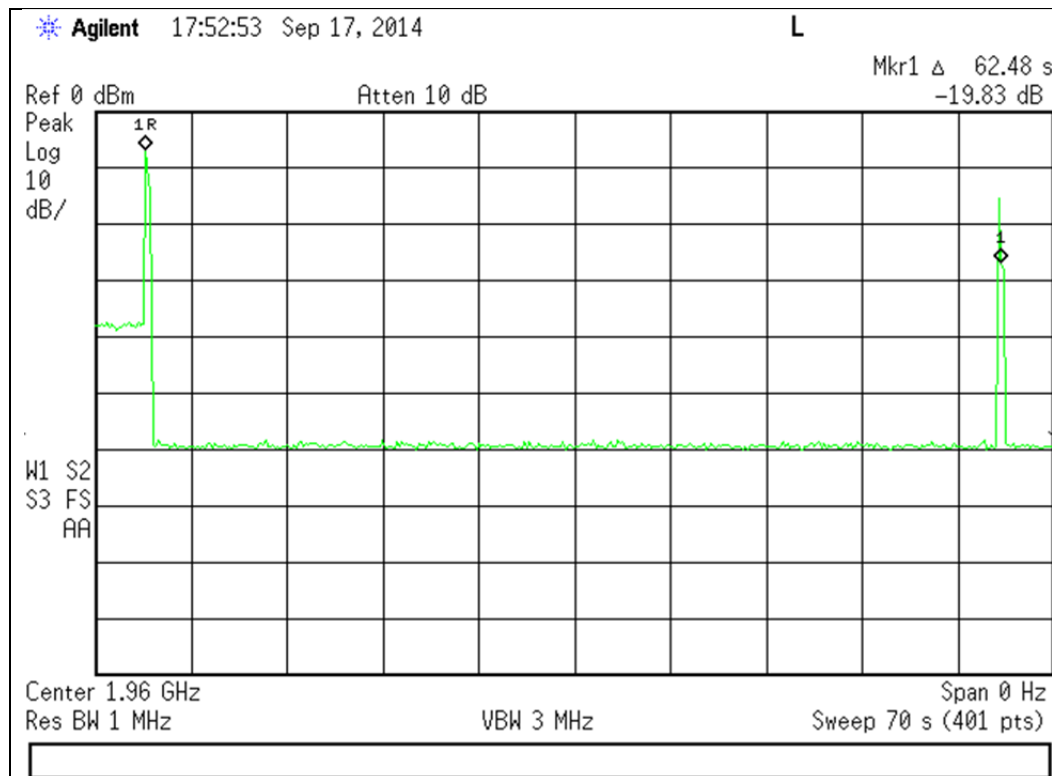




869 - 894 MHz Band

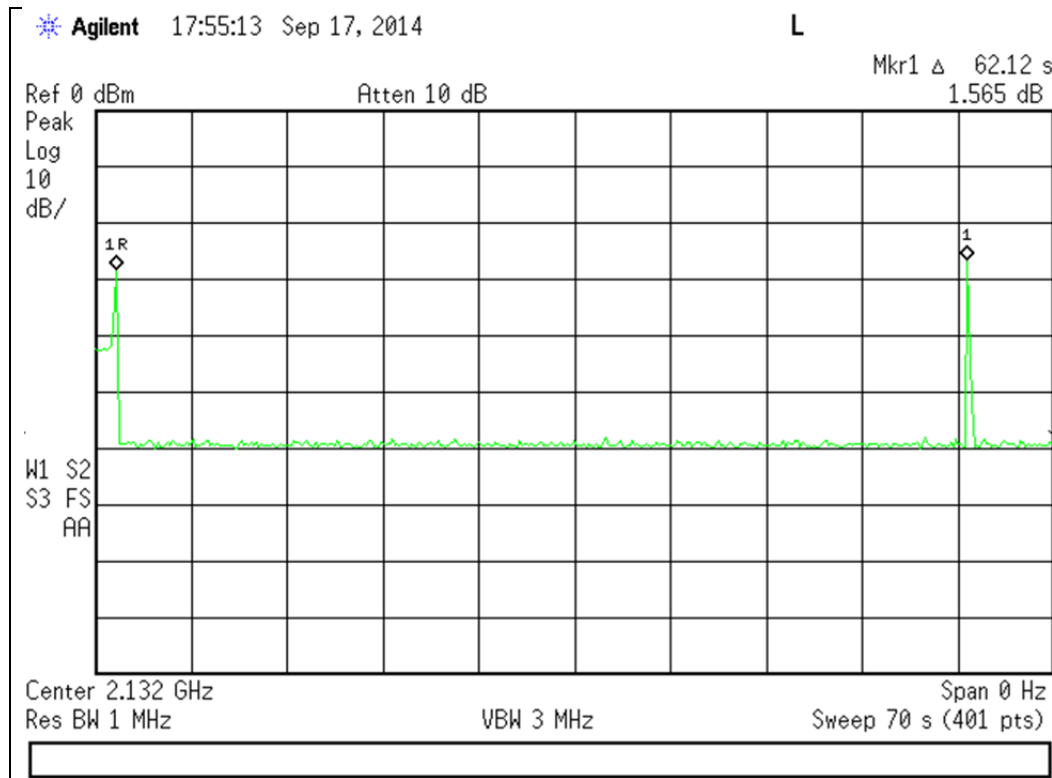


1930 - 1990 MHz Band



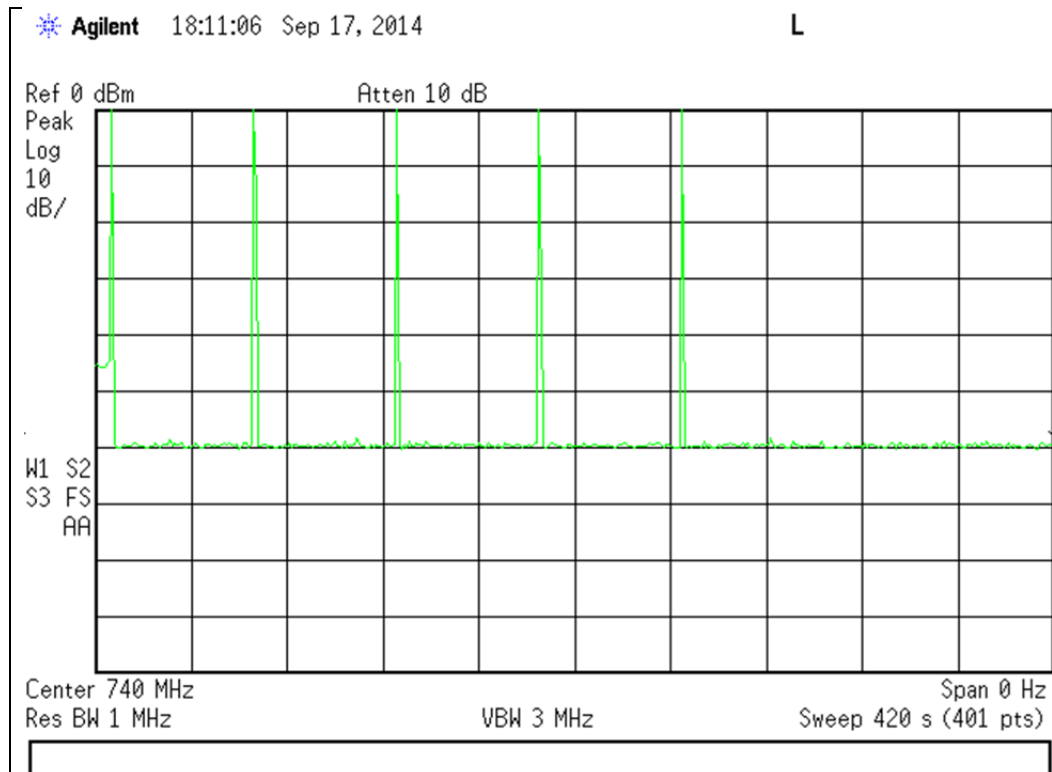


2110 - 2155 MHz Band



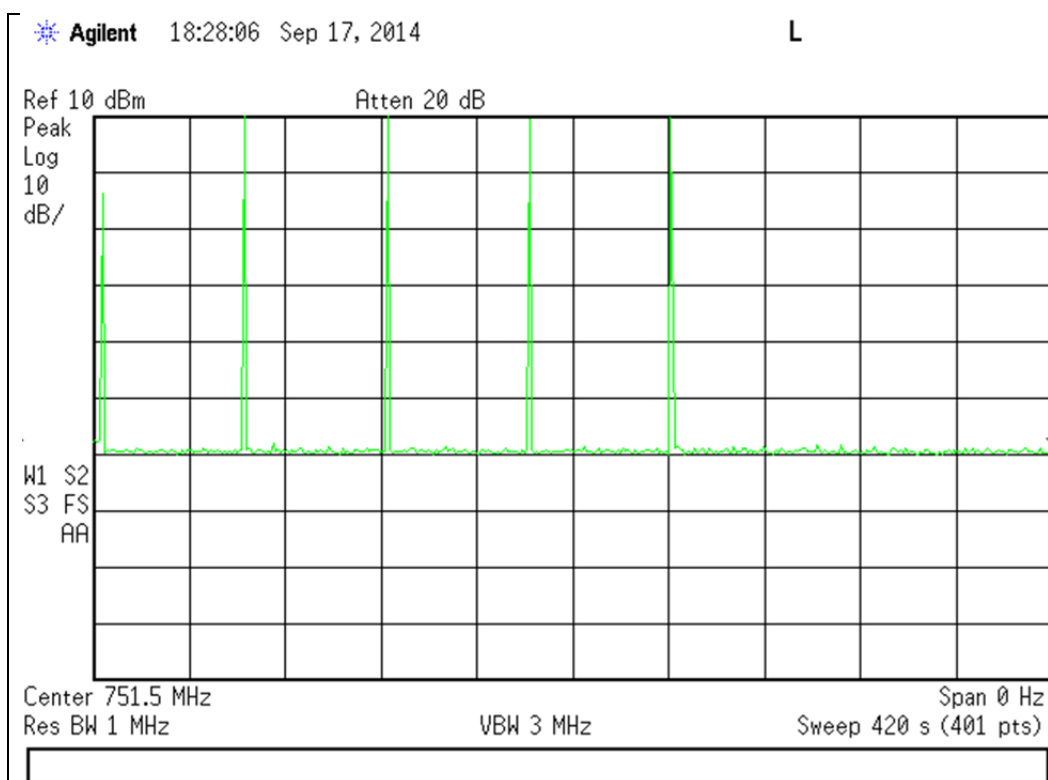
Downlink Restart Count Test Results

734 - 746 MHz Band

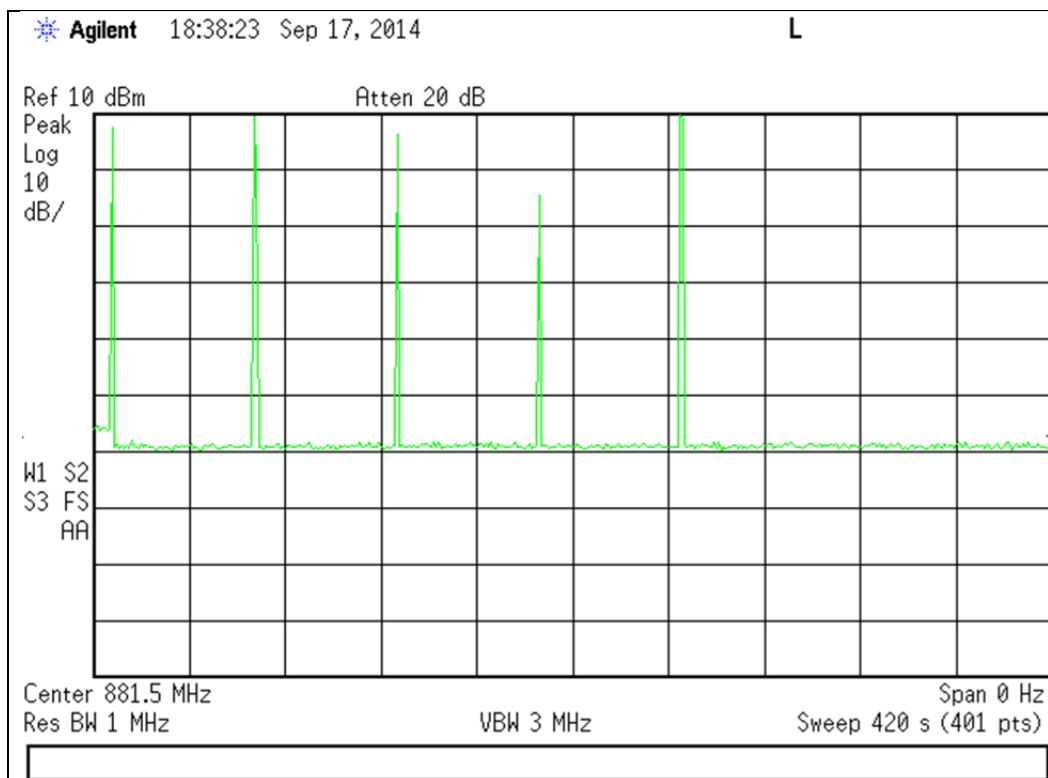




746 - 757 MHz Band

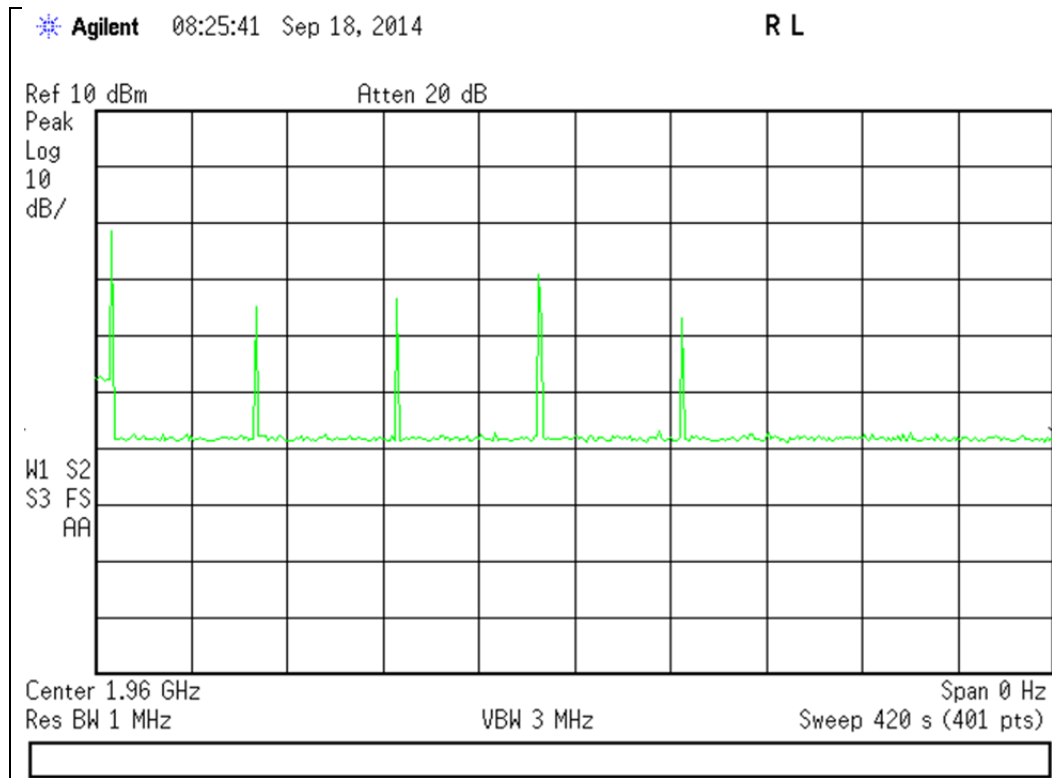


869 - 894 MHz Band

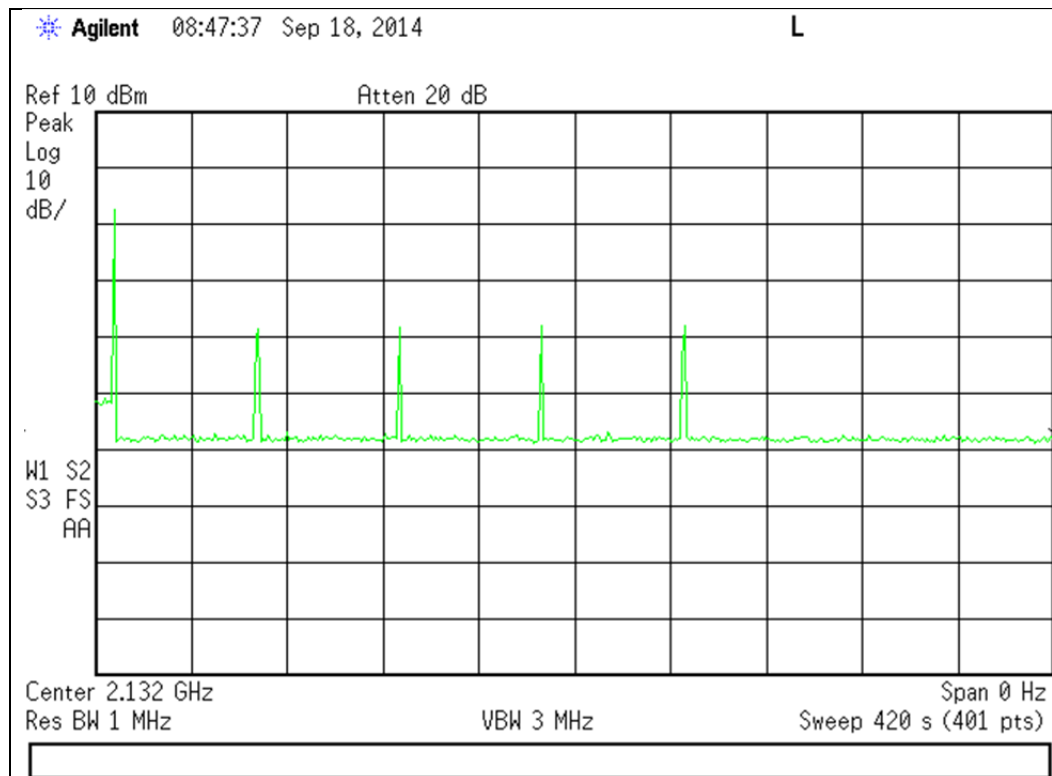




1930 - 1990 MHz Band



