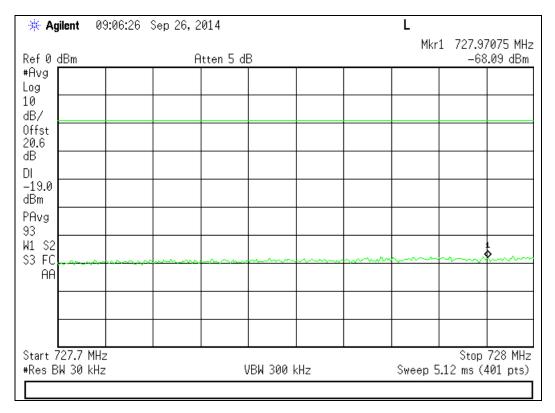


#### WCDMA Downlink Test Plots

#### 728 - 746 MHz Band

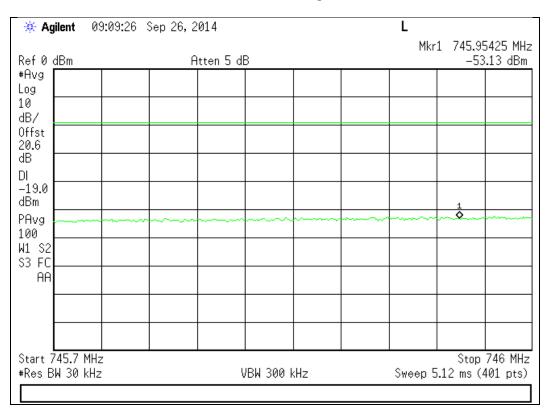
#### Lower Band Edge



Mkr1 746.008							
-56.5			В	ltten 5 d	A		Bm
	1						
							1 \$
man market and the second s	man	m		~~~~~~		~~~~	· em
Stop 746							46 MHz
Sweep 5.12 ms (40		kHz	/BW 300				√ 30 kHz



#### 746 - 757 MHz Band



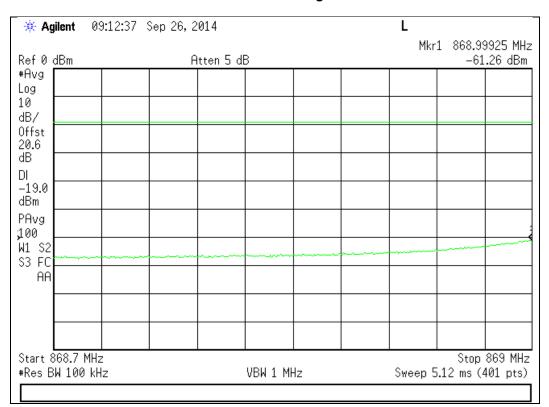
#### Lower Band Edge

Upper Band Edge

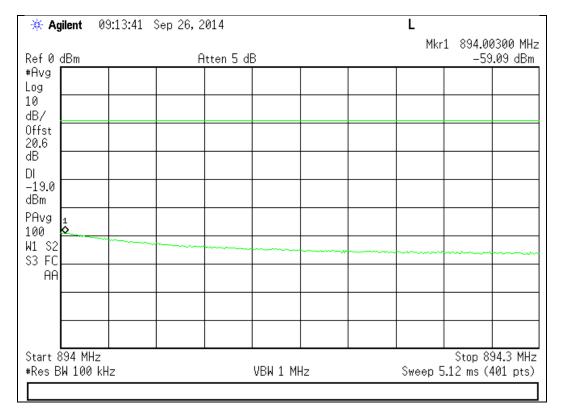
🔆 Agilent	09:11:01	Sep 26, 2014			L		
Ref 0 dBm		Atten 5	dB	_	Mkr		4475 MHz .58 dBm
#Avg Log 10 dB/ Offst 20.6 dB DI							
-19.0 dBm PAvg 100 W1 S2 S3 FC			1				
Start 757 M #Res BW 30			VBW 300	kHz	Sweep 5	Stop /: 5.12 ms (4	57.3 MHz 401 pts)



#### 869 - 894 MHz Band

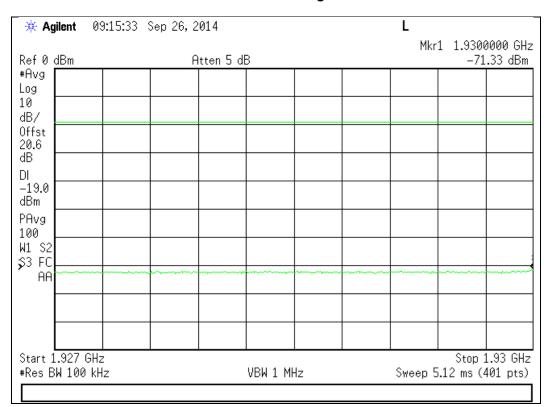


#### Lower Band Edge

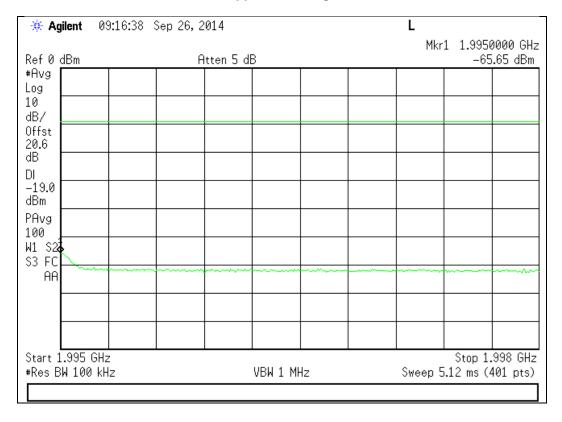




#### 1930 - 1995 MHz Band

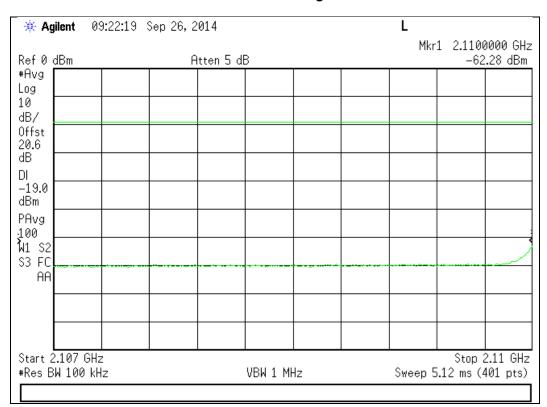


#### Lower Band Edge

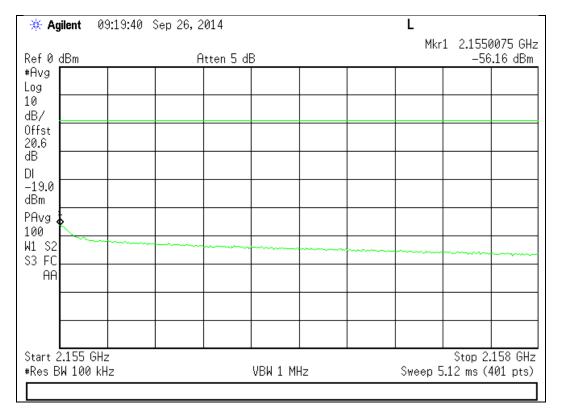




#### 2110 - 2155 MHz Band



#### Lower Band Edge





### Conducted Spurious Emissions Engineer: Mike Graffeo Test Date: 9/26/14

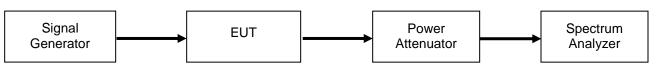
#### **Test Procedure**

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 needed to ensure accurate readings. A signal generator was utilized to produce a 4.1 MHz AWGN signal operating at the maximum allowable power. The conducted spurious emissions from 9 kHz to 10 times the highest tunable frequency for each operational band were measured (excluding the band defined by the Out of band emissions test). The emissions were plotted and the highest level was recorded in the summary table.

The following formulas are used for calculating the limits.

Conducted Spurious Emissions Limit = P1 - (43 + 10Log(P2)) = -13 dBmP1 = power in dBm P2 = power in Watts

#### **Test Setup**



#### **Uplink Test Results**

Frequency Band (MHz)	Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
698 - 716	716.1	-24.30	-13	Pass
776 - 787	787.1	-13.59	-13	Pass
824 - 849	2997.1	-39.56	-13	Pass
1710 - 1755	21928.9	-40.29	-13	Pass
1850 - 1915	5647.7	-39.49	-13	Pass

#### **Downlink Test Results**

Frequency Band (MHz)	Measured Frequency (MHz)	Measured Level (dBm)	Limit (dBm)	Result
728 - 746	2953.5	-40.29	-13	Pass
746 - 757	2997.8	-38.93	-13	Pass
869 - 894	2989	-38.87	-13	Pass
1930 - 1995	2997.3	-39.55	-13	Pass
2110 - 2155	7080.9	-41.08	-13	Pass



# For the 746 – 758 downlink and 776 – 788 Uplink bands of operation, the following additional spurious emissions requirements apply.

