

# Cellphone-Mate, Inc.

REVISED TEST REPORT TO 100637-15

**5 Band Mobile Consumer Booster  
Model: Fusion2go 3.0**

Tested to The Following Standard:

FCC Part 20.21 / 22H / 24E / 27

Report No.: 100637-15A

Date of issue: August 14, 2018



This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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## ADMINISTRATIVE INFORMATION

### Test Report Information

**REPORT PREPARED FOR:**

Cellphone-Mate, Inc.  
48346 Milmont Drive  
Fremont, CA 94538

Representative: Dennis Findley  
Customer Reference Number: CKC11072017

**DATE OF EQUIPMENT RECEIPT:****DATE(S) OF TESTING:****REPORT PREPARED BY:**

Terri Rayle  
CKC Laboratories, Inc.  
5046 Sierra Pines Drive  
Mariposa, CA 95338

Project Number: 100637

November 9, 2017

November 9-15, 2017 and September 4, 2018

### Revision History

**Original:** Testing of the 5 Band Mobile Consumer Booster, Model: Fusion2go 3.0 CA to FCC Part 20.21 / 22 / 24 / 27.

**Revision A:** Original testing of section 7.4 was tested at the wrong frequency. Data is being replaced with new test results at the proper frequency. Updated the references to FCC Part 22H and 24E by adding the letter reference.

### Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



**Steve Behm**  
*Director of Quality Assurance & Engineering Services*  
*CKC Laboratories, Inc.*

## Test Facility Information



Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):  
CKC Laboratories, Inc.  
1120 Fulton Place  
Fremont, CA 94539

## Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.11
EMITest Immunity	5.03.10

## Site Registration & Accreditation Information

Location	NIST CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont, CA	US0082	SL2-IN-E-1148R	3082B-1	US1023	A-0149

## SUMMARY OF RESULTS

**Standard / Specification: FCC Part 20.21 / 22H / 24E / 27**

KDB 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04r01, Oct 27, 2017		FCC Part Section Correlation		Mods	Results
Guidance Sec #	Guidance Description	FCC Sec #	FCC Rule Description		
7.1 a) - k)	Authorized Frequency Band Verification Test	20.21(e)(3)	Frequency Bands	NA	Pass
7.2.2 a) - k)	Maximum Power Measurement Procedure	2.1046/20.21(e)(8)(i)(D)	Power Limit	NA	Pass
7.3 a) - d)	Maximum Booster Gain Computation	20.21(e)(8)(i)(B)	Bidirectional Capabilities	NA	Pass
7.4 a) - n)	Intermodulation Product	20.21(e)(8)(i)(F)	Intermodulation Limit	NA	Pass
7.5 a) - n)	Out of Band Emissions	20.21(e)(8)(i)(E)	Out of Band Emission	NA	Pass
7.6 a) - e)	Conducted Spurious Emission	2.1051/22H/24E/27	Spurious emission	NA	Pass
7.7.1 a) - g) 7.7.1 h) - n) 7.7.2 a) - g)	Noise Limit Procedure Variable Noise Variable Noise Timing	20.21(e)(8)(i)(A)(2)(i) 20.21(e)(8)(i)(A)(1) 20.21(e)(8)(i)(H)	Noise Limits  Transmit Power Off Mode	NA	Pass
7.8 a) - l)	Uplink inactivity	20.21(e)(8)(i)(I)	Uplink Inactivity	NA	Pass
7.9.1 a) - l) 7.9.2 a) - f)	Variable Booster Gain Variable Uplink Gain Timing	20.21(e)(8)(i)(C) (1), (2)(i) 20.21(e)(8)(i)(H)	Booster Gain  Transmit Power Off Mode	NA	Pass
7.10.a) - j)	Occupied Band Width	2.1049/22H/24E/27	Occupied Band Width	NA	Pass

NA = Not Applicable

## SUMMARY OF RESULTS CONTINUED

### Standard / Specification: FCC Part 20.21 / 22H / 24E / 27

KDB 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04r01, Oct 27, 2017		FCC Part Section Correlation		Mods	Results
Guidance Sec #	Guidance Description	FCC Sec #	FCC Rule Description		
7.11.2 a) - r) 7.11.3 a) - h) 7.11.4 a) - h) (alternate to 7.11.3)	Anti-Oscillation	20.21(e)(8)(ii)(A)	Anti-Oscillation	Note1	Pass
7.12a) - f)	Radiated Spurious Emission	2.1053/ 22H/24E/27	Spurious Emission	Note1	Pass
7.13 a) - c)	Spectrum Block Filter	NA <sup>1</sup>	NA <sup>1</sup>	NA	NA <sup>1</sup>

NA = Not Applicable

NA<sup>1</sup> = Not applicable. This device does not employ spectrum block filter.

Note1: New firmware installed (replaced version from 3.0 to 3.2)

### Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

### Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
None

## EQUIPMENT UNDER TEST (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

### Configuration 1

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
5 Band Mobile Consumer Booster	Cellphone-Mate, Inc.	Fusion2go 3.0	01
Switching Power Adapter	SureCall	GFP451DA-1238-1	1404-0000347
DC Power Supply	SureCall	SC-DC-12V5A-B	None

***Support Equipment:***

Device	Manufacturer	Model #	S/N
None			



## FCC PART 20.21 / 22H / 24E / 27

### 7.1 (a-k) Authorized Frequency Band Verification

#### Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170  
 Customer: Cellphone-Mate, Inc  
 Specification: **7.1 Authorized Frequency Band Verification**  
 Work Order #: **100637** Date: 11/9/2017  
 Test Type: **Conducted Emissions** Time: 9:19:00 AM  
 Tested By: **Daniel Bertran** Sequence#: 1  
 Software: EMITest 5.03.11

#### Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

#### Support Equipment:

Device	Manufacturer	Model #	S/N

#### Test Conditions / Notes:

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.  
 The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.  
 The EUT Server port is a type FME connector and 50-ohm impedance.  
 The EUT Donor port is type FME connector and 50-ohm impedance.

#### Part 22

UL: 824-849MHz

DL: 869-894MHz

#### Part 24

UL: 1850-1915MHz

DL: 1930-1995MHz

#### Part 27

UL: 1710-1755MHz, 698-716MHz, 776-787MHz

DL: 2110-2155MHz, 728-746MHz, 746-757MHz

#### Test procedure:

The test was performed in accordance with section 7.1 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04r01 Dated October 27, 2017.

Firmware: V 3.0

Test environment conditions: 22°C, 44% Relative Humidity, 101.5 kPa

**Test Equipment:**

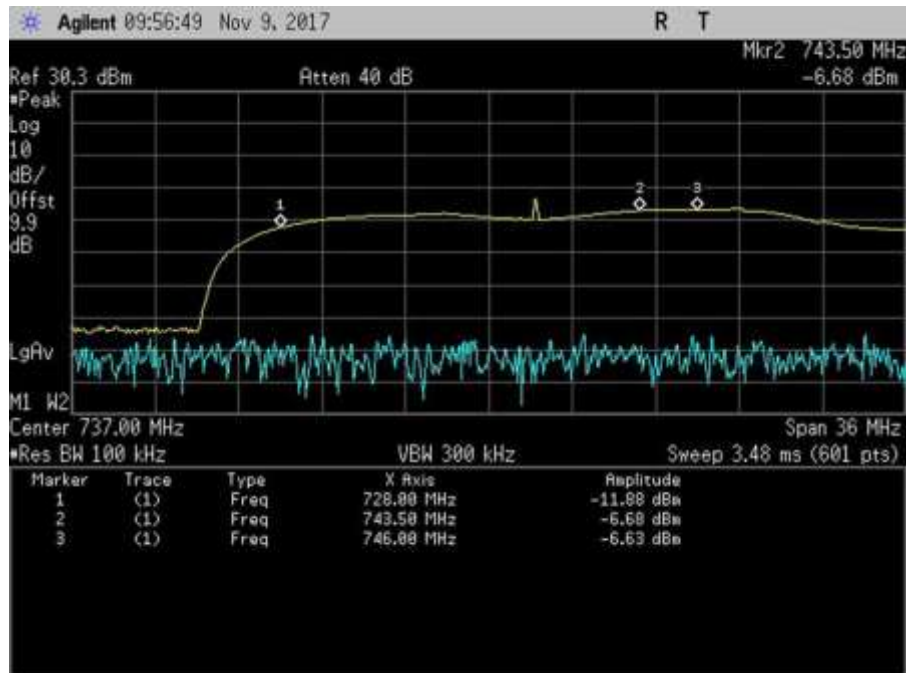
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	6/19/2017	6/19/2019
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	12/9/2015	12/9/2017

**Summary of Results**

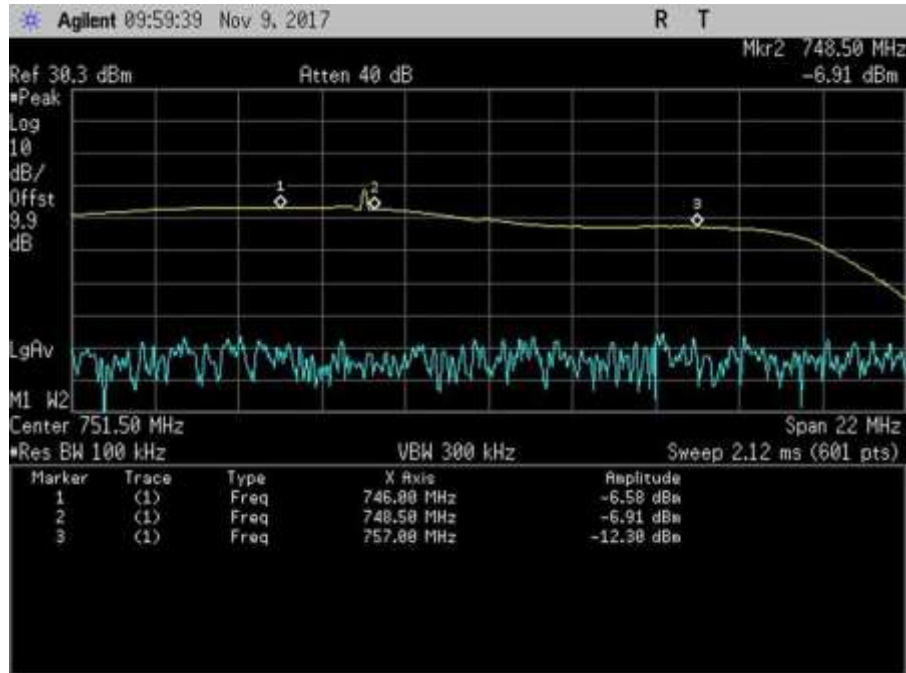
Pass: The plots below show the device only operates on the CMRS frequency bands authorized for use by the NPS.

**Plots**

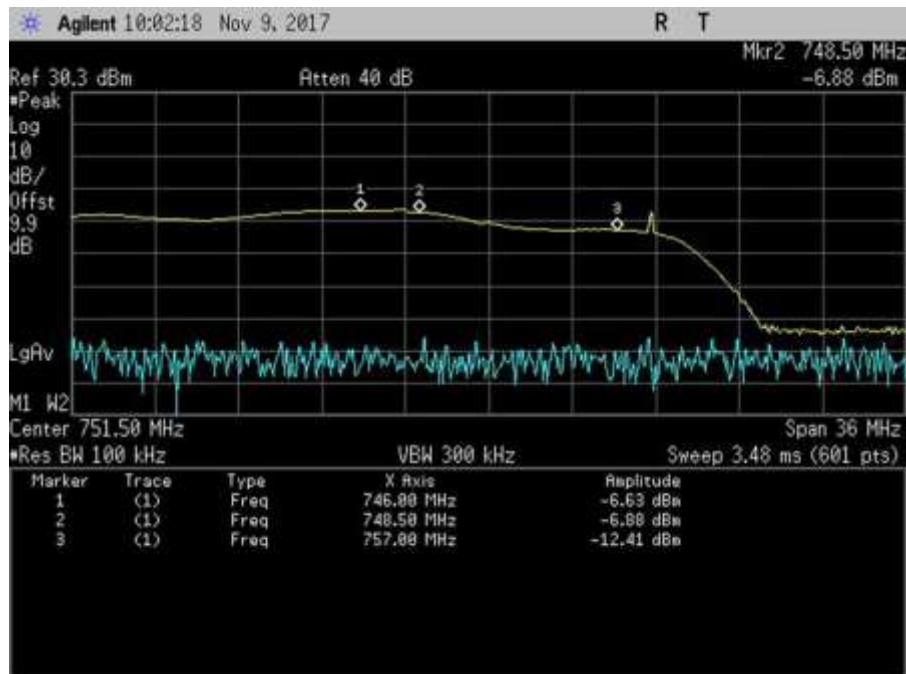
**DL**



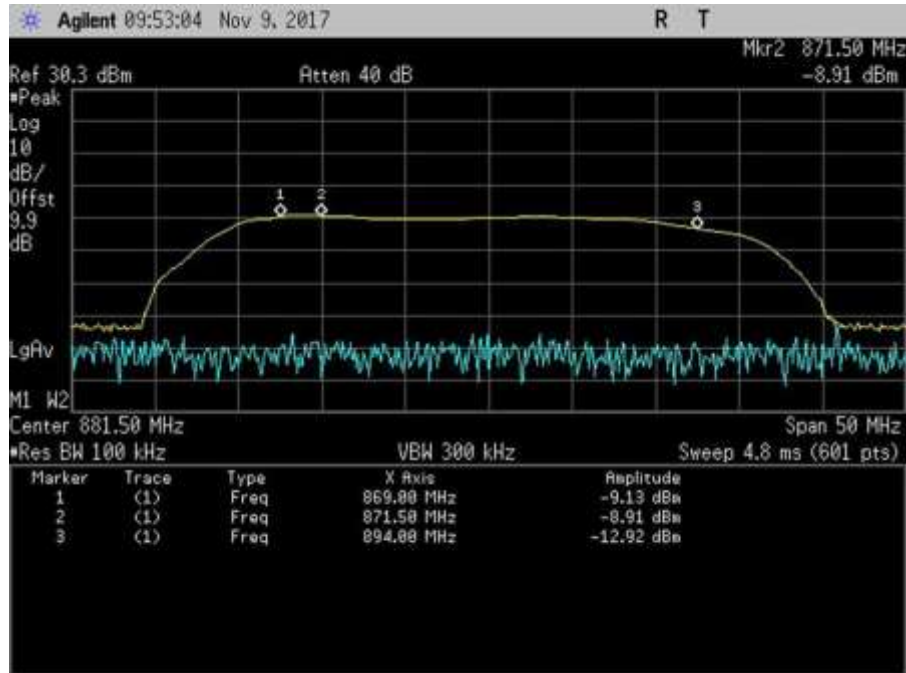
7.1\_Band Verify\_DL\_728-746MHz



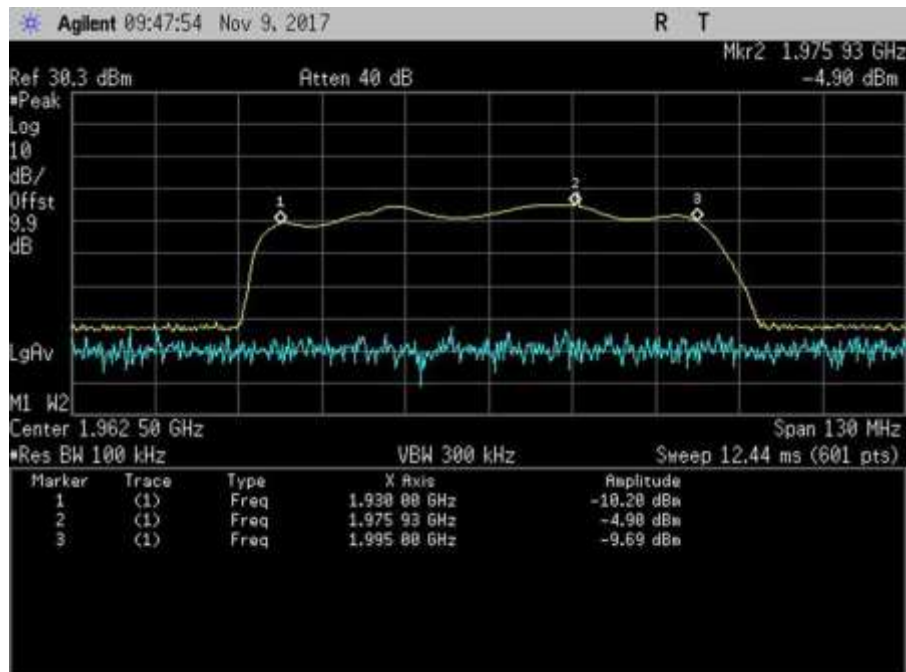
7.1\_Band Verify\_DL\_746-757MHz



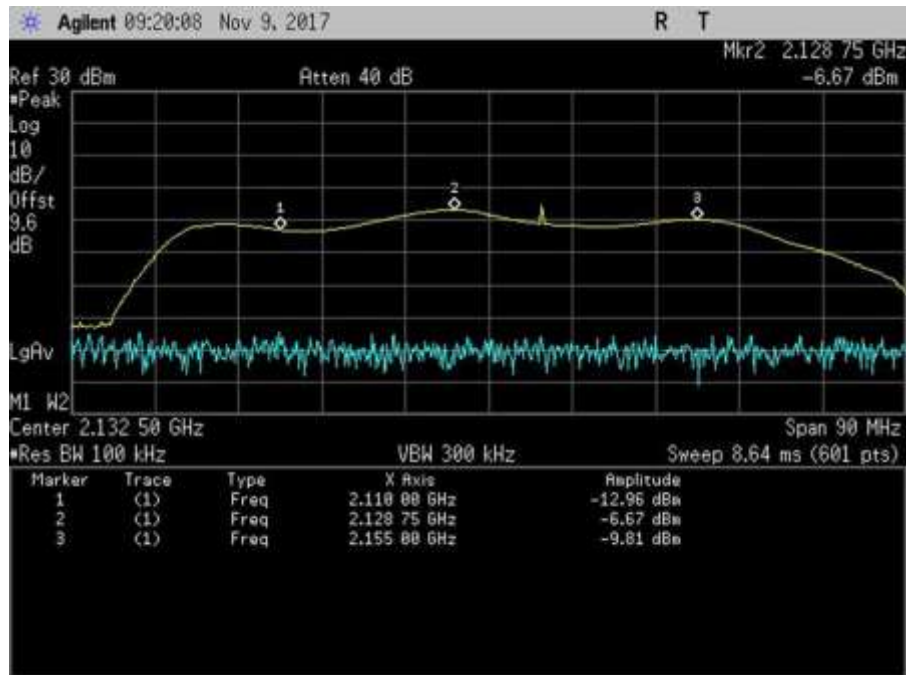
7.1\_Band Verify\_DL\_746-757MHz\_Zoom



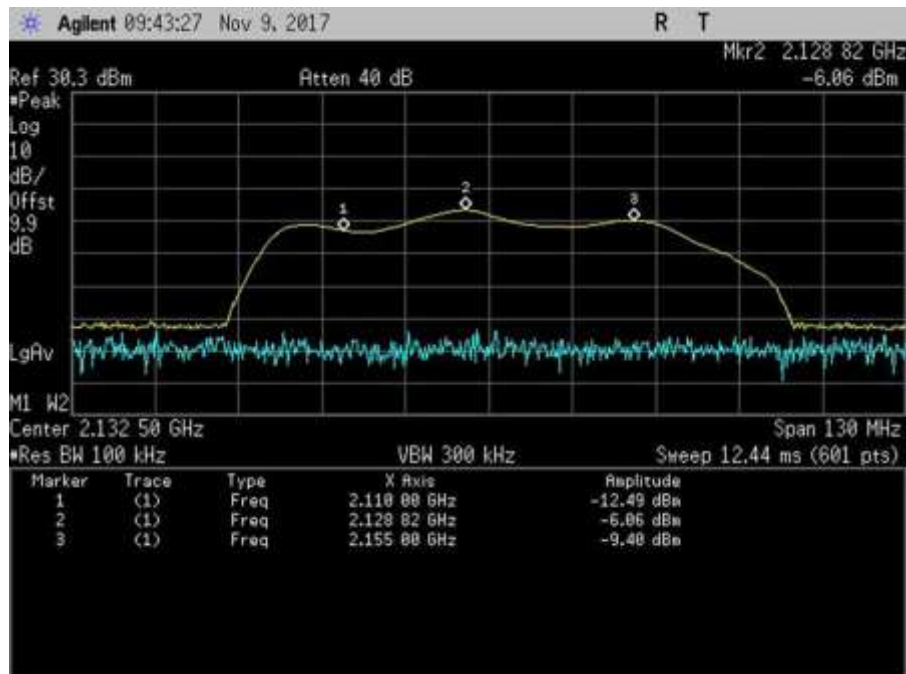
7.1\_Band Verify\_DL\_869-894MHz



7.1\_Band Verify\_DL\_1930-1995MHz

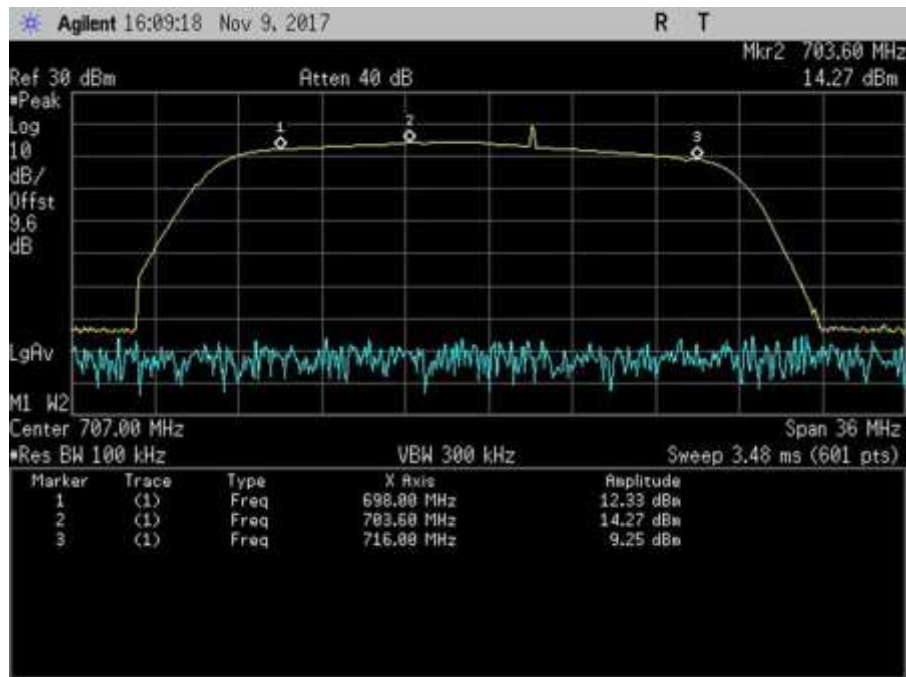


7.1\_Band Verify\_DL\_2110-2155MHz

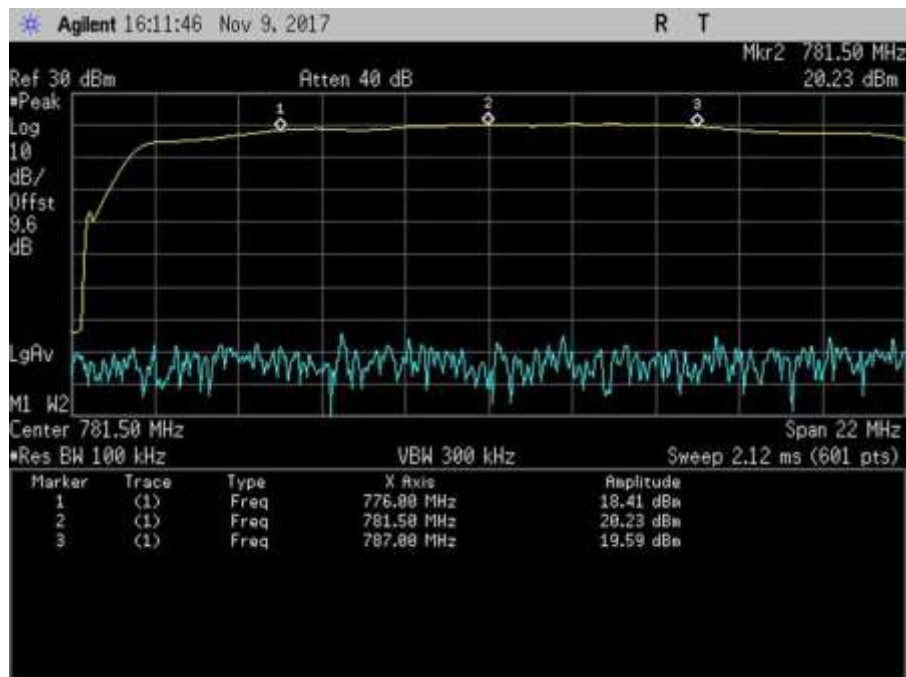


7.1\_Band Verify\_DL\_2110-2155MHz\_Zoom

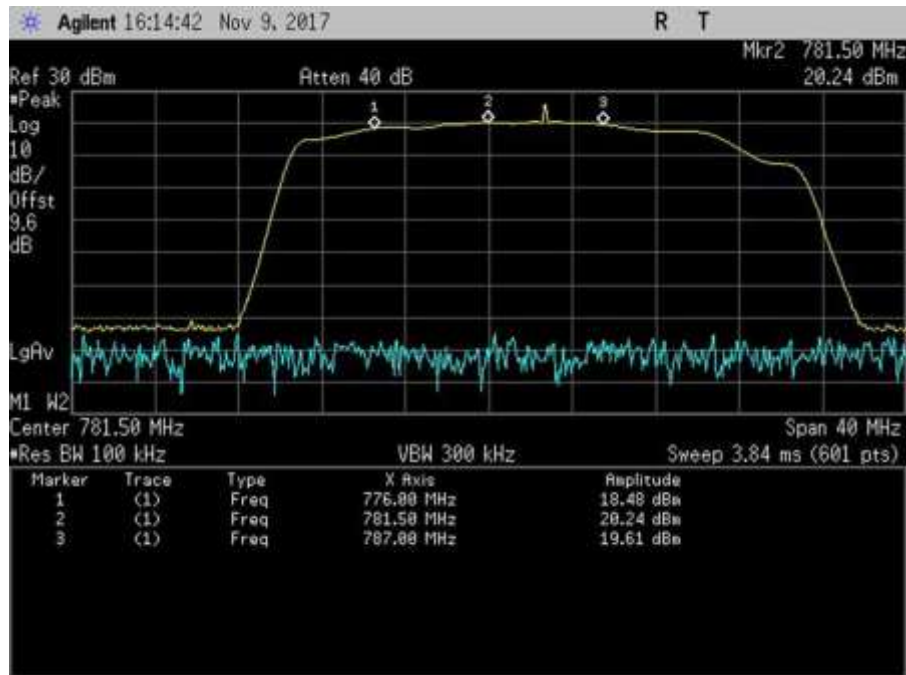
UL



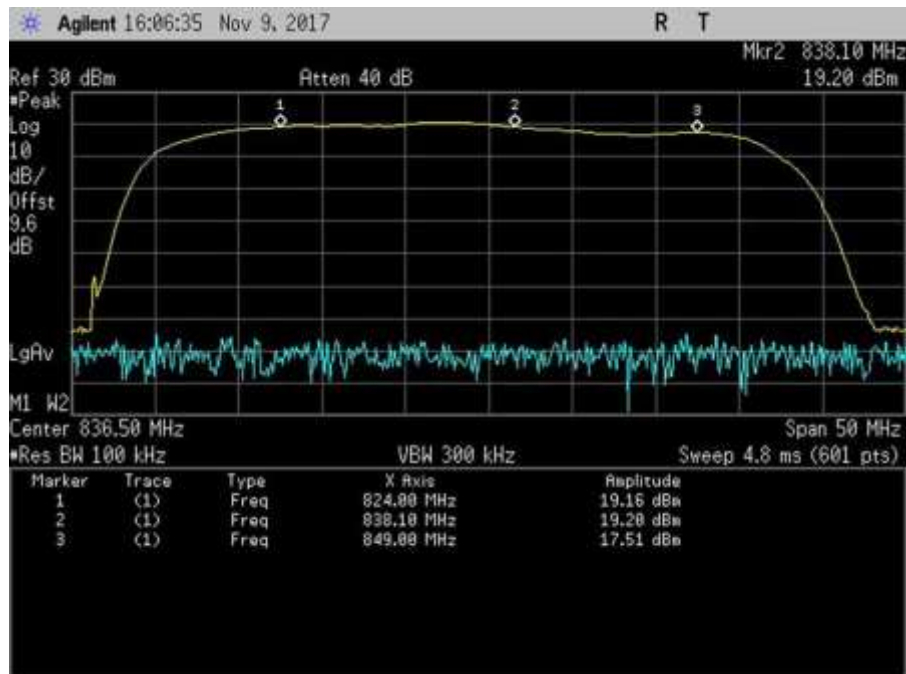
7.1\_Band Verify\_UL\_698-716MHz



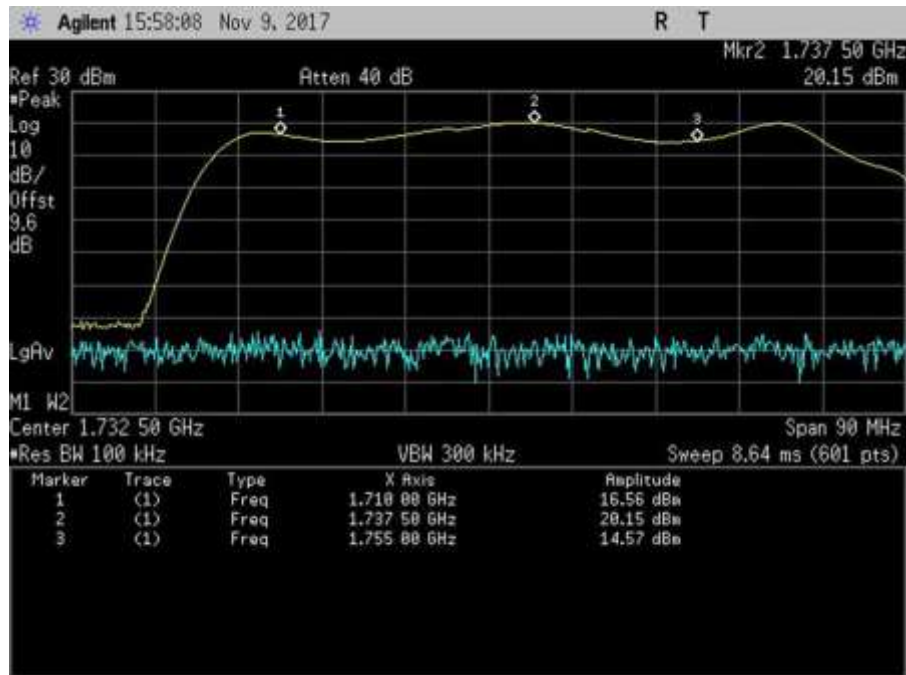
7.1\_Band Verify\_UL\_776-787MHz



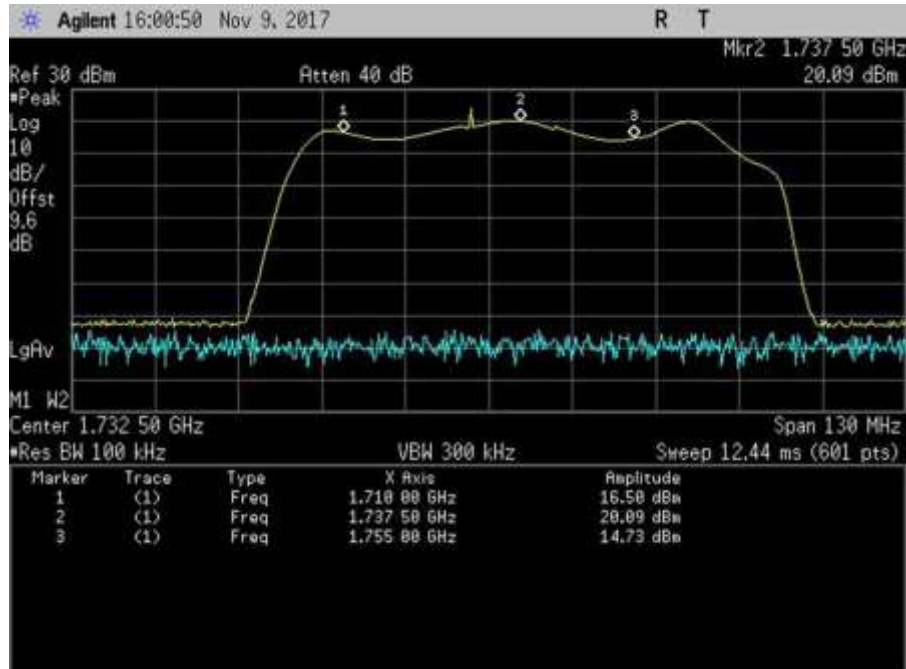
7.1\_Band Verify\_UL\_776-787MHz\_Zoom



7.1\_Band Verify\_UL\_824-849MHz

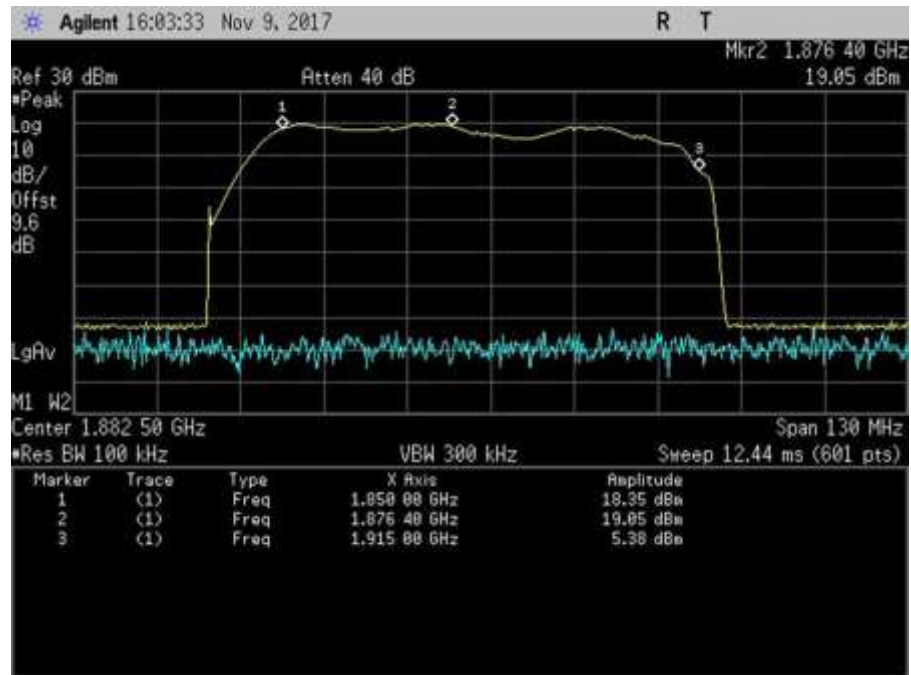


7.1\_Band Verify\_UL\_1710-1755MHz



7.1\_Band Verify\_UL\_1710-1755MHz\_Zoom





7.1\_Band Verify\_UL\_1850-1915MHz



**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	6/19/2017	6/19/2019
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	12/9/2015	12/9/2017

**Summary of Results**

Pass: as summarized in table below, measured EIRP, Gain and UL/DL gain ratio are within limits.

Frequency (MHz)	Pre AGC			Pre AGC		
	Input (dBm)	Output (dBm)	Gain (dB)	Input (dBm)	Output (dBm)	Gain (dB)
UL1710-1755	-17.9	27.0	44.9	-22.0	23.2	45.2
UL1850-1915	-21.0	25.1	46.1	-24.9	21.9	46.8
UL824-894	-18.6	29.0	47.6	-21.2	26.0	47.2
UL 698-716	-18.9	28.3	47.2	-22.8	25.6	48.4
UL776-787	-22.4	26.6	49.0	-23.0	25.0	48.0
DL2110-2155	-46.6	-0.8	45.8	-51.5	-4.5	47.0
DL1930-1995	-43.7	2.2	45.9	-47.9	-0.6	47.3
DL869-894	-47.9	-2.0	45.9	-50.4	-4.9	45.5
DL:728-746	-48.0	-1.4	46.6	-50.2	-3.5	46.7
DL 746-757	-47.0	-2.0	45.0	-50.3	-4.3	46.0

Pulse GSM				Conducted	Conducted and EIRP	
Frequency (MHz)	Output Power (dBm)	*Ant Gain-Cable loss (dBi)		EIRP (dBm)	Limit Min (dBm)	Limit Max (dBm)
UL1710-1755	27.0	-2.12		24.9	17	30
UL1850-1915	25.1	-2.52		22.6	17	30
UL824-894	29.0	-0.98		28.0	17	30
UL 698-716	28.3	-0.52		27.8	17	30
UL776-787	26.6	-0.52		26.1	17	30
DL2110-2155	-0.8	6.24		5.44	NA	17
DL1930-1995	2.2	6.44		8.64	NA	17
DL869-894	-2.0	4.71		2.71	NA	17
DL:728-746	-1.4	4.94		3.54	NA	17
DL 746-757	-2.0	4.94		2.94	NA	17

4.1MHz AWGN				Conducted	Conducted and EIRP	
Frequency (MHz)	Output Power (dBm)	*Ant Gain-Cable loss (dBi)		EIRP (dBm)	Limit Min (dBm)	Limit Max (dBm)
UL1710-1755	23.2	-2.12		21.1	17	30
UL1850-1915	21.9	-2.52		19.3	17	30
UL824-894	26.0	-0.98		25.0	17	30
UL 698-716	25.6	-0.52		25.1	17	30
UL776-787	25.0	-0.52		24.5	17	30
DL2110-2155	-4.5	6.24		1.74	NA	17
DL1930-1995	-0.6	6.44		5.84	NA	17
DL869-894	-4.9	4.71		-0.19	NA	17
DL:728-746	-3.5	4.94		1.44	NA	17
DL 746-757	-4.3	4.94		0.64	NA	17

\* Antenna gain, and cable losses indicated from the antenna kitting (Marine-1 kit).

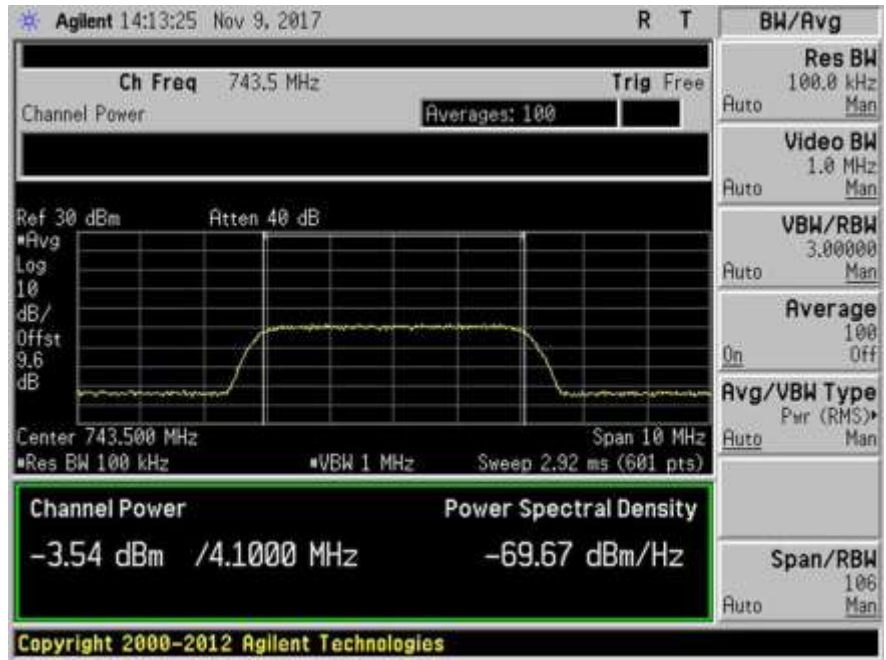
Section 5.5 power						
Frequency (MHz)	Input (dBm)	Pulse GSM		Input (dBm)	4.1 MHz AWGN	
		Output (dBm)	Gain (dB)		Output (dBm)	Gain (dB)
UL1710-1755	-6.5	28.0	34.5	-10.5	24.4	34.9
UL1850-1915	-8.4	25.5	33.9	-10.9	22.5	33.4
UL824-894	-9.6	29.1	38.7	-12.2	26.0	38.2
UL 698-716	-6.9	28.6	35.5	-10.3	25.7	36.0
UL776-787	-9.0	25.9	34.9	-10.5	24.9	35.4
DL2110-2155	-45.0	-1.5	43.5	-46.5	-4.2	42.3
DL1930-1995	-42.9	1.9	44.8	-45.4	-0.5	44.9
DL869-894	-44.9	-2.1	42.8	-45.9	-4.3	41.6
DL:728-746	-44.9	-1.3	43.6	-46.9	-3.8	43.1
DL 746-757	-44.9	-2.1	42.8	-46.9	-4.3	42.6

Note: The booster went into Transmitter off mode at Max input power in accordance with section 5.5. Results presented on the above table are at 1 dB below the Transmit off RF input level.