2110 - 2155 MHz Band





Radiated Spurious

Name of Test:

Radiated Spurious

Engineer: Mike Graffeo

Test Equipment Utilized:

i00271, i00379, i00349, i00334

Test Date: 9/18/14

Test Procedure

The EUT was tested in a semi-anechoic chamber with the turntable set 3m from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the requirements for Radiated Emissions. The EUT was tested by rotating it 360 degrees with the antenna in both the vertical and horizontal orientation while raised from 1 to 4 meters to ensure that the signal levels were maximized. All cable and antenna correction factors were input into the spectrum analyzer ensuring an accurate measurement in ERP/EIRP with the resultant power in dBm. A signal generator was used to provide a CW signal centered in each operational uplink and downlink band. The EUT output was terminated into a 50 Ohm non-radiating load.

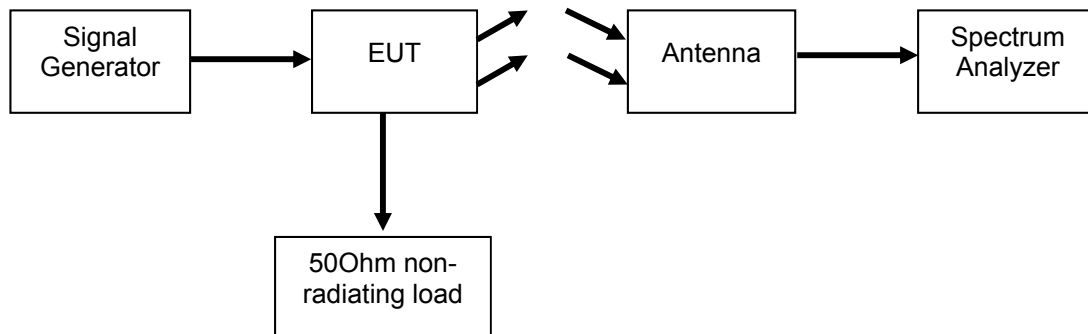
The following formula was used for calculating the limits:

Radiated Spurious Emissions Limit = $P_1 - (43 + 10\log(P_2)) = -13\text{dBm}$

P_1 = power in dBm

P_2 = power in Watts

Test Setup





Uplink Test Results

704 - 716 MHz Band 710 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
1420	-80.02	-13	Pass
2130	-79.17	-13	Pass
2840	-77.03	-13	Pass

776 - 787 MHz Band 781.5 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
1563	-81.77	-13	Pass
2344.5	-76.88	-13	Pass
3126	-77.13	-13	Pass

824 - 849 MHz Band 836.5 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
1673	-79.76	-13	Pass
2509.5	-77.11	-13	Pass
3346	-74.60	-13	Pass

1710 - 1755 MHz Band 1732.5 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
3465	-75.75	-13	Pass
5197.5	-75.65	-13	Pass
6930	-70.21	-13	Pass

1850 - 1910 MHz Band 1880.5 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
3761	-79.10	-13	Pass
5641.5	-74.46	-13	Pass
7522	-69.33	-13	Pass



Downlink Test Results

734 - 746 MHz Band 740 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
1480	-94.85	-13	Pass
2220	-94.47	-13	Pass
2960	-87.03	-13	Pass