#### FCC 27.53(c)

For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

The test is performed using a 10 kHz RBW. Since the limit is referenced to a 6.25 kHz BW, the following correction factor is applied to the measured data.

BW correction Factor = 10Log B1/B2 BW correction Factor =10Log 6.25 / 10 = - 2.0 dB

Final Value (dBm) = conducted measurement +BW correction factor

Spurious Frequency Range (MHz)	Measured Frequency (MHz)	Measured Value (dBm)	Bandwidth Correction Factor (dB)	Final Value (dBm)	Limit (dBm)	Margin (dB)
763 – 775	774.95	-49.31	-2.0	-51.35	-35	-16.35
793 – 805	793.15	-60.39	-2.0	-62.43	-35	-27.43

#### 776 – 787 MHz Uplink Band

#### 746 - 757 MHz Downlink Band

Spurious Frequency Range (MHz)	Measured Frequency (MHz)	Measured Value (dBm)	Bandwidth Correction Factor (dB)	Final Value (dBm)	Limit (dBm)	Margin (dB)
763 – 775	763.36	-80.31	-2.0	-82.35	-35	-47.35
793 – 805	794.55	-78.12	-2.0	-80.16	-35	-45.16



#### FCC 27.53(e)

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Since the limit is referenced to EIRP, the final data is computed using the Conducted Spurious Emission data and adding the BW correction factor plus the final gain/loss data from the antenna kitting information supplied by the manufacturer.

For the Narrowband measurement, the test is performed using a 10 kHz RBW. Since the limit is referenced to a 700 Hz BW, the following correction factor is applied to the measured data.

BW correction Factor = 10Log B1/B2 BW correction Factor =10Log 700 / 10000 = -11.55 dB

Final Value (dBm) = conducted measurement +BW correction factor + final gain/loss from Antenna Kitting document

The Limit for discreet (narrowband) emissions is -80dBW (-50 dBm) in 700 MHz BW. The Limit for (wideband Emissions) is -70 dBW (-40 dBm) in a 1 MHz BW.

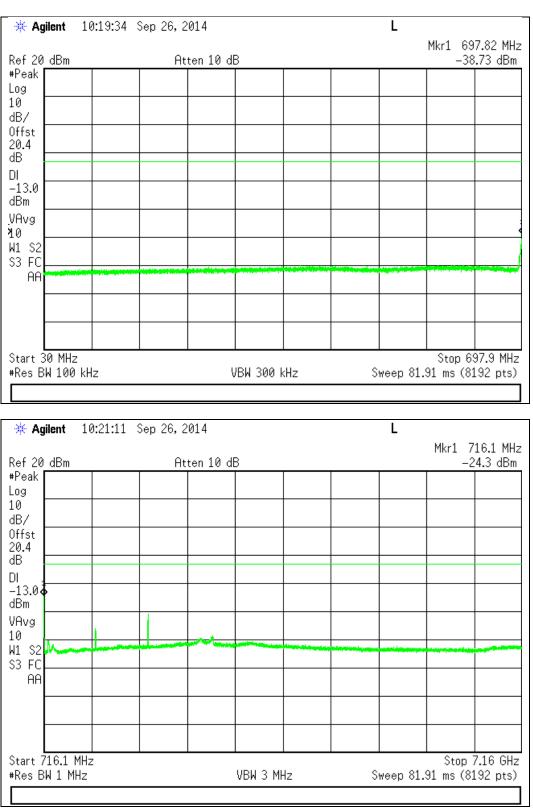
	776 – 787 MHz Uplink Band											
Spurious Frequency Range (MHz)	Measured Frequency (MHz)	Measured Value (dBm)	Final Value (dBm)	Limit (dBm)	Margin (dB)							
1559 – 1610 (Wideband)	1563.1	-47.10	0	-5.09	-52.19	-40	-12.19					
1559 – 1610 (Narrowband)	1563.8	-66.21	-11.55	-5.09	-82.85	-50	-32.85					

#### 746 - 757 MHz Downlink Band

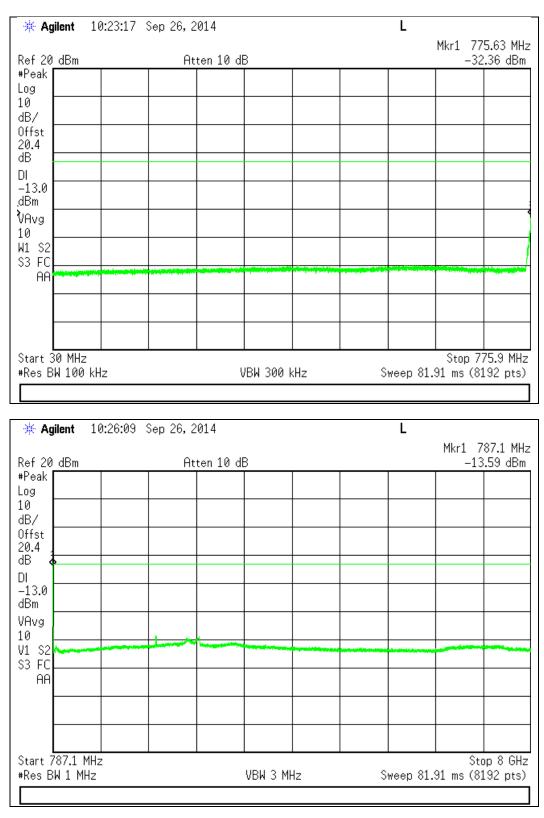
Spurious Frequency Range (MHz)	Measured Frequency (MHz)	Measured Value (dBm)	Bandwidth Correction Factor (dB)	Gain/Loss from Antenna Kitting information (dB)	Final Value (dBm)	Limit (dBm)	Margin (dB)
1559 – 1610 (Wideband)	1609.8	-57.74	0	-5.09	-62.83	-40	-22.83
1559 – 1610 (Narrowband)	1566.6	-77.58	-11.55	-5.09	-94.22	-50	-44.22