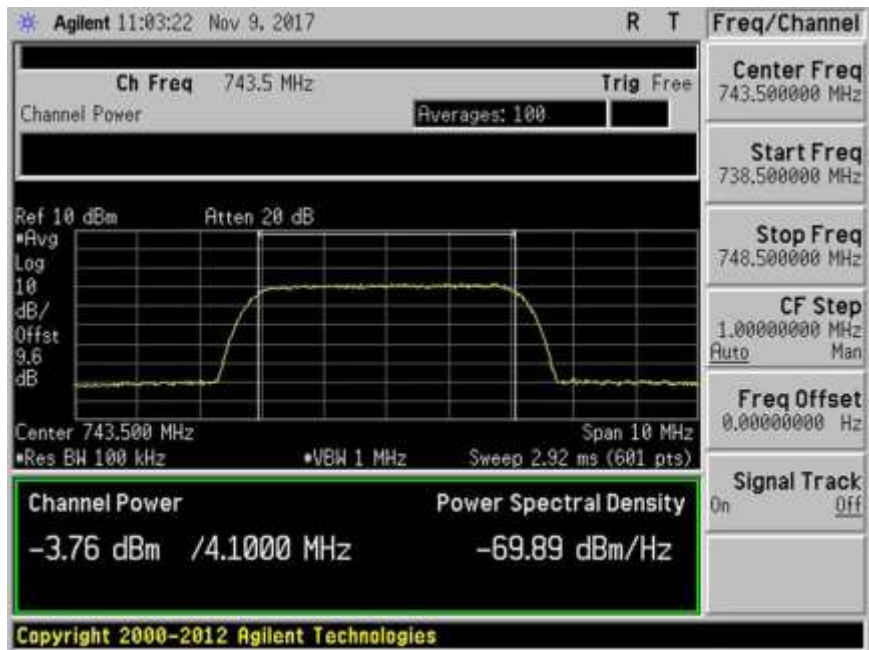
UL gain vs DL gain	Pulse GSM (dB)	4.1MHz AWGN (dB)	Limit (dB)
UL gain vs DL gain 1710/2110	-0.9	-4.8	9.0
UL gain vs DL gain 1850/1930	0.2	-0.6	9.0
UL gain vs DL gain 824/869	1.7	1.7	9.0
UL gain vs DL gain 776/728	0.6	1.7	9.0
UL gain vs DL gain 776/746	4.0	2.1	9.0