746 - 757 MHz Band 751.5 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
1503	-92.68	-13	Pass
2254.5	-89.39	-13	Pass
3006	-89.53	-13	Pass

869 - 894 MHz Band 881.5 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
1763	-93.47	-13	Pass
2644.5	-94.42	-13	Pass
3526	-89.12	-13	Pass

1930 - 1990 MHz Band 1960 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
3920	-87.32	-13	Pass
5880	-84.07	-13	Pass
7840	-85.59	-13	Pass

2110 - 2155 MHz Band 2132.5 MHz Tuned Frequency

Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
4265	-87.52	-13	Pass
6397.5	-90.53	-13	Pass
8530	-82.20	-13	Pass

No other emissions were detected. All emissions were lower than -13 dBm.
All emissions were system noise floor.



Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Horn Antenna, Amplified	ARA	DRG-118/A	i00271	5/8/14	5/8/16
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	10/8/13	10/8/15
Humidity / Temp Meter	Newport	IBTHX-W-5	i00282	3/24/14	3/24/15
Voltmeter	Fluke	75III	i00320	3/24/14	3/24/15
EMI Analyzer	Agilent	E7405A	i00379	1/14/14	1/14/15
Non-radiating load	Termaline	8201	i00334	Verified on: 9/1/14	
Signal Generator	Rohde & Schwarz	SMU200A	i00405	12/11/13	12/11/14
RF Directional Coupler	Meca	CS06-1.500V	i00412	Verified on: 9/1/14	

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT

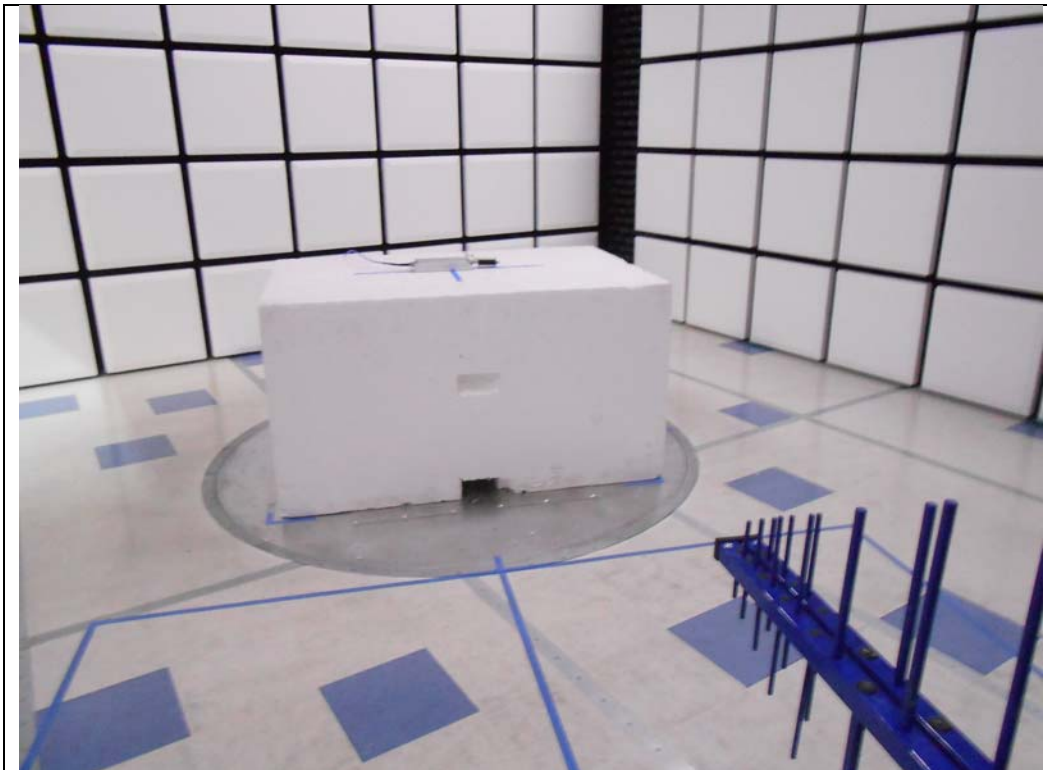


Test Setup Photos
FCC ID: OWWF10G-CPAL-AB-C

RF Radiated (1GHz and up testing)



RF Conducted (30MHz to 1GHz testing)





RF Conducted