#### **Uplink Test Plots**

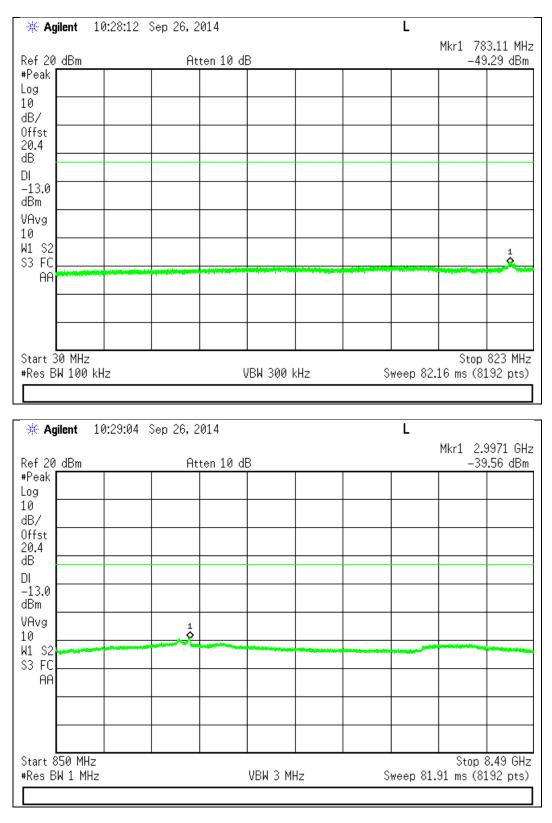


698 - 716 MHz Band



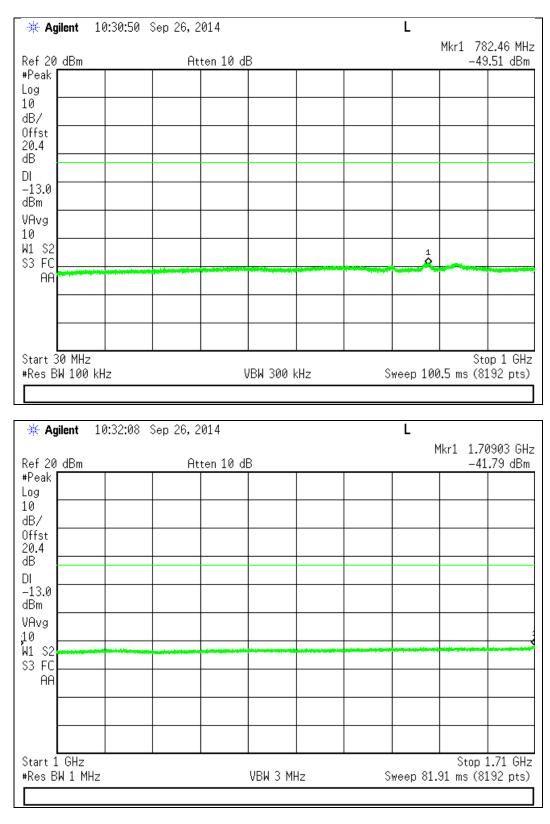
776 - 787 MHz Band





824 - 849 MHz Band





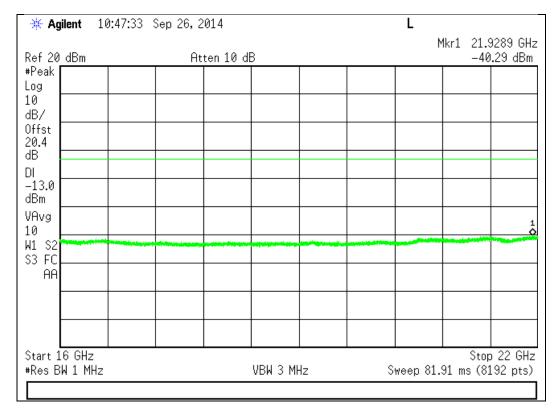
1710 - 1755 MHz Band



	04 Sep 26, 2	014			L		
Ref 20 dBm	Att	:en 10 dB					4698 GHz L.69 dBm
#Peak							
Log 10						+	
dB/ Offst				_			
20.4							
dB							
-13.0 dBm							
VAvg				-			
10							
W1 S2 S3 FC							
AA							
				_			
Start 1.755 GHz						St	op 8 GHz
#Res BW 1 MHz		VBW	3 MHz	S	weep 81	.91 ms (8	
 <b>* Agilent</b> 10:46:	52 Sep 26, 2	014			L		
_					-	Mkr1 8.	1680 GHz
Ref 20 dBm	Att	en 10 dB:					
#Peak I						-42	2.04 dBm
#Peak Log						-42	
Log 10						-42	
Log 10 dB/ Offst						-42	
Log 10 dB/						-42	
Log 10 dB/ Offst 20.4 dB DI						-4	
Log 10 dB/ Offst 20.4 dB DI -13.0 dBm							
Log 10 dB/ Offst 20.4 dB DI -13.0 dBm VAvg 10 1							
Log 10 dB/ Offst 20.4 dB DI -13.0 dBm VAvg 10 W1 S2							
Log 10 dB/ Offst 20.4 dB DI -13.0 dBm VAvg 10 W1 S2 S3 FC							
Log 10 dB/ Offst 20.4 dB DI -13.0 dBm VAvg 10 W1 S2							
Log 10 dB/ Offst 20.4 dB DI -13.0 dBm VAvg 10 W1 S2 S3 FC							
Log 10 dB/ Offst 20.4 dB DI -13.0 dBm VAvg 10 W1 S2 S3 FC AA							2.04 dBm
Log 10 dB/ Offst 20.4 dB DI -13.0 dBm VAvg 10 W1 S2 S3 FC			3 MHz				2.04 dBm

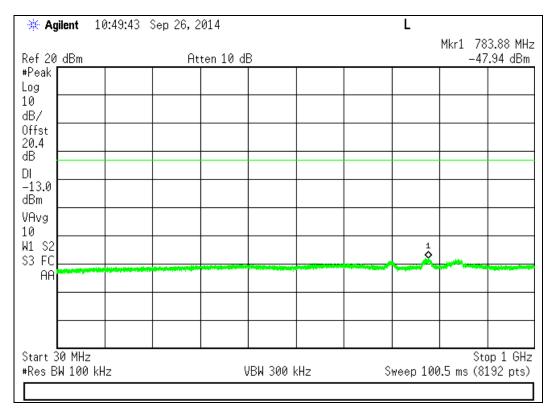
# 1710 - 1755 MHz Band (cont)