**Plots**

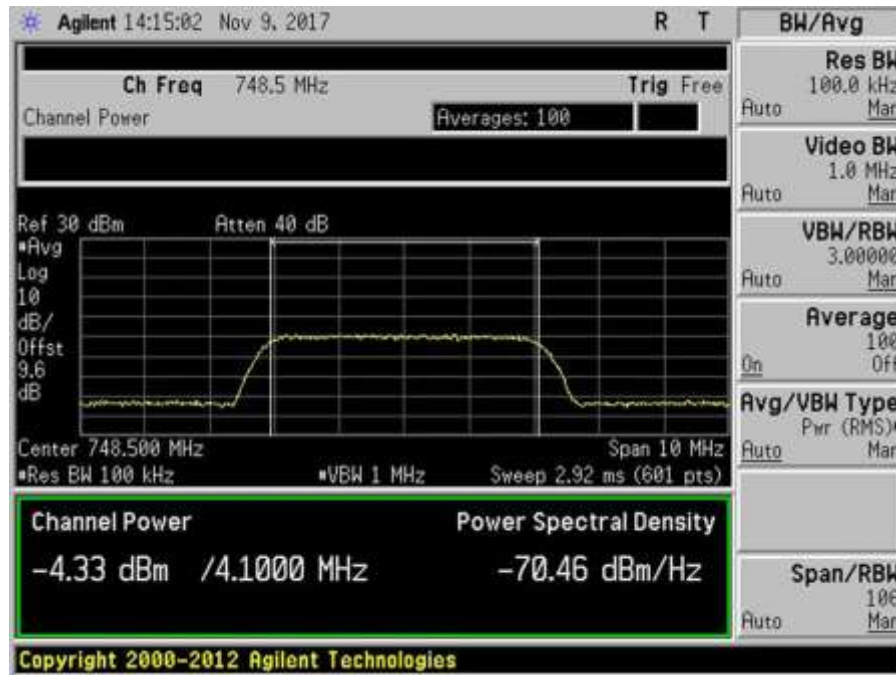
**AWGN, DL**



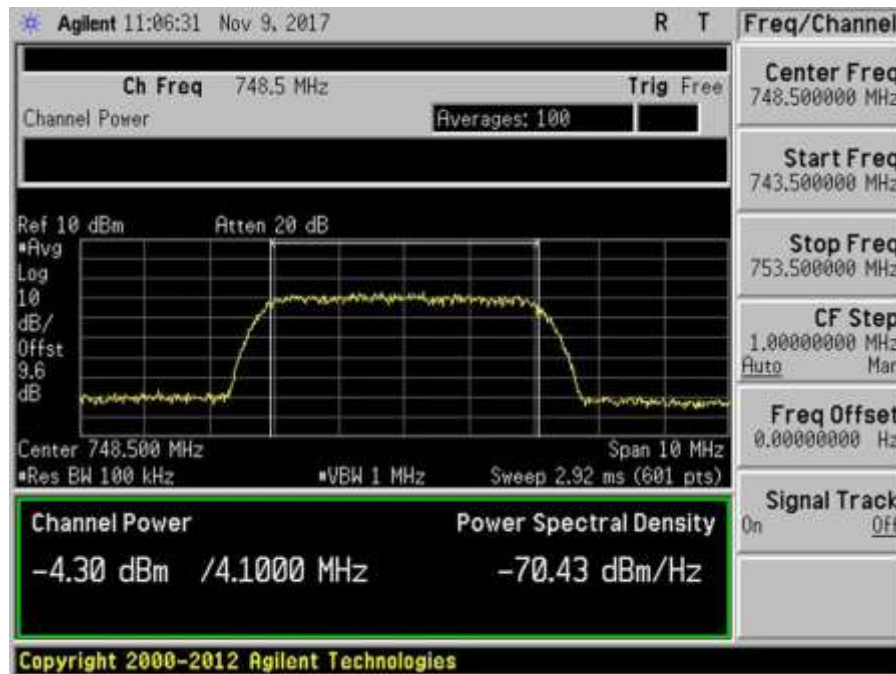
7.2\_Power\_DL\_728-746MHz\_AWGN



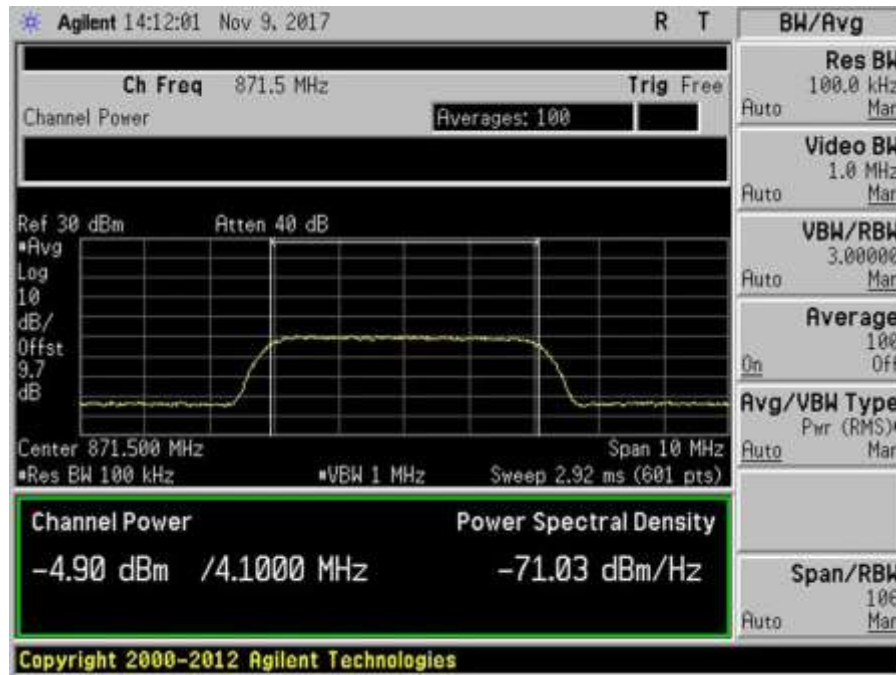
7.2\_Power\_DL\_728-746MHz\_AWGN\_Max



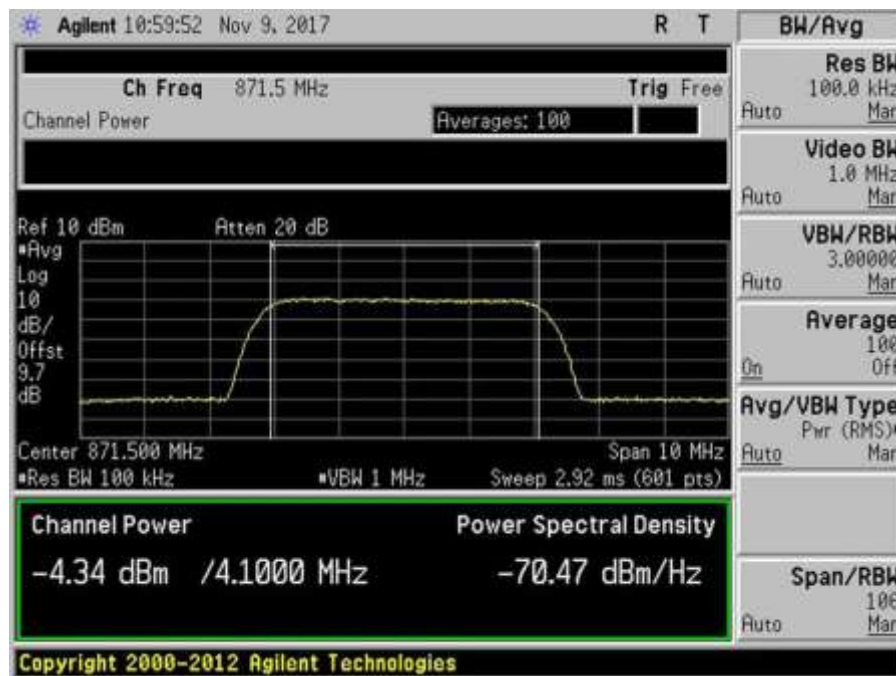
7.2\_Power\_DL\_746-757MHz\_AWGN



7.2\_Power\_DL\_746-757MHz\_AWGN\_Max

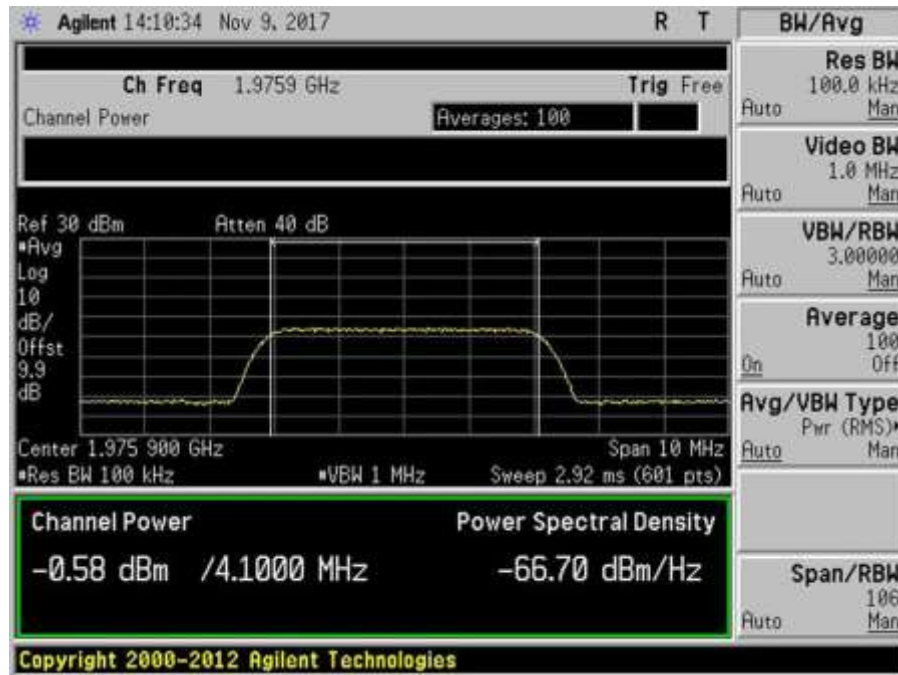


7.2\_Power\_DL\_869-894MHz\_AWGN

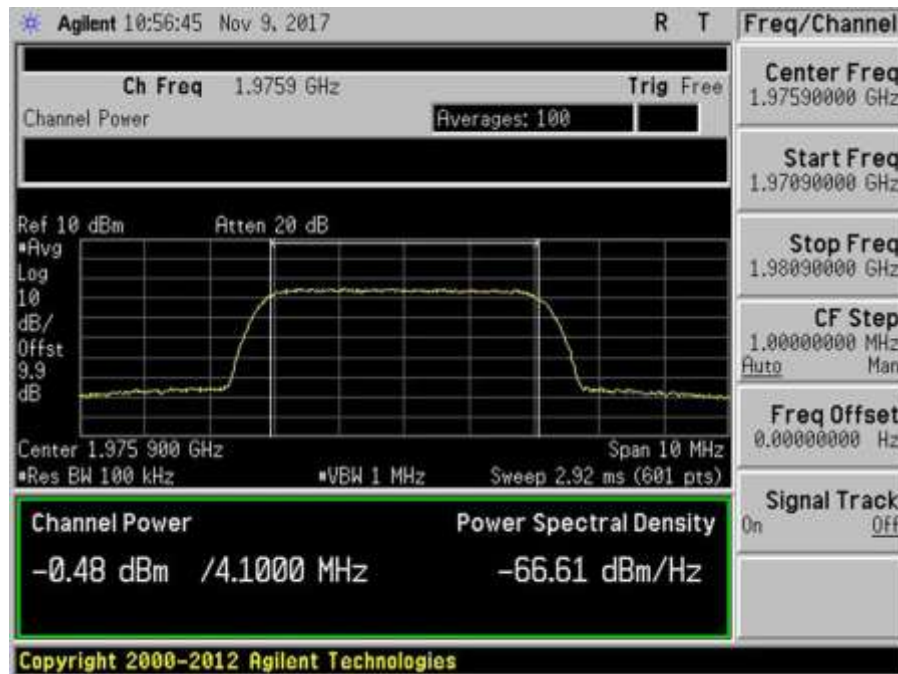


7.2\_Power\_DL\_869-894MHz\_AWGN\_Max

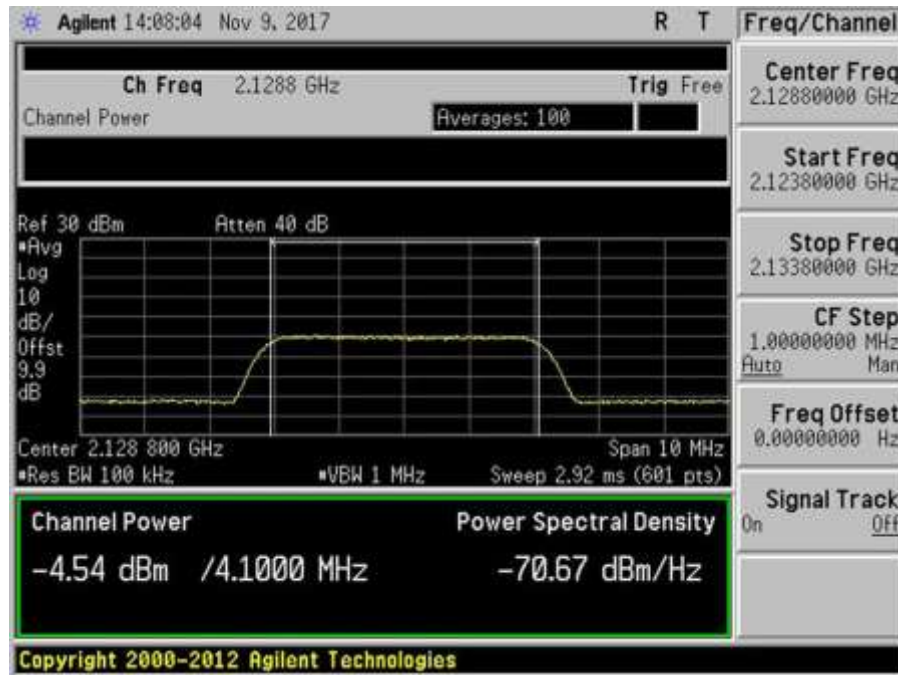




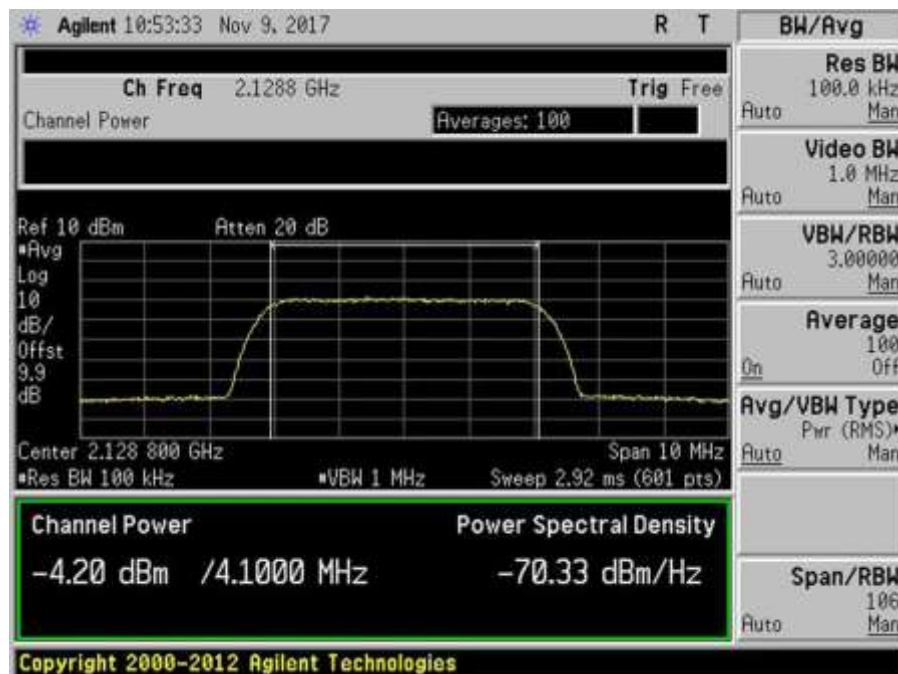
7.2\_Power\_DL\_1930-1995MHz\_AWGN



7.2\_Power\_DL\_1930-1995MHz\_AWGN\_Max

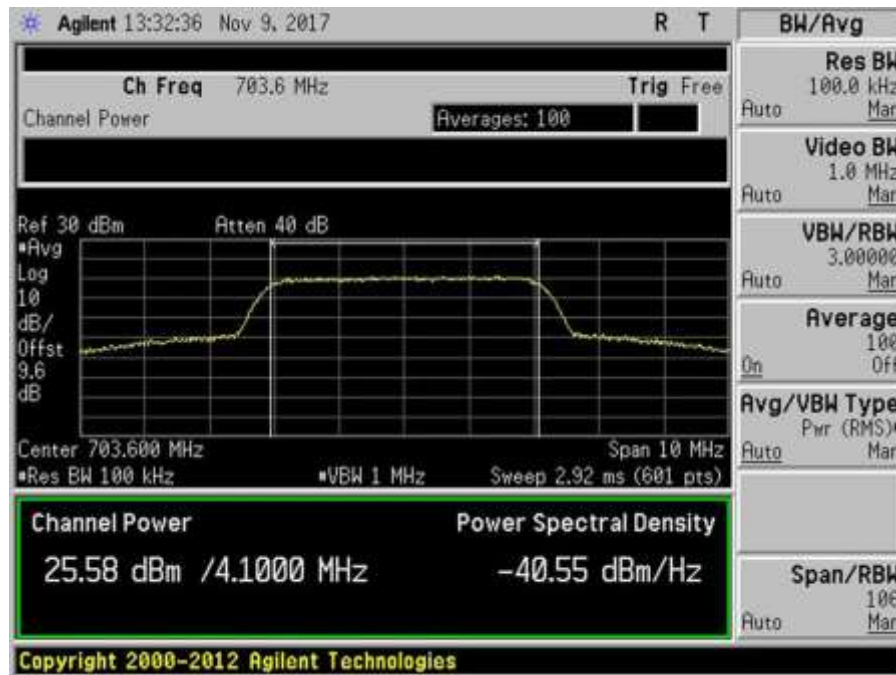


7.2\_Power\_DL\_2110-2155MHz\_AWGN

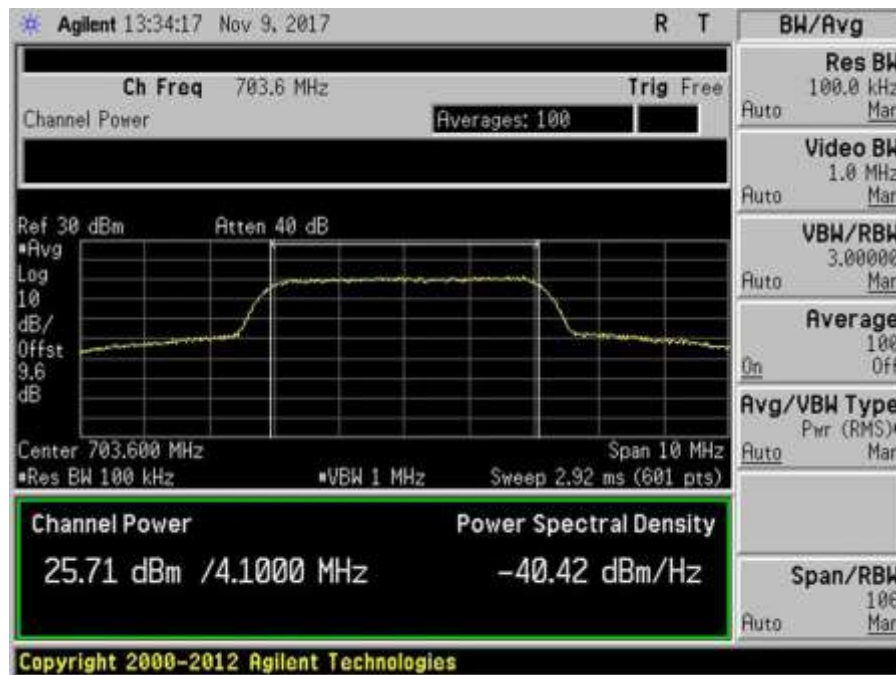


7.2\_Power\_DL\_2110-2155MHz\_AWGN\_Max

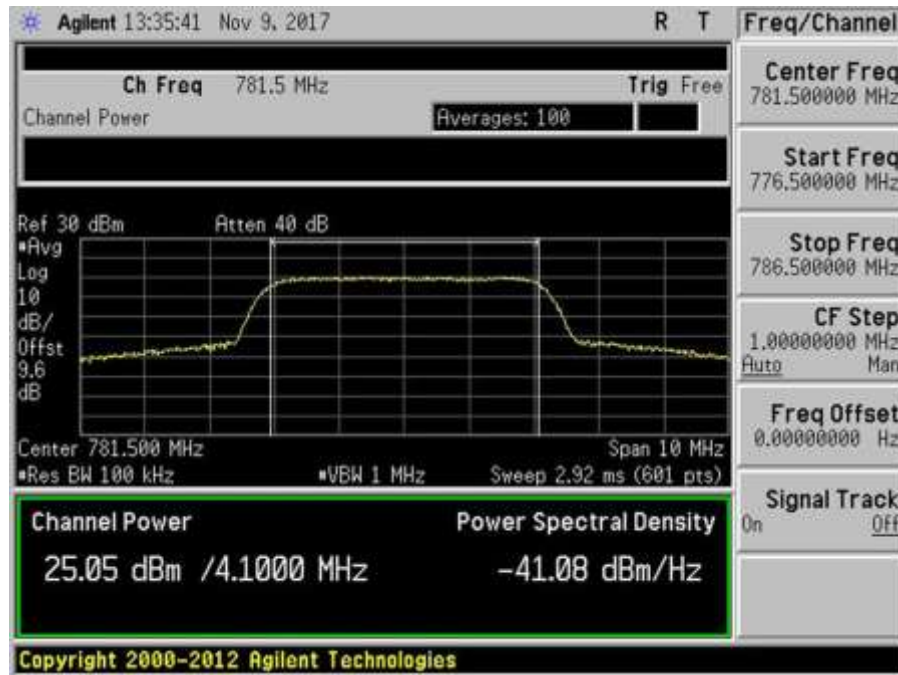
### AWGN, UL



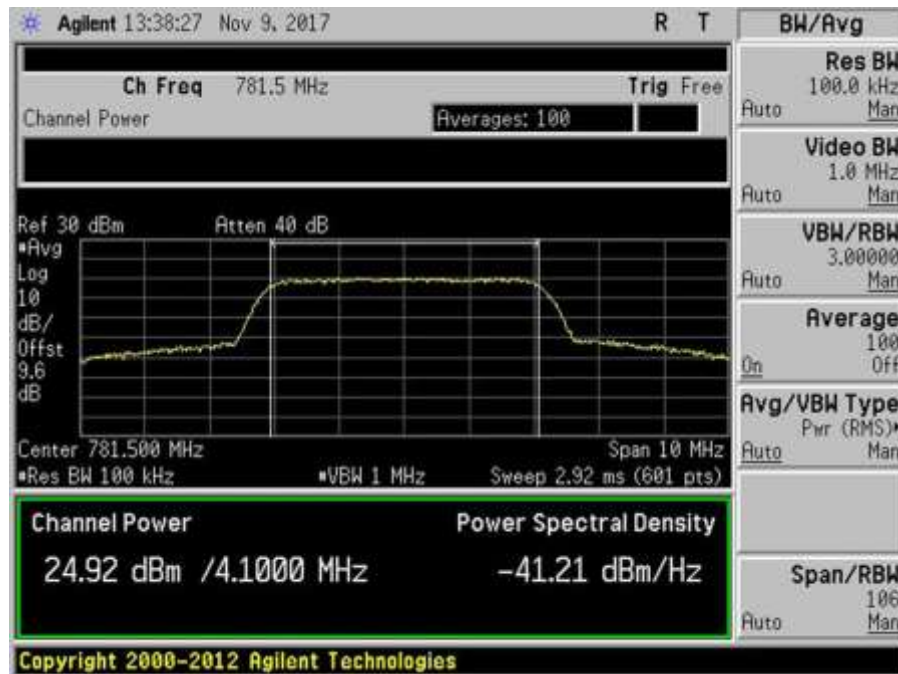
7.2\_Power\_UL\_698-716MHz\_AWGN



7.2\_Power\_UL\_698-716MHz\_AWGN\_Max



7.2\_Power\_UL\_776-787MHz\_AWGN



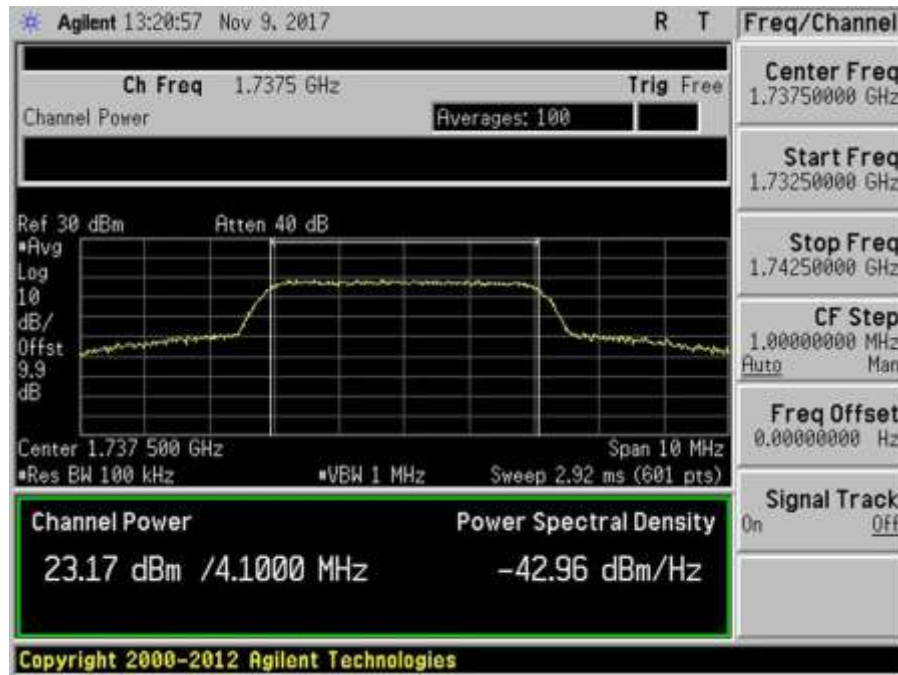
7.2\_Power\_UL\_776-787MHz\_AWGN\_Max



7.2\_Power\_UL\_824-849MHz\_AWGN



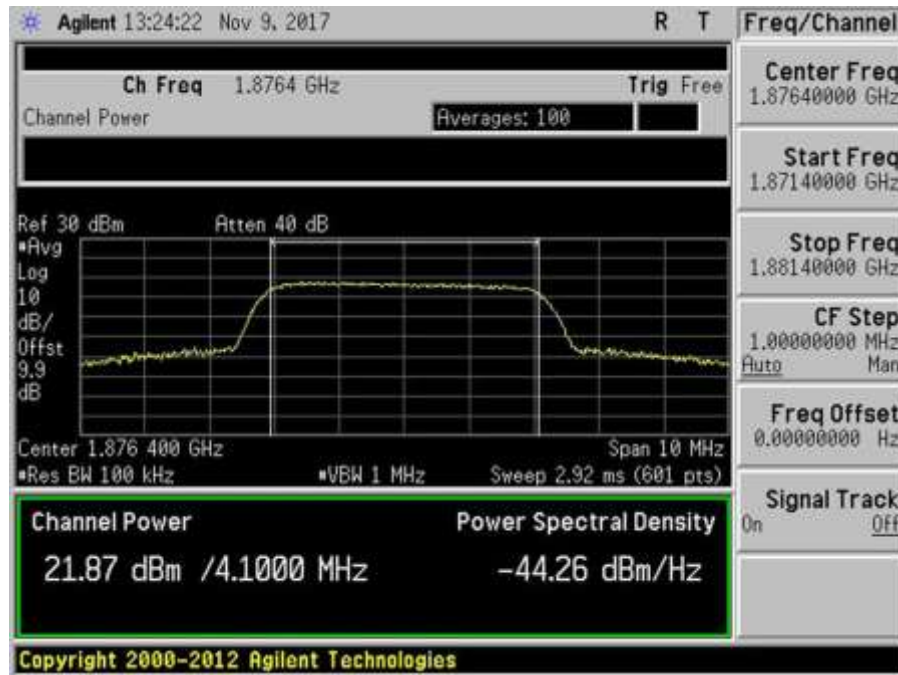
7.2\_Power\_UL\_824-849MHz\_AWGN\_Max



7.2\_Power\_UL\_1710-1755MHz\_AWGN



7.2\_Power\_UL\_1710-1755MHz\_AWGN\_Max

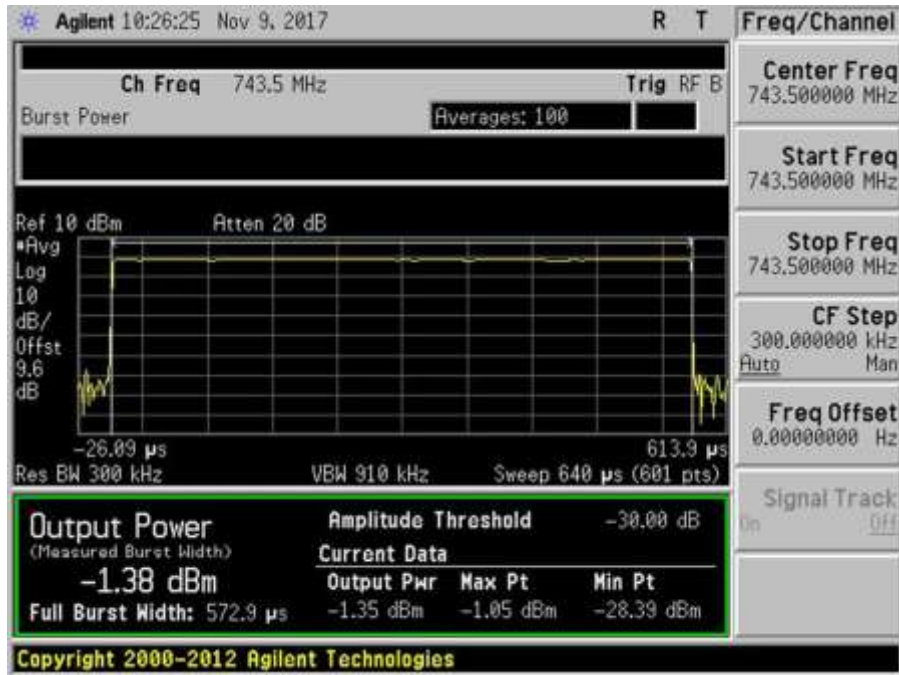


7.2\_Power\_UL\_1850-1915MHz\_AWGN

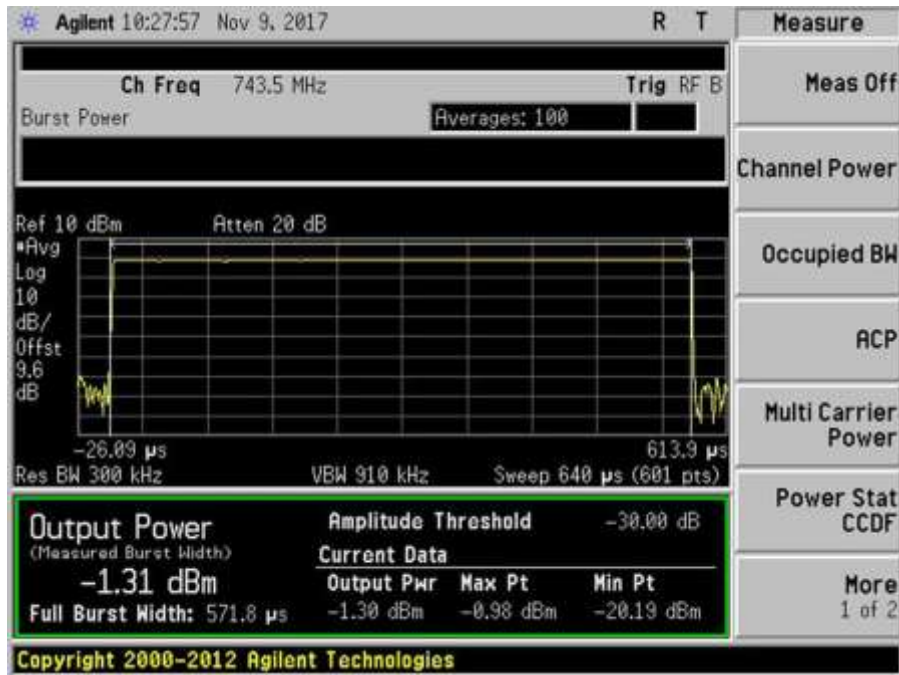


7.2\_Power\_UL\_1850-1915MHz\_AWGN\_Max

GSM, DL

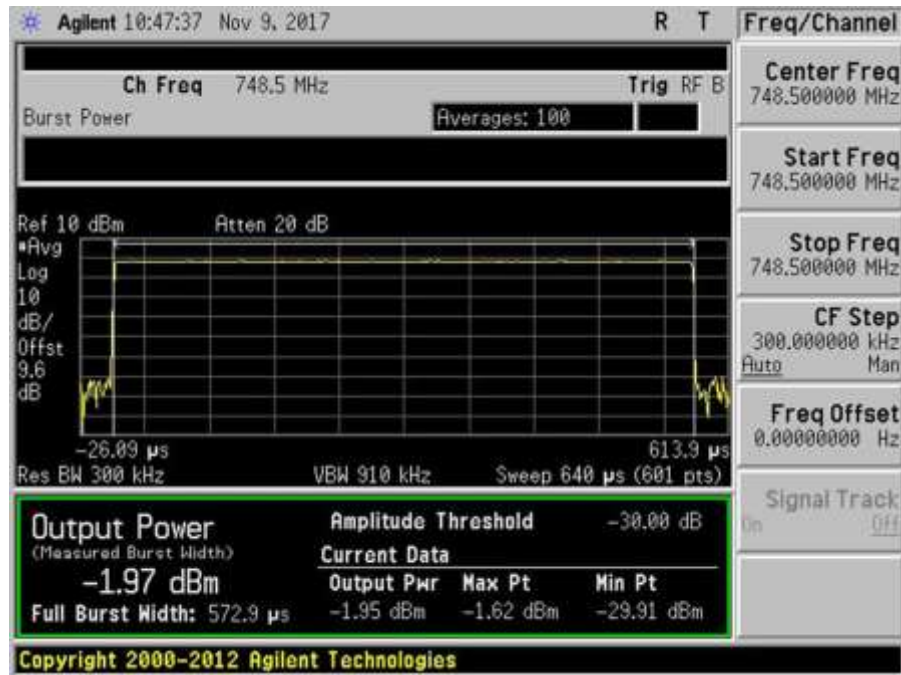


7.2\_Power\_DL\_728-746MHz\_GSM

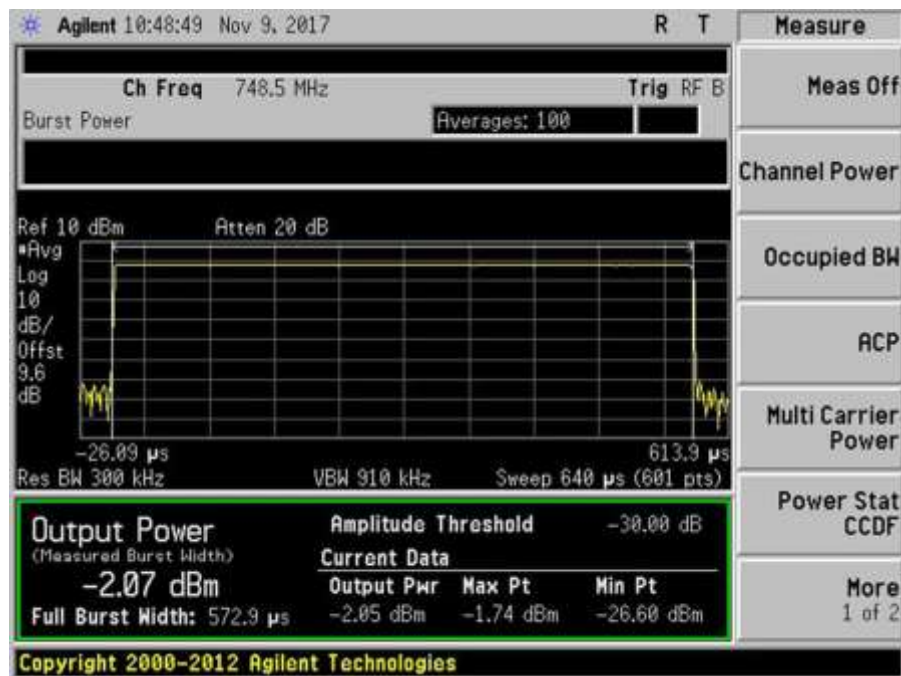


7.2\_Power\_DL\_728-746MHz\_GSM\_Max

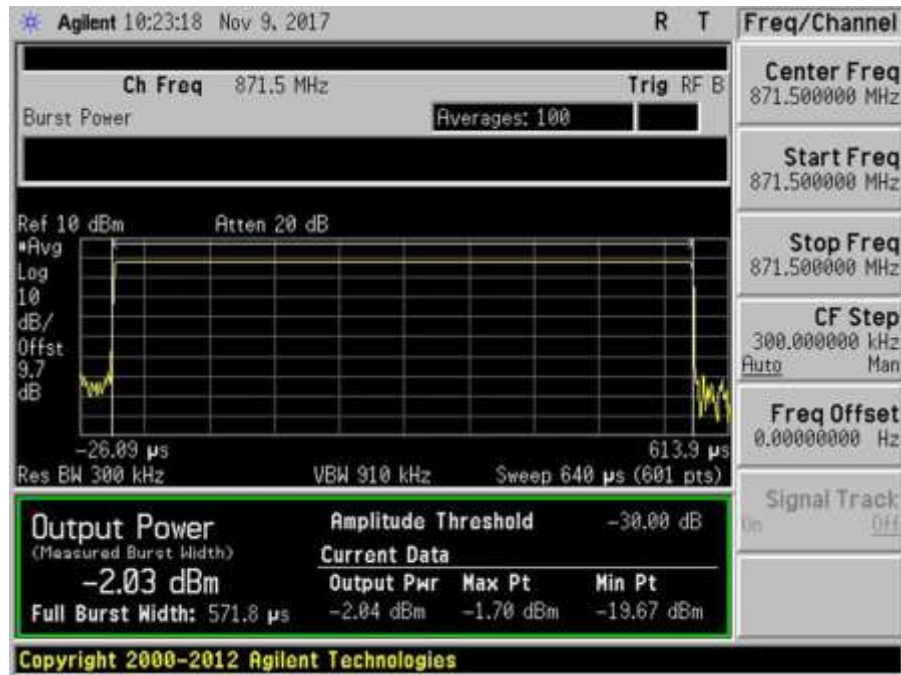




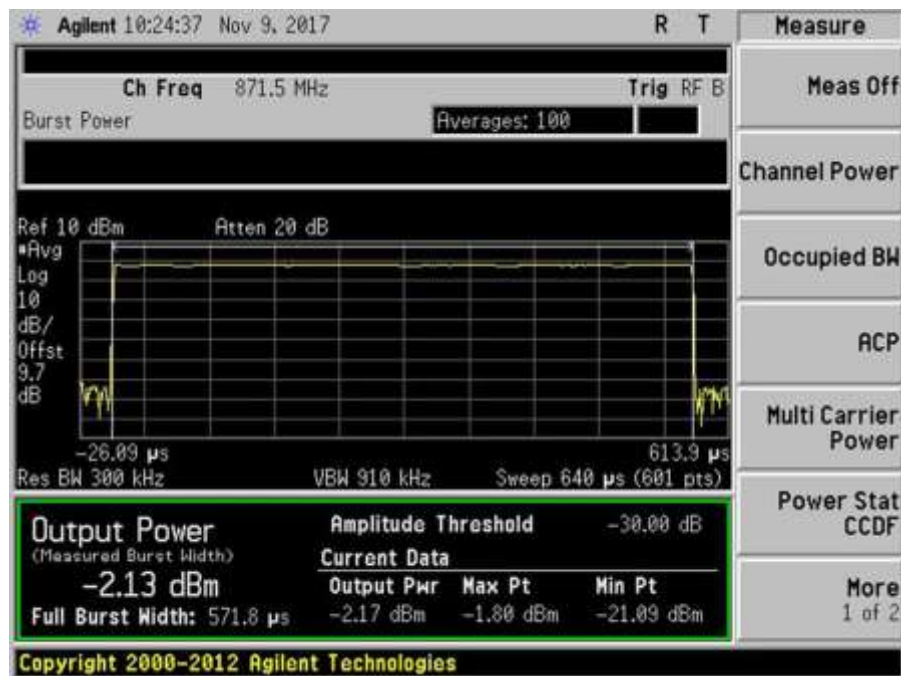
7.2\_Power\_DL\_746-757MHz\_GSM



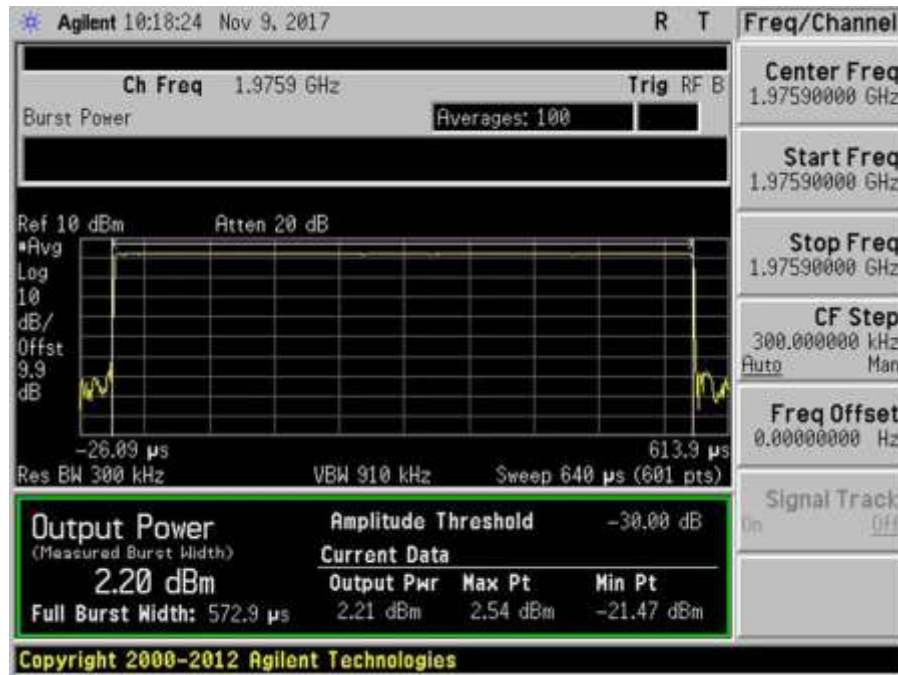
7.2\_Power\_DL\_746-757MHz\_GSM\_Max



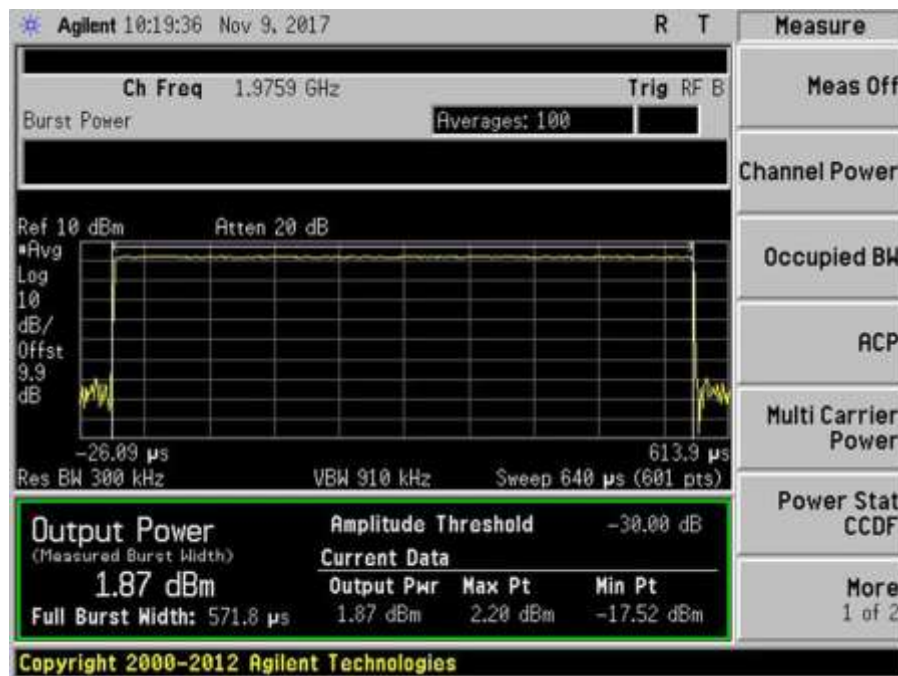
7.2\_Power\_DL\_869-894MHz\_GSM



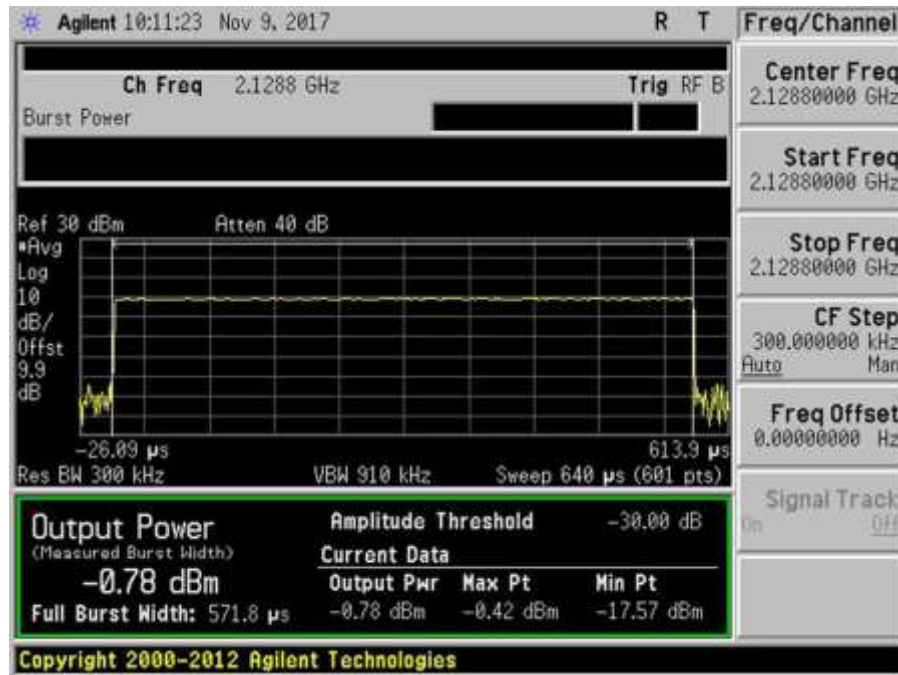
7.2\_Power\_DL\_869-894MHz\_GSM\_Max



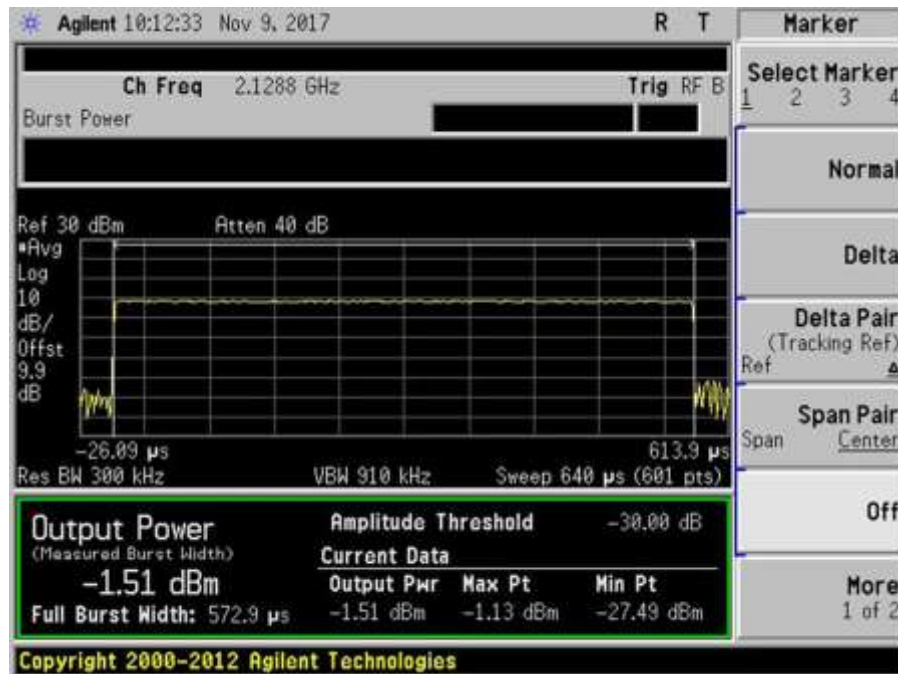
7.2\_Power\_DL\_1930-1995MHz\_GSM



7.2\_Power\_DL\_1930-1995MHz\_GSM\_Max

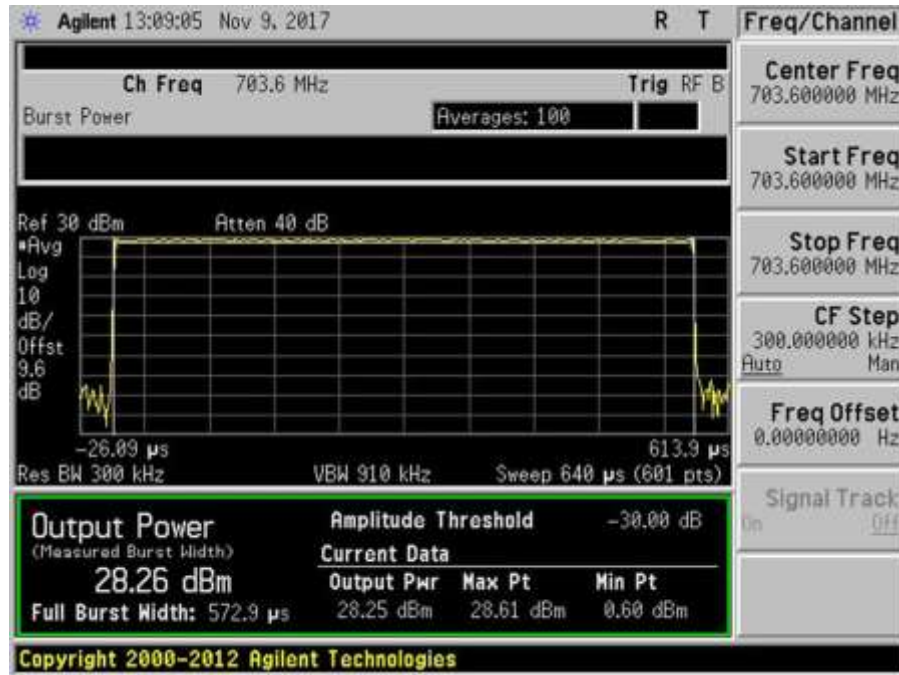


7.2\_Power\_DL\_2110-2155MHz\_GSM

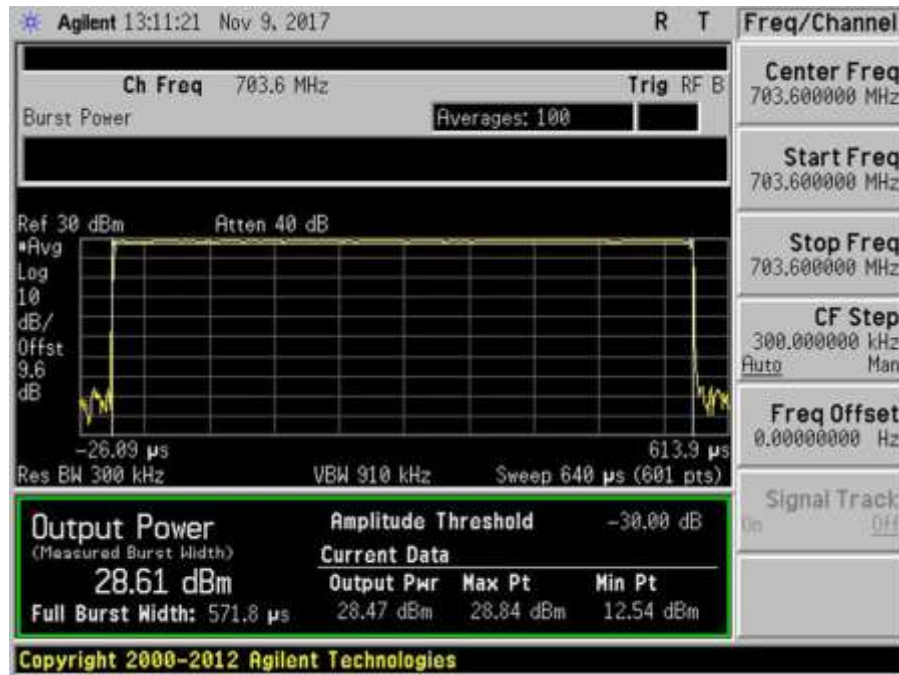


7.2\_Power\_DL\_2110-2155MHz\_GSM\_Max

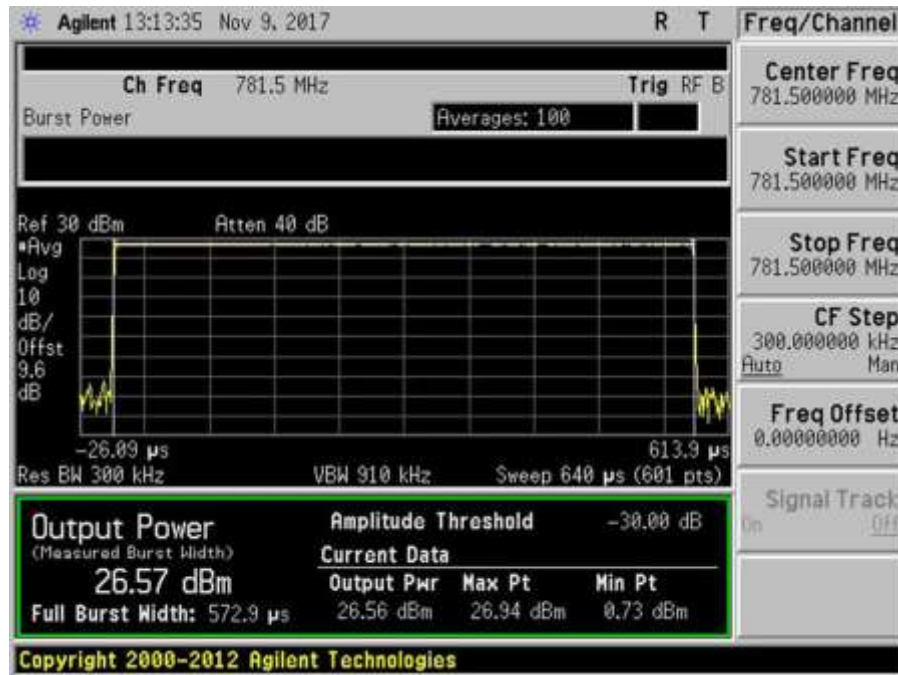
GSM, UL



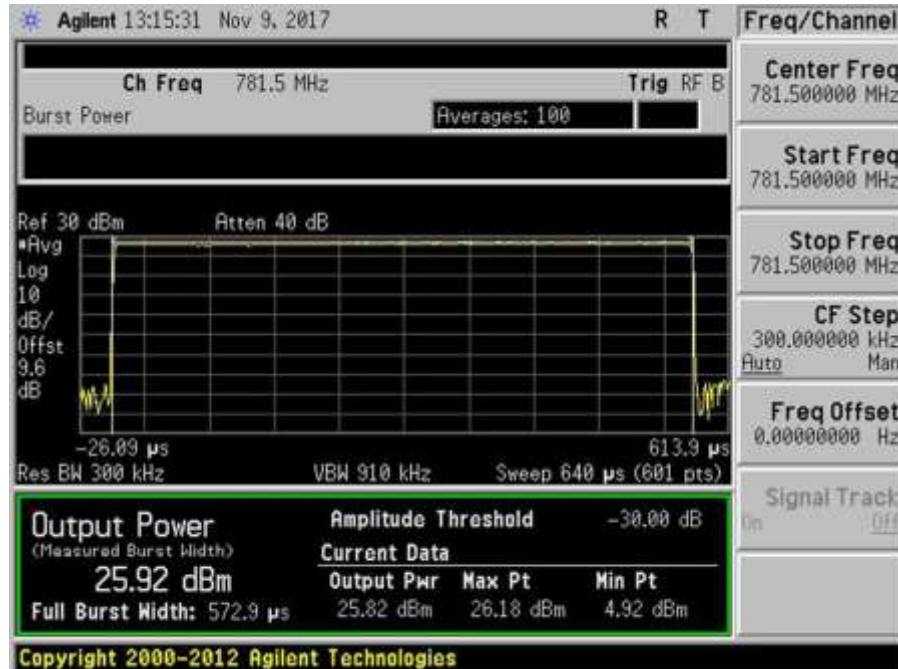
7.2\_Power\_UL\_698-716MHz\_GSM



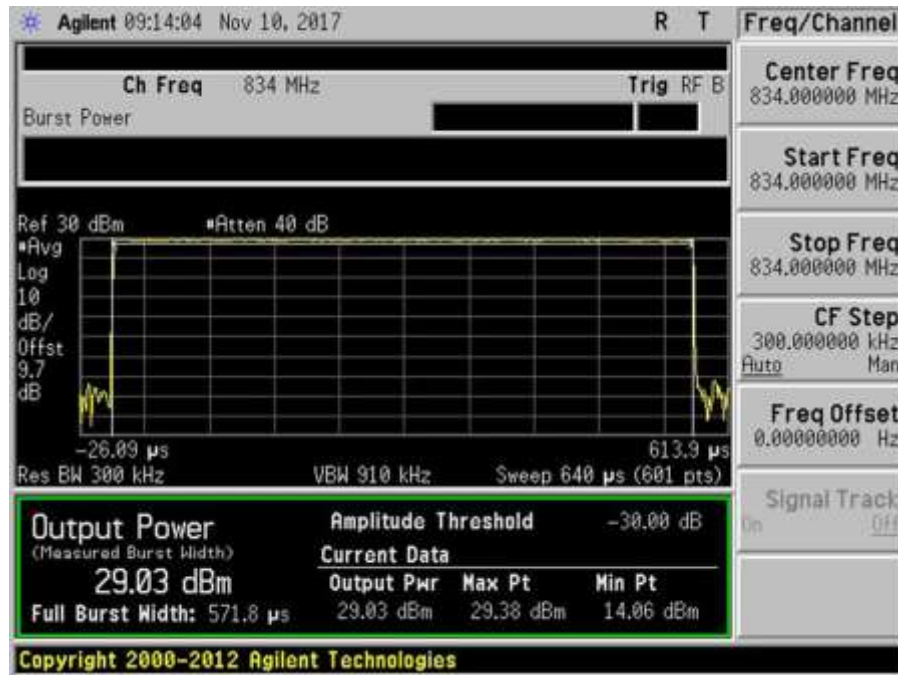
7.2\_Power\_UL\_698-716MHz\_GSM\_Max



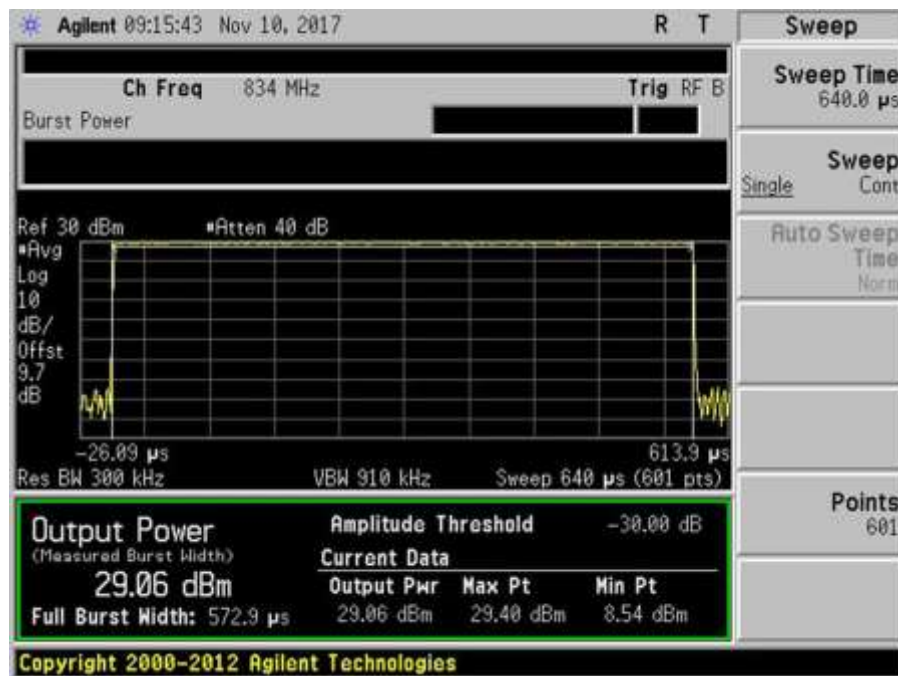
7.2\_Power\_UL\_776-787MHz\_GSM



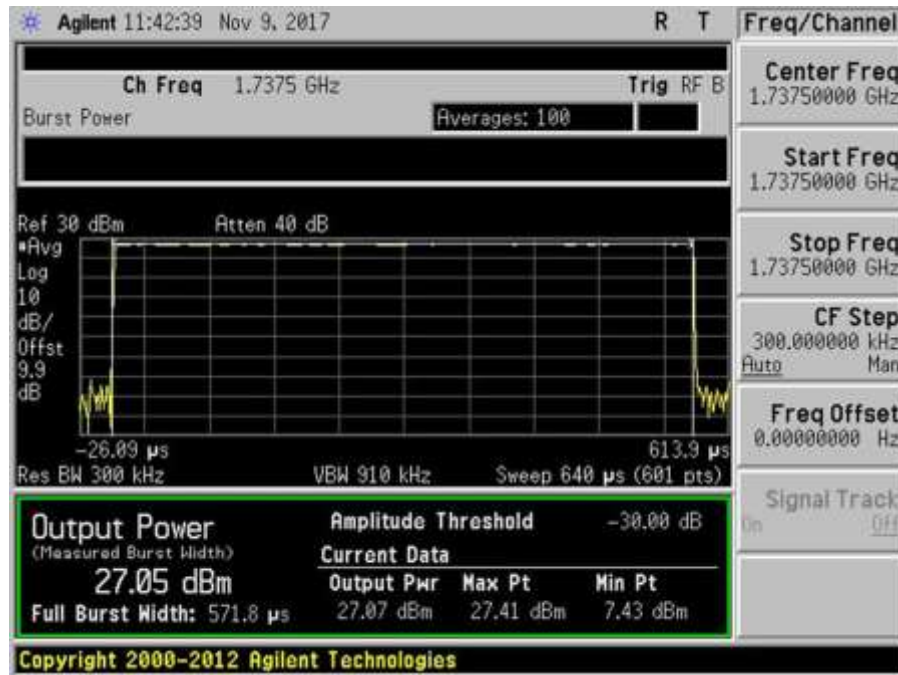
7.2\_Power\_UL\_776-787MHz\_GSM\_Max



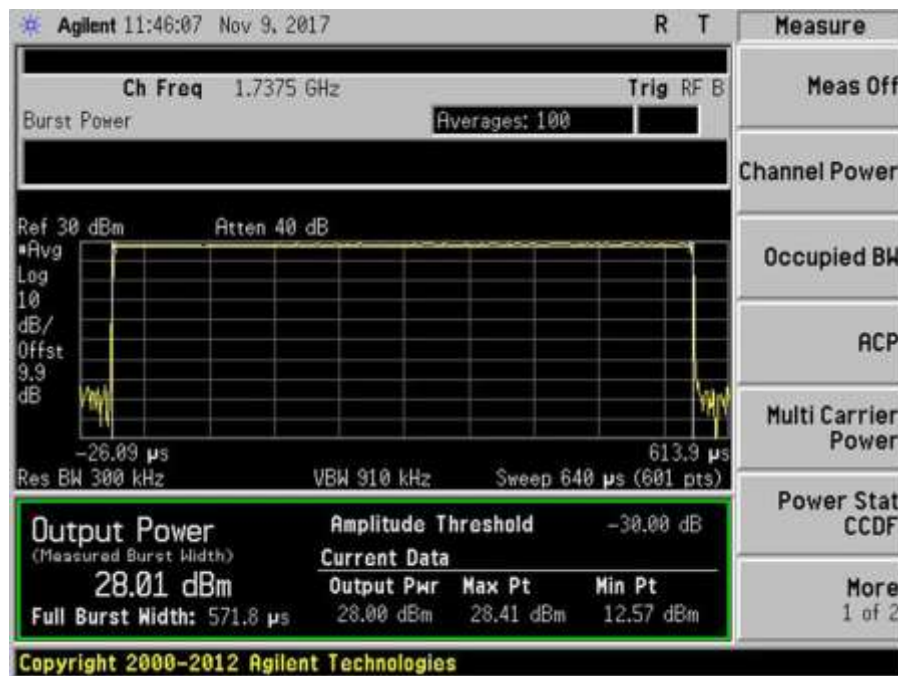
7.2\_Power\_UL\_824-849MHz\_GSM



7.2\_Power\_UL\_824-849MHz\_GSM\_Max

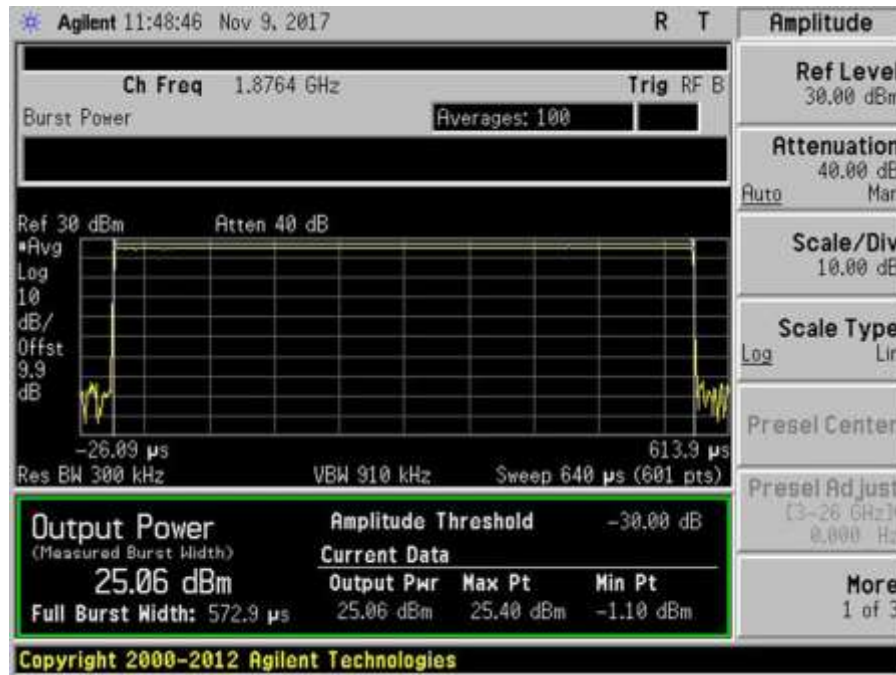


7.2\_Power\_UL\_1710-1755MHz\_GSM

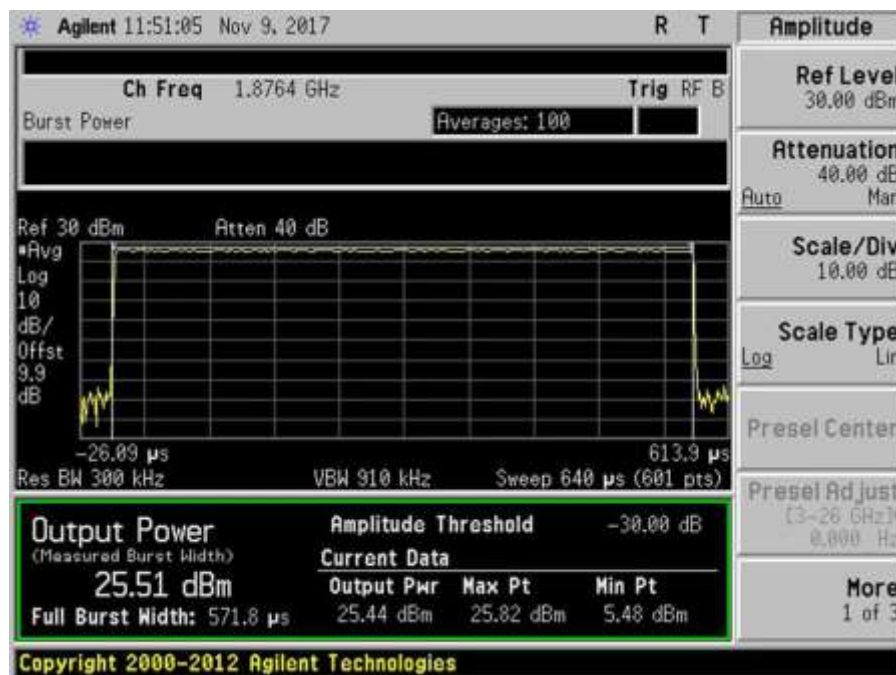


7.2\_Power\_UL\_1710-1755MHz\_GSM\_Max





7.2\_Power\_UL\_1850-1915MHz\_GSM



7.2\_Power\_UL\_1850-1915MHz\_GSM\_Max

## 7.4 Intermodulation Product

### Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170  
 Customer: Cellphone-Mate, Inc .  
 Specification: **7.4 Intermodulation Product**  
 Work Order #: **100637** Date 9/4/18  
 Test Type: **Conducted Emissions**  
 Tested By: **Hieu S. Nguyenpham**  
 Software: EMITest 5.03.11

***Equipment Tested:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Support Equipment:***

Device	Manufacturer	Model #	S/N
Configuration 1			

***Test Conditions / Notes:***

Test environment conditions: Temperature: 21.0°C Relative Humidity: 57.8% Pressure: 102.5kPa
---

***Test Equipment:***

Asset #	Description	Manufacturer	Model	Calibration Date	Cal Due Date
P05411	Attenuator	Weinschel	54A-10	1/19/2018	1/19/2020
P07192	Cable	Astro	32022-29094K-29094K-48TC	10/9/2017	10/9/2019
P07191	Cable	Astro	32022-29094K-29094K-48TC	10/30/2017	10/30/2019
03418	Signal Generator	Agilent	E4438C	6/19/2017	6/19/2019
03470	Spectrum Analyzer	Agilent	E4440A	1/3/2018	1/3/2020

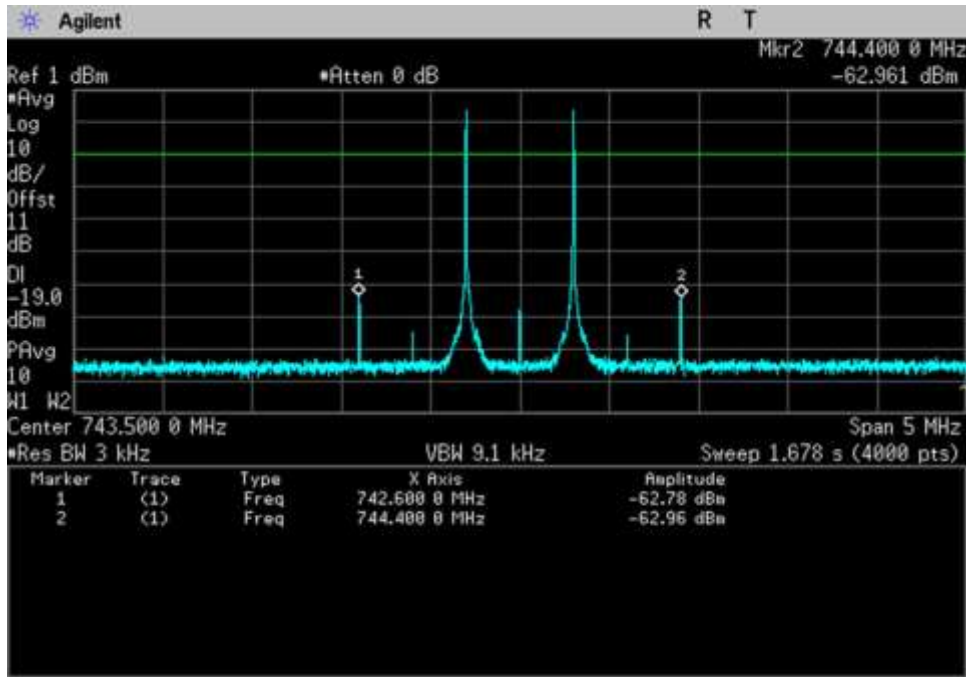
**Summary of Results**

Pass: As shown on the plots, all intermodulation products are measured below -19dbm limit.

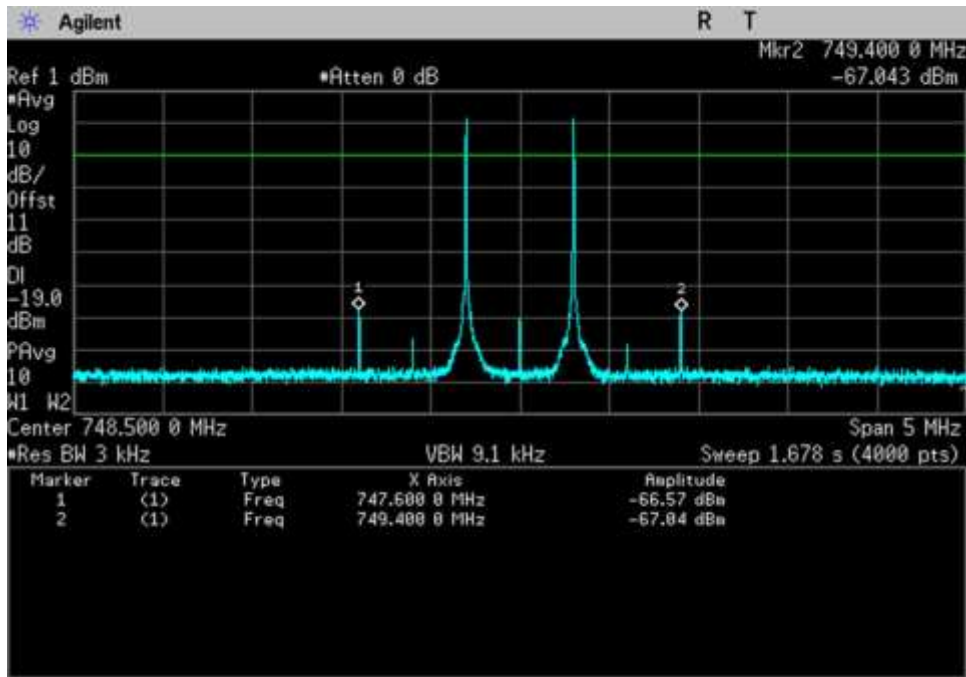
Inter Modulation Product			
Frequency (MHz)	Pre AGC (dBm)	Limit (dBm)	Results
UL 1710-1755	-20.1	-19	Pass
UL 1850-1915	-23.8	-19	Pass
UL 824-894	-23.0	-19	Pass
UL 698-716	-20.7	-19	Pass
UL 776-787	-23.4	-19	Pass
DL 2110-2155	-56.1	-19	Pass
DL 1930-1995	-62.5	-19	Pass
DL 869-894	-69.8	-19	Pass
DL 728-746	-62.8	-19	Pass
DL 746-757	-66.6	-19	Pass

Note: The EUT maintains compliance with the intermodulation limit at input power of AGC+10dB.

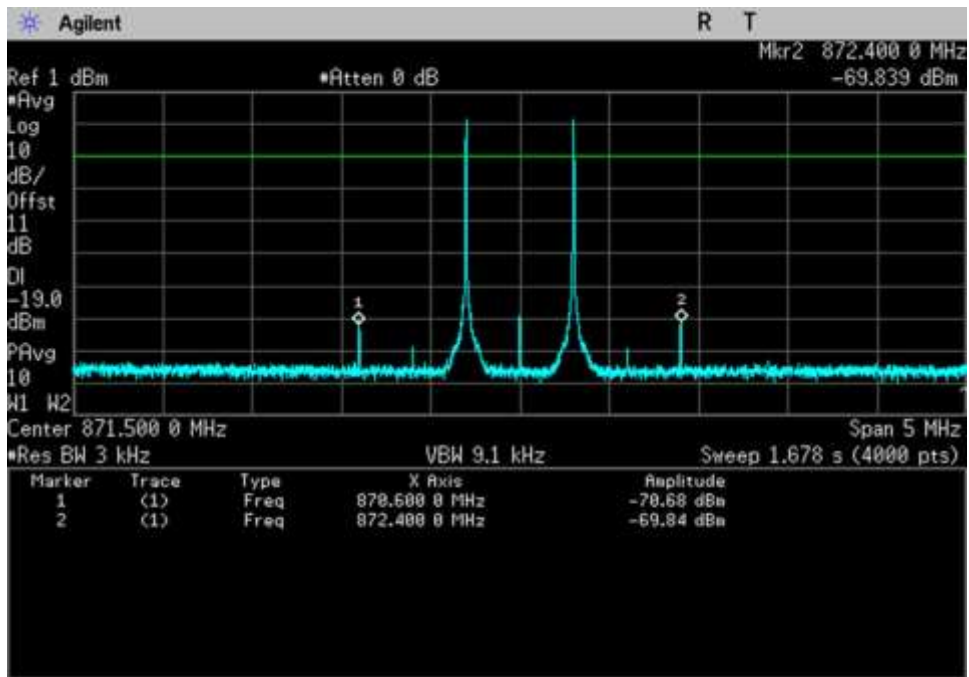
Plots



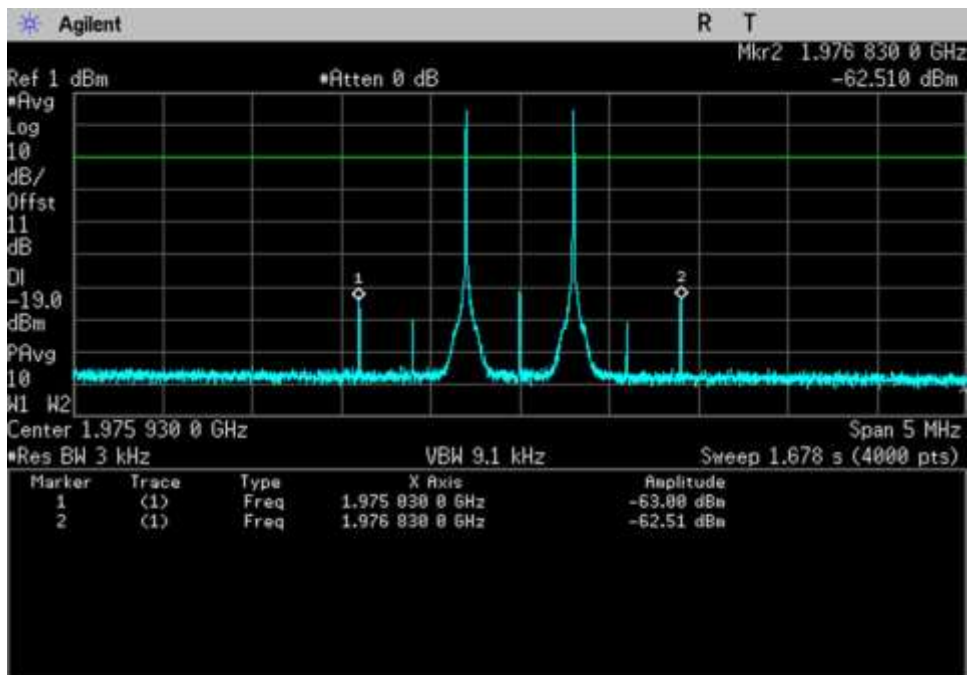
7.4\_Intermod\_DL\_728-746MHz, 743.5MHz



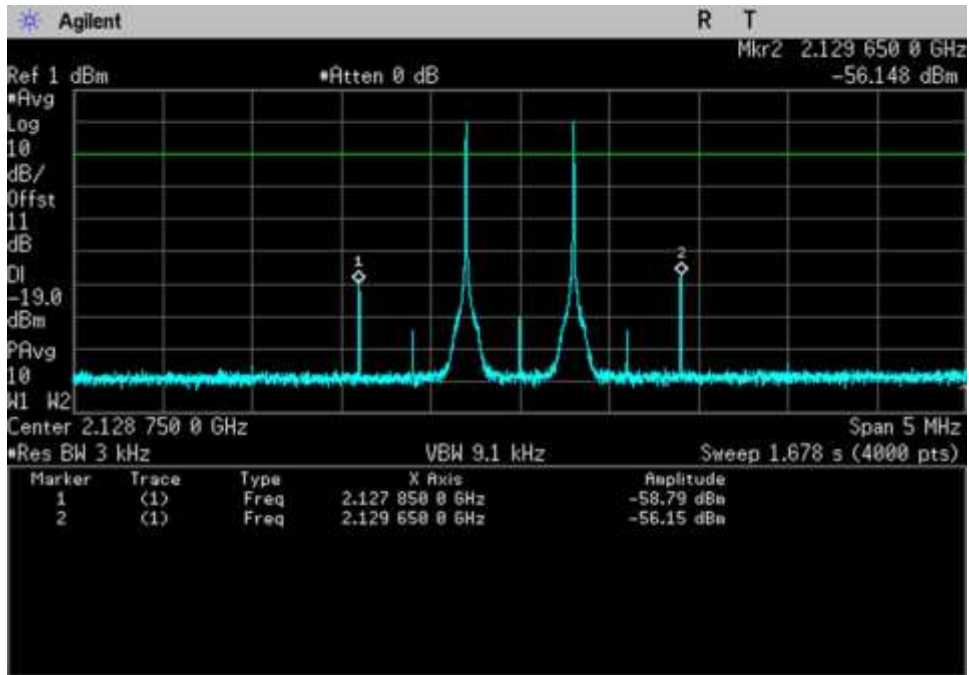
7.4\_Intermod\_DL\_746-757MHz, 748.5MHz



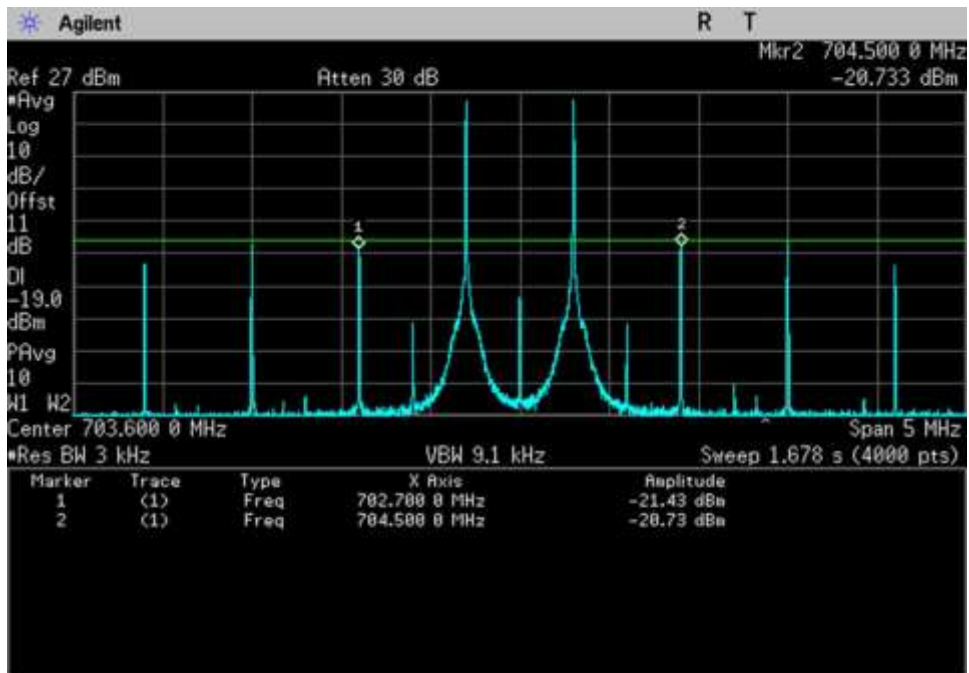
7.4\_Intermod\_DL\_869-894MHz, 871.5MHz



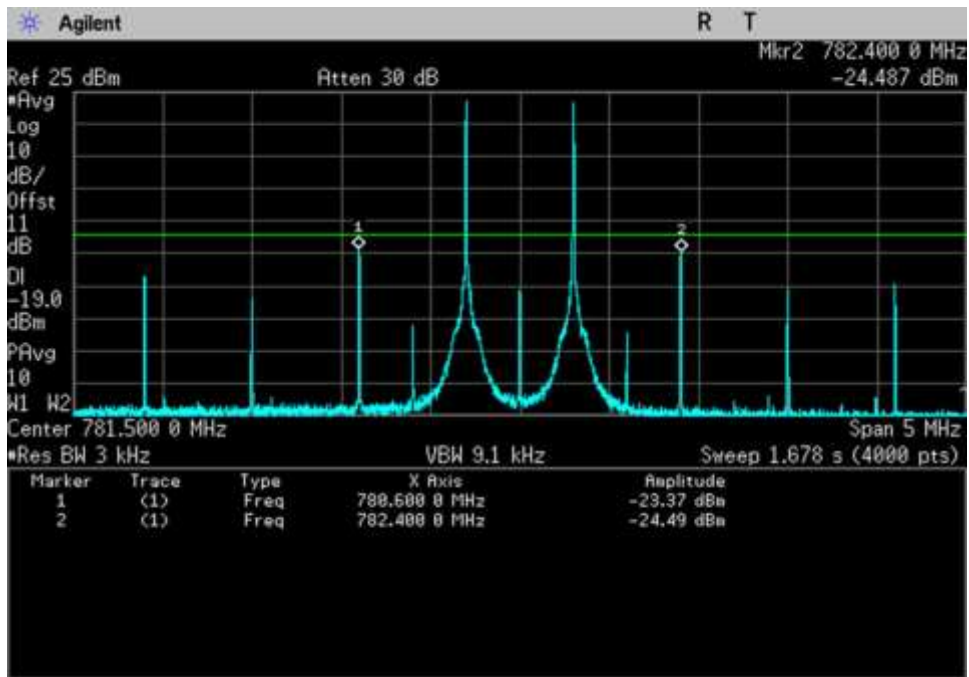
7.4\_Intermod\_DL\_1930-1995MHz, 1975.93MHz



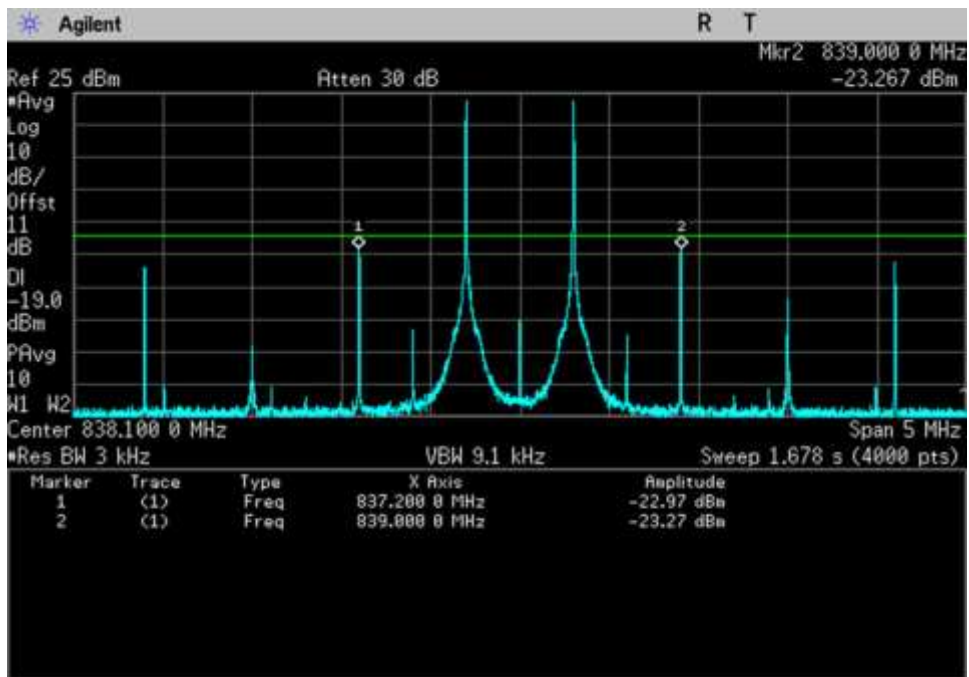
7.4\_Intermod\_DL\_2110-2155MHz, 2128.75MHz



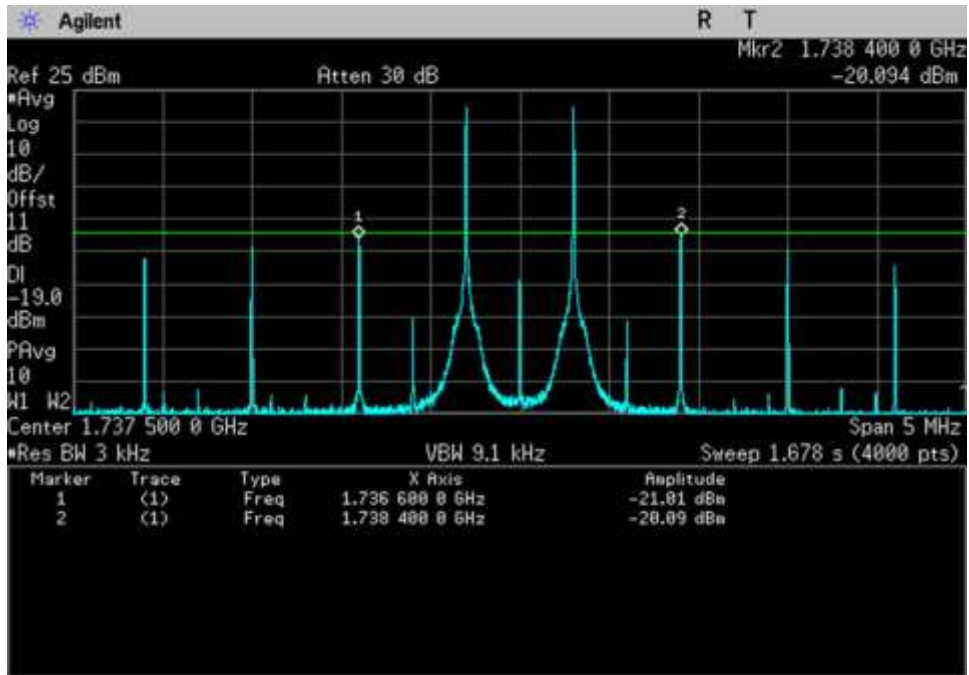
7.4\_Intermod\_UL\_698-716MHz, 703.6MHz



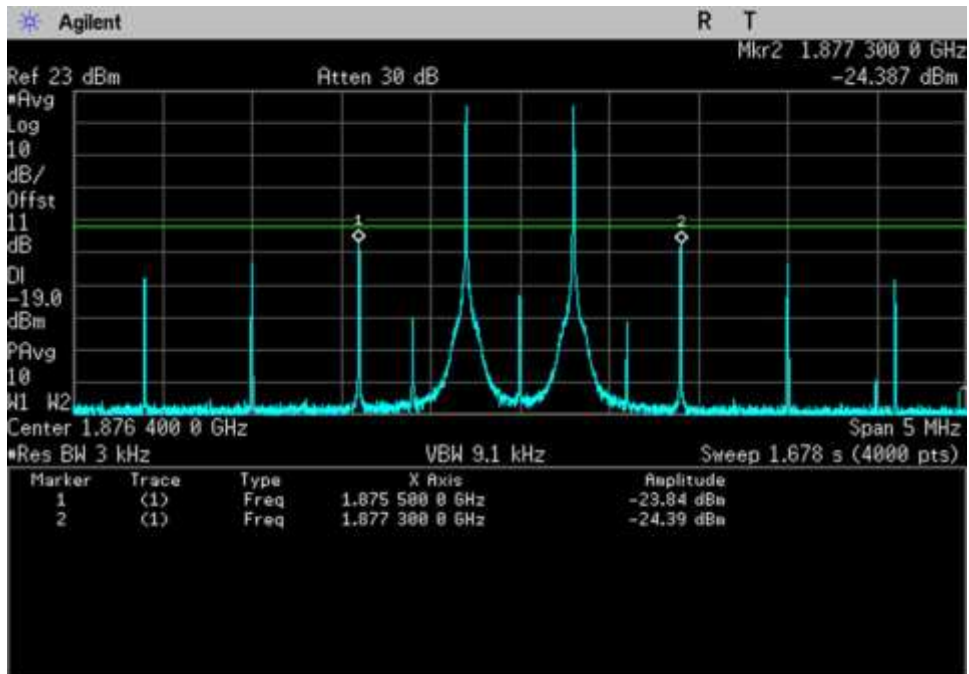
7.4\_Intermod\_UL\_776-787MHz, 781.5MHz



7.4\_Intermod\_UL\_824-849MHz, 838.1MHz



7.4\_Intermod\_UL\_1710-1755MHz, 1737.5MHz



7.4\_Intermod\_UL\_1850-1915MHz, 1876.4MHz



## 7.5 Out of Band Emissions

### Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170  
 Customer: Cellphone-Mate, Inc  
 Specification: **7.5 Out-of-band Emissions**  
 Work Order #: **100637** Date: 11/10/2017  
 Test Type: **Conducted Emissions** Time: 9:48:00 AM  
 Tested By: **Daniel Bertran** Sequence#: 1  
 Software: EMITest 5.03.11

**Equipment Tested:**

Device	Manufacturer	Model #	S/N
Configuration 1			

**Support Equipment:**

Device	Manufacturer	Model #	S/N

**Test Conditions / Notes:**

The equipment under test (EUT) is a Mobile Wideband Consumer Booster. The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port. The EUT Server port is a type FME connector and 50-ohm impedance. The EUT Donor port is type FME connector and 50-ohm impedance.

Part 22  
 UL: 824-849MHz  
 DL: 869-894MHz

Part 24  
 UL: 1850-1915MHz  
 DL: 1930-1995MHz

Part 27  
 UL: 1710-1755MHz, 698-716MHz, 776-787MHz  
 DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure: The test was performed in accordance with section 7.5 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04r01 Dated October 27, 2017.  
 Firmware: V 3.0  
 Test environment conditions: 22°C, 44% Relative Humidity, 101.5 kPa  
 Additional plots taken at 1dB before EUT shuts down and before reaching the maximum input level indicated in section 5.5 of above document.

- Maximum uplink transmitter test levels for mobile wideband consumer signal booster: +10 dBm
- The maximum downlink input level for all device types is -20 dBm

Lower RBW was used as applicable per rule part, in addition integration power function of the Spectrum Analyzers' Adjacent Channel Power tool was used to show compliance in instances where accuracy can be improved by integrating power measured in smaller RBW and linearly summed into standard bandwidth.

Used for testing the alternative test modulation types:

- CDMA (alternative 1.25 MHz AWGN\*)
- LTE 5 MHz (alternative 4.1 MHz AWGN\*)

\*AWGN test signal, the bandwidth was measured 99% occupied bandwidth.

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	6/19/2017	6/19/2019
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	12/9/2015	12/9/2017

**Summary of Results**

Pass: as indicated in plots above, all OBE are under the limit of -19dBm.

**GSM**

Low				Hi			
Out of Band Emission				Out of Band Emission			
Freq (MHz)	Pre AGC	Limit (dBm)	Results	Freq (MHz)	Pre AGC	Limit (dBm)	Results
UL1710-1755	-23.1	-19	Pass	UL1710-1755	-25.1	-19	Pass
UL1850-1915	-22.3	-19	Pass	UL1850-1915	-24.4	-19	Pass
UL824-849	-20.6	-19	Pass	UL824-849	-25.5	-19	Pass
UL 698-716	-20.7	-19	Pass	UL 698-716	-23.8	-19	Pass
UL776-787	-20.1	-19	Pass	UL776-787	-26.5	-19	Pass
DL2110-2155	-42.0	-19	Pass	DL2110-2155	-42.6	-19	Pass
DL1930-1995	-40.8	-19	Pass	DL1930-1995	-42.9	-19	Pass
DL869-894	-49.2	-19	Pass	DL869-894	-50.6	-19	Pass
DL:728-746	-53.7	-19	Pass	DL:728-746	-48.7	-19	Pass
DL 746-757	-49.8	-19	Pass	DL 746-757	-51.9	-19	Pass

**CDMA (alternative 1.25 MHz AWGN)**

Low				Hi			
Out of Band Emission				Out of Band Emission			
Freq (MHz)	Pre AGC	Limit (dBm)	Results	Freq (MHz)	Pre AGC	Limit (dBm)	Results
UL1710-1755	-22.0	-19	Pass	UL1710-1755	-27.9	-19	Pass
UL1850-1915	-26.2	-19	Pass	UL1850-1915	-28.6	-19	Pass
UL824-849	-24.0	-19	Pass	UL824-849	-26.4	-19	Pass
UL 698-716	-27.2	-19	Pass	UL 698-716	-36.0	-19	Pass
UL776-787	-30.4	-19	Pass	UL776-787	-37.4	-19	Pass
DL2110-2155	-43.3	-19	Pass	DL2110-2155	-42.0	-19	Pass
DL1930-1995	-44.4	-19	Pass	DL1930-1995	-42.9	-19	Pass
DL869-894	-52.9	-19	Pass	DL869-894	-52.6	-19	Pass
DL:728-746	-58.6	-19	Pass	DL:728-746	-58.7	-19	Pass
DL 746-757	-58.4	-19	Pass	DL 746-757	-58.7	-19	Pass

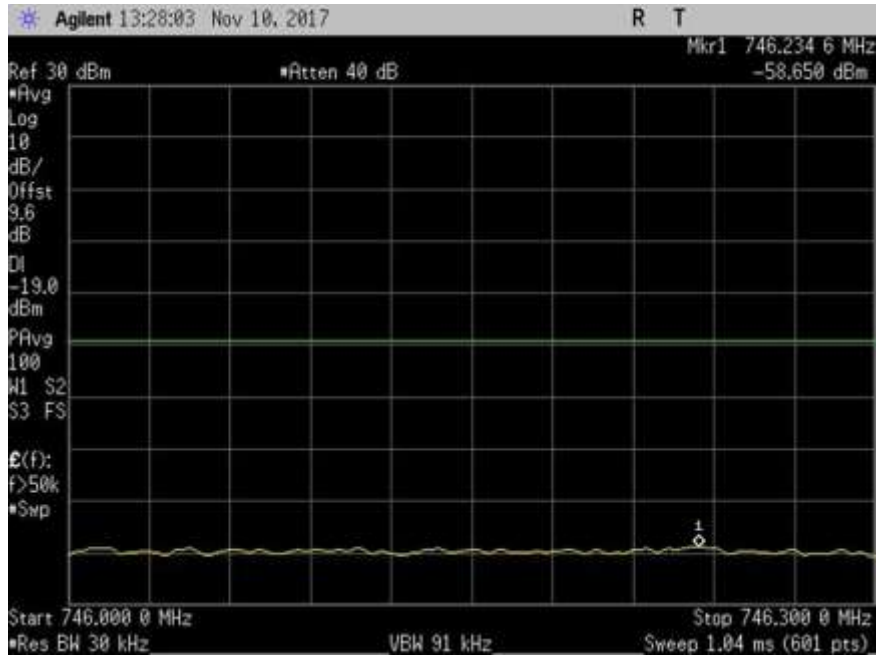
**LTE (alternative 4.1MHz AWGN)**

Low				Hi			
Out of Band Emission				Out of Band Emission			
Freq (MHz)	Pre AGC	Limit (dBm)	Results	Freq (MHz)	Pre AGC	Limit (dBm)	Results
UL1710-1755	-19.4	-19	Pass	UL1710-1755	-23.0	-19	Pass
UL1850-1915	-19.6	-19	Pass	UL1850-1915	-24.3	-19	Pass
UL824-849	-20.5	-19	Pass	UL824-849	-21.1	-19	Pass
UL 698-716	-21.1	-19	Pass	UL 698-716	-20.3	-19	Pass
UL776-787	-19.3	-19	Pass	UL776-787	-20.0	-19	Pass
DL2110-2155	-42.9	-19	Pass	DL2110-2155	-43.1	-19	Pass
DL1930-1995	-43.3	-19	Pass	DL1930-1995	-43.3	-19	Pass
DL869-894	-48.0	-19	Pass	DL869-894	-47.5	-19	Pass
DL:728-746	-52.7	-19	Pass	DL:728-746	-44.4	-19	Pass
DL 746-757	-44.9	-19	Pass	DL 746-757	-50.1	-19	Pass

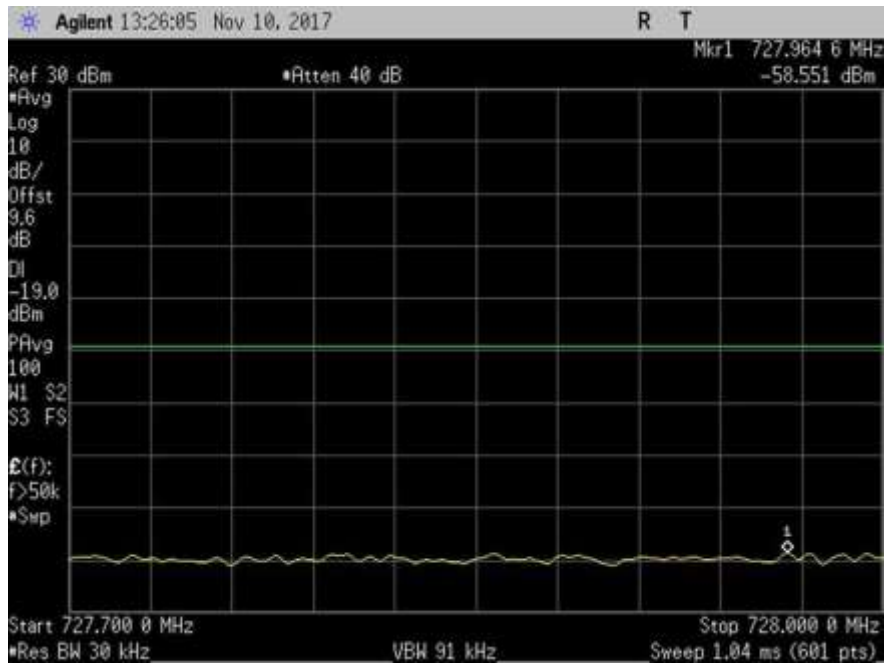
Note: The EUT also maintains compliance with the out-of-band emissions limit at input power indicated in section 5.5.

**Plots**

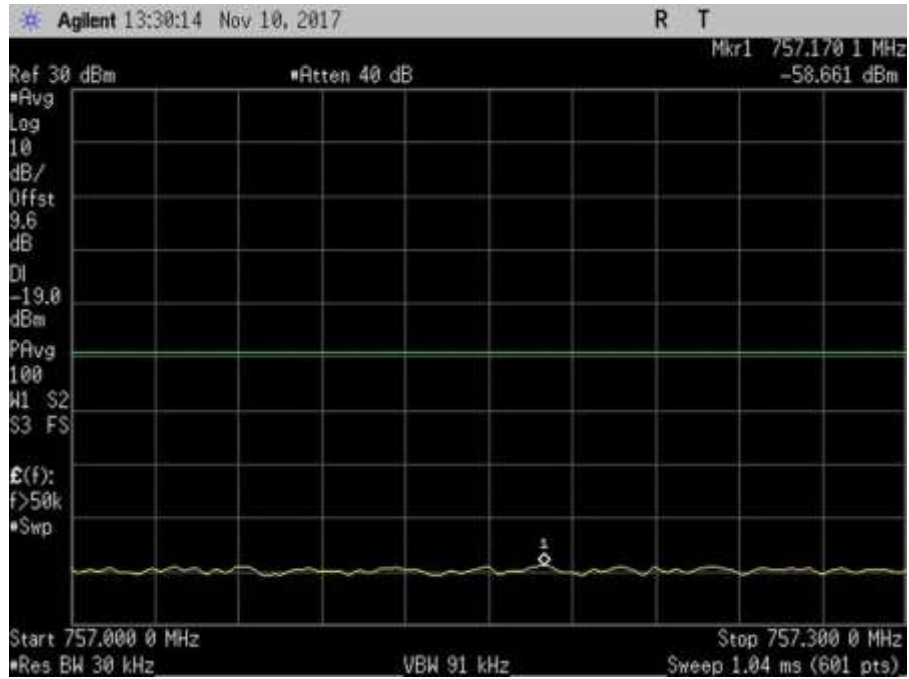
**CDMA, DL**



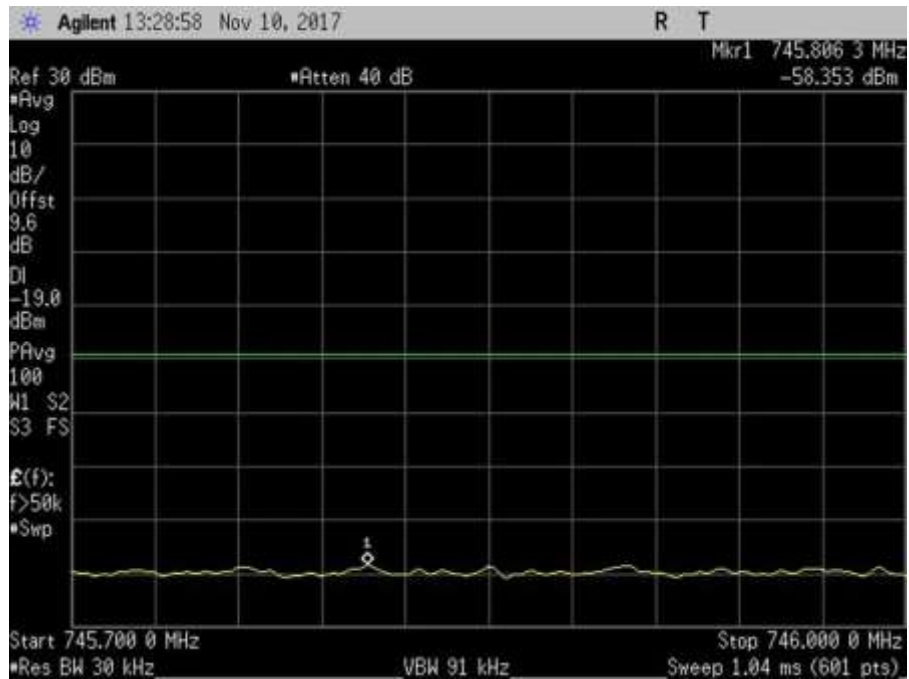
7.5\_OBE\_DL\_728-746MHz\_H\_PreAGC\_CDMA



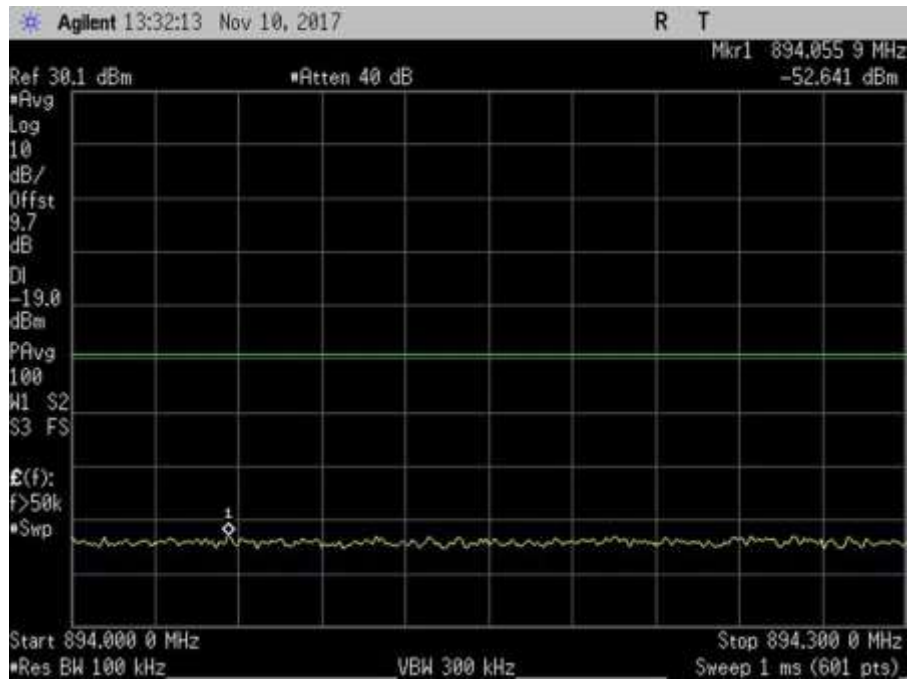
7.5\_OBE\_DL\_728-746MHz\_L\_PreAGC\_CDMA



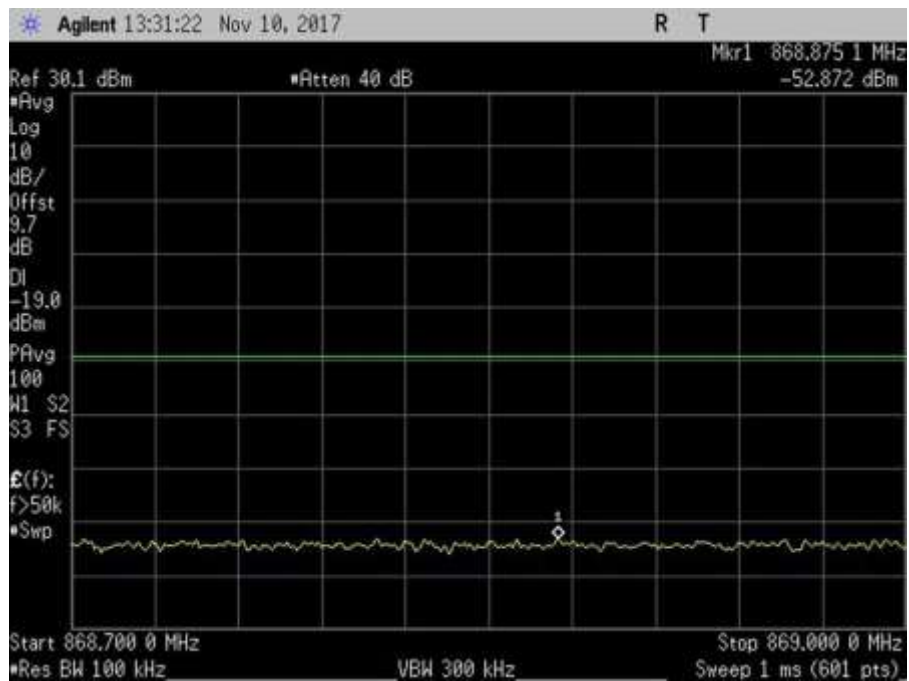
7.5\_OBE\_DL\_746-757MHz\_H\_PreAGC\_CDMA



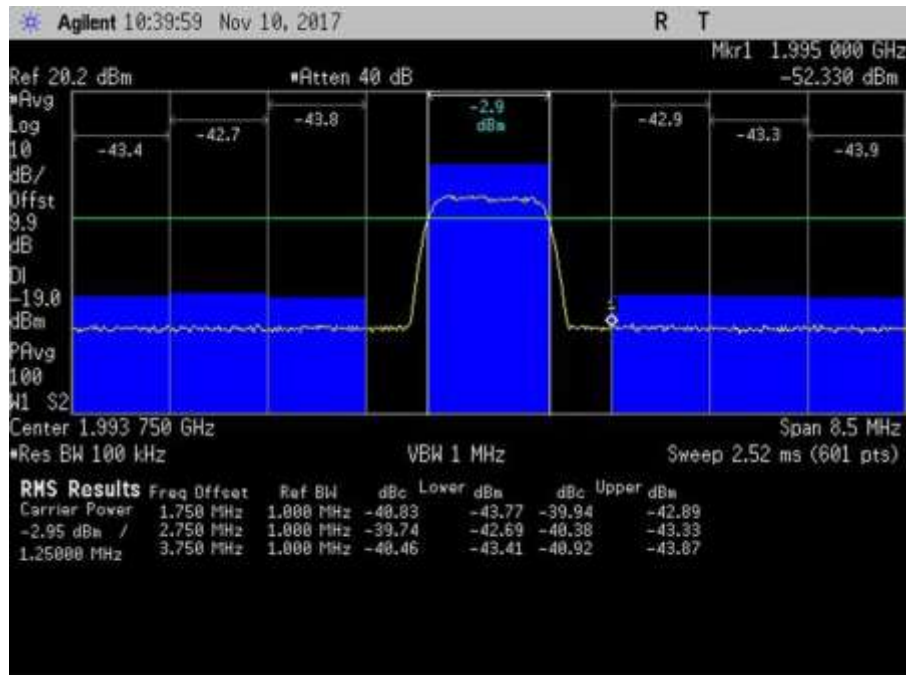
7.5\_OBE\_DL\_746-757MHz\_L\_PreAGC\_CDMA



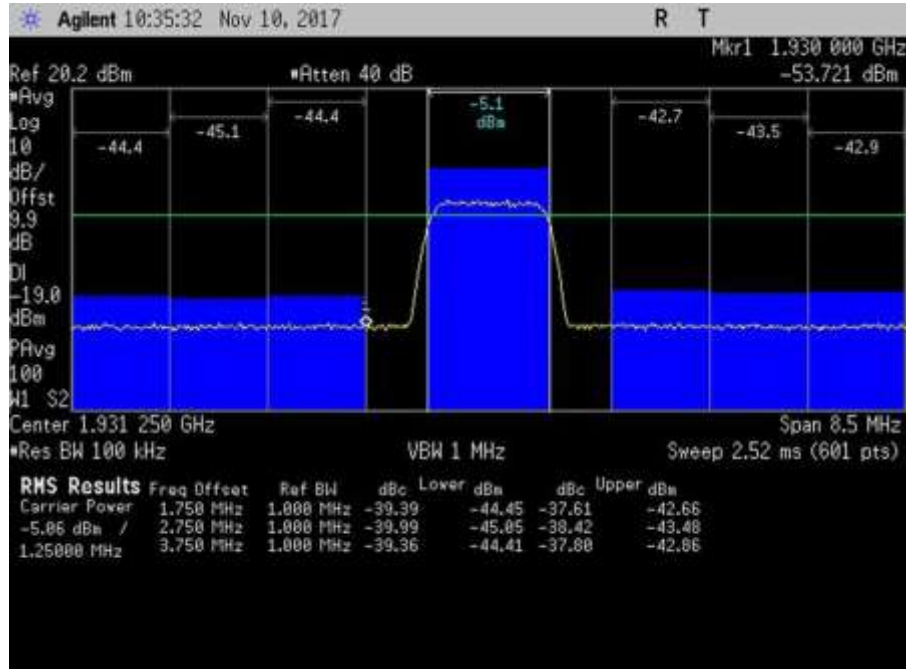
7.5\_OBE\_DL\_896-894MHz\_H\_PreAGC\_CDMA



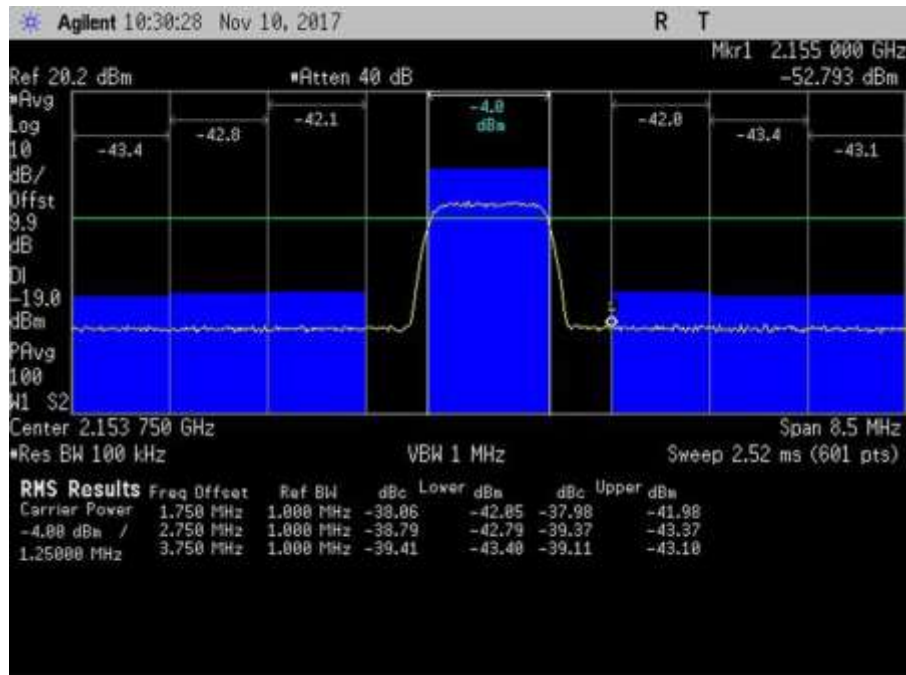
7.5\_OBE\_DL\_896-894MHz\_L\_PreAGC\_CDMA



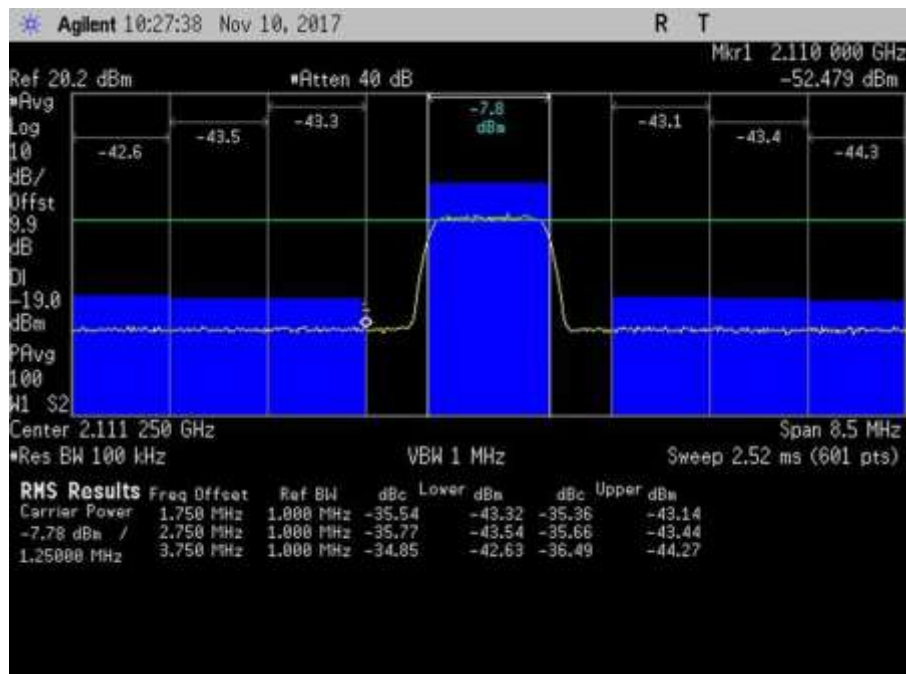
7.5\_OBE\_DL\_1930-1995MHz\_H\_PreAGC\_CDMA



7.5\_OBE\_DL\_1930-1995MHz\_L\_PreAGC\_CDMA



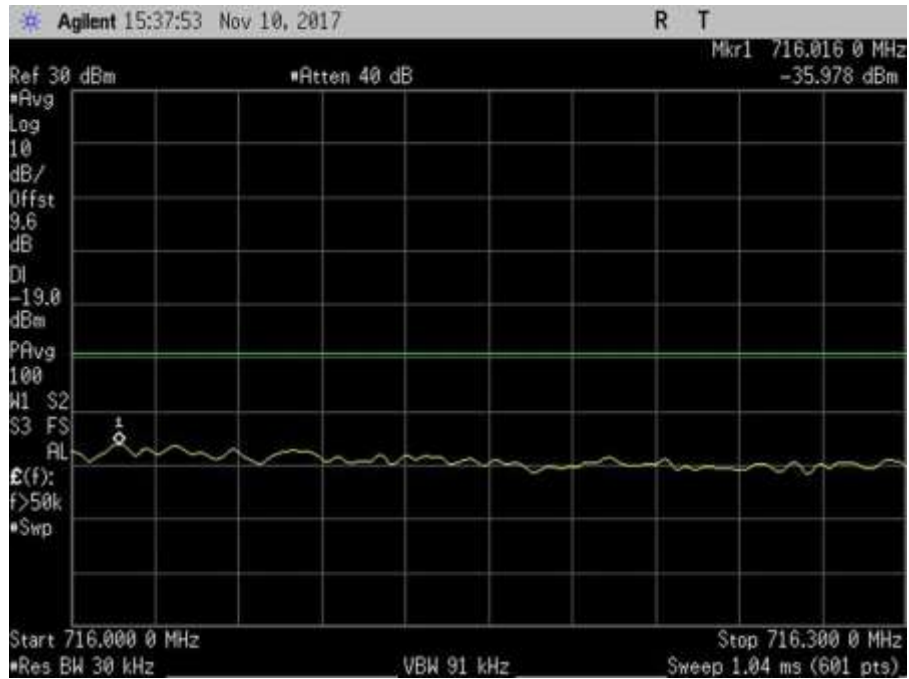
7.5\_OBE\_DL\_2110-2155MHz\_H\_PreAGC\_CDMA



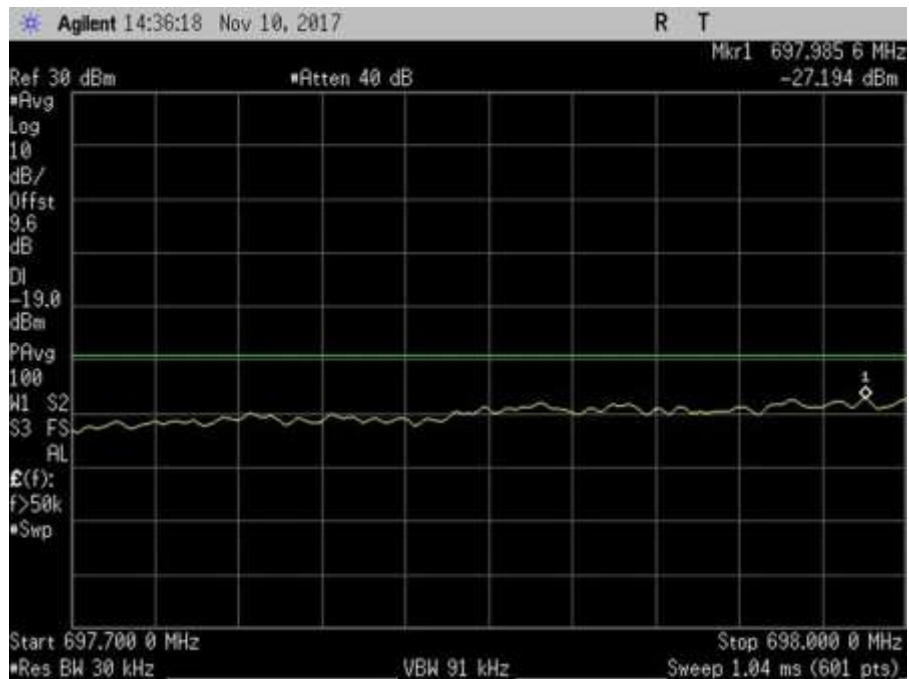
7.5\_OBE\_DL\_2110-2155MHz\_L\_PreAGC\_CDMA



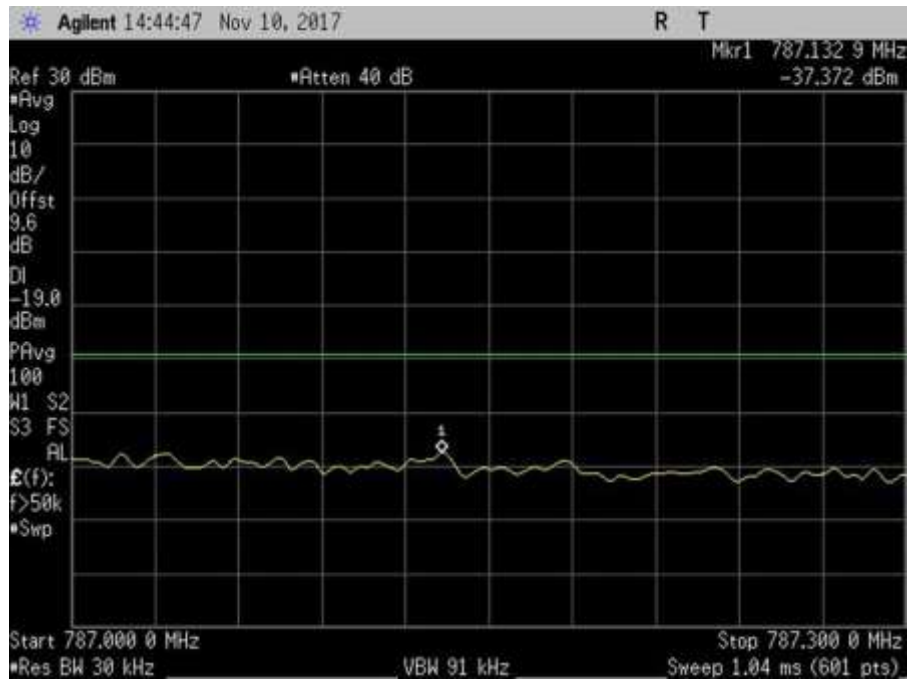
CDMA, UL



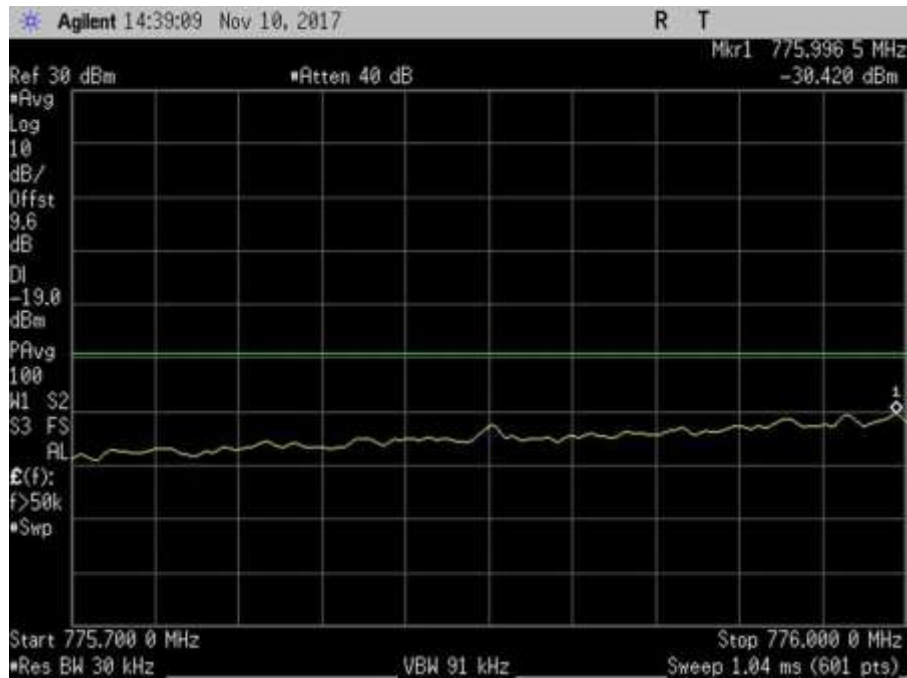
7.5\_OBE\_UL\_698-716MHz\_H\_PreAGC\_CDMA



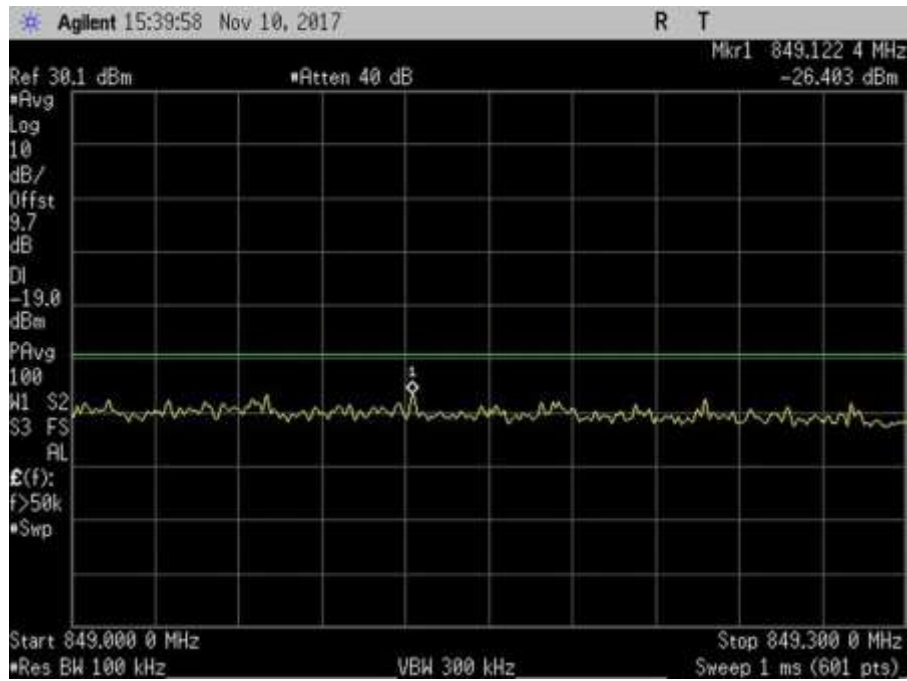
7.5\_OBE\_UL\_698-716MHz\_L\_PreAGC\_CDMA