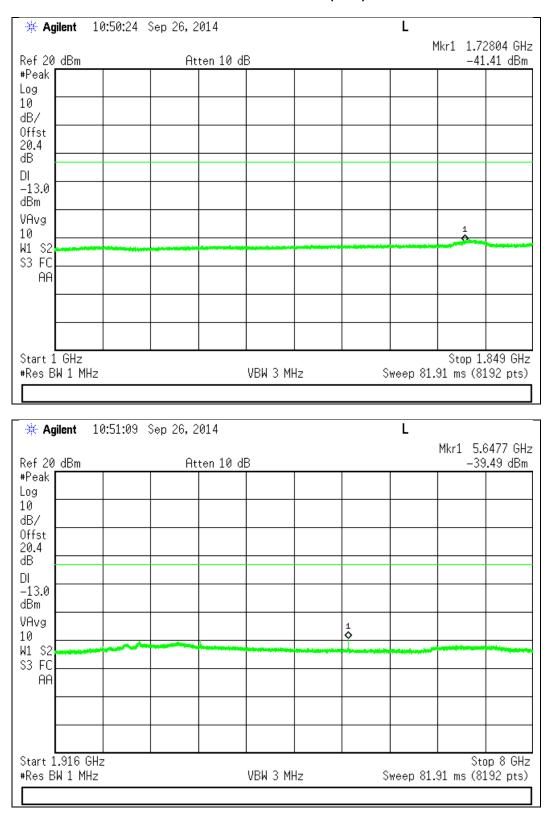


#### 1710 - 1755 MHz Band (cont)

#### 1850 - 1915 MHz Band

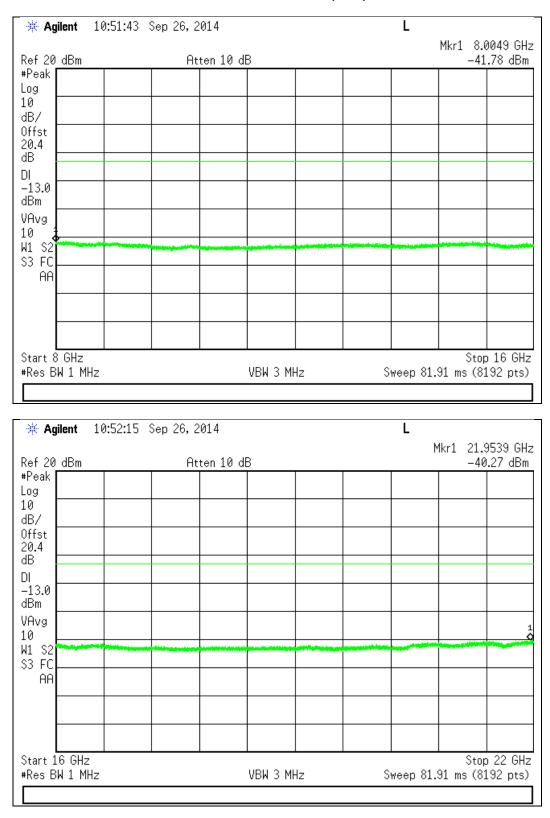






#### 1850 - 1915 MHz Band (cont)

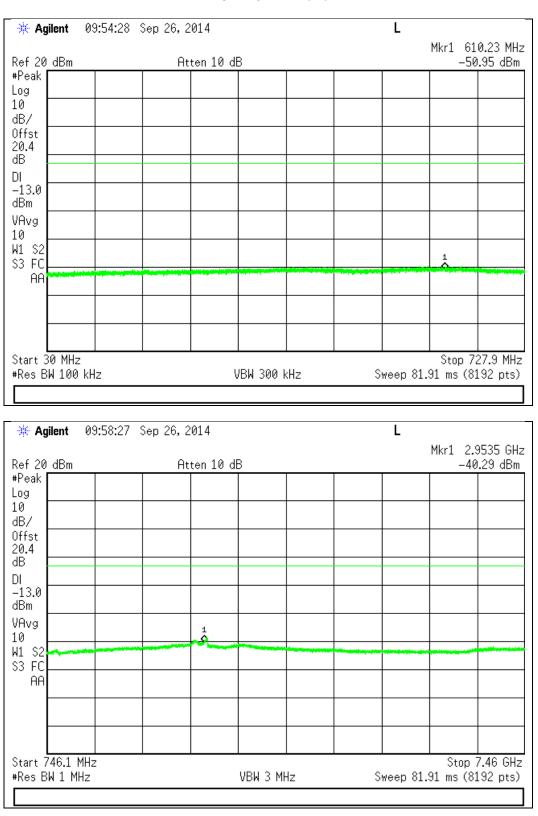




#### 1850 - 1915 MHz Band (cont)

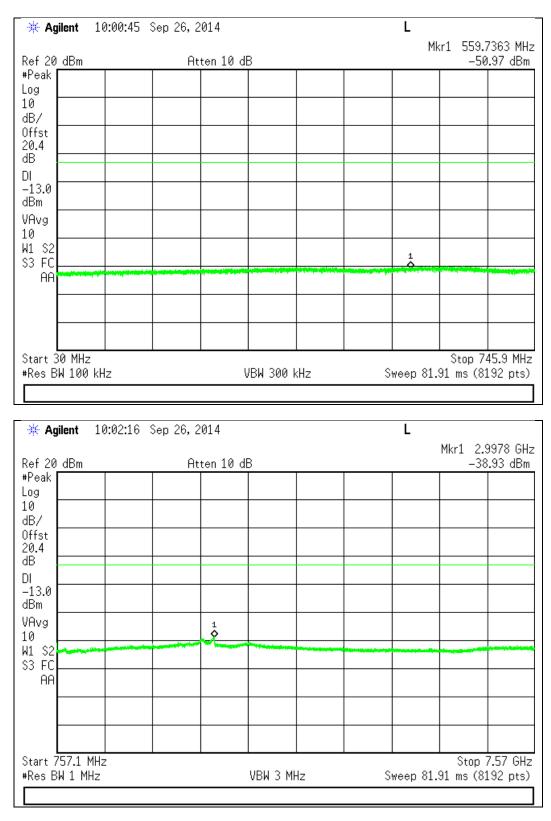


#### **Downlink Test Plots**



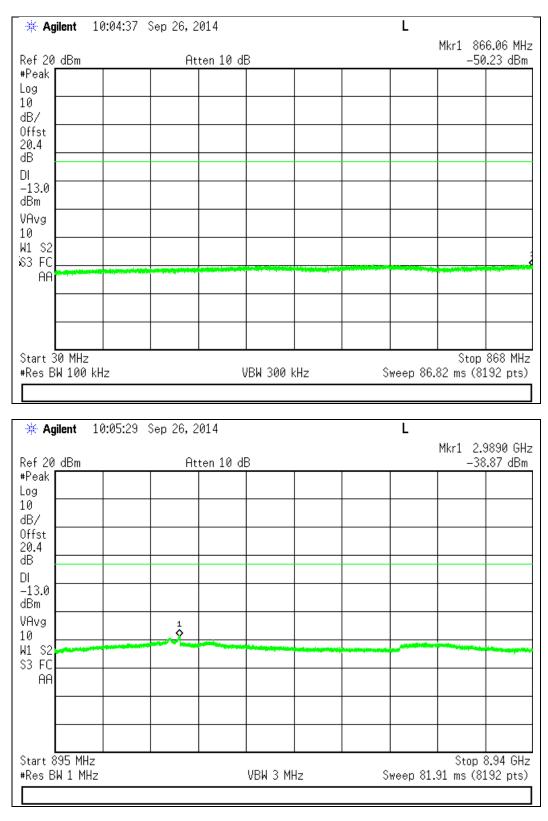
#### 728 - 746 MHz Band





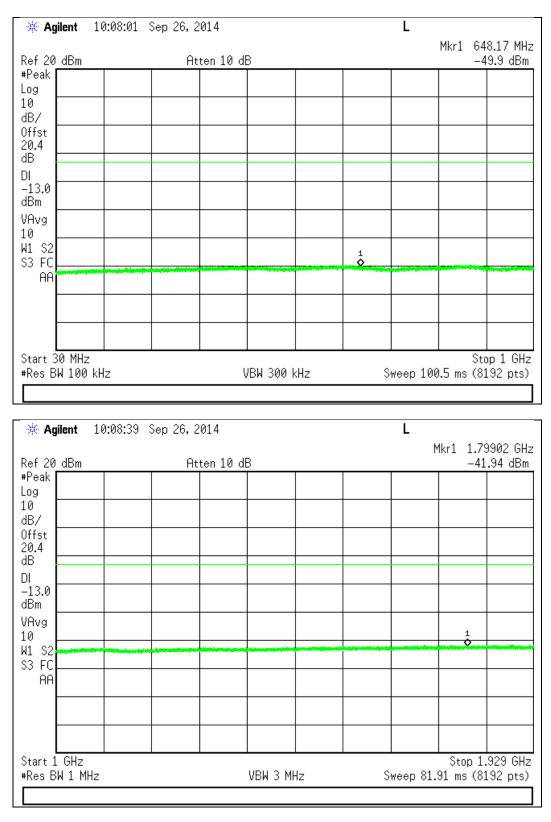
746 - 757 MHz Band





869 - 894 MHz Band





#### 1930 - 1995 MHz Band



Agilent 10:03	9:38 Sep 26,	2014		L		
20 dBm	c	Atten 10 dB		٢	1kr1 2.99 _3	97277 ( 9.55 df
ak 🛛 👘					-3	<u> u</u>
t						
,						
.0					-	
g						
\$2 <b></b>				 		-
FC				 		
AA						
t 1.996 GHz	·					op 8 G
		1	/BW 3 MHz	Sweep 81	91 ms (8	3192 pt
s BW 1 MHz						
s BW 1 MHz	):30 Sep 26,					
s BW 1 MHz	0:30 Sep 26,			 L	Mkr1 8	.1445 (
s BW 1 MHz <b>Agilent</b> 10:10 20 dBm				 L	Mkr1 8	
BW 1 MHz		2014		L		
s BW 1 MHz <b>Agilent</b> 10:10 20 dBm		2014		L		
BW 1 MHz Agilent 10:10 20 dBm ak		2014		L		
BW 1 MHz  Agilent 10:10 20 dBm ak		2014		L		
BW 1 MHz Agilent 10:10 20 dBm ak		2014		L		1445 ( 1.03 df
BW 1 MHz  Agilent 10:10 20 dBm ak		2014		L		
BW 1 MHz  Agilent 10:10  20 dBm  k  k  .0		2014		L		
BW 1 MHz  Agilent 10:10 20 dBm ak		2014		L		
BW 1 MHz  Agilent 10:10 20 dBm ak		2014		L		
BW 1 MHz  Agilent 10:10 20 dBm ak .0 9 1 52		2014		L		
Agilent 10:10		2014		L		
BW 1 MHz  Agilent 10:10 20 dBm ak .0 9 1 52		2014		L		
Agilent 10:10		2014		L		
Agilent 10:10		2014				
Agilent 10:10		2014				
Agilent 10:10		2014	/BW 3 MHz		-4	1.03 d

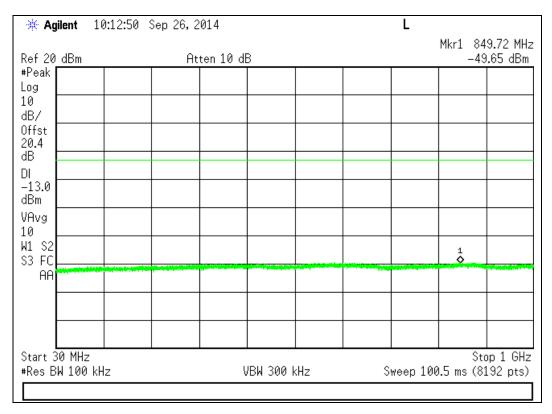
1930 - 1995 MHz Band (cont)



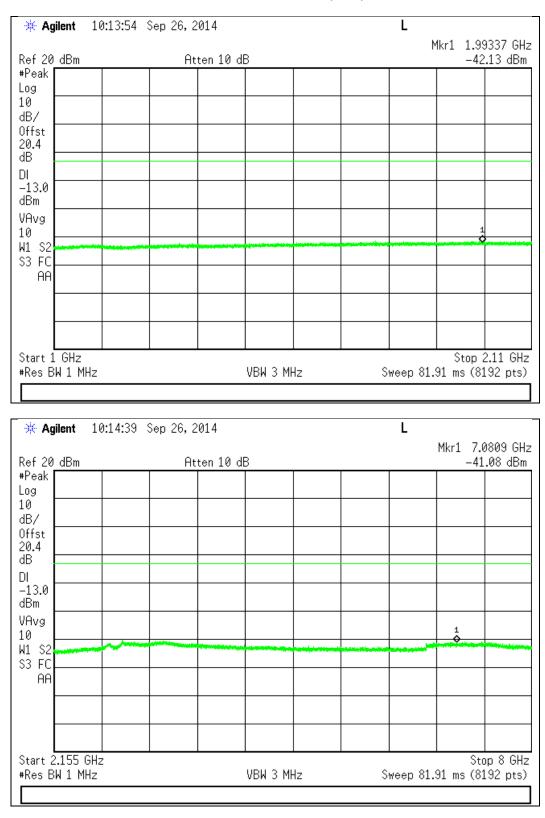
🔆 🔆 Agilent	10:11:09	Sep 26, 2014				L		
Ref 20_dBn	n	Atten 10	dB			1		1.9736 GHz 40.93 dBm
#Peak								
Log 10		+ +						+
dB/								
Offst								
20.4 dB								
DI								
-13.0								
dBm VAvg								+
.10								1
W1 S2								
\$3 FC		+ + +						
AA								
		+						+
Start 16 G						~		op 22 GHz
#Res BW 1	MHZ		VBW 3 M	Hz	S	weep 81.	91 ms(	8192 pts)

#### 1930 - 1995 MHz Band (cont)

#### 2110 - 2155 MHz Band

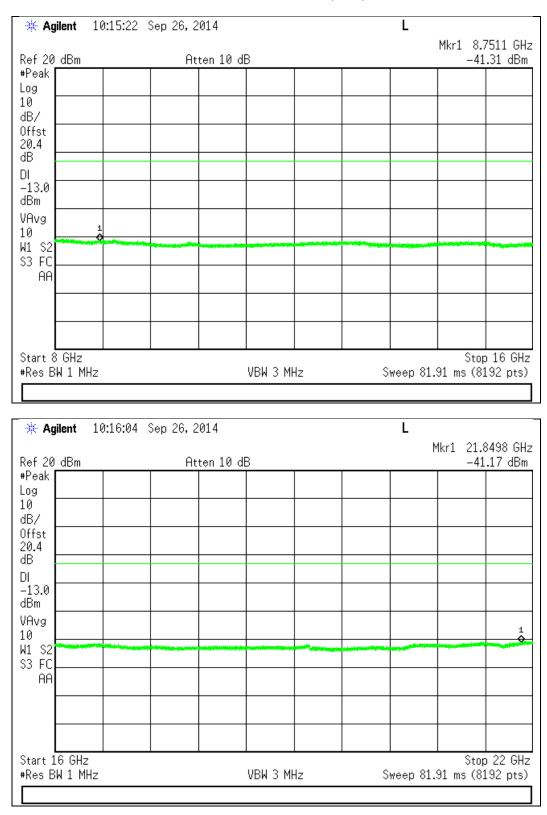






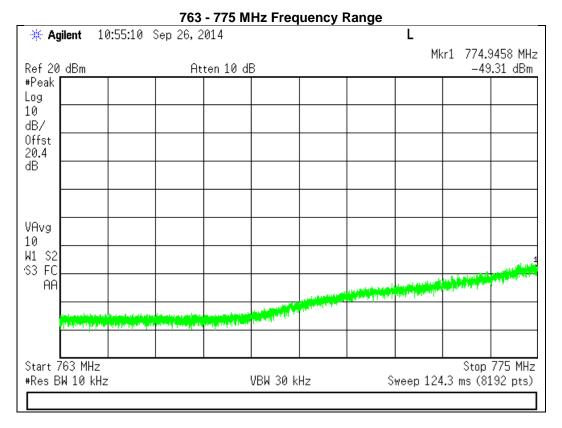
#### 2110 - 2155 MHz Band (cont)





2110 - 2155 MHz Band (cont)



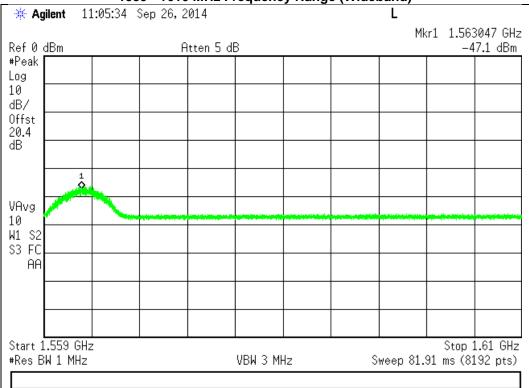


#### 776 – 787 MHz Uplink Test Plots for the

#### 793 - 805 MHz Frequency Range

🔆 🔆 Aç	gilent	10:5	7:25	Sep 26, 2	014			-	L		
Ref 20	dBm			At	ten 10 dl	В			М		1494 MHz ).39 dBm
#Peak Log											
10											
dB/ Offst											
20.4 dB											
VAvg 10											
W1 S2											
S3 FC AA											
	<b>Öhy</b>										
					e da te le ar let	a an	And the State Street of				
										Ĺ	
Start 3 #Res B						VBW 30 k	Hz	S	weep 12	Stop 4.3 ms (8	805 MHz 192 pts)

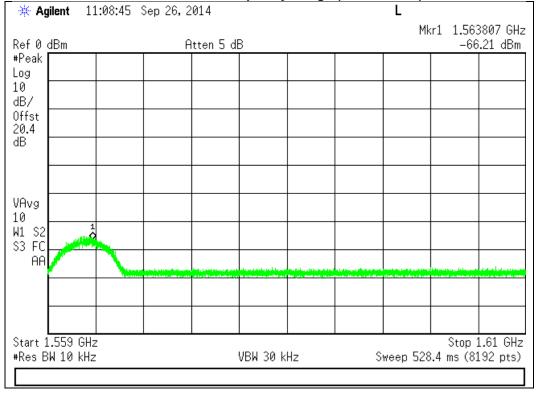




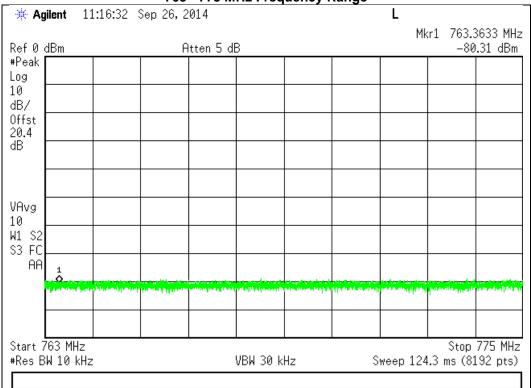
#### 776 – 787 MHz Uplink Test Plots for the



1559 - 1610 MHz Frequency Range (Narrowband)



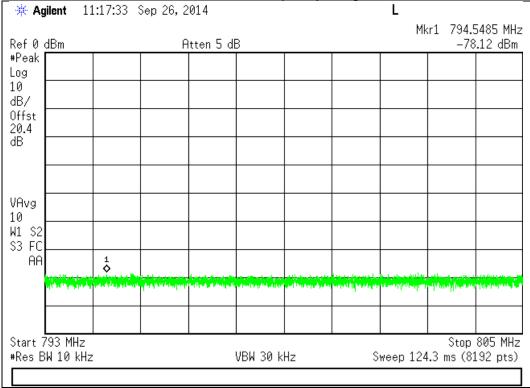




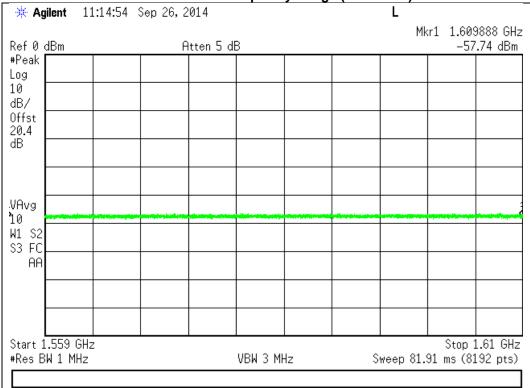
#### 746 - 757 MHz Downlink Test Plots for the



#### 793 - 805 MHz Frequency Range



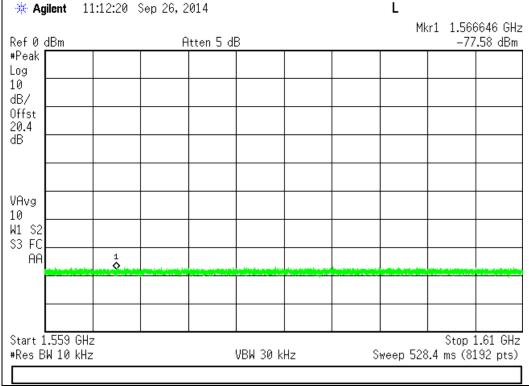




#### 746 – 757 MHz Downlink Test Plots for the



# 1559 - 1610 MHz Frequency Range (Narrowband)





Noise Limits Engineer: Mike Graffeo Test Date: 9/26/14

#### **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 tests were performed: the maximum uplink and downlink noise, the variable noise for the uplink and 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.

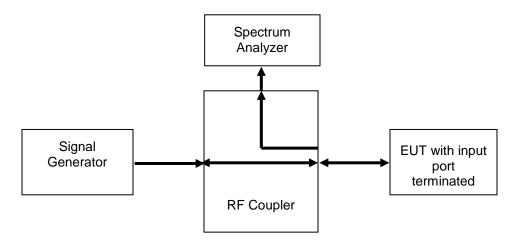
For Mobile installations the Noise limit is fixed at -59 dBm.