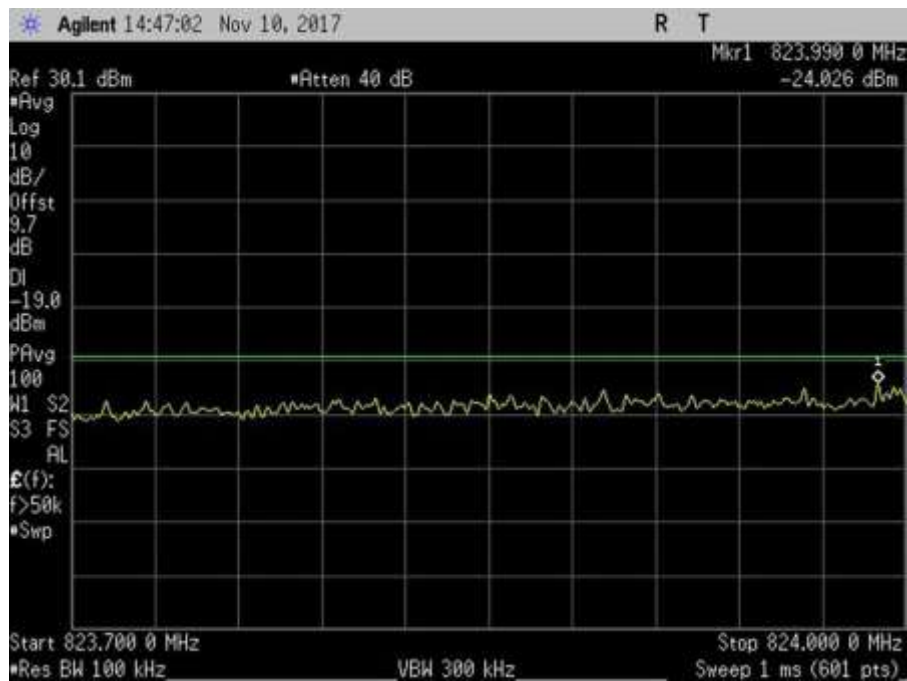
7.5\_OBE\_UL\_776-787MHz\_H\_PreAGC\_CDMA



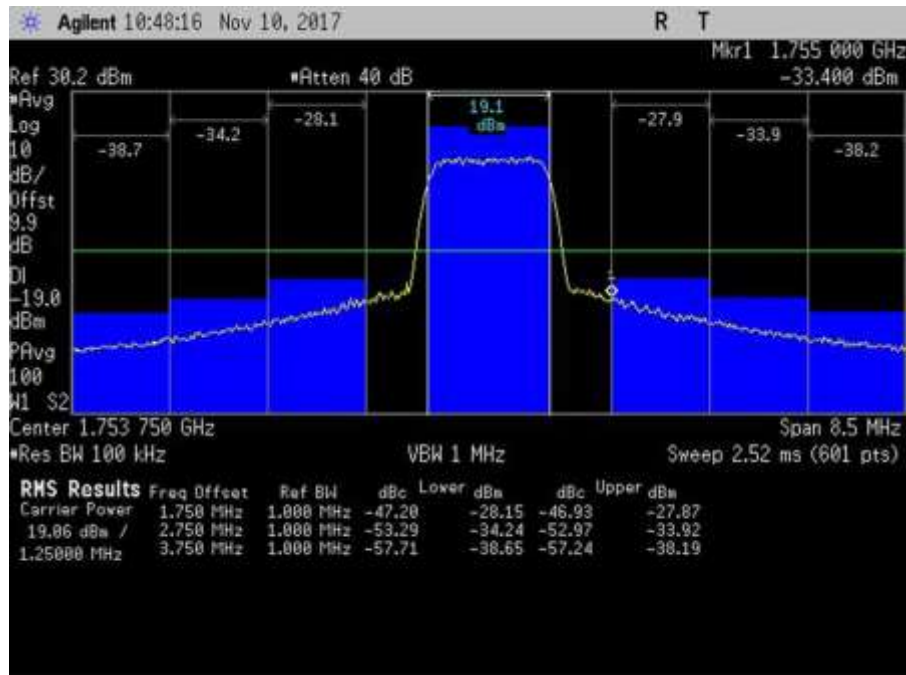
7.5\_OBE\_UL\_776-787MHz\_L\_PreAGC\_CDMA



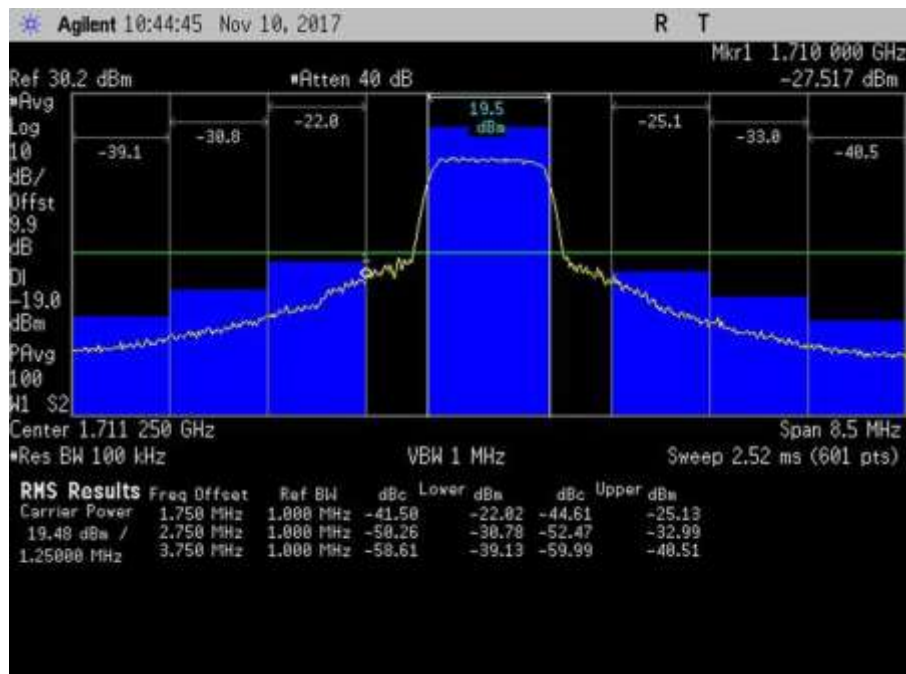
7.5\_OBE\_UL\_824-849MHz\_H\_PreAGC\_CDMA



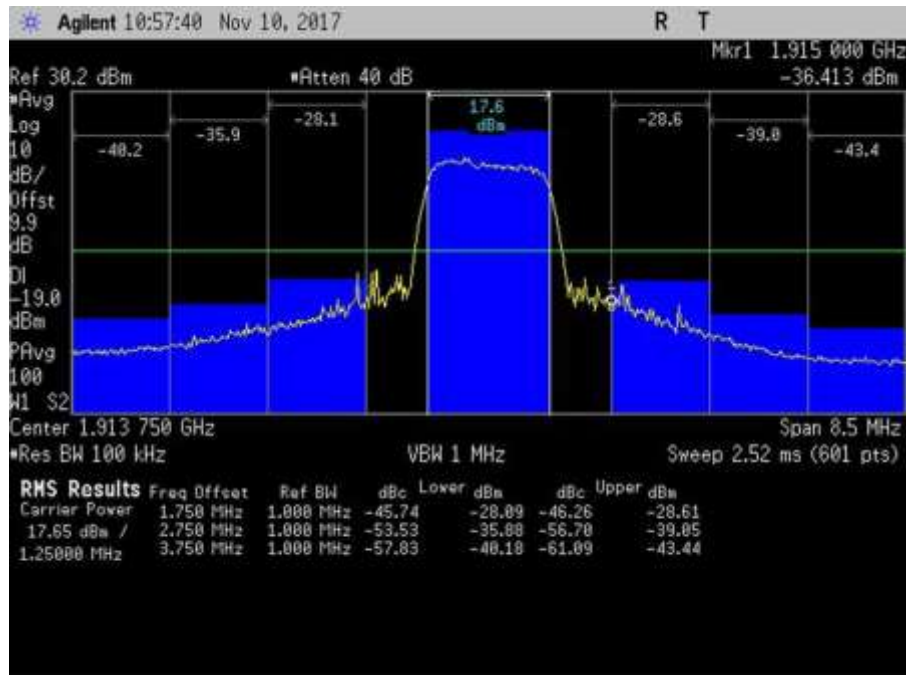
7.5\_OBE\_UL\_824-849MHz\_L\_PreAGC\_CDMA



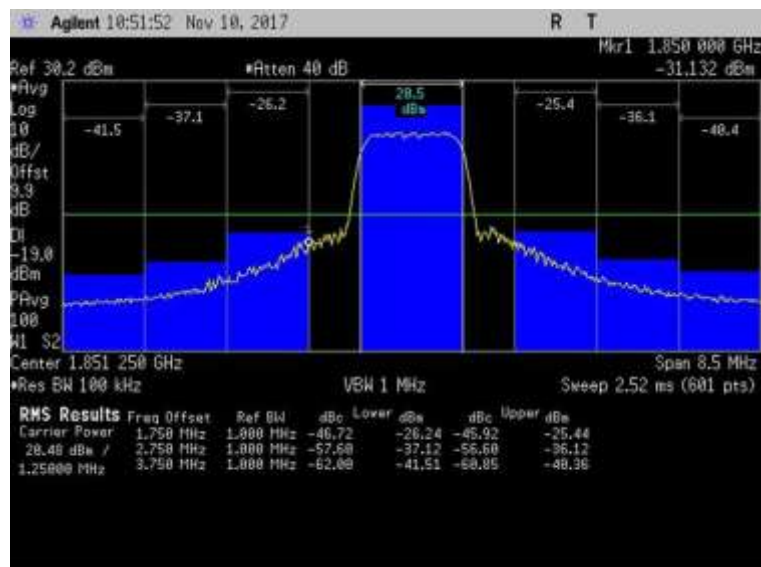
7.5\_OBE\_UL\_1710-1755MHz\_H\_PreAGC\_CDMA



7.5\_OBE\_UL\_1710-1755MHz\_L\_PreAGC\_CDMA

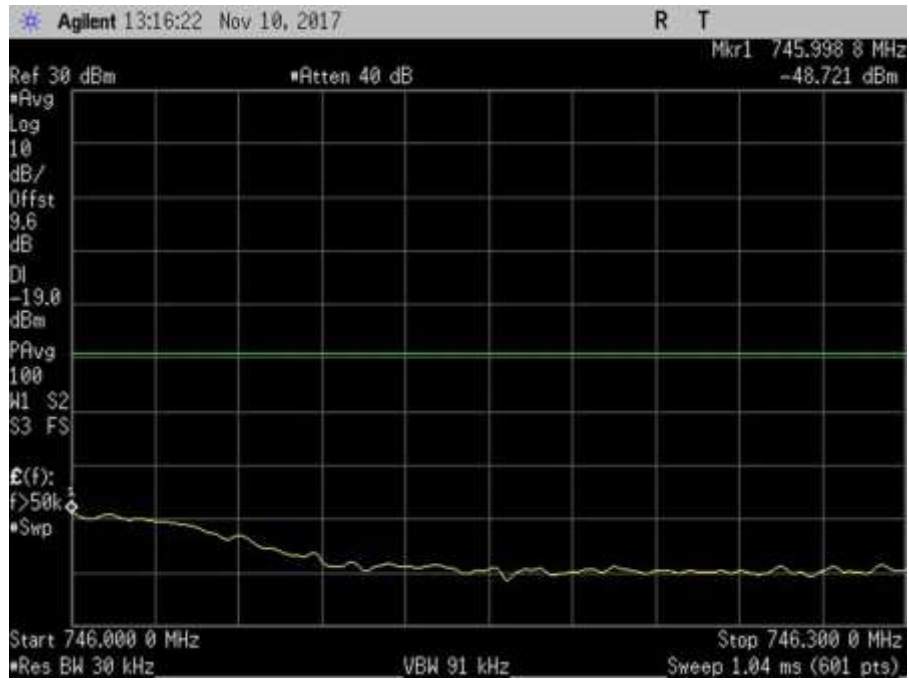


7.5\_OBE\_UL\_1850-1915MHz\_H\_PreAGC\_CDMA

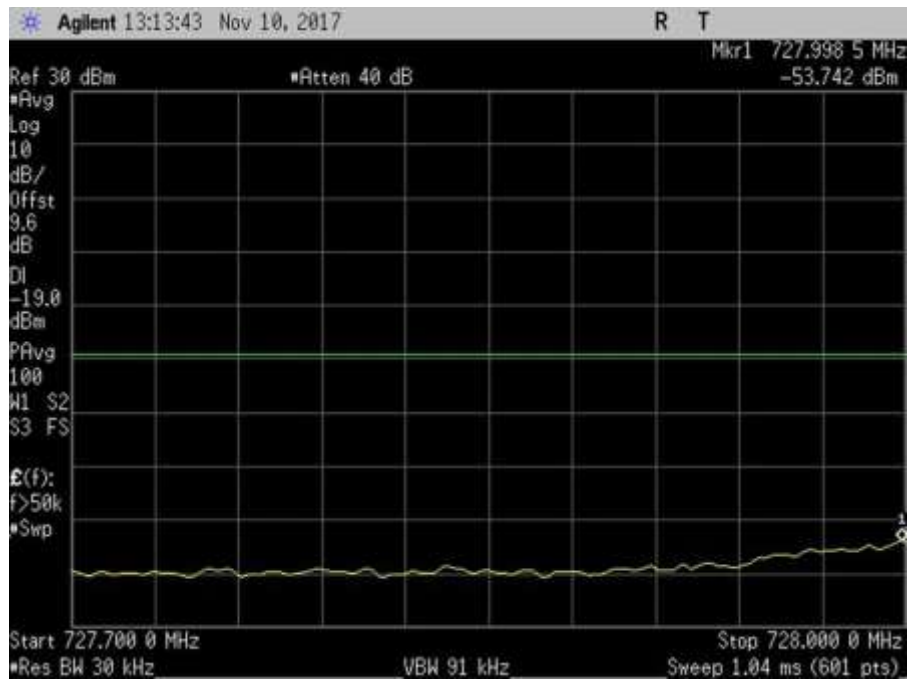


7.5\_OBE\_UL\_1850-1915MHz\_L\_PreAGC\_CDMA

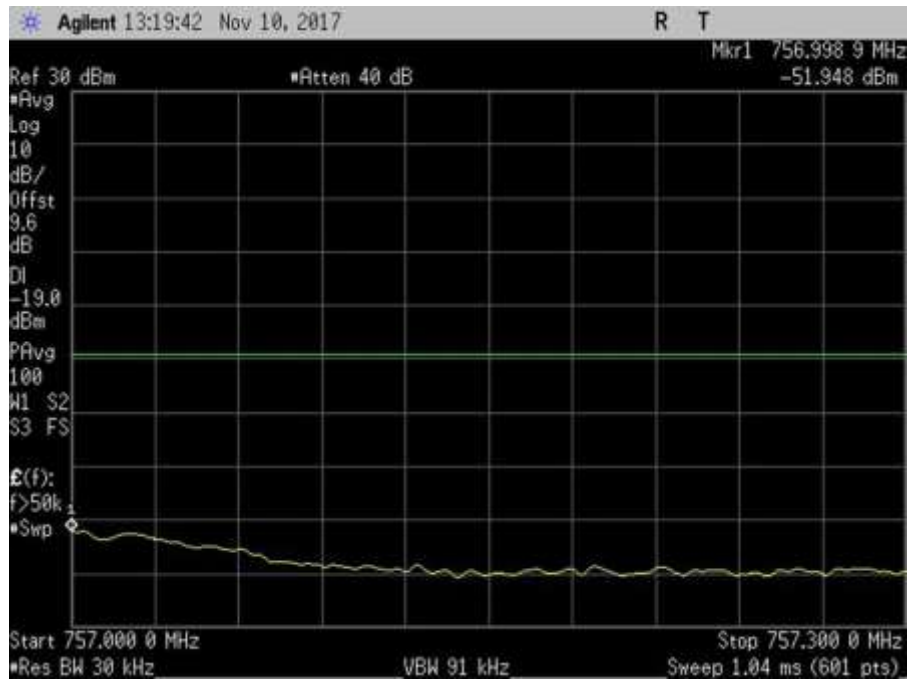
GSM, DL



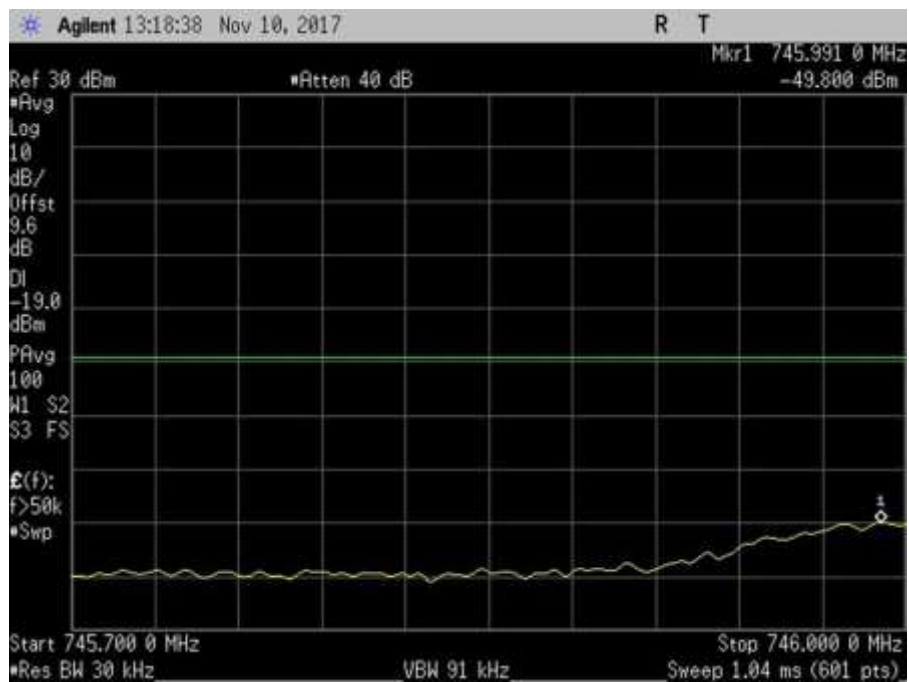
7.5\_OBE\_DL\_728-746MHz\_H\_PreAGC\_GSM



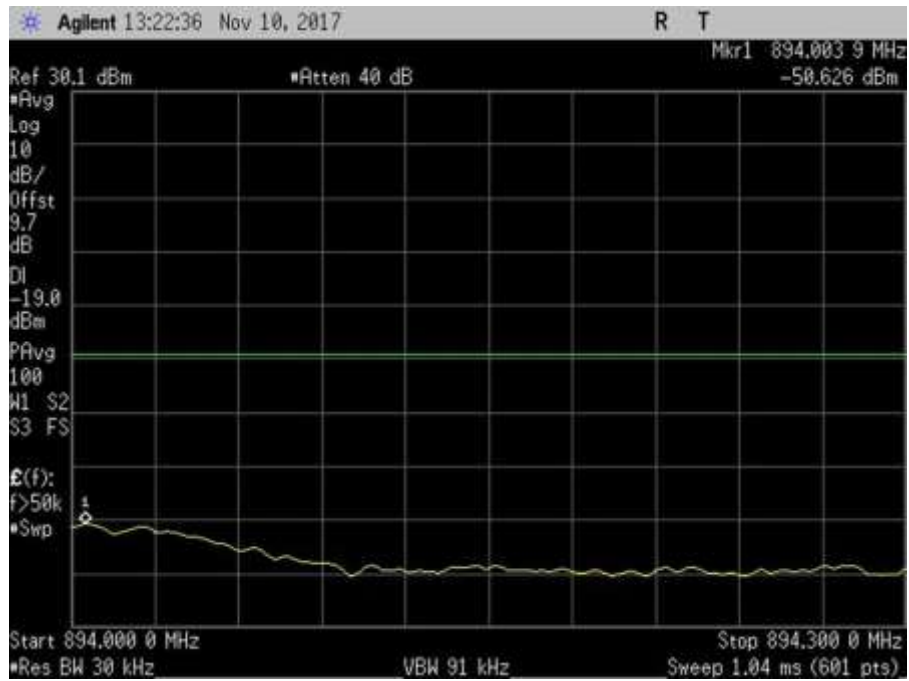
7.5\_OBE\_DL\_728-746MHz\_L\_PreAGC\_GSM



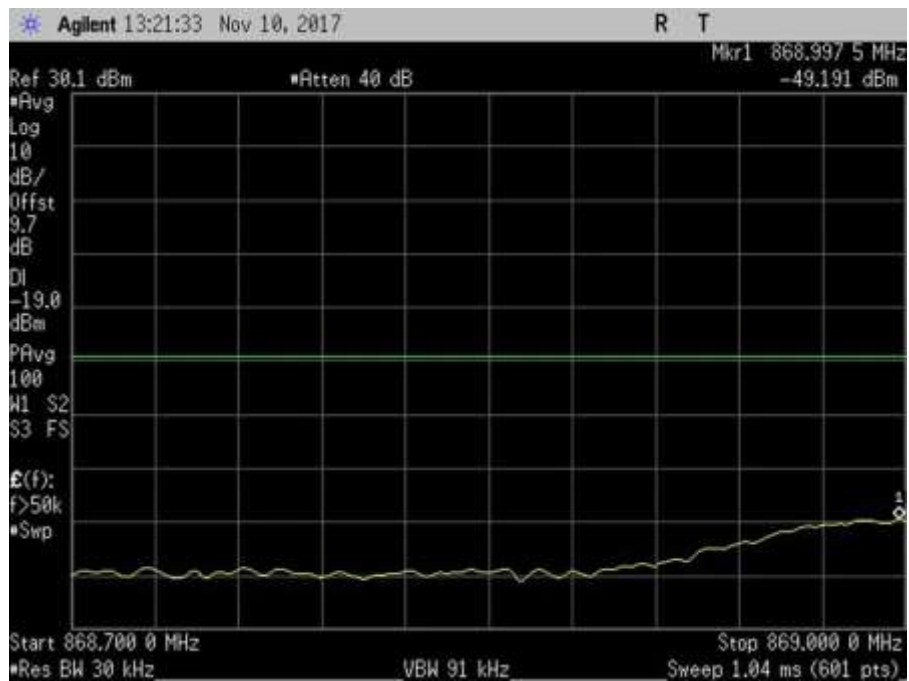
7.5\_OBE\_DL\_746-757MHz\_H\_PreAGC\_GSM



7.5\_OBE\_DL\_746-757MHz\_L\_PreAGC\_GSM

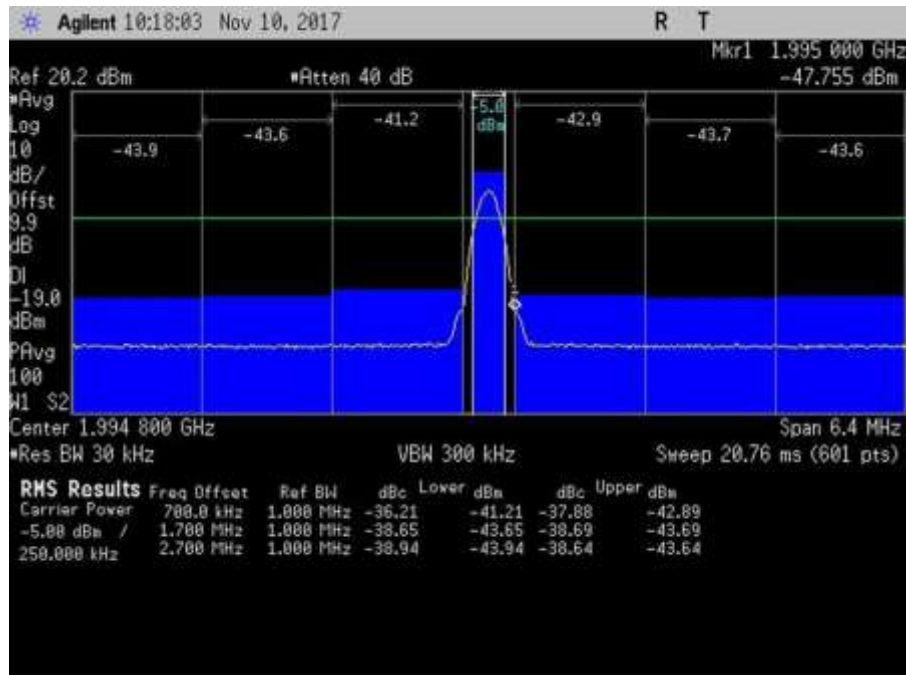


7.5\_OBE\_DL\_896-894MHz\_H\_PreAGC\_GSM

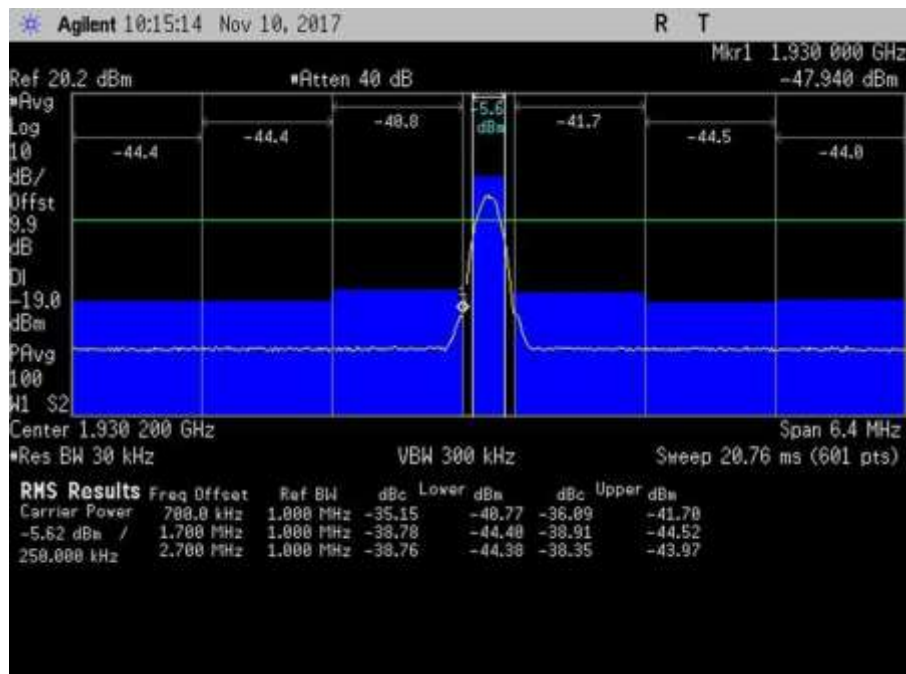


7.5\_OBE\_DL\_896-894MHz\_L\_PreAGC\_GSM

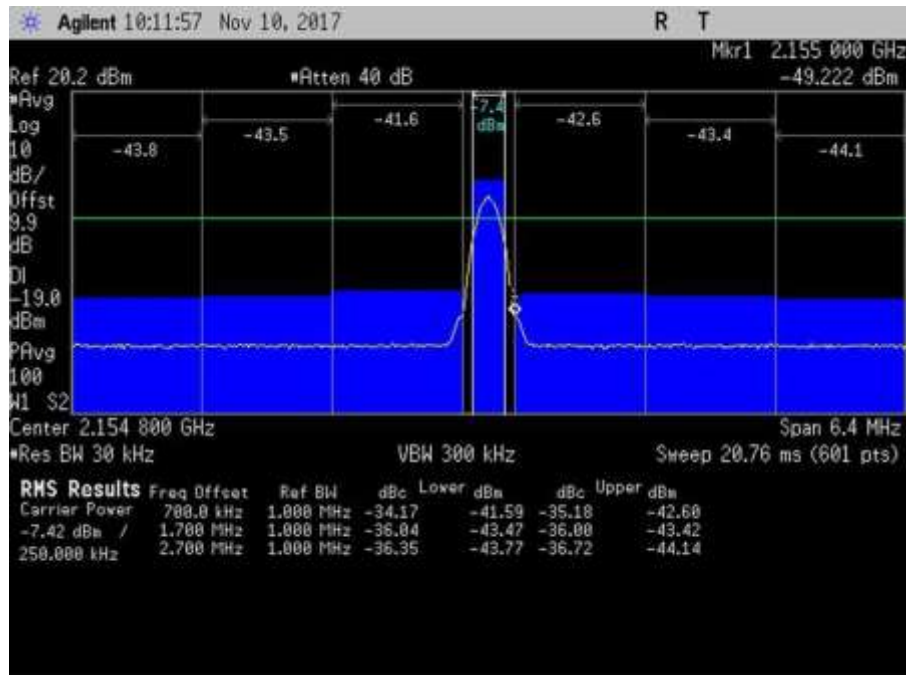




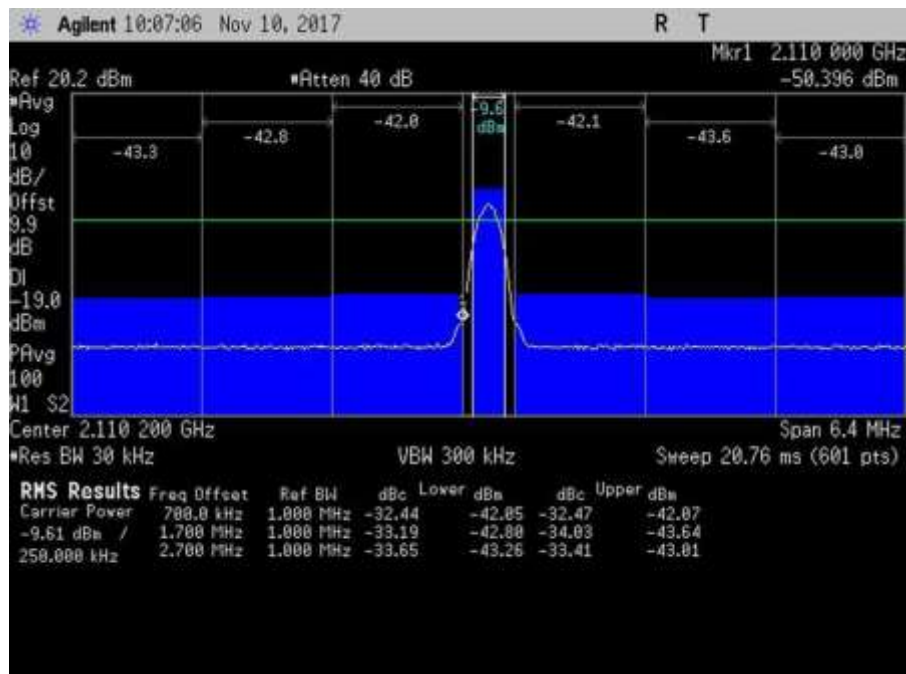
7.5\_OBE\_DL\_1930-1995MHz\_H\_PreAGC\_GSM



7.5\_OBE\_DL\_1930-1995MHz\_L\_PreAGC\_GSM

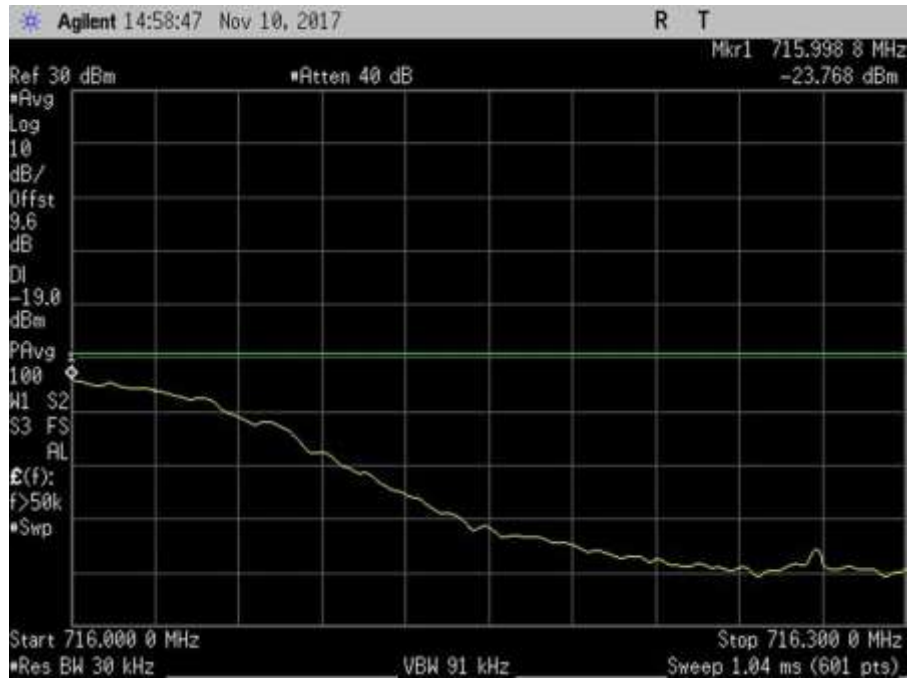


7.5\_OBE\_DL\_2110-2155MHz\_H\_PreAGC\_GSM



7.5\_OBE\_DL\_2110-2155MHz\_L\_PreAGC\_GSM

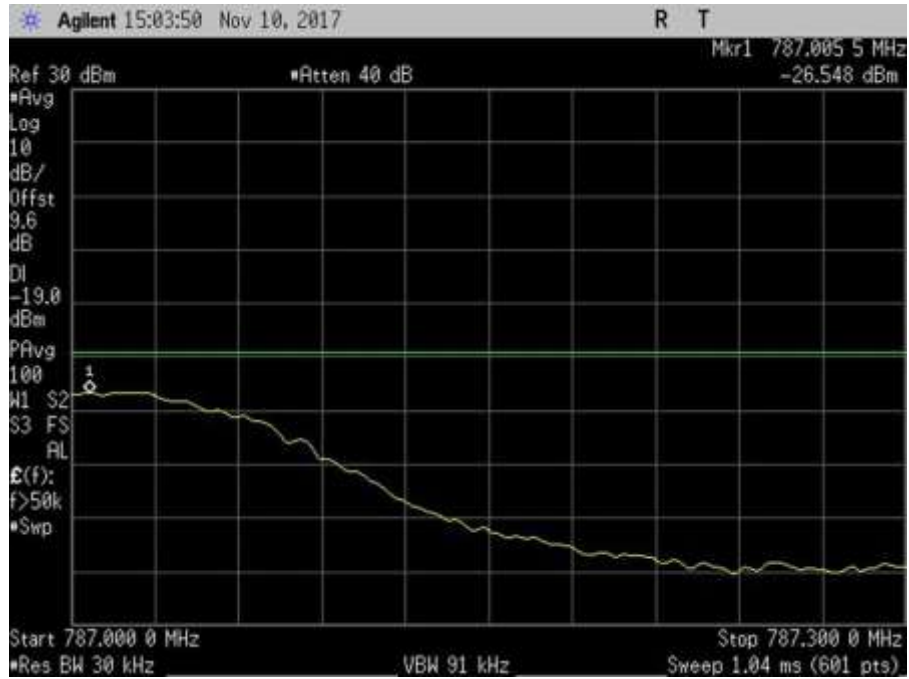
GSM, UL



7.5\_OBE\_UL\_698-716MHz\_H\_PreAGC\_GSM



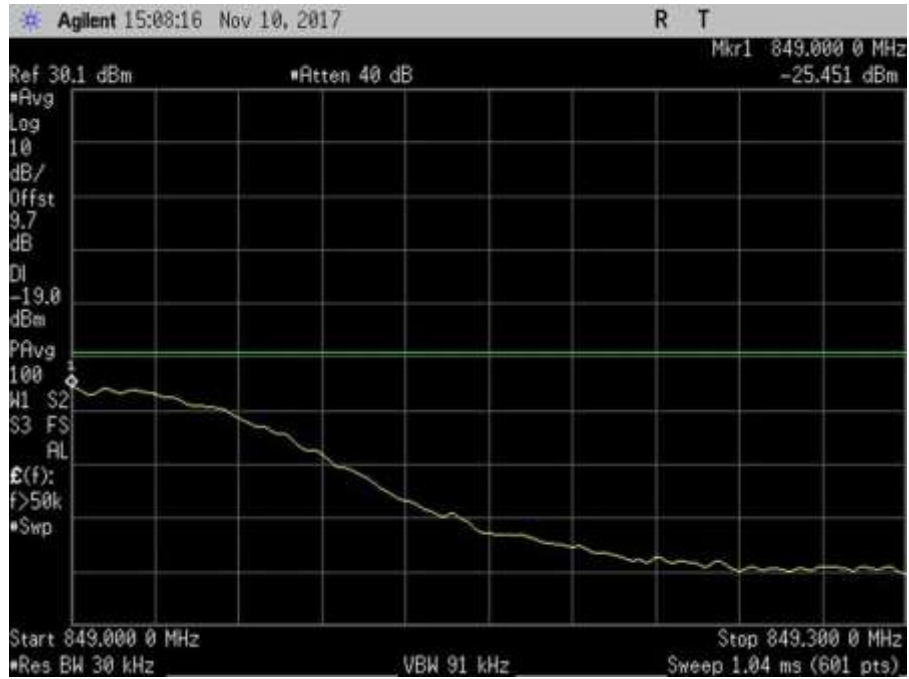
7.5\_OBE\_UL\_698-716MHz\_L\_PreAGC\_GSM



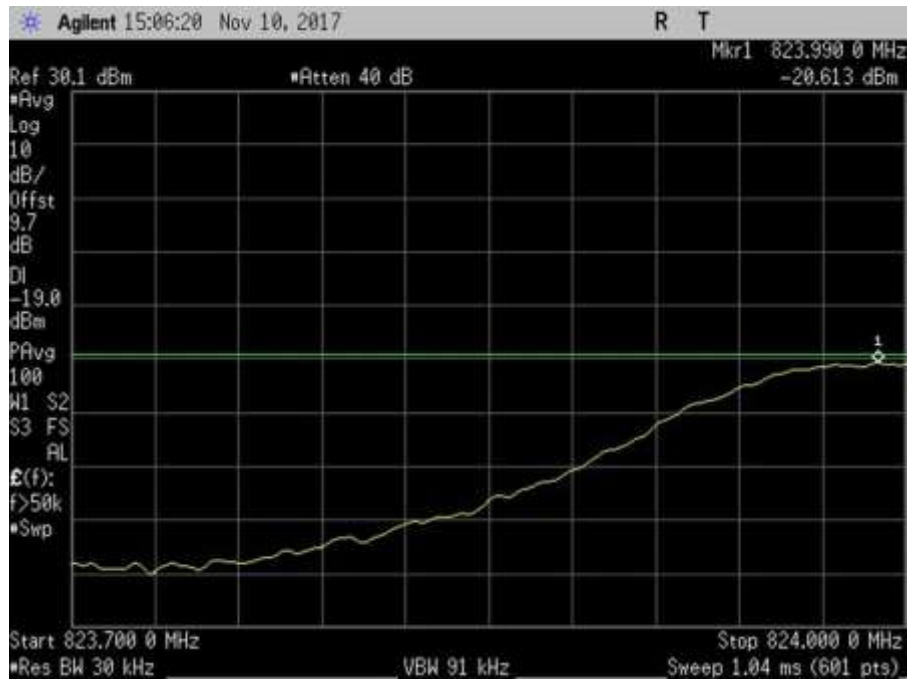
7.5\_OBE\_UL\_776-787MHz\_H\_PreAGC\_GSM



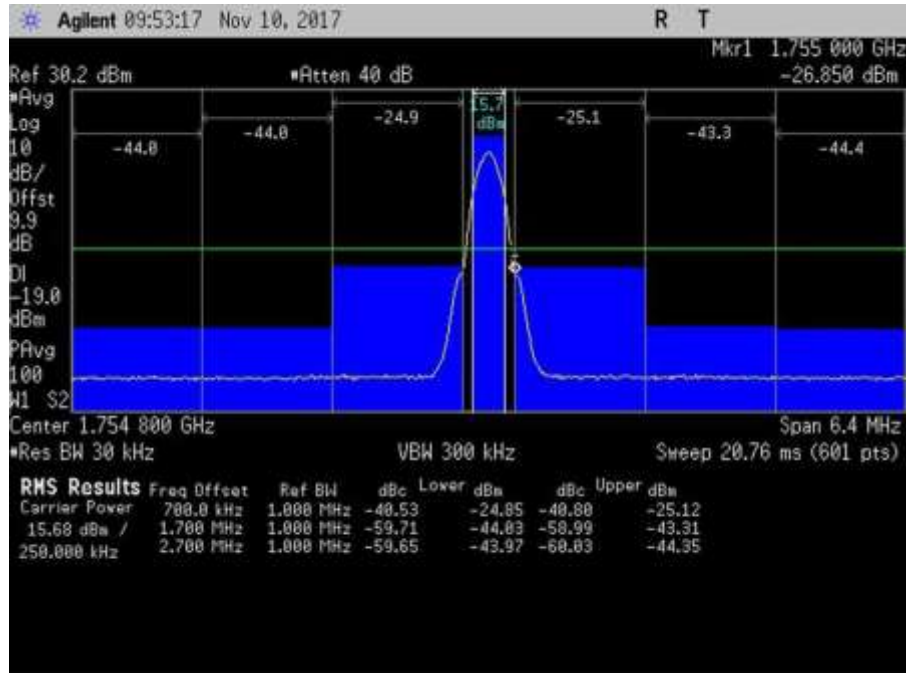
7.5\_OBE\_UL\_776-787MHz\_L\_PreAGC\_GSM



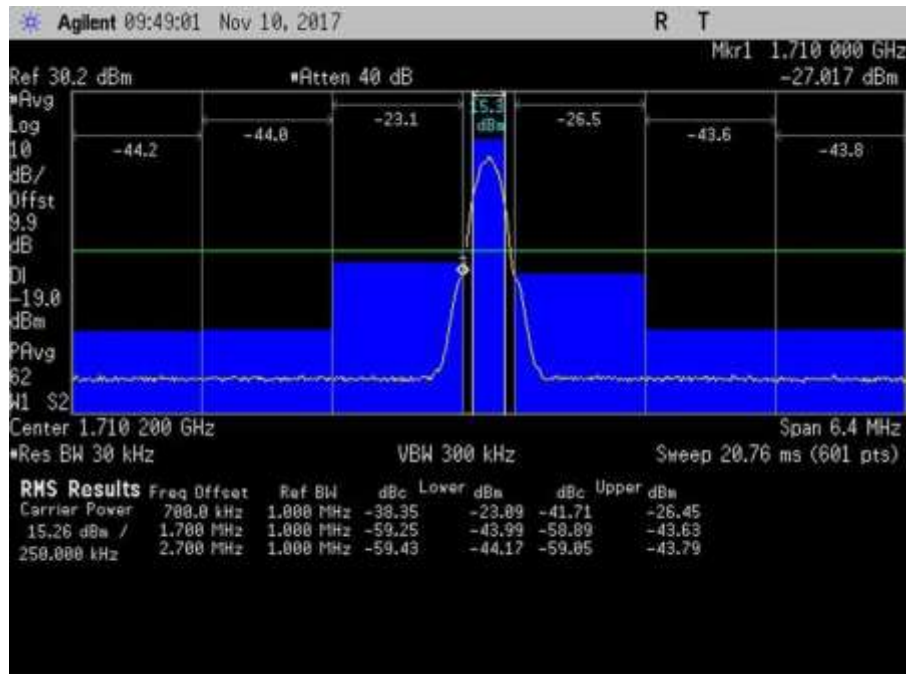
7.5\_OBE\_UL\_824-849MHz\_H\_PreAGC\_GSM