#### **Test Setup**

#### Maximum Noise Power



#### Variable Uplink Noise Power and Timing



Frequency Band (MHz)	Measured Noise (dBm)	Limit (dBm)	Margin (dB)	Result
698 - 716	-59.4	-59.0	-0.4	Pass
776 - 787	-59.3	-59.0	-0.3	Pass
824 - 849	-59.3	-59.0	-0.3	Pass
1710 - 1755	-59.6	-59.0	-0.6	Pass
1850 - 1915	-59.3	-59.0	-0.3	Pass

#### Maximum Uplink Noise Test Results

# Maximum Downlink Noise Test Results

Frequency Band (MHz)	Measured Noise (dBm)	Limit (dBm)	Margin (dB)	Result
728 - 746	-59.8	-59.0	-0.8	Pass
746 - 757	-59.8	-59.0	-0.8	Pass
869 - 894	-59.7	-59.0	-0.7	Pass
1930 - 1995	-60.5	-59.0	-1.5	Pass
2110 - 2155	-60.2	-59.0	-1.2	Pass

# **Uplink Noise Timing Test Results**

Frequency Band (MHz)	Measured Timing (mS)	Limit (mS)	Result
698 - 716	99.00	1000.0	Pass
776 - 787	112.70	1000.0	Pass
824 - 849	13.75	1000.0	Pass
1710 - 1755	5.500	1000.0	Pass
1850 - 1915	5.500	1000.0	Pass

#### Variable Uplink Noise Limit Test Results

	698 - 716 MHZ										
RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)								
-35.0	-68.0	-72.2	-4.2								
-34.0	-69.0	-72.2	-3.2								
-52.0	-59.0	-62.2	-3.2								
-55.0	-59.0	-61.2	-2.2								
-54.0	-59.0	-61.2	-2.2								
-53.0	-59.0	-61.2	-2.2								

#### 698 - 716 MHz

#### 776 - 787 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-35.0	-68.0	-70.3	-2.3
-34.0	-69.0	-70.3	-1.3
-55.0	-59.0	-60.3	-1.3
-54.0	-59.0	-60.3	-1.3
-53.0	-59.0	-60.3	-1.3
-52.0	-59.0	-60.3	-1.3

#### 824 - 849 MHz

	-		
RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-35.0	-68.0	-71.4	-3.4
-34.0	-69.0	-71.4	-2.4
-56.0	-59.0	-60.3	-1.3
-59.0	-59.0	-60.1	-1.1
-58.0	-59.0	-60.1	-1.1
-57.0	-59.0	-60.1	-1.1

#### 1710 - 1755 MHz

RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-35.0	-68.0	-72.5	-4.5
-34.0	-69.0	-72.5	-3.5
-54.0	-59.0	-60.3	-1.3
-53.0	-59.0	-60.3	-1.3
-52.0	-59.0	-60.3	-1.3
-51.0	-59.0	-60.3	-1.3

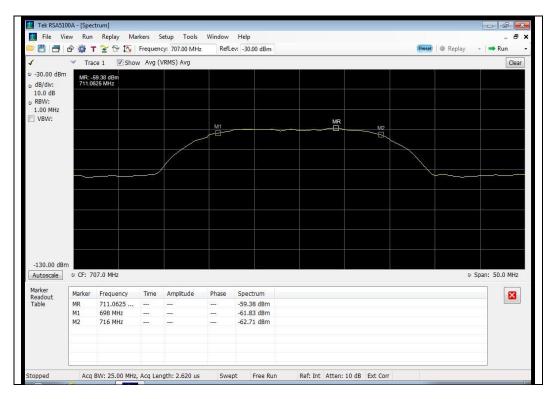
#### 1850 - 1915 MHz

	1000		
RSSI (dBm)	Noise Limit (dBm)	Measured Noise (dBm)	Margin (dB)
-35.0	-68.0	-73.6	-5.6
-34.0	-69.0	-73.6	-4.6
-54.0	-59.0	-61.1	-2.1
-53.0	-59.0	-61.1	-2.1
-52.0	-59.0	-61.1	-2.1
-51.0	-59.0	-61.1	-2.1



#### Maximum Uplink Noise Test Plots

#### 698 - 716 MHz Band



#### 776 - 787 MHz Band

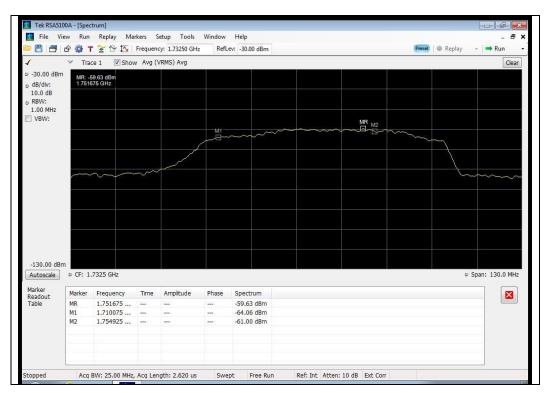
	论 🎲 T	🏆 🏠 👔	Frequen	cy: 781.50 MHz	RefL	ev: -30.00 dBm			Preset	🔵 Replay	- 🔿 Run
1	👻 Trac	ce 1 🛛 🗹 Shov	v Avg (	VRMS) Avg							Clea
-30.00 dBn dB/div: 10.0 dB RBW:		59.27 dBm 25 MHz									
1.00 MHz ] VBW:						M1	MR	M2			
-130.00 dB Autoscale	m 🖉 CF: 78	81.5 MHz								© 5	pan: 50.0 MHz
larker	Marker	Frequency	Time	Amplitude	Phase	Spectrum					
eadout able	MR	783.125 MHz		Amplicude	PildSe	-59.27 dBm					
aure	M1	776 MHz				-59.96 dBm					
	M2	787 MHz				-61.01 dBm					



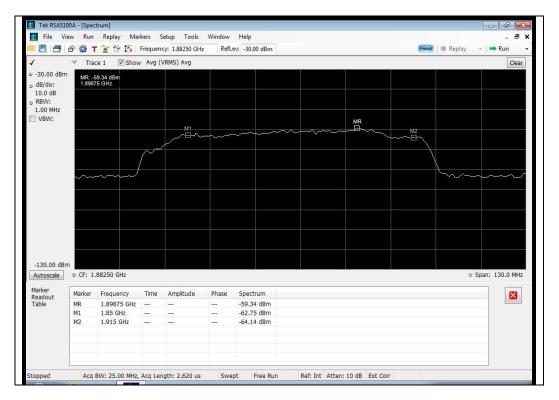
824 - 849	<b>MHz Band</b>
-----------	-----------------

File V	.00A - [Spec iew Run			etup Tools	Window	Help				- 8
nie v						ev: -30.00 dBm		Preset	🕘 Replay 🛛 🗸	- P
		r <u>≩ 🍄 I∿</u>		122	KerL	ev: -30.00 dBm		Preset	• Kepiay •	
	✓ Tra	ce 1 🛛 🗹 Sho	w Avg (	VRMS) Avg						Clear
-30.00 dBn	MR: -	59.26 dBm 5 MHz								
dB/div: 10.0 dB	044.2	5 1411 12								
RBW:										
1.00 MHz VBW:										
VBVV:				M1			MR	M2		
								~	~	
		/								
									1	_
	-									
-130.00 dB										
Autoscale	207 B	36.50 MHz							e Spa	n: 50.0 MHz
larker eadout	Marker	Frequency	Time	Amplitude	Phase	Spectrum				
able	MR	844.25 MHz	(2011)	(222)		-59.26 dBm				
	M1 M2	824 MHz 849 MHz	10000			-62.60 dBm -61.09 dBm				
	1912	OT 9 MILZ		(1997)	1.000	-01.09 0000				

#### 1710 - 1755 MHz Band



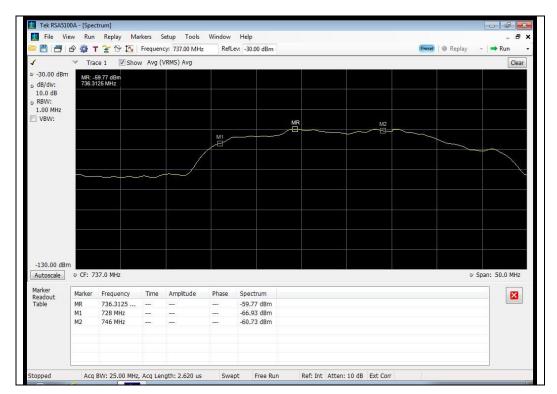




1850 - 1915 MHz Band

#### **Maximum Downlink Noise Test Plots**

728 - 746 MHz Band





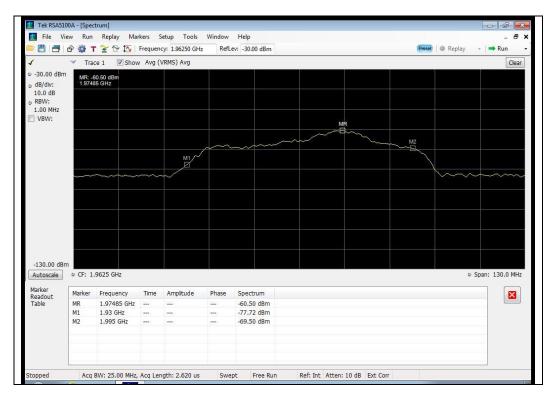
746 - 757	MHz Band
-----------	----------

	.00A - [Spec iew Run		diana di	etup Tools	Window	Help					_ 7
									-		
	٦ 😢 ۲۵	🏆 🖓 🌆		32.	RefL	ev: -30.00 dBm			Preset	Replay	Run
(	✓ Tra	ce 1 🛛 Show	v Avg (1	VRMS) Avg							Clear
-30.00 dBn	MR: -	59.82 dBm 5 MHz									
dB/div: 10.0 dB	746.5	o MHZ									
RBW:											
1.00 MHz											
VBW:						MR					
		<u>.</u>				E®					
				-			M	2			· ·
	$\sim$										
	_										n
-130.00 dB	2017								2		
Autoscale	© CF: 7	51.50 MHz								e Sp	oan: 60.0 MHz
Marker Readout Table	Marker	Frequency	Time	Amplitude	Phase	Spectrum					
	MR	746.55 MHz				-59.82 dBm					
	M1	746.025 MHz				-60.11 dBm					
	M2	756.975 MHz				-69.50 dBm					