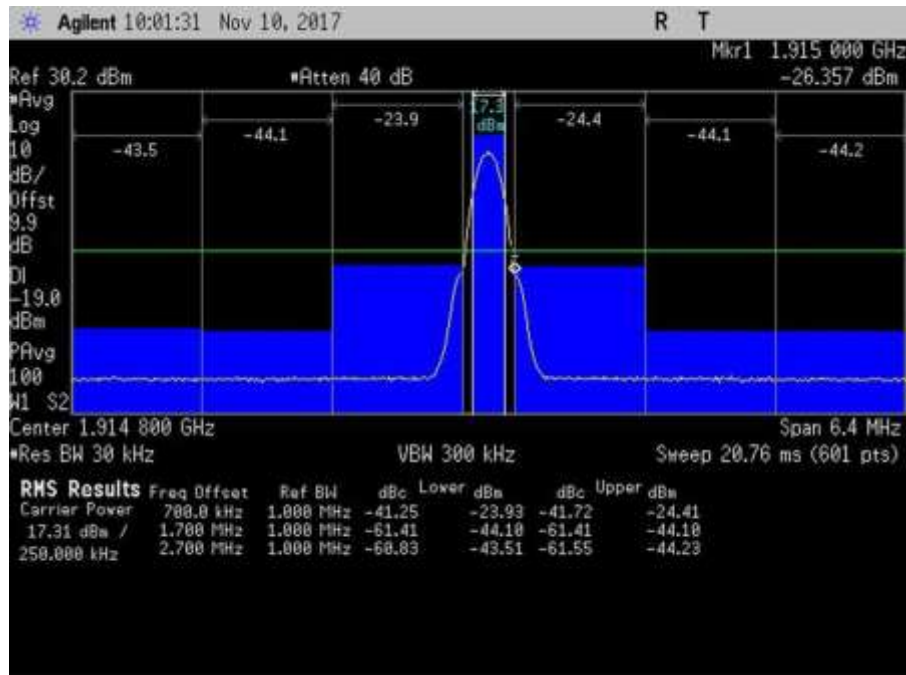
7.5\_OBE\_UL\_824-849MHz\_L\_PreAGC\_GSM



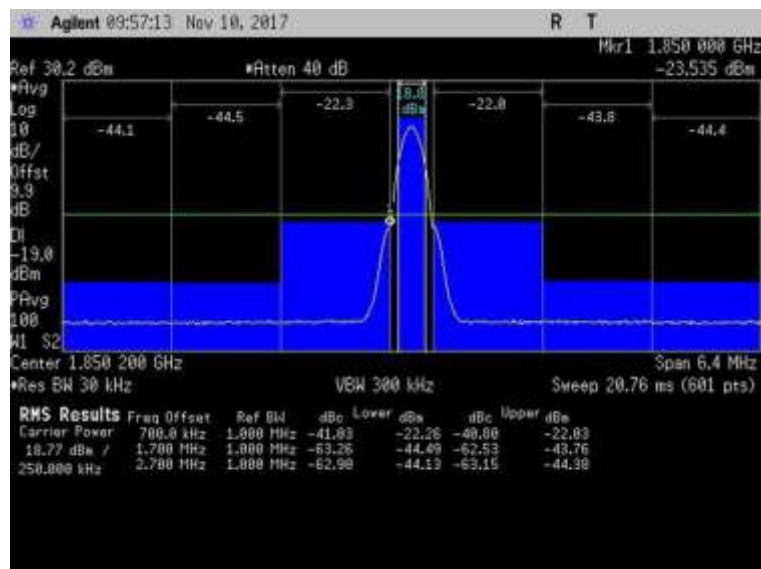
7.5\_OBE\_UL\_1710-1755MHz\_H\_PreAGC\_GSM



7.5\_OBE\_UL\_1710-1755MHz\_L\_PreAGC\_GSM

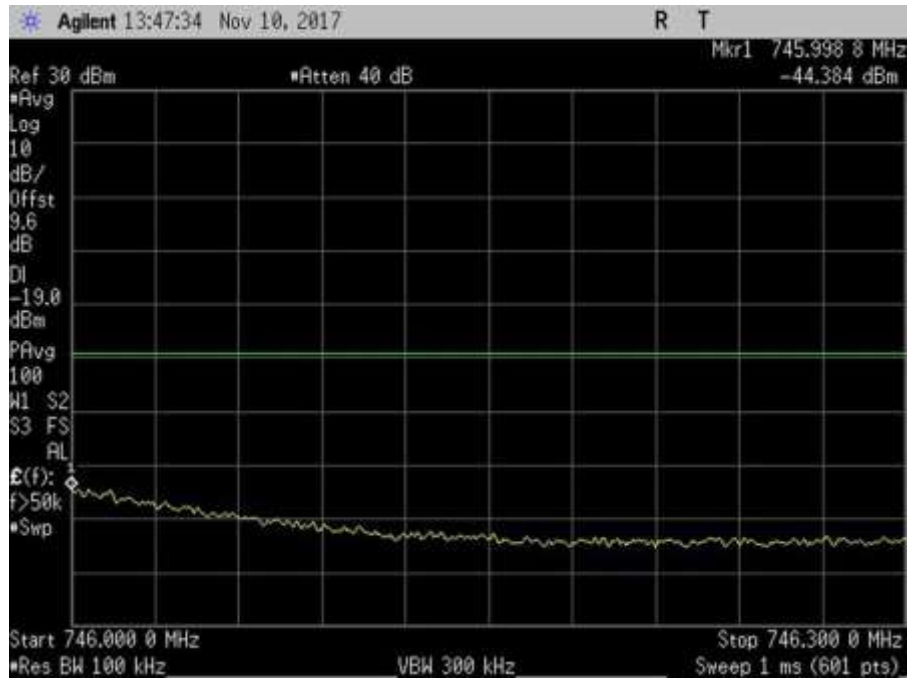


7.5\_OBE\_UL\_1850-1915MHz\_H\_PreAGC\_GSM

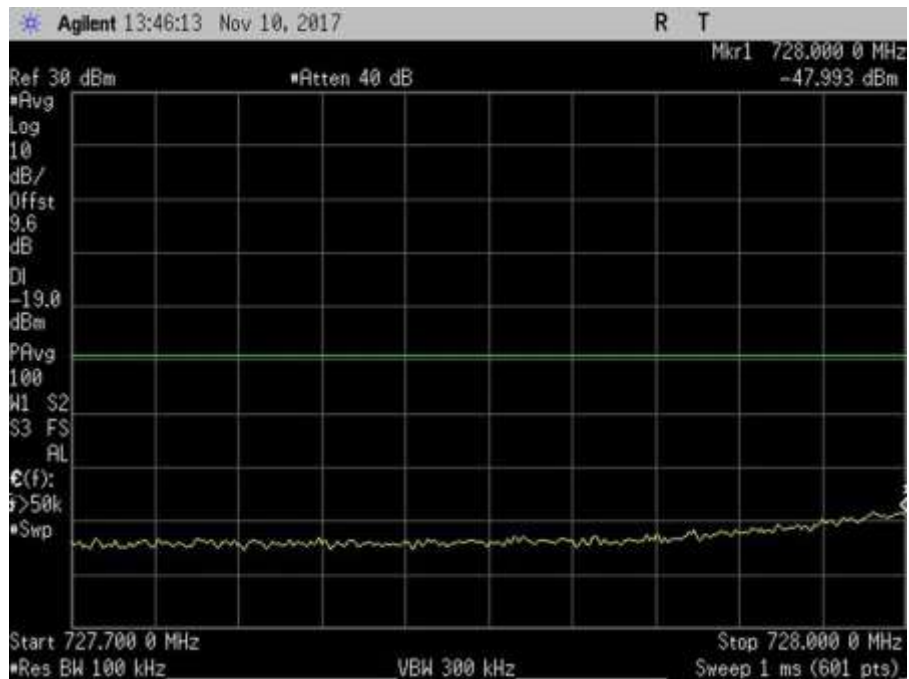


7.5\_OBE\_UL\_1850-1915MHz\_L\_PreAGC\_GSM

LTE, DL

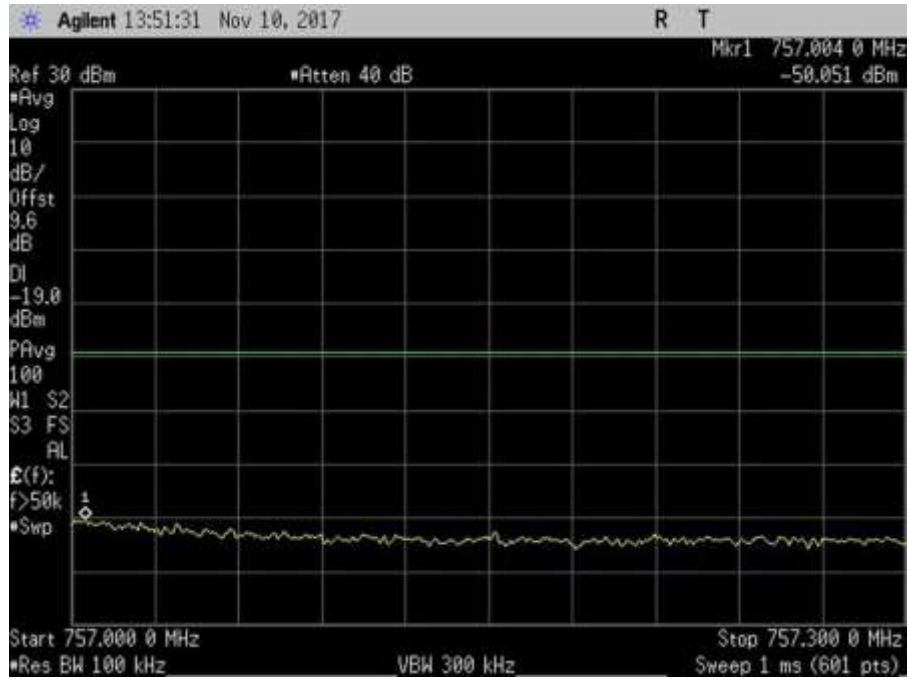


7.5\_OBE\_DL\_728-746MHz\_H\_PreAGC\_LTE

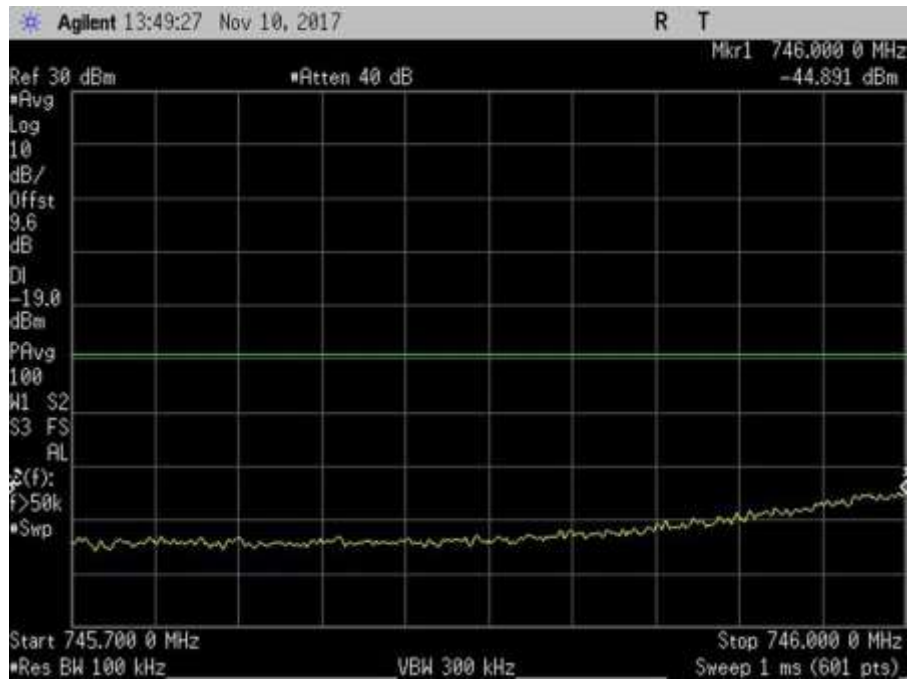


7.5\_OBE\_DL\_728-746MHz\_L\_PreAGC\_LTE

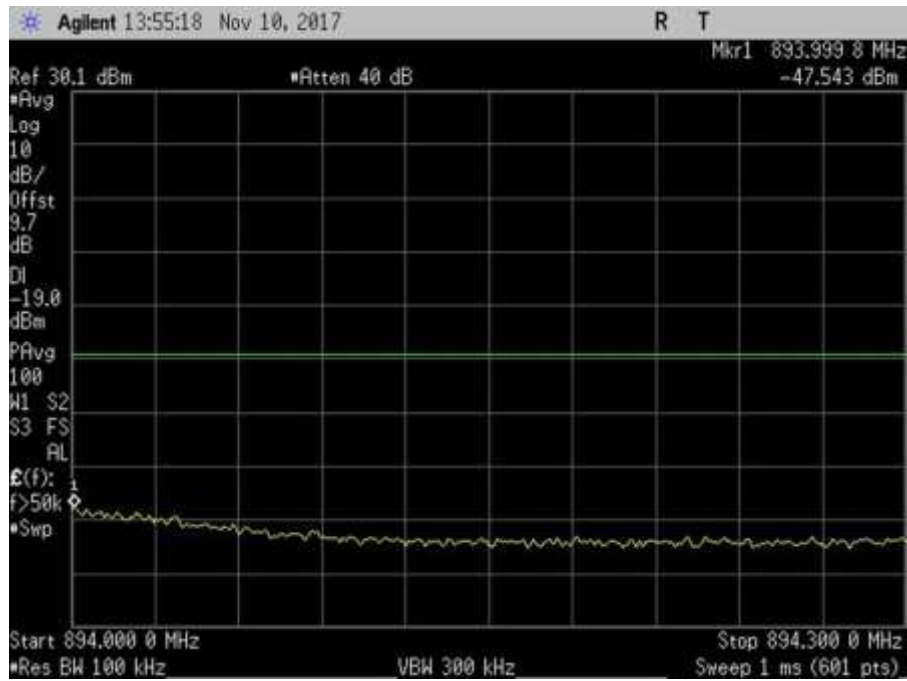




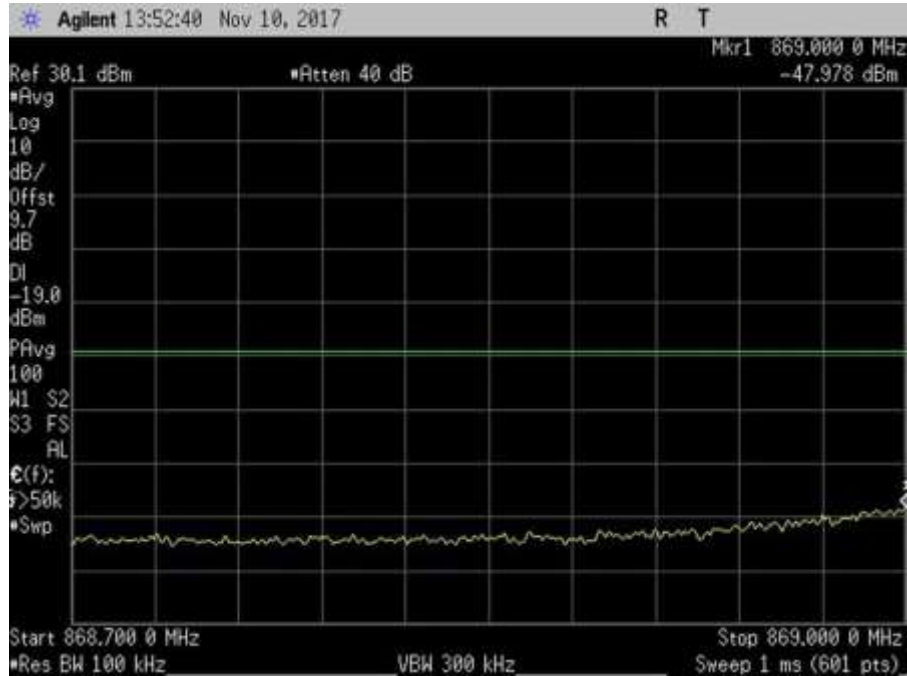
7.5\_OBE\_DL\_746-757MHz\_H\_PreAGC\_LTE



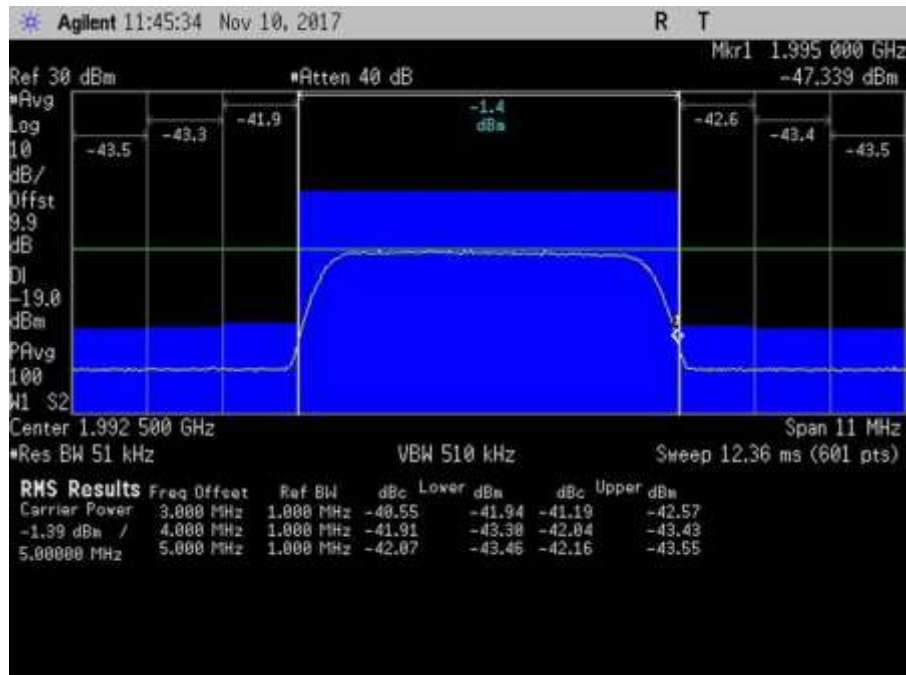
7.5\_OBE\_DL\_746-757MHz\_L\_PreAGC\_LTE



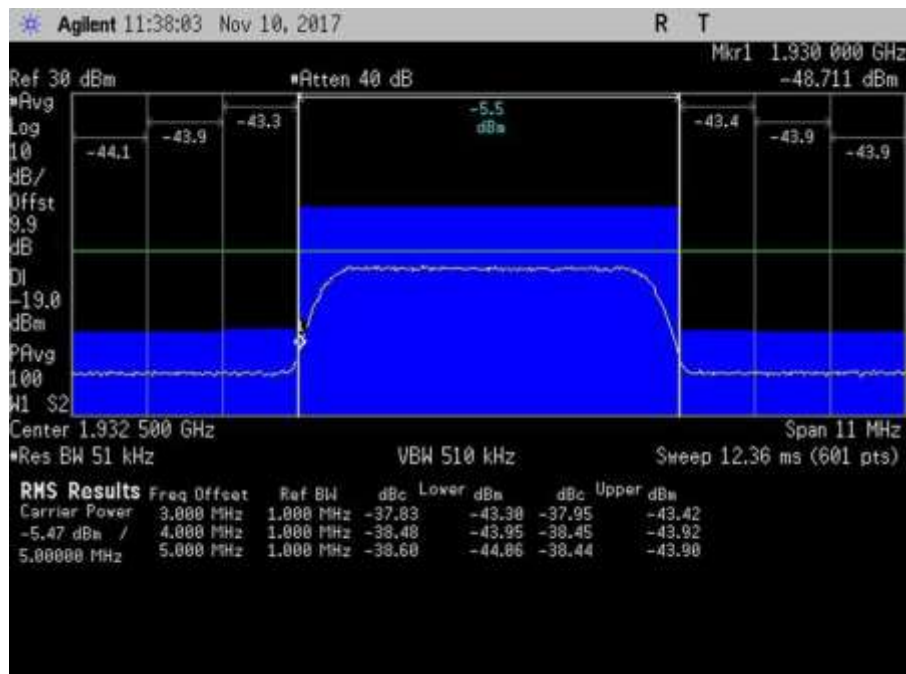
7.5\_OBE\_DL\_896-894MHz\_H\_PreAGC\_LTE



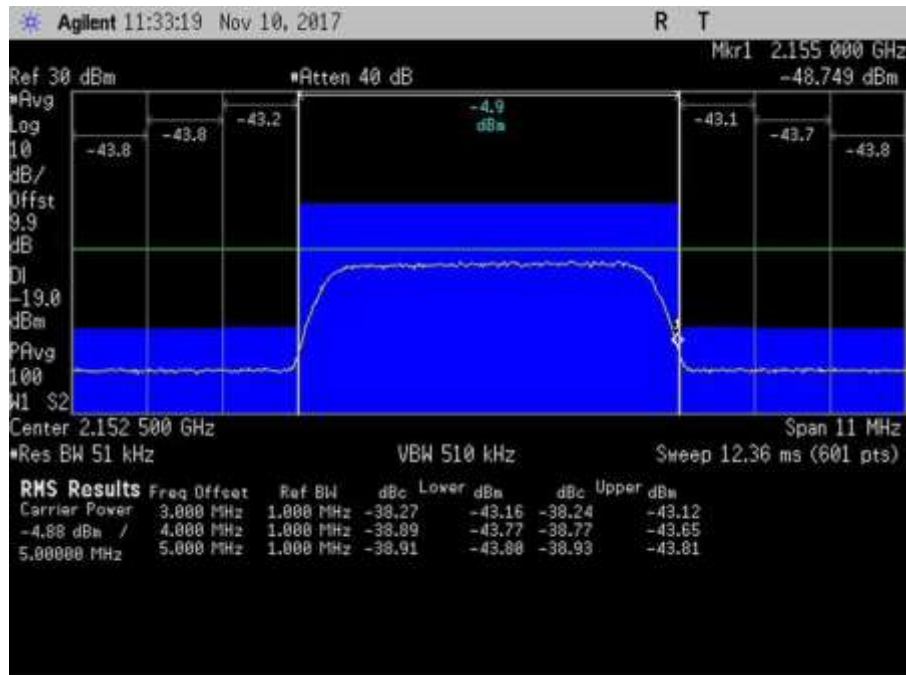
7.5\_OBE\_DL\_896-894MHz\_L\_PreAGC\_LTE



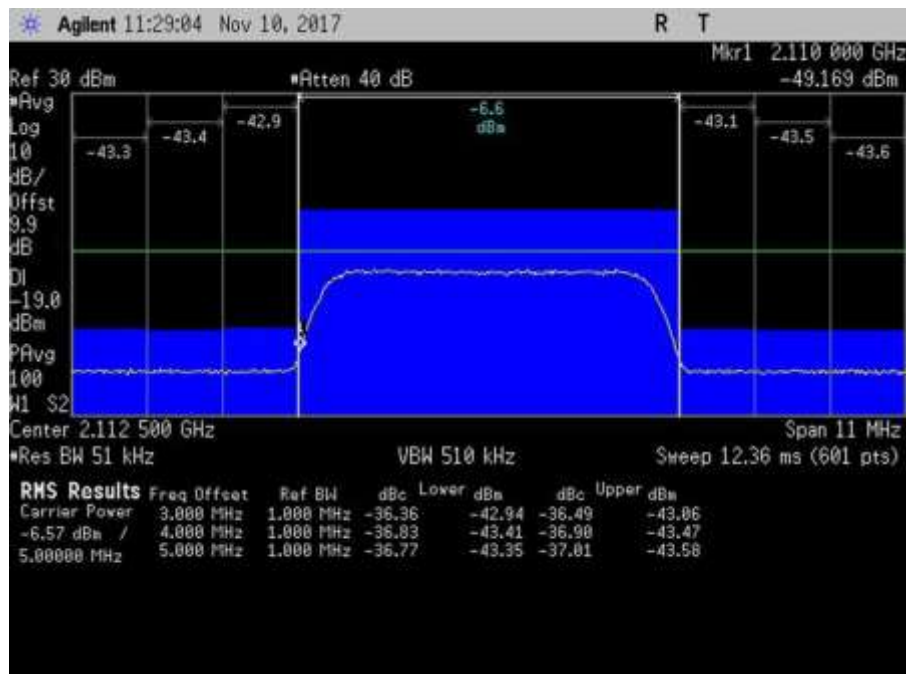
7.5\_OBE\_DL\_1930-1995MHz\_H\_PreAGC\_LTE



7.5\_OBE\_DL\_1930-1995MHz\_L\_PreAGC\_LTE

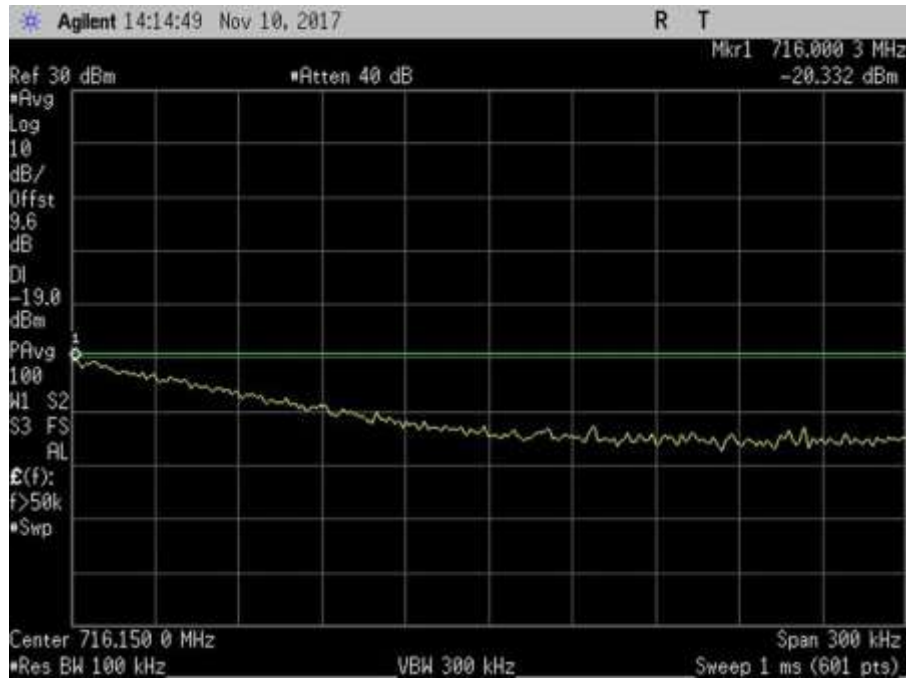


7.5\_OBE\_DL\_2110-2155MHz\_H\_PreAGC\_LTE

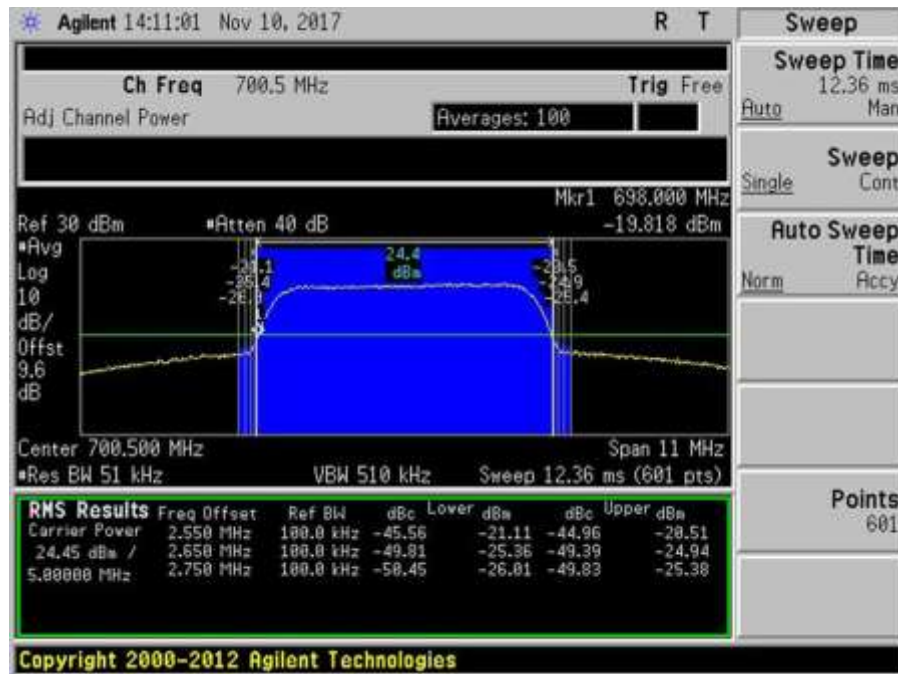


7.5\_OBE\_DL\_2110-2155MHz\_L\_PreAGC\_LTE

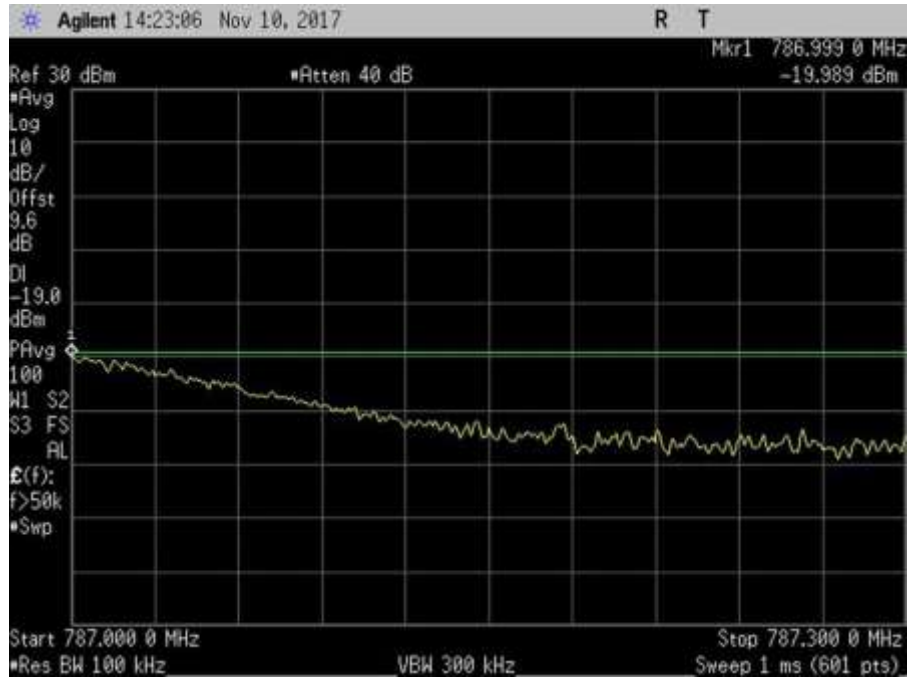
LTE, UL



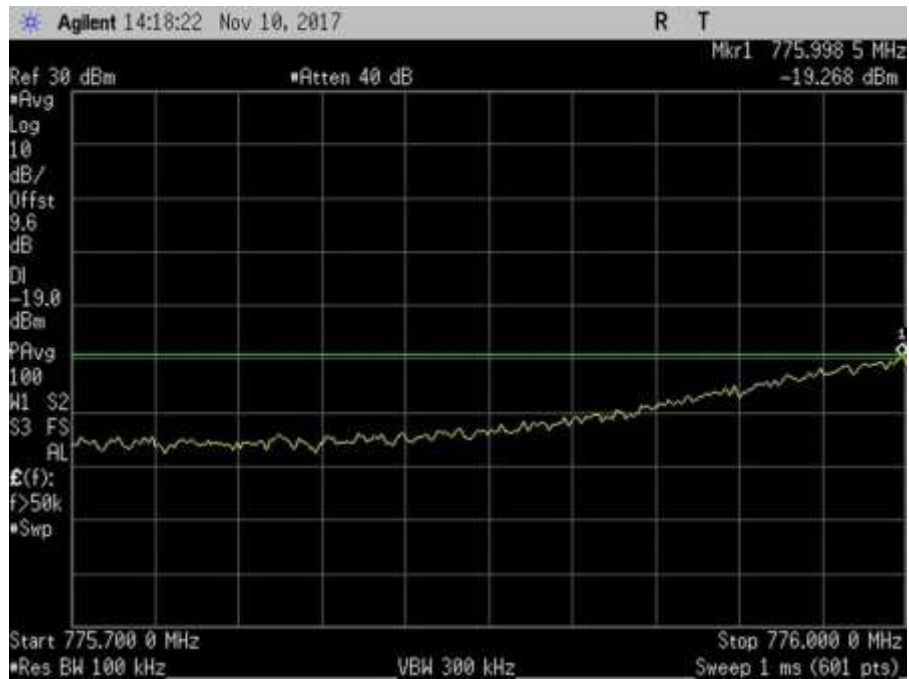
7.5\_OBE\_UL\_698-716MHz\_H\_PreAGC\_LTE



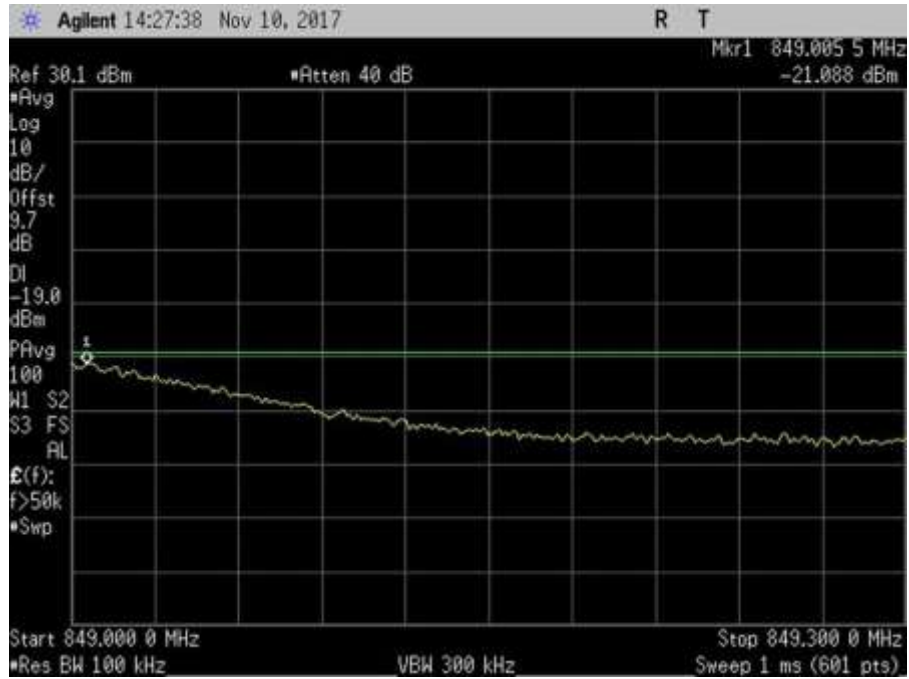
7.5\_OBE\_UL\_698-716MHz\_L\_PreAGC\_LTE



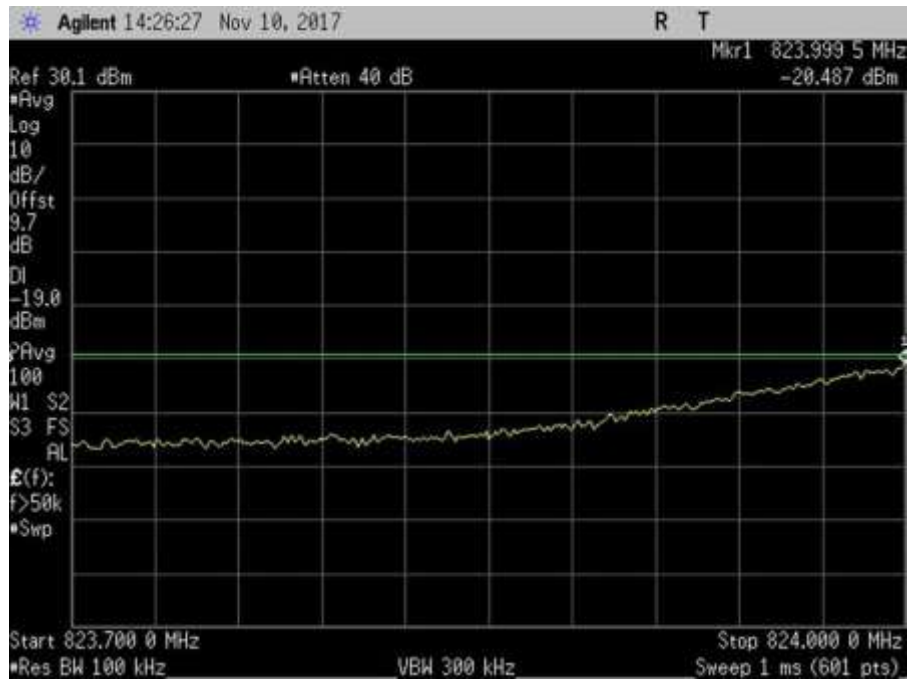
7.5\_OBE\_UL\_776-787MHz\_H\_PreAGC\_LTE



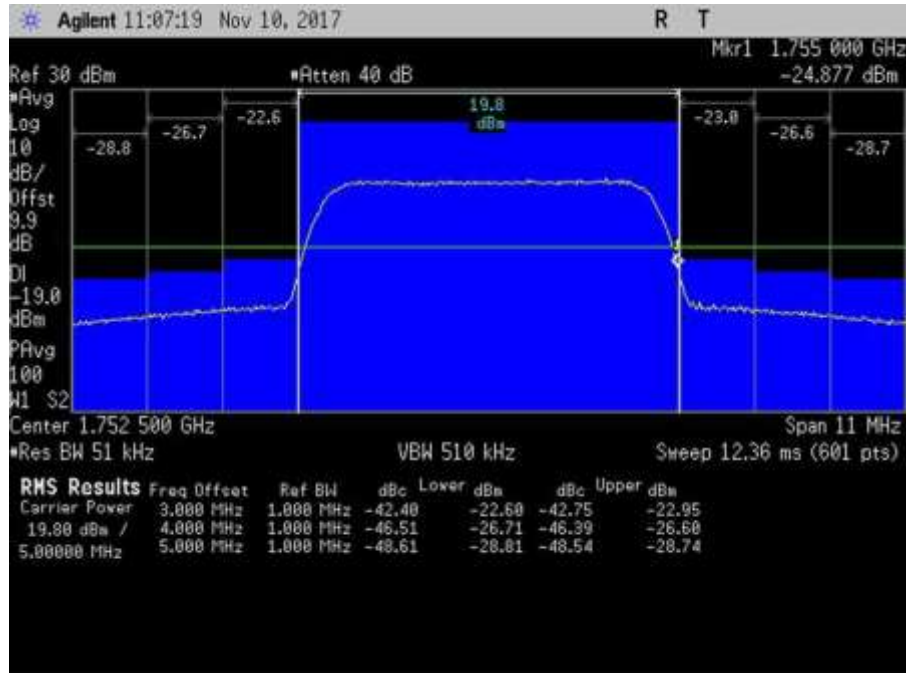
7.5\_OBE\_UL\_776-787MHz\_L\_PreAGC\_LTE



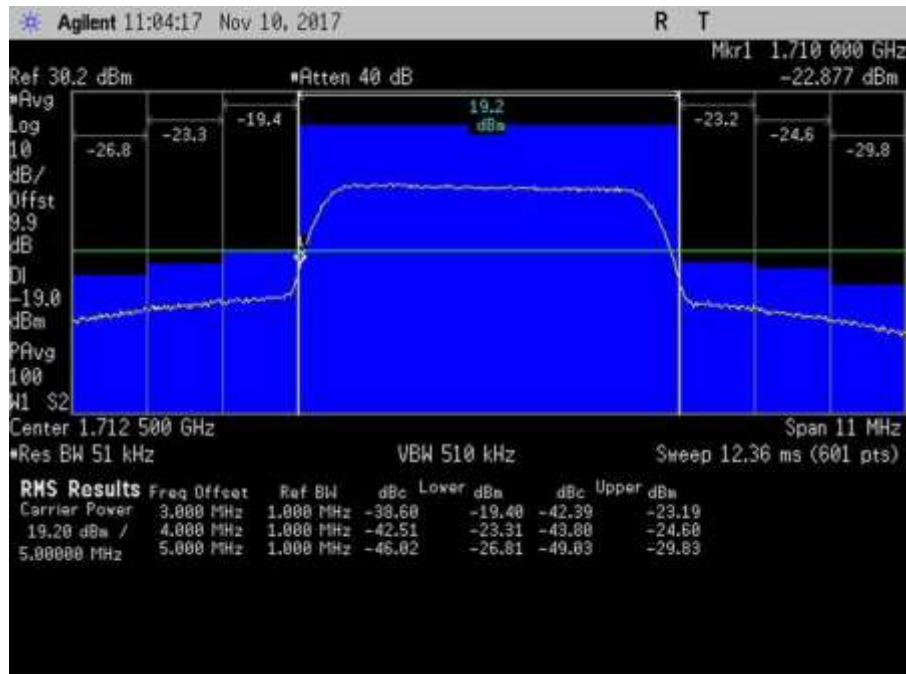
7.5\_OBE\_UL\_824-849MHz\_H\_PreAGC\_LTE



7.5\_OBE\_UL\_824-849MHz\_L\_PreAGC\_LTE

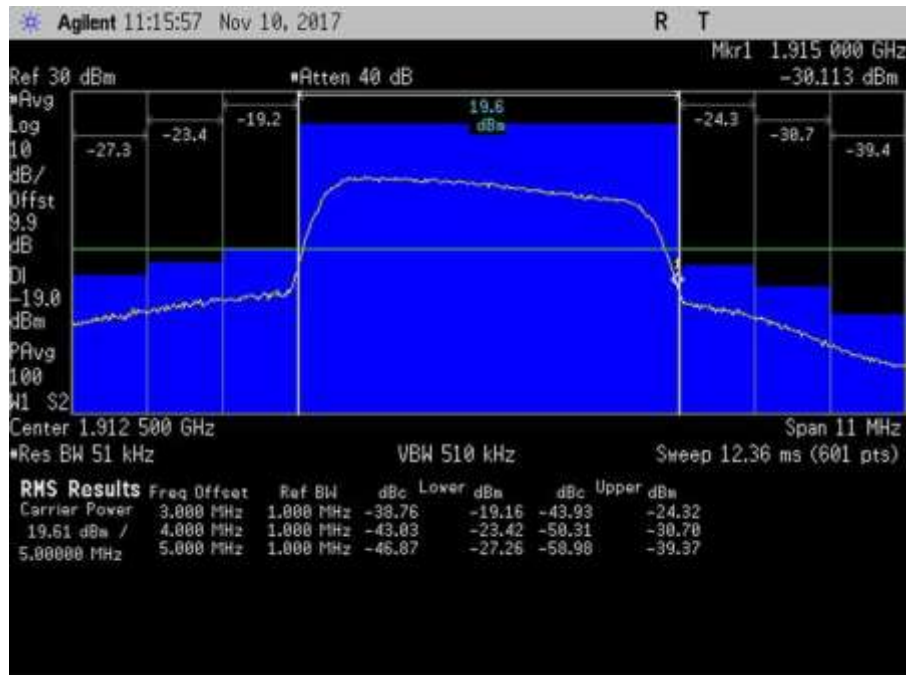


7.5\_OBE\_UL\_1710-1755MHz\_H\_PreAGC\_LTE

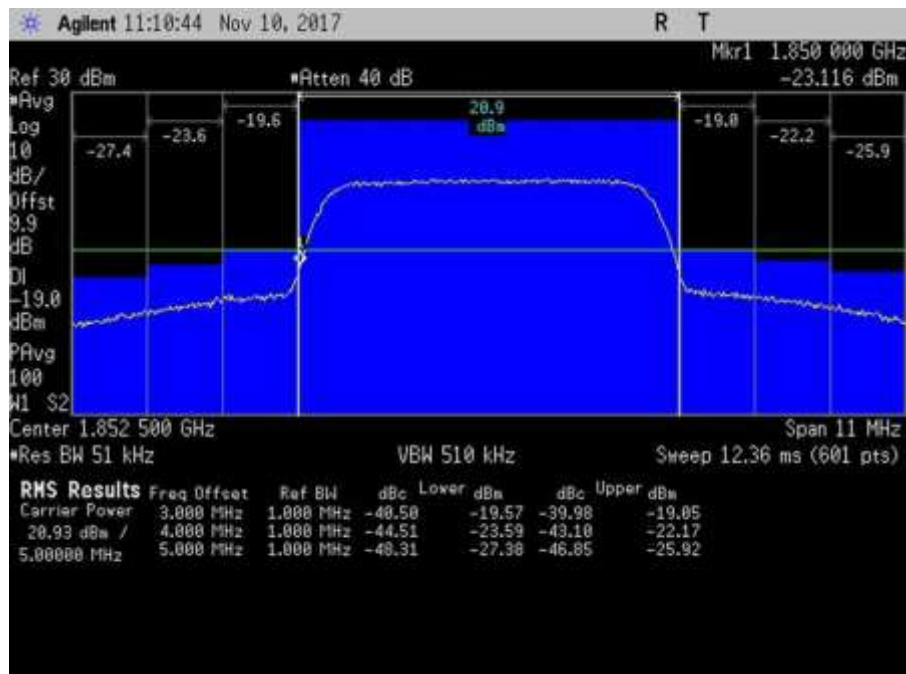


7.5\_OBE\_UL\_1710-1755MHz\_L\_PreAGC\_LTE





7.5\_OBE\_UL\_1850-1915MHz\_H\_PreAGC\_LTE



7.5\_OBE\_UL\_1850-1915MHz\_L\_PreAGC\_LTE

## 7.6 Conducted Spurious Emissions

### Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170  
 Customer: Cellphone-Mate, Inc  
 Specification: **7.6 Conducted Spurious Emissions / 47 CFR §2.1051 Spurious Emissions at Antenna Terminals**  
 Work Order #: **100637** Date: 11/13/2017  
 Test Type: **Conducted Emissions** Time: 9:23:00 AM  
 Tested By: **Daniel Bertran** Sequence#: 1  
 Software: EMITest 5.03.11

**Equipment Tested:**

Device	Manufacturer	Model #	S/N
Configuration 1			

**Support Equipment:**

Device	Manufacturer	Model #	S/N

**Test Conditions / Notes:**

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.  
 The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.  
 The EUT Server port is a type FME connector and 50-ohm impedance.  
 The EUT Donor port is type FME connector and 50-ohm impedance.

Part 22  
 UL: 824-849MHz  
 DL: 869-894MHz  
 Part 24  
 UL: 1850-1915MHz  
 DL: 1930-1995MHz  
 Part 27  
 UL: 1710-1755MHz, 698-716MHz, 776-787MHz  
 DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure:  
 The test was performed in accordance with section 7.6 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04r01 Dated October 27, 2017.  
 Firmware: V 3.0  
 Test environment conditions: 22°C, 40% Relative Humidity, 102 kPa  
 Frequency range of measurement = 9kHz- 22GHz.  
 9 kHz - 150 kHz -> RBW= 200Hz VBW= 200Hz  
 150 kHz - 30 MHz -> RBW= 9kHz VBW= 9kHz  
 30 MHz - 1000MHz -> RBW\*= 1MHz VBW= 3MHz  
 1000 MHz - 22000MHz ->RBW= 1MHz VBW= 3MHz

\*Note: As specified on 7.6 Conducted spurious emissions test procedure of 935210 D03 Signal Booster Measurements v04, for frequencies below 1 GHz, an RBW of 1 MHz may be used in a preliminary measurement. If

non-compliant emissions are detected, a final measurement shall be made with a 100 kHz RBW. Additionally, a peak detector may also be used for the preliminary measurement. If non-compliant emissions are detected, then a final measurement of these emissions shall be made with the power averaging (RMS) detector.

27.53 (f) 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.

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	6/19/2017	6/19/2019
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	12/9/2015	12/9/2017

**Summary of Results**

Pass: As summarized in plots below, the conducted spurious emissions are within limits.

**9 KHz-30 MHz**

No Conducted Spurious Emissions were found within 20dB of the limit.

Per section 27.53 (f), the 1559-1610 band was also investigated and found emission within limits using applied correction (see calculation below).

Limit Line Calculation*					
Freq ( MHz)	Antenna Gain- cable loss (dBi)		Limit line EIRP (dBW/MHz)	Limit line EIRP (dBm)	Limit line EIRP corrected (dBm)
UL 776-787	-0.52		-70.0	-40	-40.52

\*Used RV-2 kit



## LIMIT LINE FOR SPURIOUS CONDUCTED EMISSION

$$\text{REQUIRED ATTENUATION} = 43 + 10 \text{ LOG P DB}$$

$$\text{Limit line (dBuV)} = V_{\text{dBuV}} - \text{Attenuation}$$

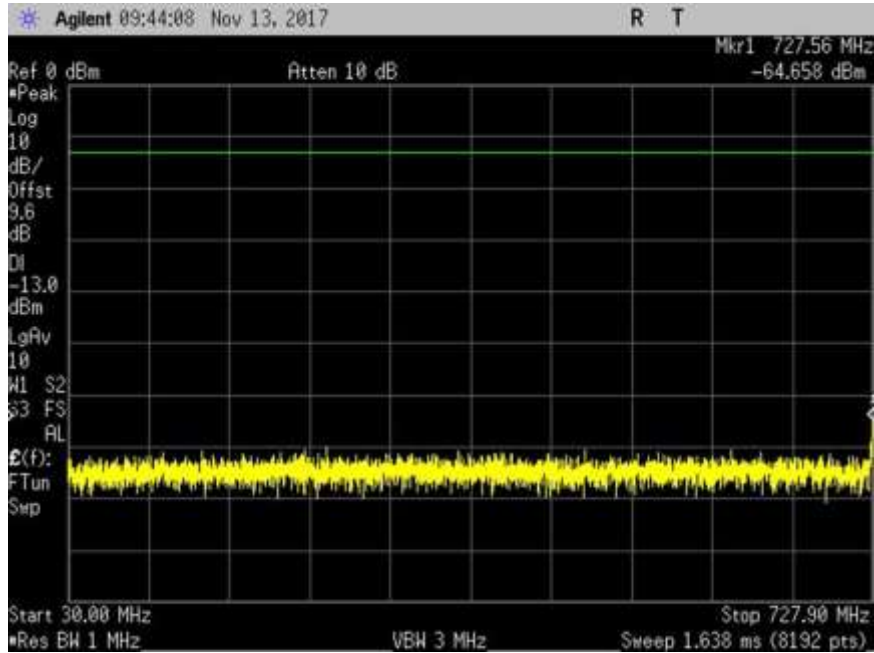
$$\begin{aligned} V_{\text{dBuV}} &= 20 \text{ Log } \frac{V}{1 \times 10^{-6}} \\ &= 20 (\text{Log } V - \text{Log } 1 \times 10^{-6}) \\ &= 20 \text{ Log } V - 20 \text{ Log } 1 \times 10^{-6} \\ &= 20 \text{ Log } V - 20 (-6) \\ &= 20 \text{ Log } V + 120 \end{aligned}$$

$$\begin{aligned} \text{Attenuation} &= 43 + 10 \text{ Log } P \\ &= 43 + 10 \text{ Log } \frac{V^2}{R} \\ &= 43 + 10 (\text{Log } V^2 - \text{Log } R) \\ &= 43 + 10 (2 \text{ Log } V - \text{Log } R) \\ &= 43 + 20 \text{ Log } V - 10 \text{ Log } R \end{aligned}$$

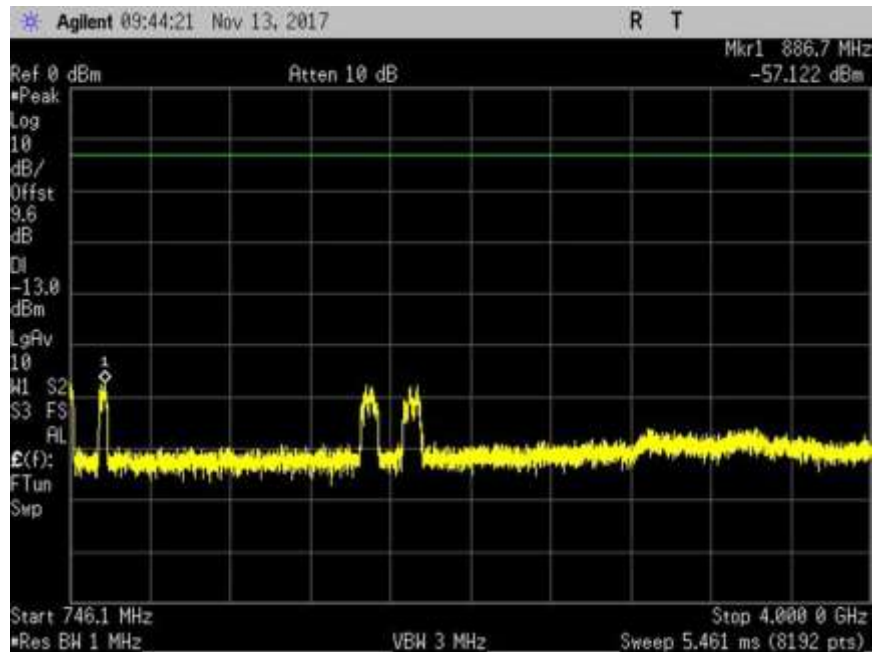
$$\begin{aligned} \text{Limit line} &= V_{\text{dBuV}} - \text{Attenuation} \\ &= 20 \text{ Log } V + 120 - (43 + 20 \text{ Log } V - 10 \text{ Log } R) \\ &= 20 \text{ Log } V + 120 - 43 - 20 \text{ Log } V + 10 \text{ Log } R \\ &= 20 \text{ Log } V + 120 - 43 - 20 \text{ Log } V + 10 \text{ Log } R \\ &= 120 - 43 + 10 \text{ Log } 50 \quad \text{Note : } R = 50 \Omega \\ &= 120 - 43 + 16.897 \\ &= 94 \text{ dBuV at any power level} \end{aligned}$$