#### 869 - 894 MHz Band

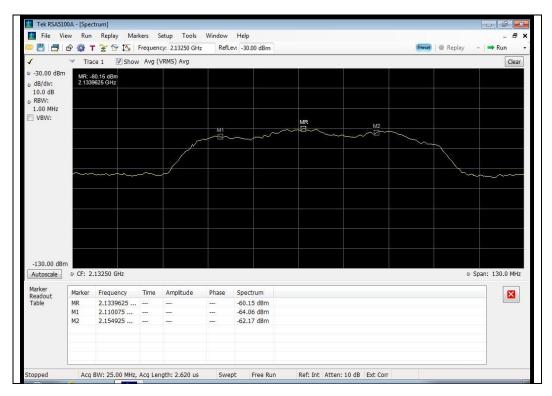
Concernance of the second	iew Run			Setup Tools		Help		- 8
	o 🎲 1	। 🚰 🖓 🌆	Frequen	cy: 881.50 MHz	RefL	ev: -30.00 dBm	Preset	● Replay - → Run
	V Tra	ce 1 🛛 🗹 Shov	v Avg (	VRMS) Avg				Clea
-30.00 dBm dB/div: 10.0 dB RBW: 1.00 MHz	MR: -8 879.55	59.70 dBm 5 MHz						
VBW:						MR		
				~~~	M1 2		M2 I	
			1	/				
	-							
-130.00 dBr	m							
Autoscale	© CF: 8	81.50 MHz						Span: 60.0 MHz
Marker Readout Table	Marker	Frequency	Time	Amplitude	Phase	Spectrum		×
	MR	879.55 MHz	222.1	122		-59.70 dBm		
	M1	868.975 MHz				-64.15 dBm		
	M2	894.025 MHz				-64.20 dBm		





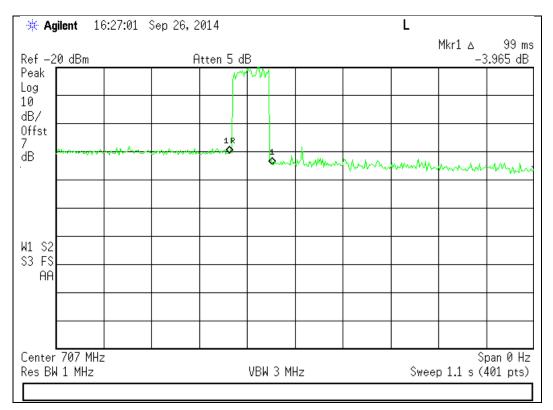
#### 1930 - 1995 MHz Band

#### 2110 - 2155 MHz Band



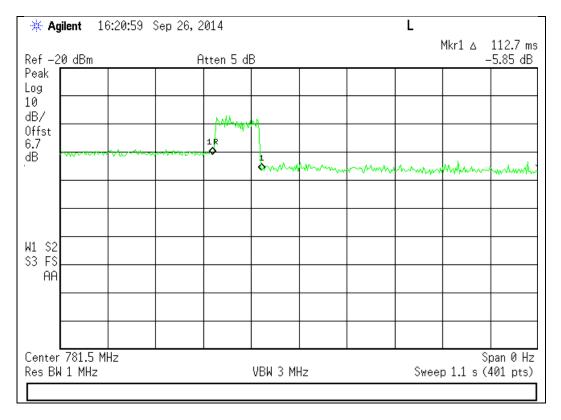


## **Uplink Noise Timing Test Plots**

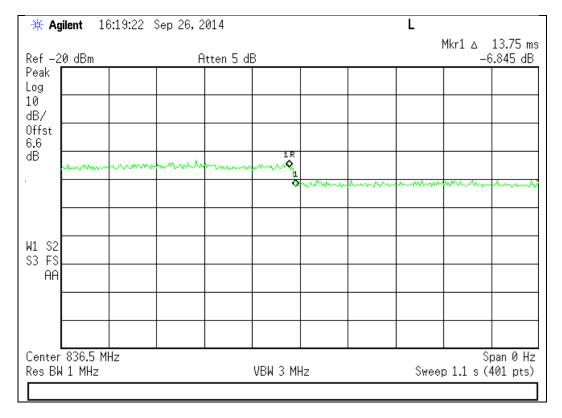


698 - 716 MHz Band

776 - 787 MHz Band

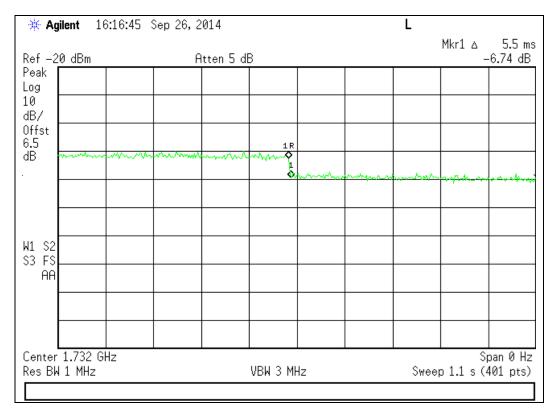




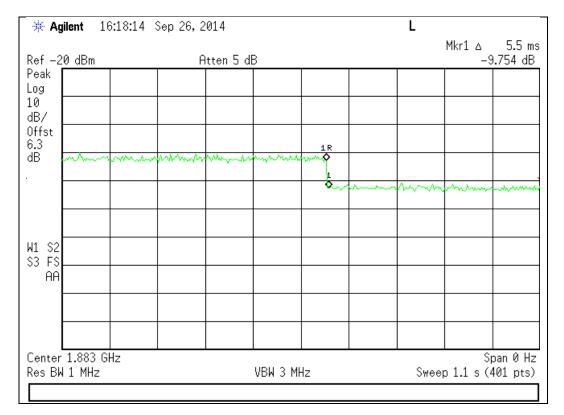


824 - 849 MHz Band









1850 - 1915 MHz Band

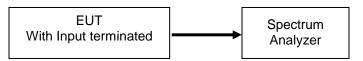


Uplink Inactivity Engineer: Mike Graffeo Test Date: 9/24/14

### **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

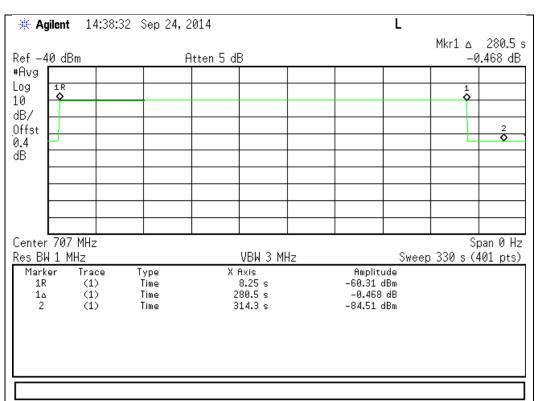
#### **Test Setup**



### **Uplink Test Results**

Frequency Band (MHz)	Measured Time (Seconds)	Limit (Seconds)	Result
698 - 716	280.5	300	Pass
776 - 787	280.5	300	Pass
824 - 849	279.7	300	Pass
1710 - 1755	294.5	300	Pass
1850 - 1915	293.7	300	Pass

### **Uplink Inactivity Test Results**



698 - 716 MHz

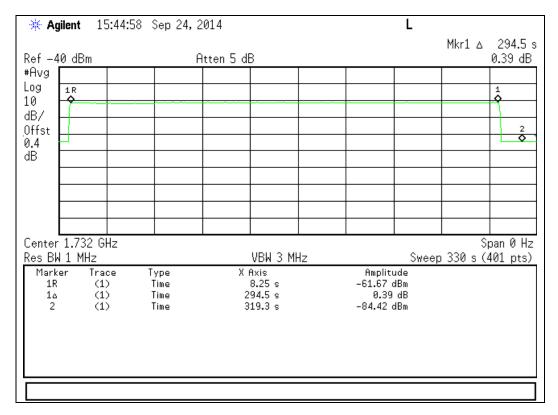
776 - 787 MHz

🔆 Agilent	14:45:00	Sep 24, 2	014				L	Mkr1 A	280.5 s
Ref -40 dBr	n	A	ltten 5 dB	3					0.255 dB
#Avg Log 1R 10 dB/ Offst dB dB									2
Center 781. Res BW 1 M				VBW 3 Mł	Ηz		Swee		) (401 pts)
Marker 1R 1۵ 2	Trace (1) (1) (1)	Type Time Time Time	9 2	Axis .075 s 80.5 s 14.3 s		Amplitu -60.3 c -0.255 -84.94 c	ıde IBm dB		

824 - 849 MHz

₩ A(	gilent 14	:51:17 🗧	Sep 24, 2	014				L		
	10 dBm		A	tten 5 df	3				Mkr1 ∆	279.7 s 0.35 dB
#Avg Log 10	1R									
dB/ Offst 0.4 dB										2
	′836.5 MH √1 MHz	lz			VBW 3 Mł	łz		Sweep	S) 0 330 s (4	pan 0 Hz 401 pts)
Mark 1R 1¢ 2	er Trac (1) (1)	T T	/pe ime ime	1 2	Axis 0.72 s 79.7 s 14.3 s		Amplitu -62.23 c 0.35 -84.57 c	ıde IBm dB		

#### 1710 - 1755 MHz





🔆 🔆 Aç	jilent	15:1	8:31 3	Sep 24, 2	014				L		
Ref -4	10 dBm			A	tten 5 dE	3					293.7 s L.953 dB
#Avg Log 10	1R										1
dB/ Offst											2
0.4 dB		_									
		+									
Center Res Bk						VBW 3 MF	Ηz		Sweer	S 0 330 s (4	pan 0 Hz 401 pts)
Mark 1R 1a 2	er 1	(1) (1) (1) (1)	Ť	ype ime ime ime	X 1 2	17xis 8.25 s 93.7 s 18.4 s		Amplitu -64.11 d 1.953 -84.44 d	ıde IBm dB		

1850 - 1915 MHz



Variable Gain Engineer: Mike Graffeo Test Date: 9/25/14

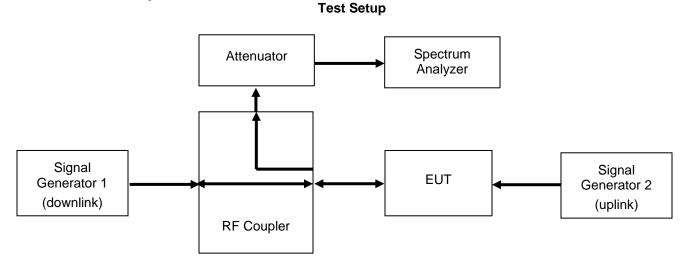
### **Test Procedure**

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 in order to ensure accurate readings were obtained. The uplink gain in the presence of a downlink signal was measured for each operational uplink band using the detailed procedures from KDB 935210 D03 Wideband Consumer Signal Booster Measurement Guidance DR04-41516.

The following formula is used for calculating the limits:

Variable Gain = -34 dB - RSSI +MSCL

Mobile Booster maximum gain = 50dB



## **Uplink Test Results**

		<b>698 - 7</b> 1	6 MHz			
RSSI (dBm)	MSCL (dB)	Gain Limit (dBm)	P(in) (dBm)	P(out) (dBm)	Gain (dB)	Margin (dB)
-68.0	30.8	50.0	-25.6	18.3	43.9	-6.1
-67.0	30.8	50.0	-25.6	18.3	43.9	-6.1
-66.0	30.8	50.0	-25.6	18.3	43.9	-6.1
-65.0	30.8	50.0	-25.6	18.3	43.9	-6.1
-47.0	30.8	42.0	-25.6	15.3	40.9	-1.1
-46.0	30.8	41.0	-25.6	14.4	40.0	-1.0

# 698 - 716 MHz

### 776 - 787 MHz

RSSI (dBm)	MSCL (dB)	Gain Limit (dBm)	P(in) (dBm)	P(out) (dBm)	Gain (dB)	Margin (dB)
-69.0	30.1	50.0	-28.1	17.5	45.6	-4.4
-68.0	30.1	50.0	-28.1	17.5	45.6	-4.4
-67.0	30.1	50.0	-28.1	17.5	45.6	-4.4
-66.0	30.1	50.0	-28.1	17.5	45.6	-4.4
-49.0	30.1	44.0	-28.1	15.5	43.6	-0.4
-48.0	30.1	43.0	-28.1	14.5	42.6	-0.4

### 824 - 849 MHz

RSSI (dBm)	MSCL (dB)	Gain Limit (dBm)	P(in) (dBm)	P(out) (dBm)	Gain (dB)	Margin (dB)
-70.0	28.8	50.0	-28.2	17.3	45.5	-4.5
-69.0	28.8	50.0	-28.2	17.3	45.5	-4.5
-68.0	28.8	50.0	-28.2	17.3	45.5	-4.5
-67.0	28.8	50.0	-28.2	17.3	45.5	-4.5
-52.0	28.8	47.0	-28.2	16.3	44.5	-2.5
-51.0	28.8	46.0	-28.2	15.4	43.6	-2.4

### 1710 - 1755 MHz

	SSI Bm)	MSCL (dB)	Gain Limit (dBm)	P(in) (dBm)	P(out) (dBm)	Gain (dB)	Margin (dB)
-	70.0	35.3	50.0	-28.0	16.0	44.0	-6.0
-(	69.0	35.3	50.0	-28.0	16.0	44.0	-6.0
-(	68.0	35.3	50.0	-28.0	16.0	44.0	-6.0
-(	67.0	35.3	50.0	-28.0	16.0	44.0	-6.0
-4	42.0	35.3	37.0	-28.0	8.2	36.2	-0.8
-4	41.0	35.3	37.0	-28.0	8.2	36.2	-0.8

### 1850 – 1915 MHz

RSSI (dBm)	MSCL (dB)	Gain Limit (dBm)	P(in) (dBm)	P(out) (dBm)	Gain (dB)	Margin (dB)
-68.0	34.8	50.0	-26.3	16.8	43.1	-6.9
-67.0	34.8	50.0	-26.3	16.8	43.1	-6.9
-66.0	34.8	50.0	-26.3	16.8	43.1	-6.9
-65.0	34.8	50.0	-26.3	16.8	43.1	-6.9
-47.0	34.8	42.0	-26.3	15.1	41.4	-0.6
-46.0	34.8	41.0	-26.3	14.1	40.4	-0.6

Frequency Band (MHz)	Measured Timing (Seconds)	Limit (Seconds)	Result
698 - 716	0.0825	1.0	Pass
776 - 787	0.0825	1.0	Pass
824 - 849	0.0110	1.0	Pass
1710 - 1755	0.0165	1.0	Pass
1850 - 1915	0.0110	1.0	Pass

# Uplink Gain Timing Test Results

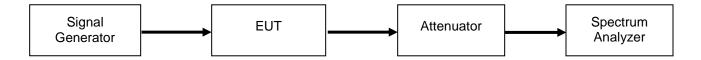


Occupied Bandwidth Engineer: Mike Graffeo Test Date: 9/26/14

### **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 required to ensure that accurate readings were obtained. A signal generator was utilized to produce the following signals: GSM, CDMA, and WCDMA. The signal generator was tuned to the center channel of each of the EUT operational uplink and downlink bands with the RF level set at a point just prior to the AGC being in control of the power. For each modulation type, the input and output signal was measured and plotted to ensure that the signals were similar.



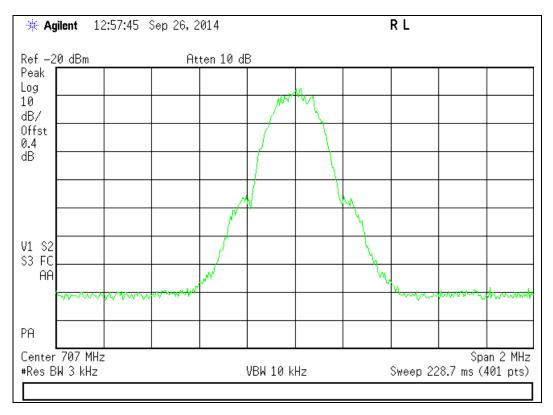




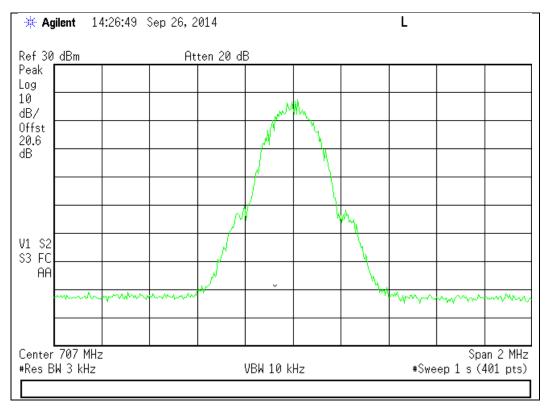
### **GSM Uplink Test Plots**

## 698 - 716 MHz Band

Input



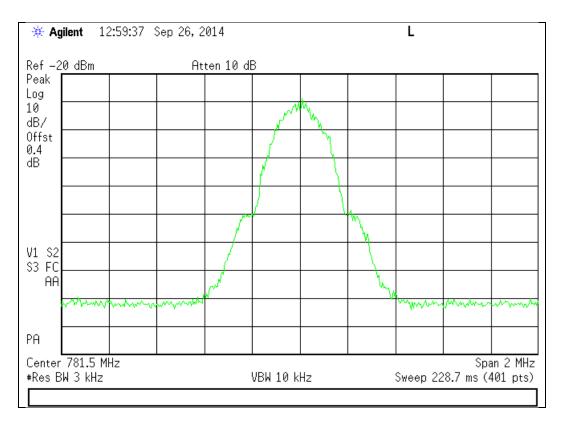
### Output





### 776 - 787 MHz Band





Output