Plots

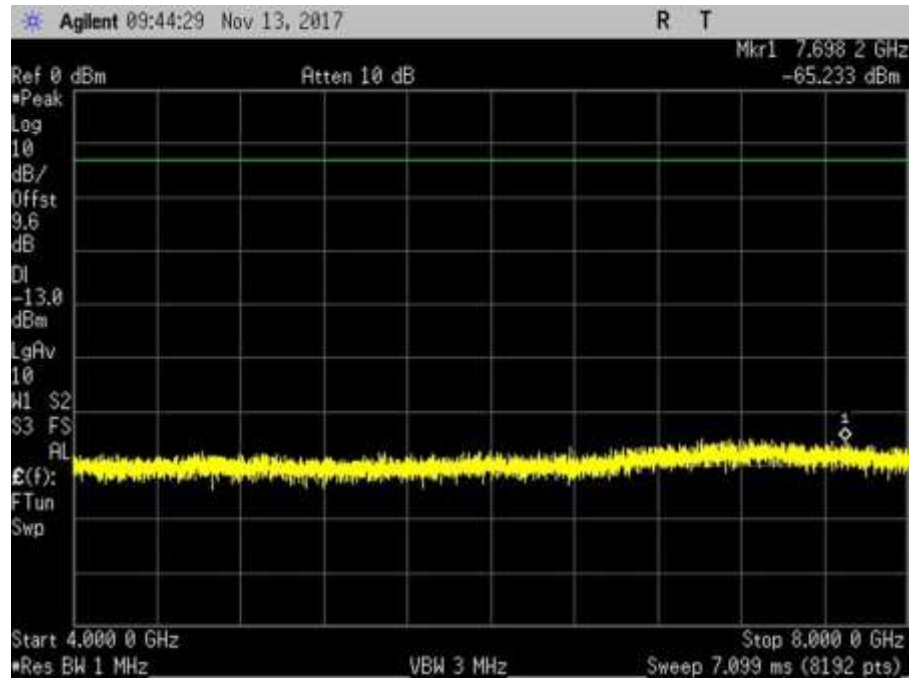
DL



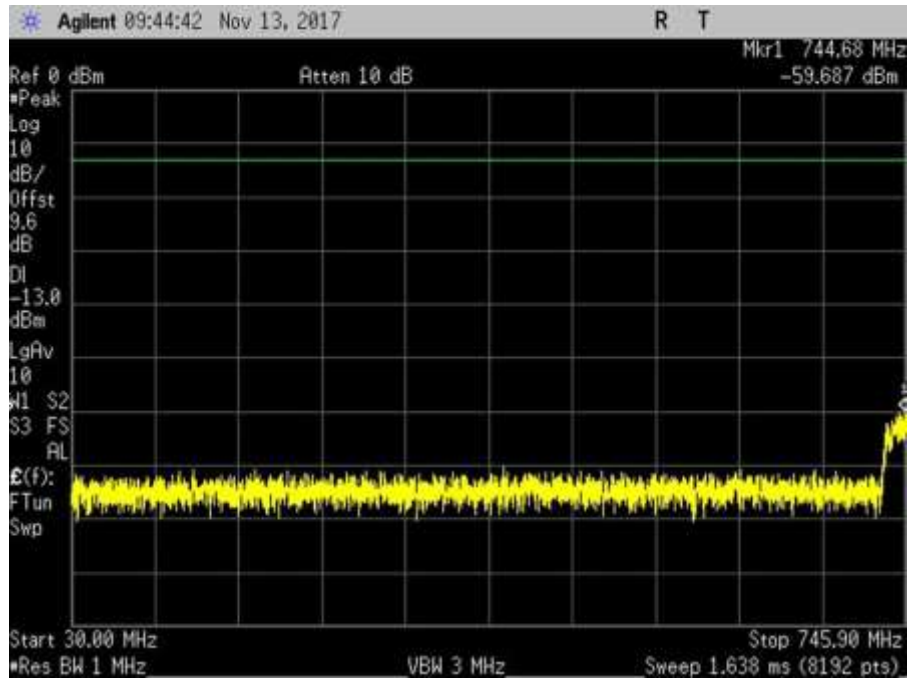
7.6\_CSE\_DL\_728-746MHz\_L



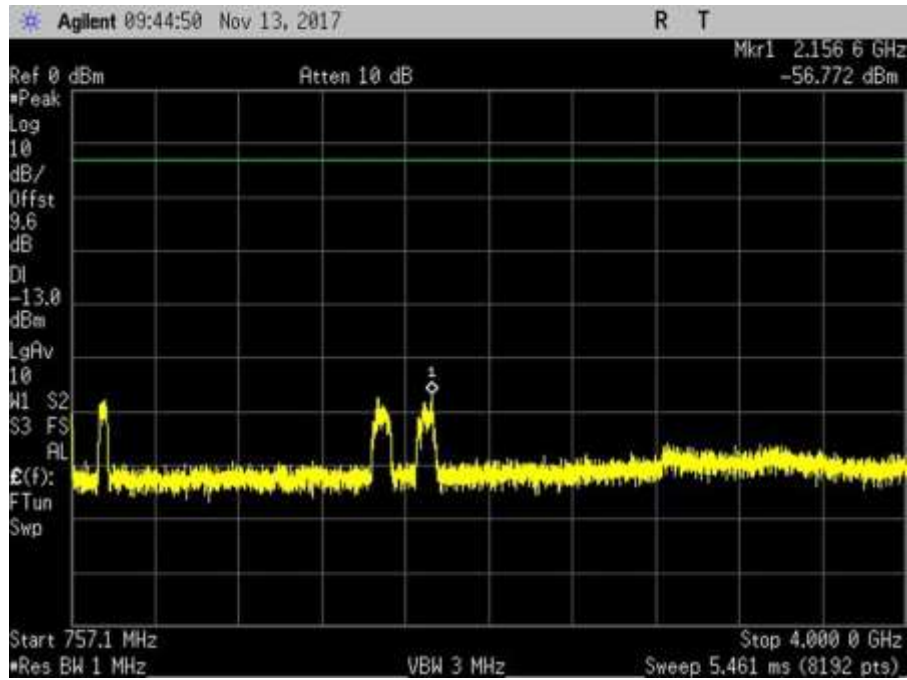
7.6\_CSE\_DL\_728-746MHz\_R1



7.6\_CSE\_DL\_728-746MHz\_R2

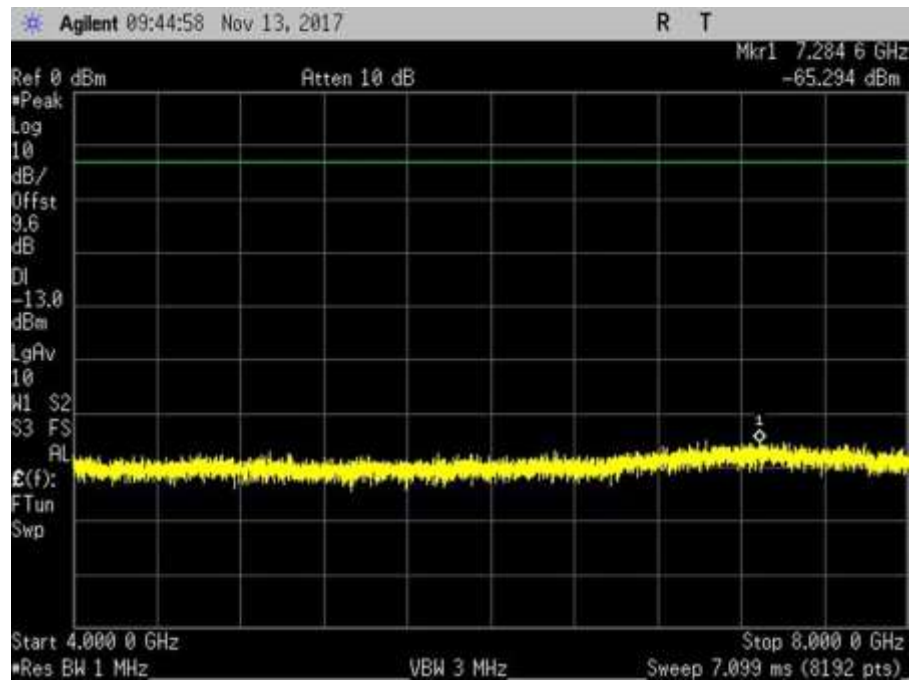


7.6\_CSE\_DL\_746-757\_MHz\_L

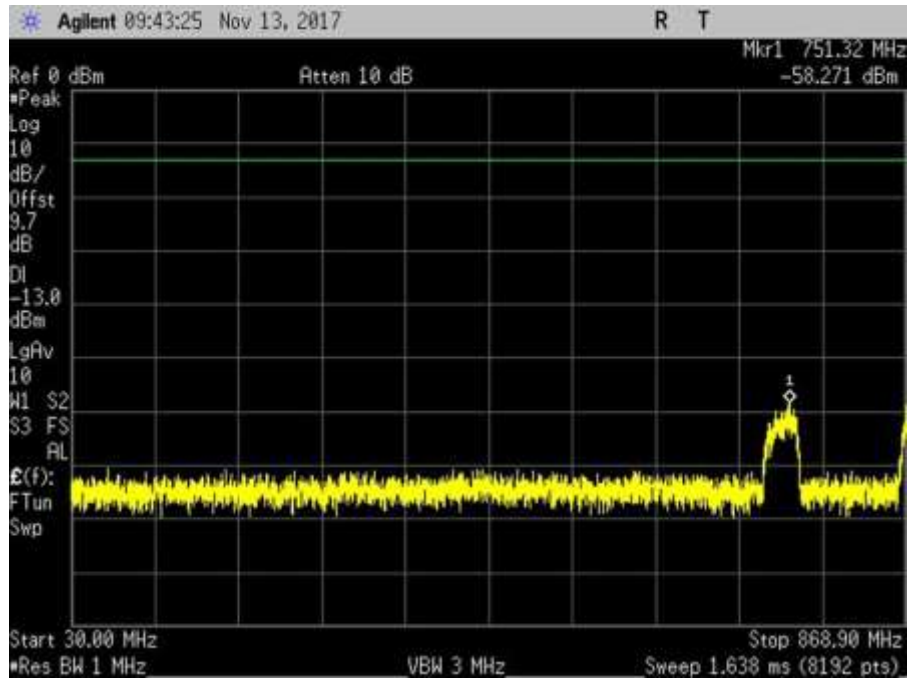


7.6\_CSE\_DL\_746-757\_MHz\_R1

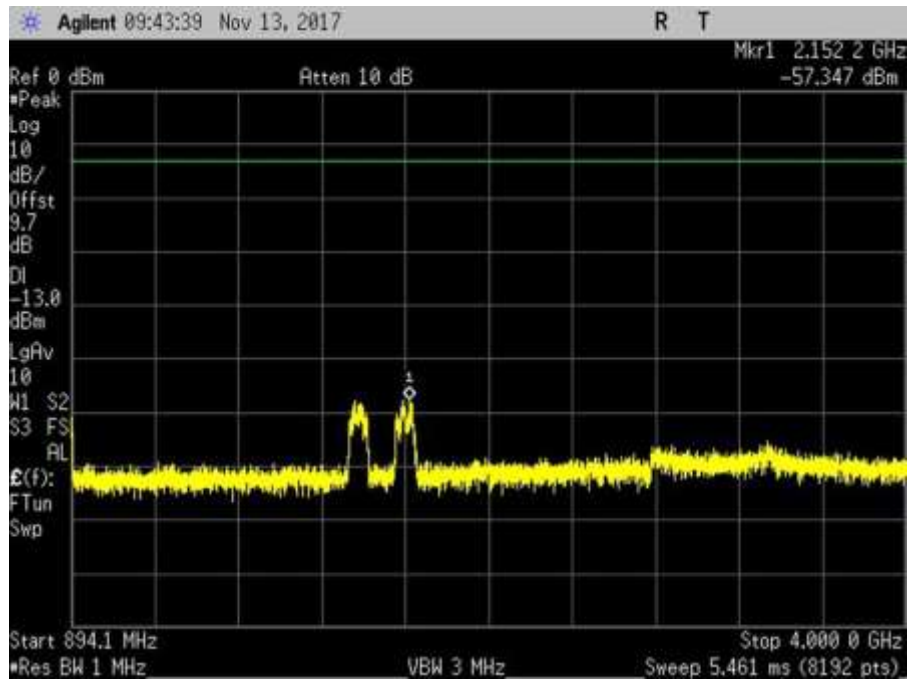




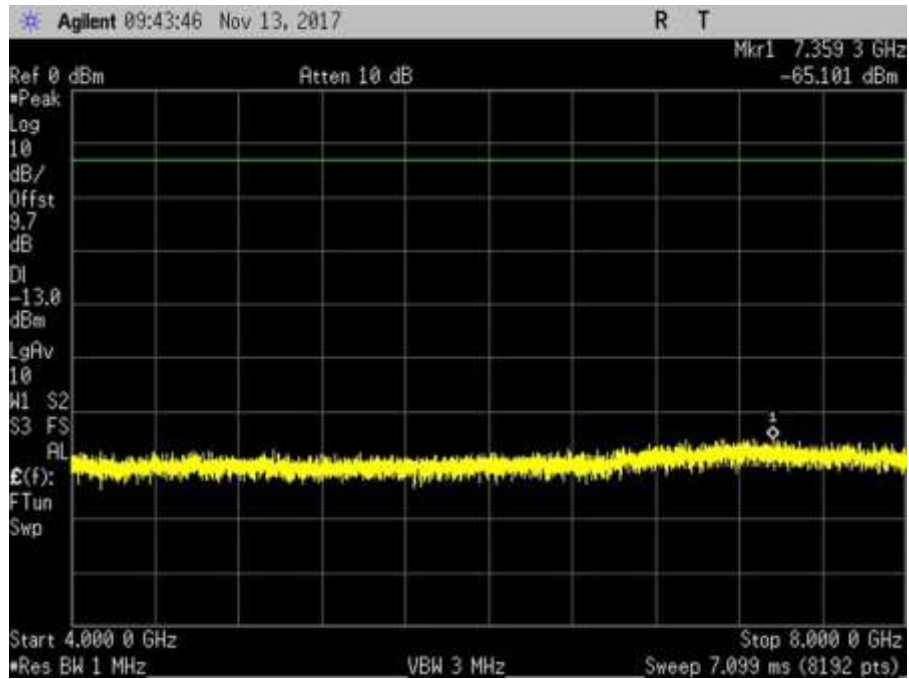
7.6\_CSE\_DL\_746-757\_MHz\_R2



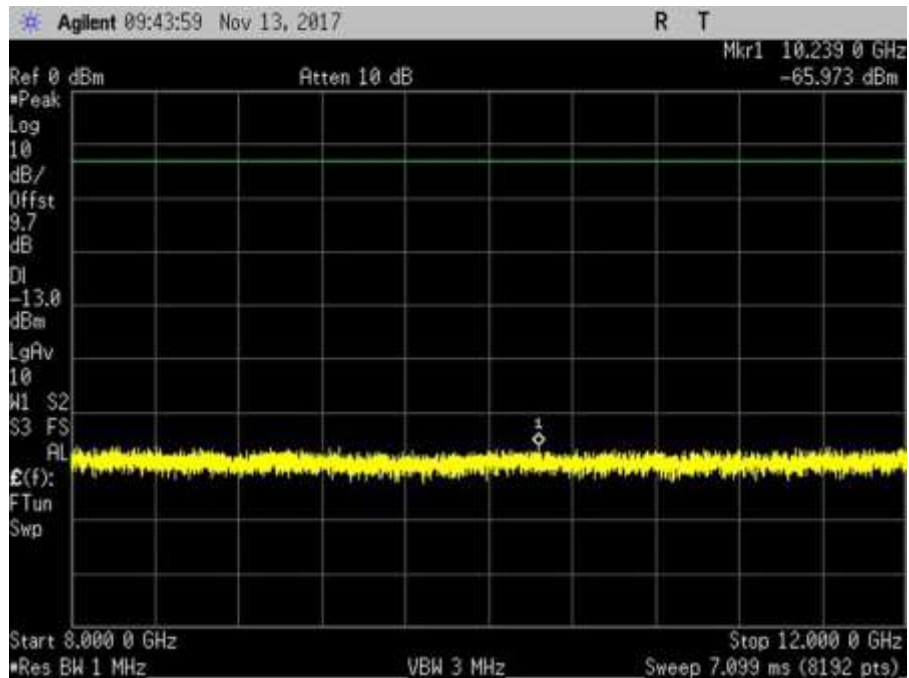
7.6\_CSE\_DL\_869-894\_MHz\_L



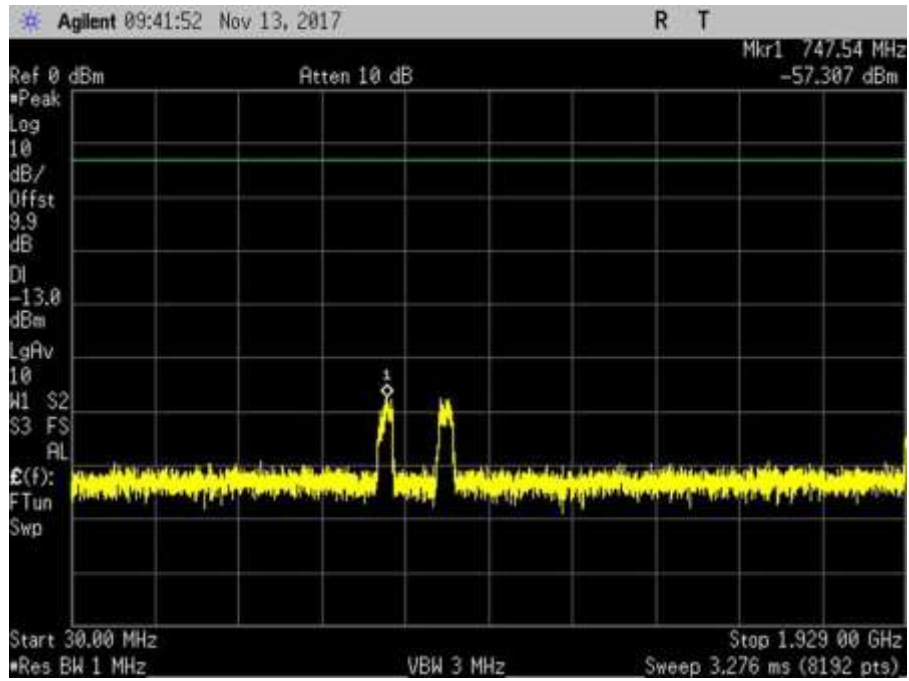
7.6\_CSE\_DL\_869-894\_MHz\_R1



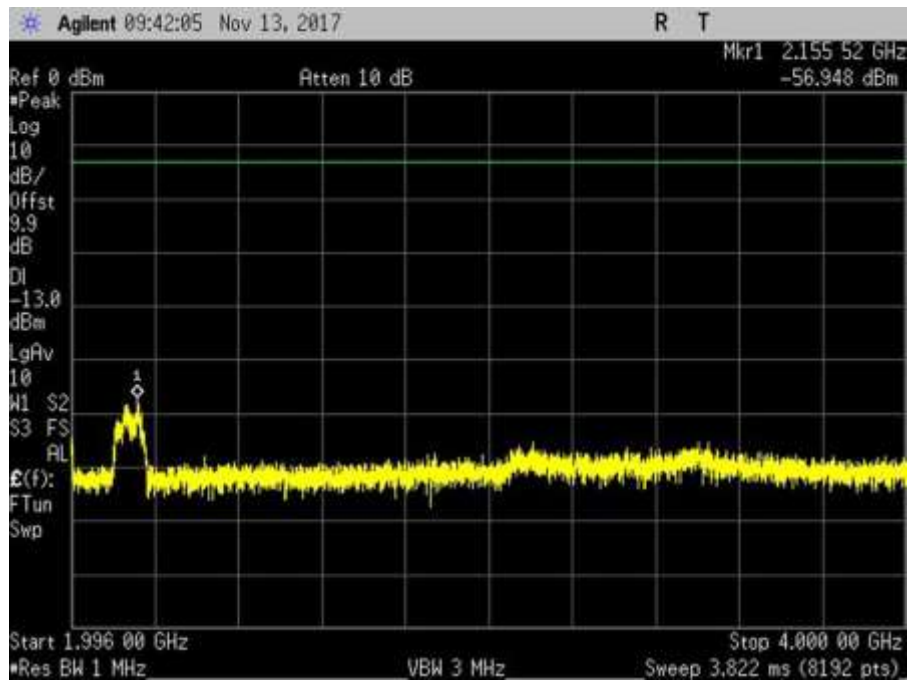
7.6\_CSE\_DL\_869-894\_MHz\_R2



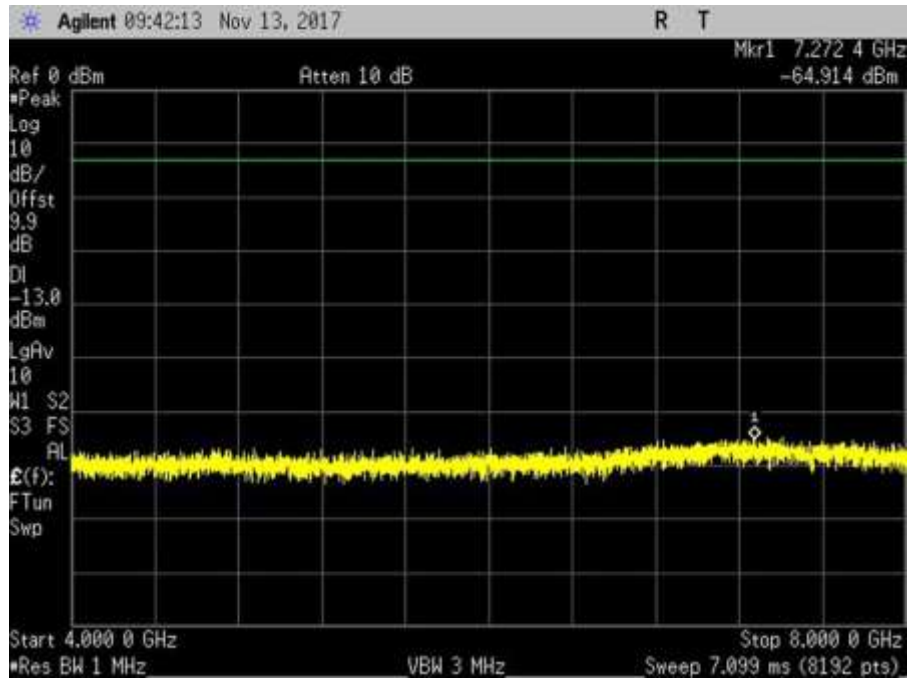
7.6\_CSE\_DL\_869-894MHz\_R3



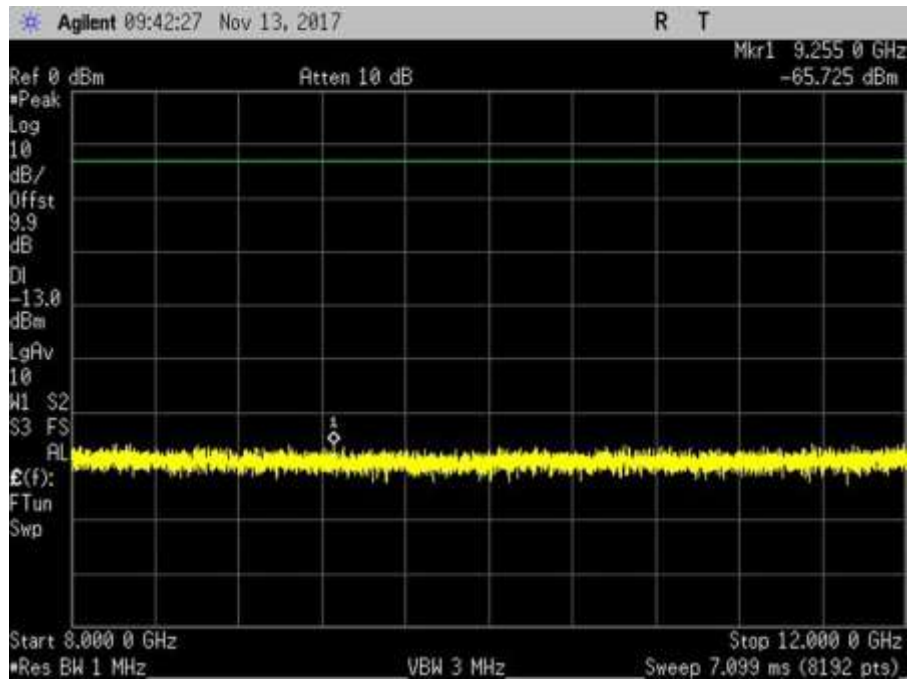
7.6\_CSE\_DL\_1930-1995MHz\_L



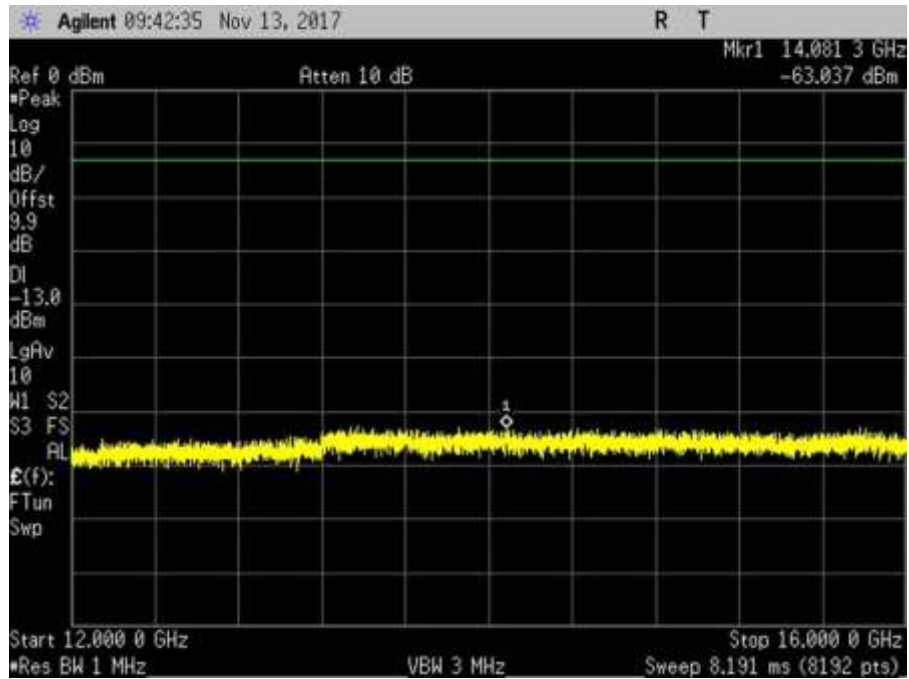
7.6\_CSE\_DL\_1930-1995MHz\_R1



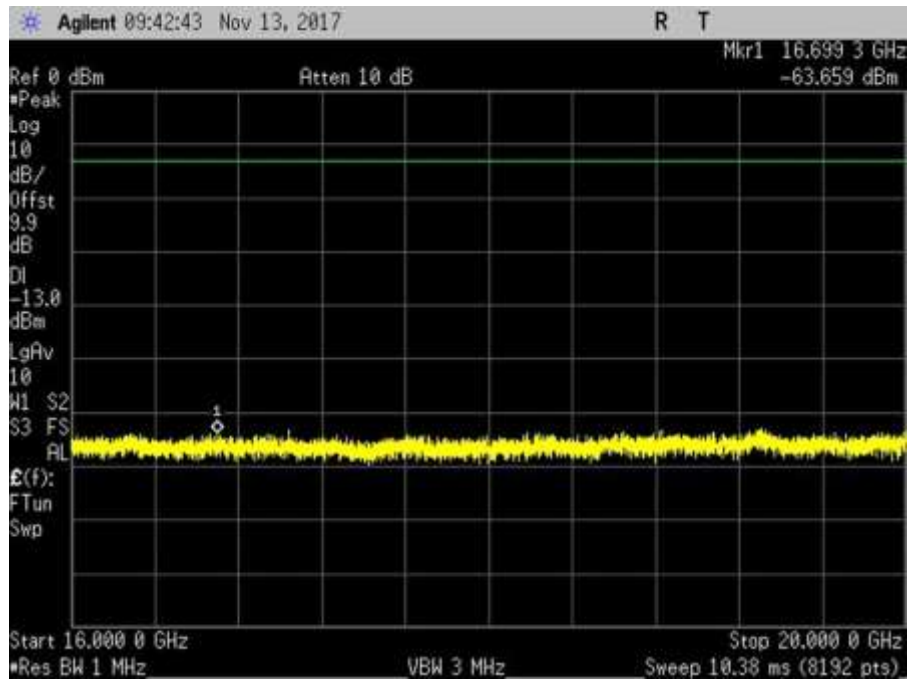
7.6\_CSE\_DL\_1930-1995MHz\_R2



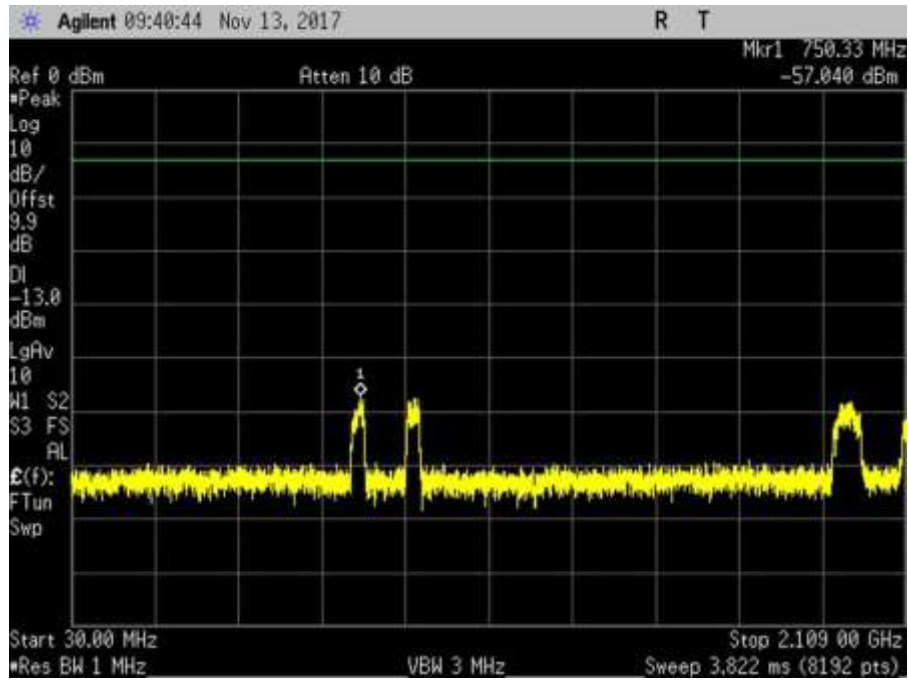
7.6\_CSE\_DL\_1930-1995MHz\_R3



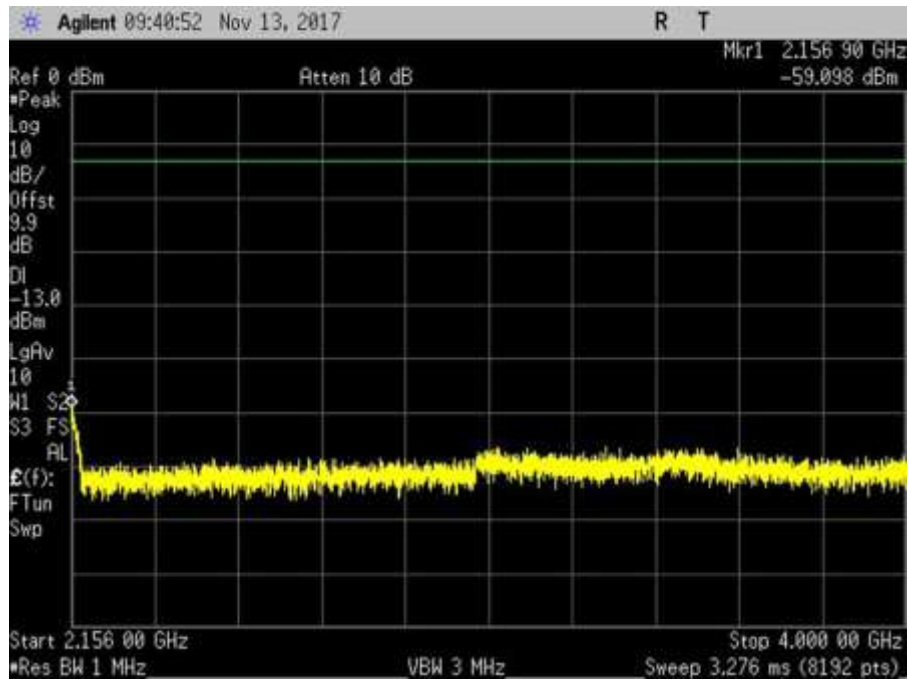
7.6\_CSE\_DL\_1930-1995MHz\_R4



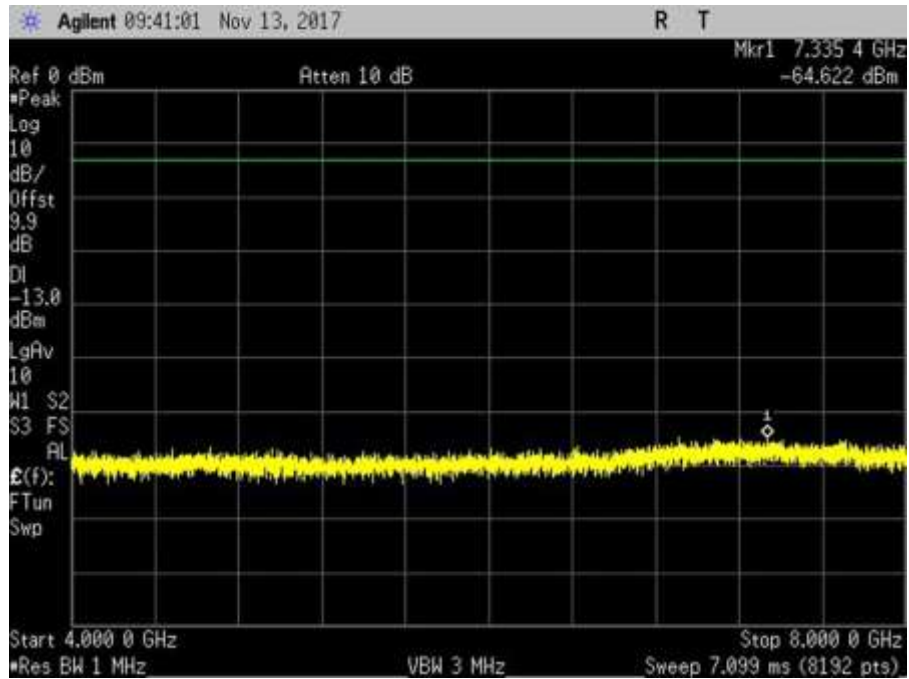
7.6\_CSE\_DL\_1930-1995MHz\_R5



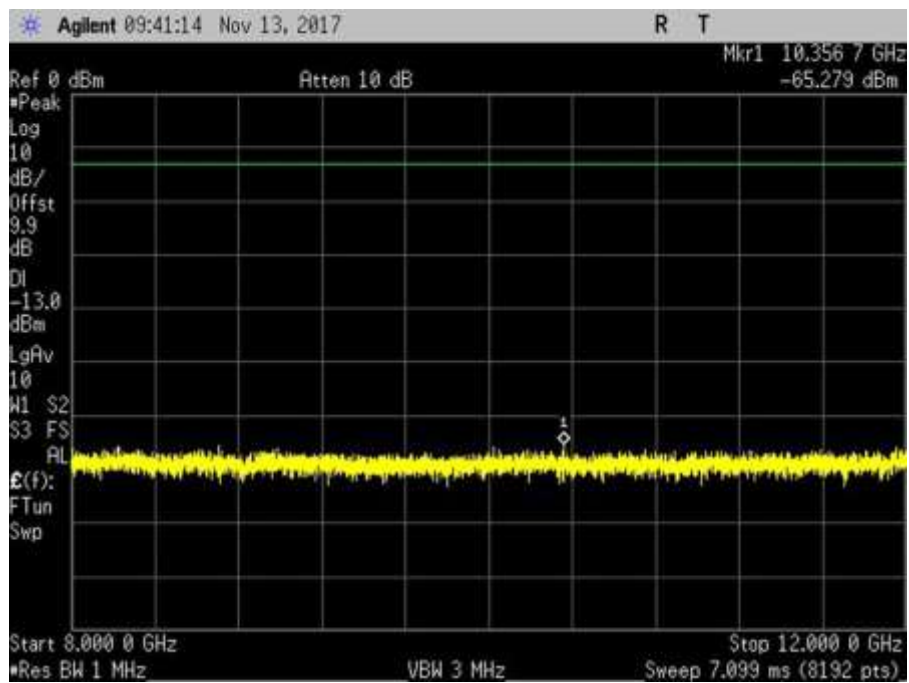
7.6\_CSE\_DL\_2110-2155MHz\_L



7.6\_CSE\_DL\_2110-2155MHz\_R1

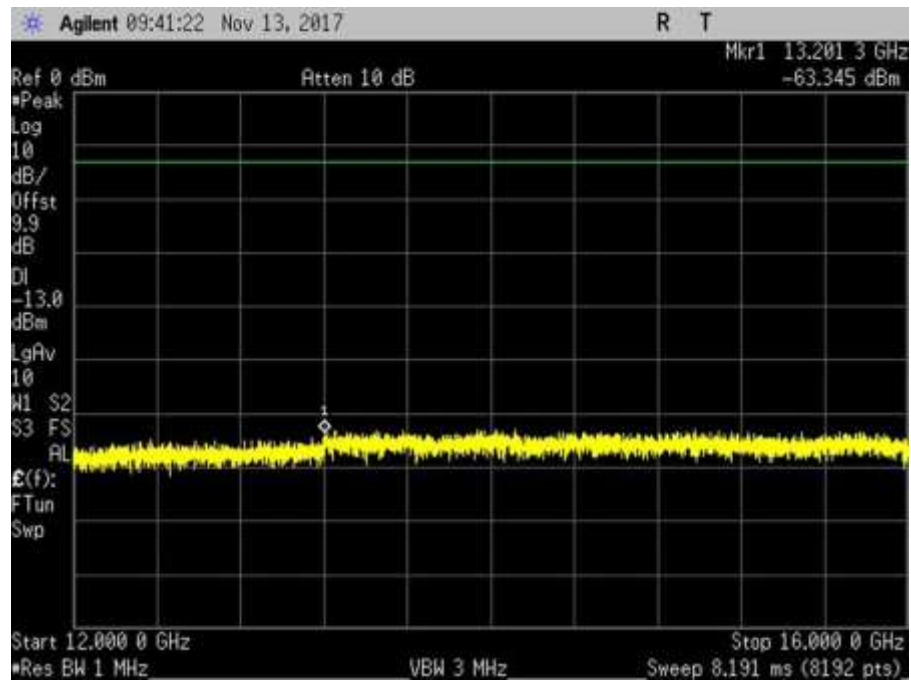


7.6\_CSE\_DL\_2110-2155MHz\_R2

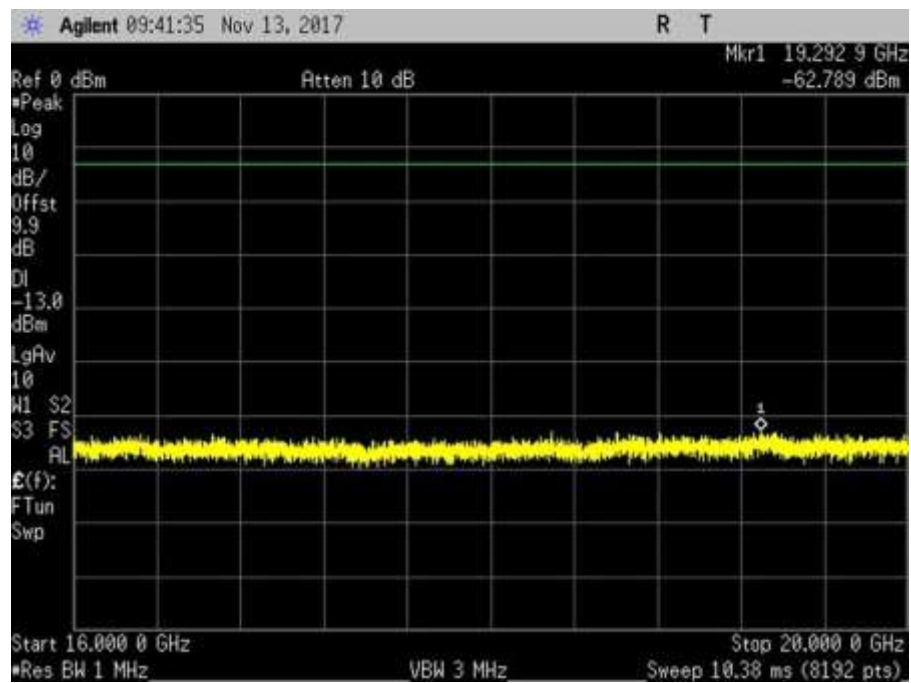


7.6\_CSE\_DL\_2110-2155MHz\_R3

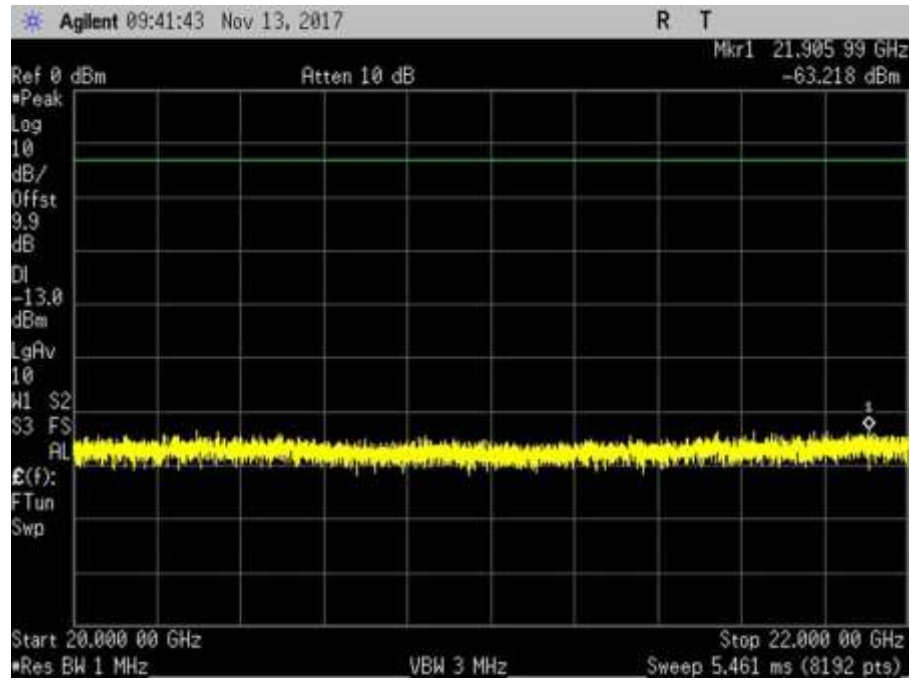




7.6\_CSE\_DL\_2110-2155MHz\_R4

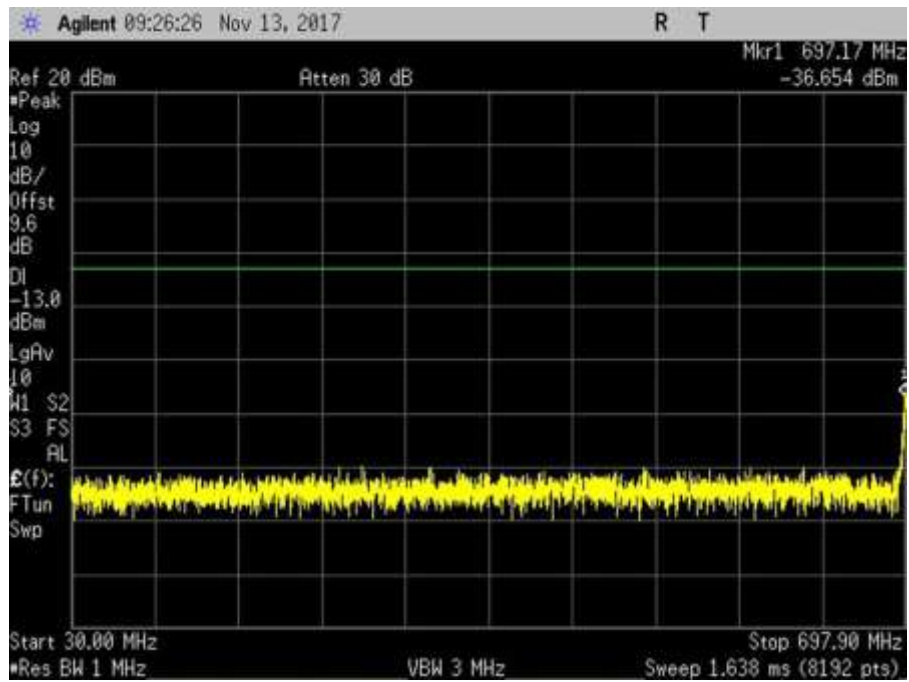


7.6\_CSE\_DL\_2110-2155MHz\_R5

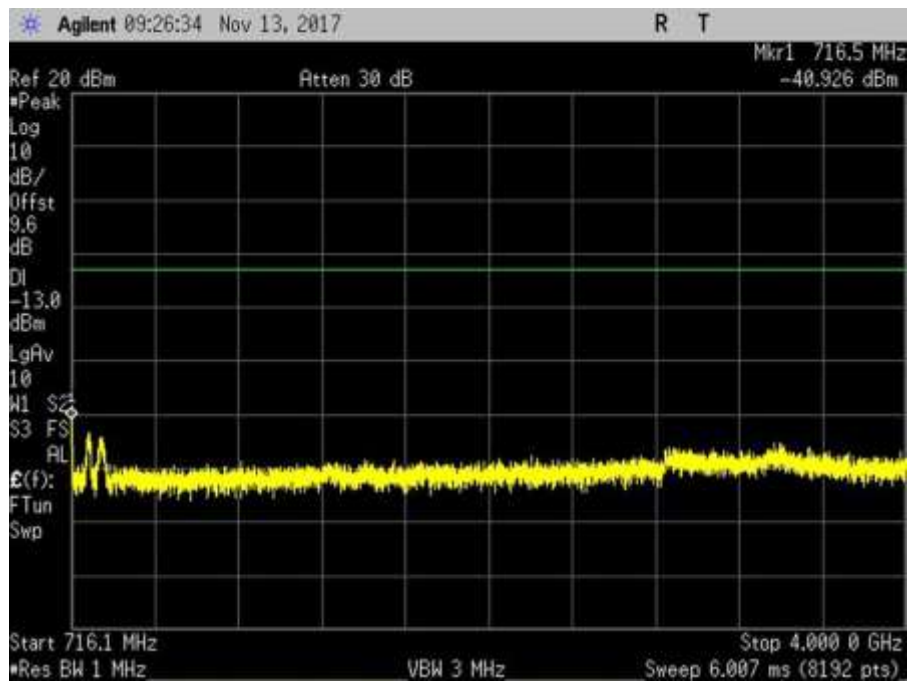


7.6\_CSE\_DL\_2110-2155MHz\_R6

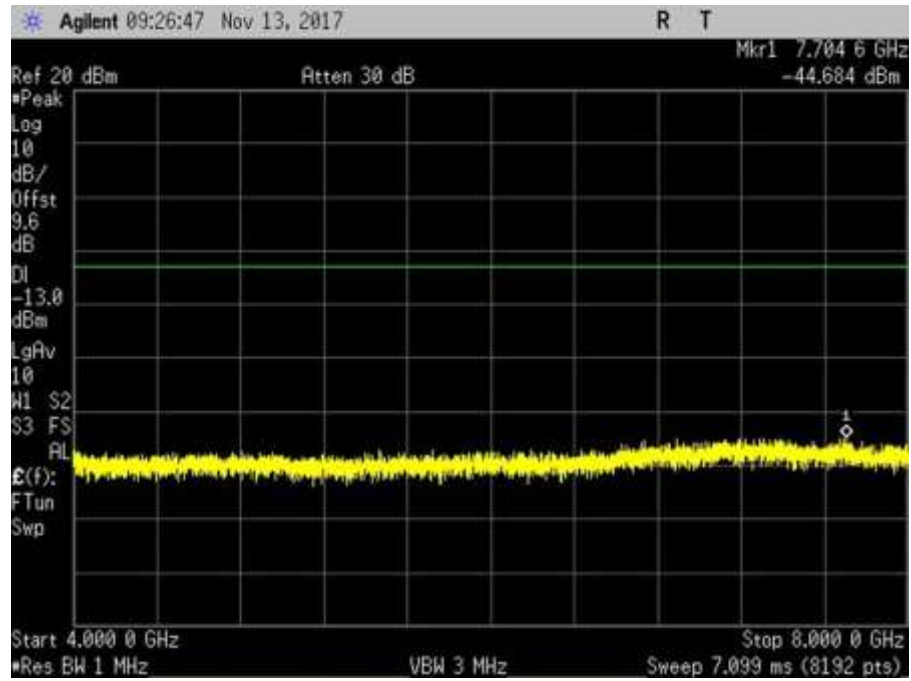
UL



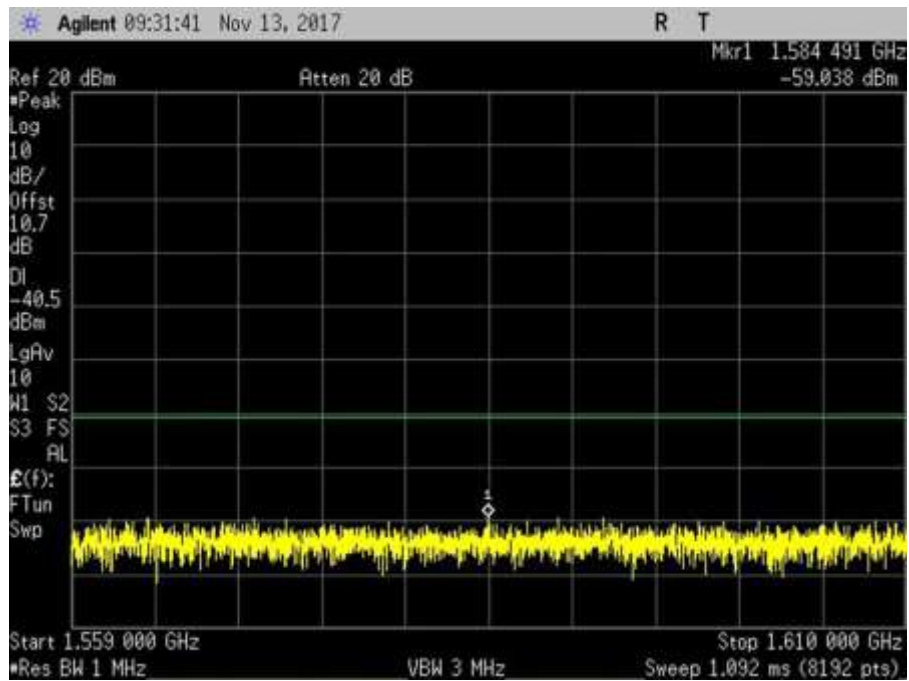
7.6\_CSE\_UL\_698-716MHz\_L



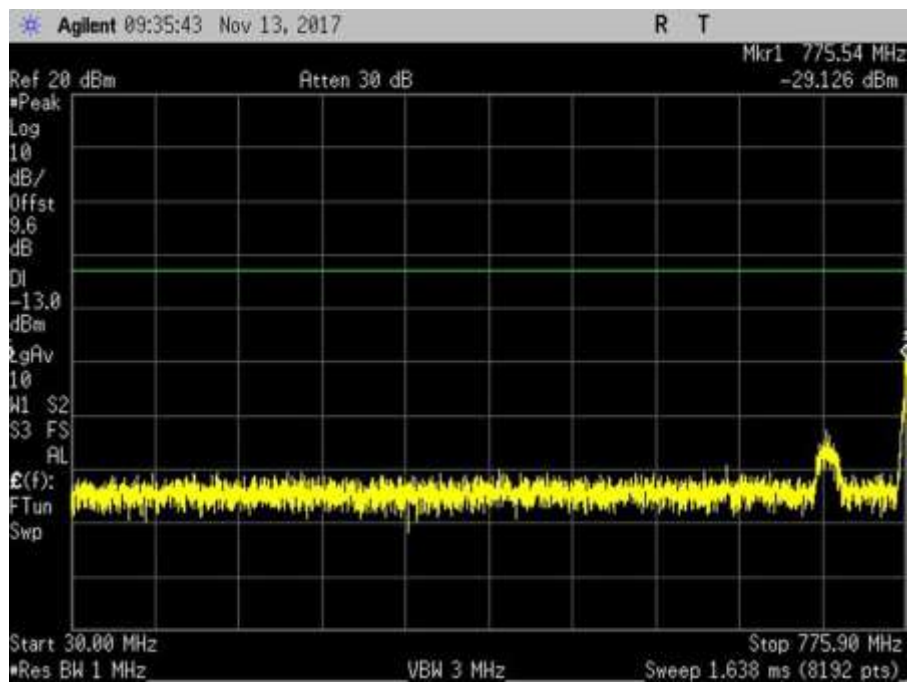
7.6\_CSE\_UL\_698-716MHz\_R1



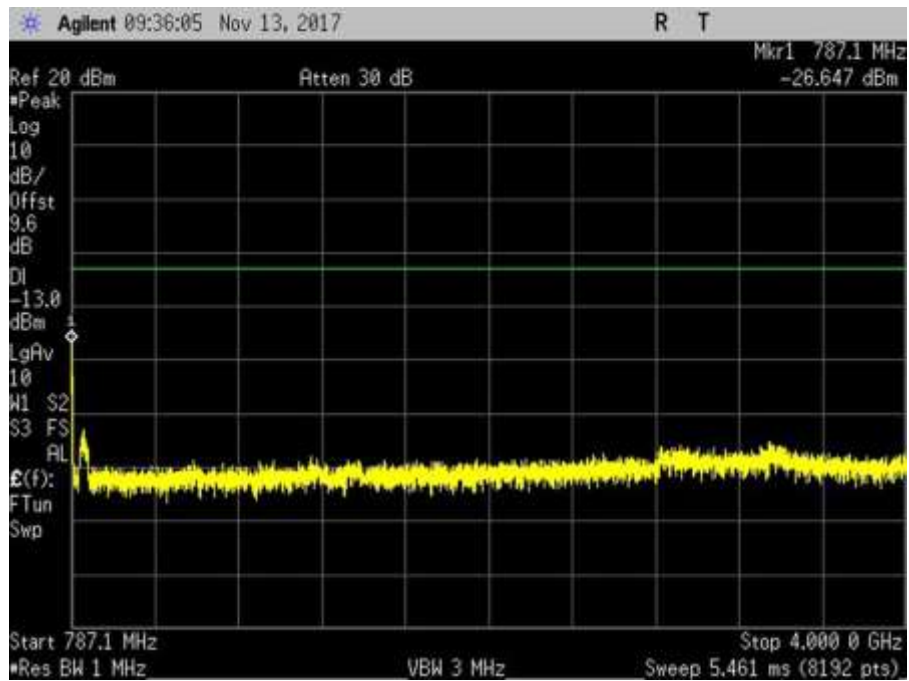
7.6\_CSE\_UL\_698-716MHz\_R2



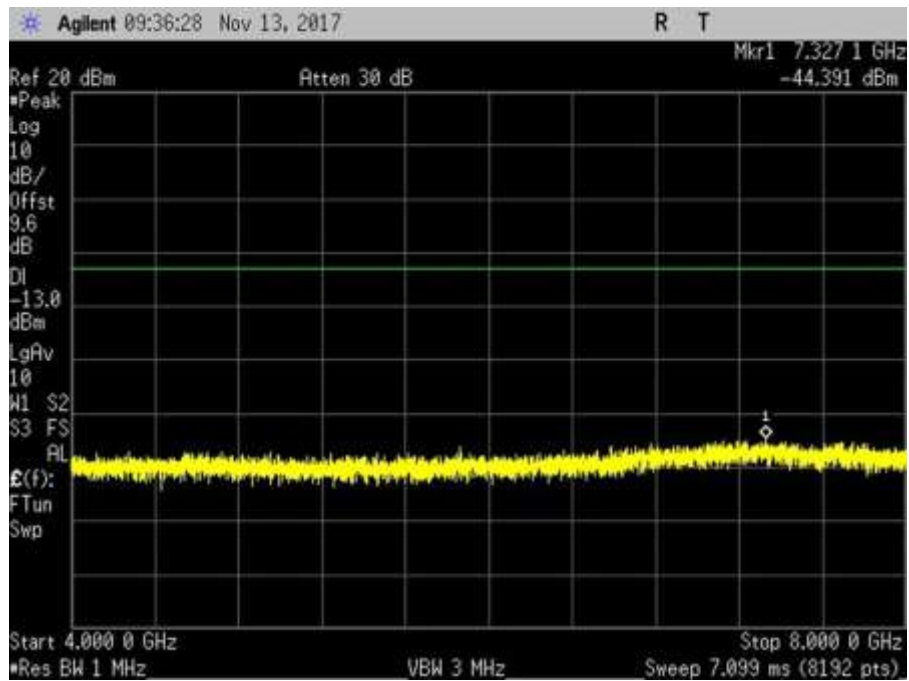
7.6\_CSE\_UL\_776-787MHz\_GPS



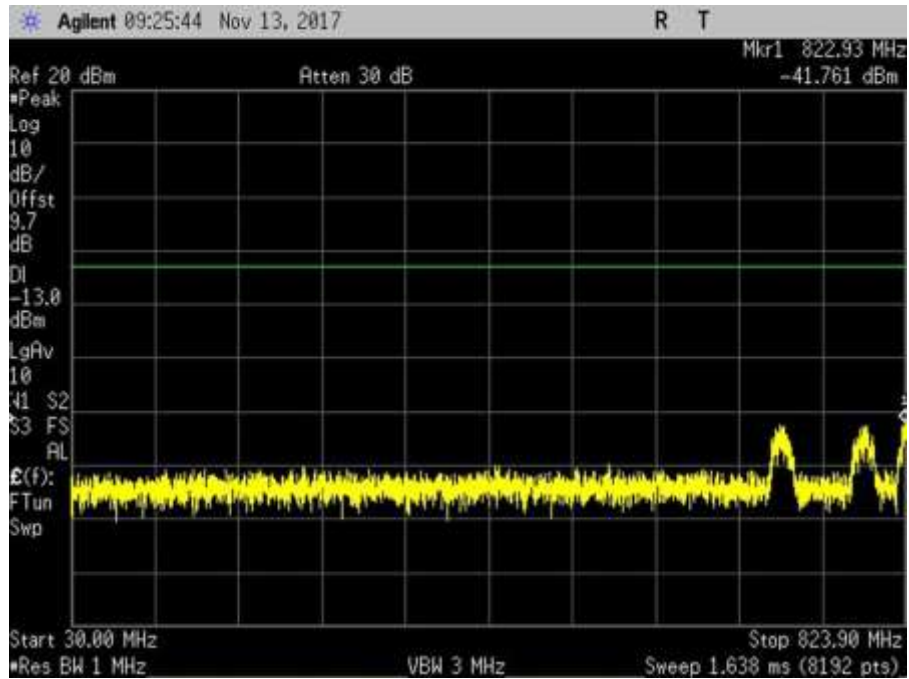
7.6\_CSE\_UL\_776-787MHz\_L



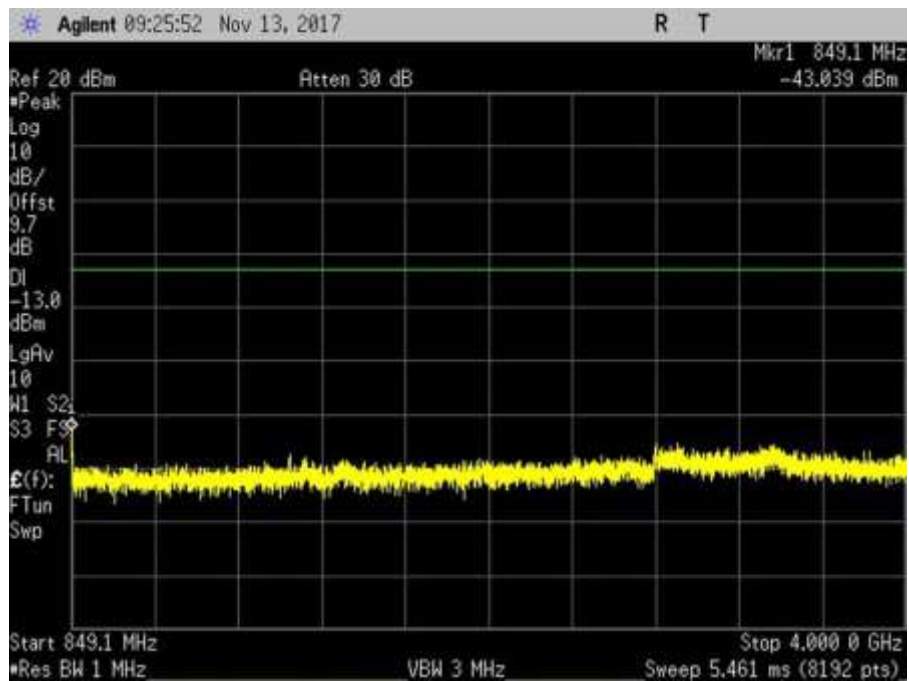
7.6\_CSE\_UL\_776-787MHz\_R1



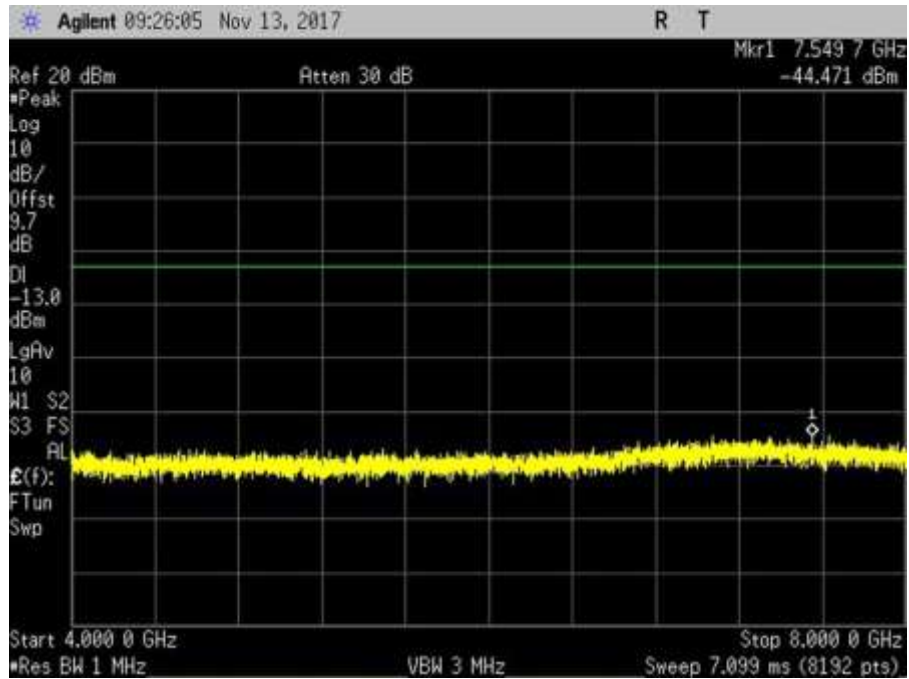
7.6\_CSE\_UL\_776-787MHz\_R2



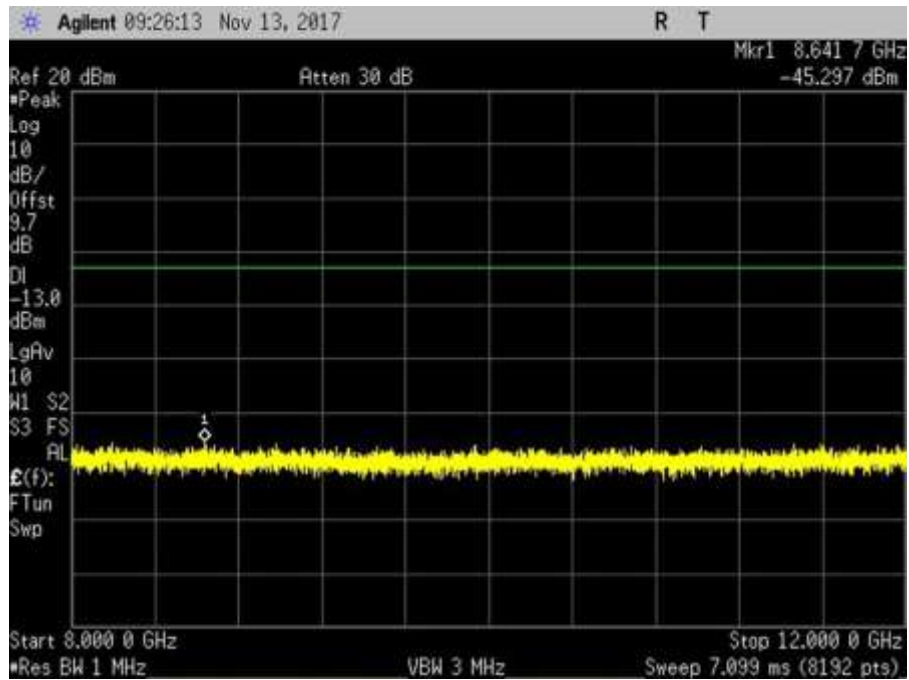
7.6\_CSE\_UL\_824-849MHz\_L



7.6\_CSE\_UL\_824-849MHz\_R1

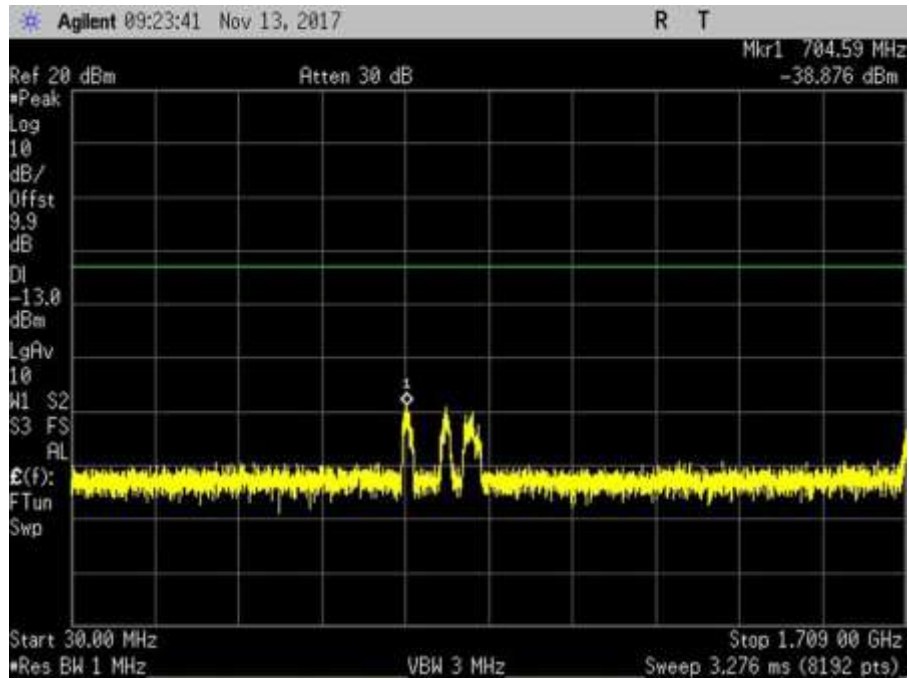


7.6\_CSE\_UL\_824-849MHz\_R2

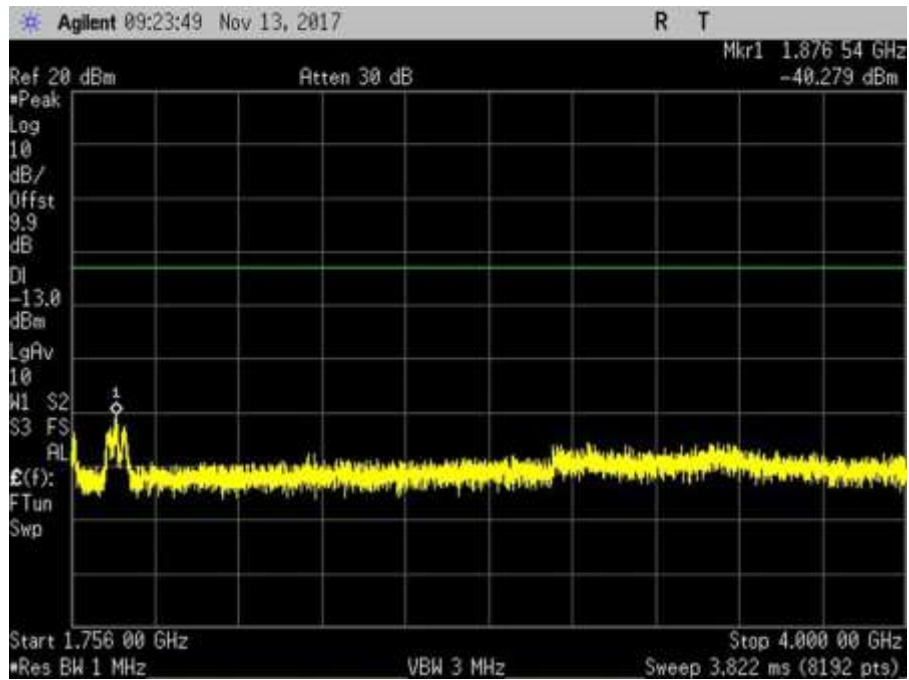


7.6\_CSE\_UL\_824-849MHz\_R3

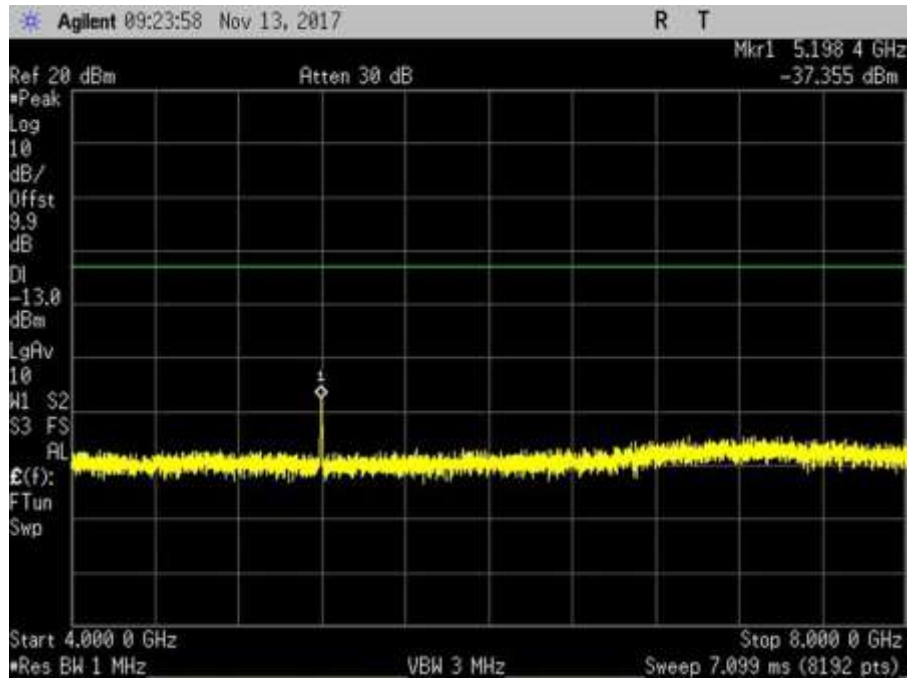




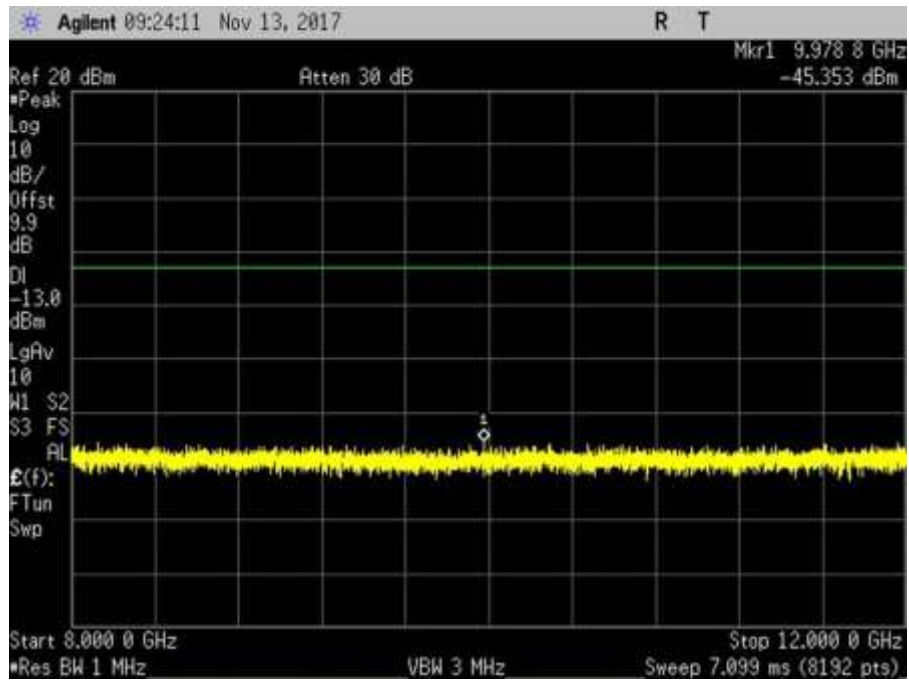
7.6\_CSE\_UL\_1710-1755MHz\_L



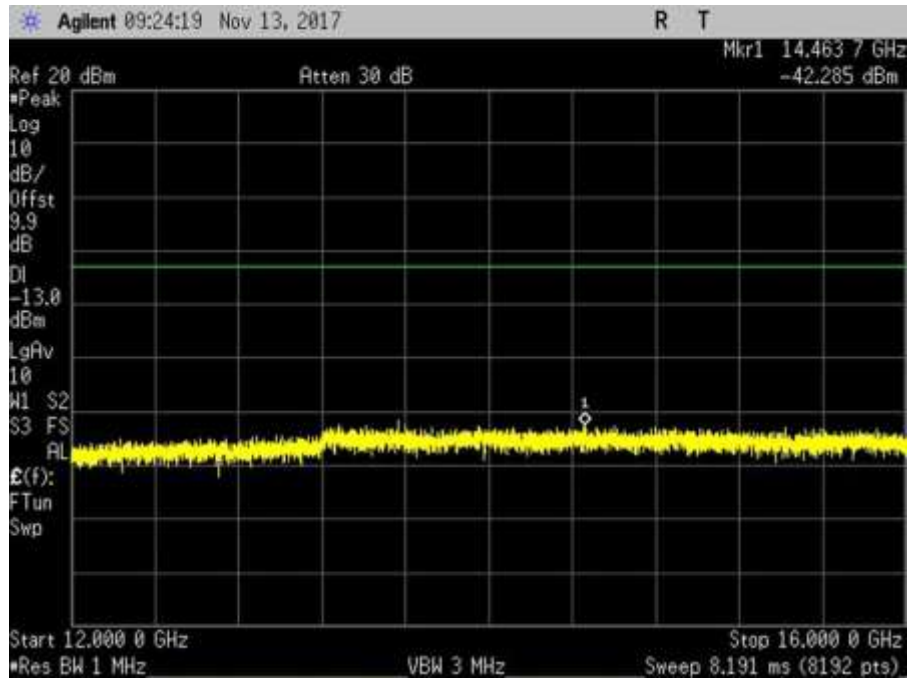
7.6\_CSE\_UL\_1710-1755MHz\_R1



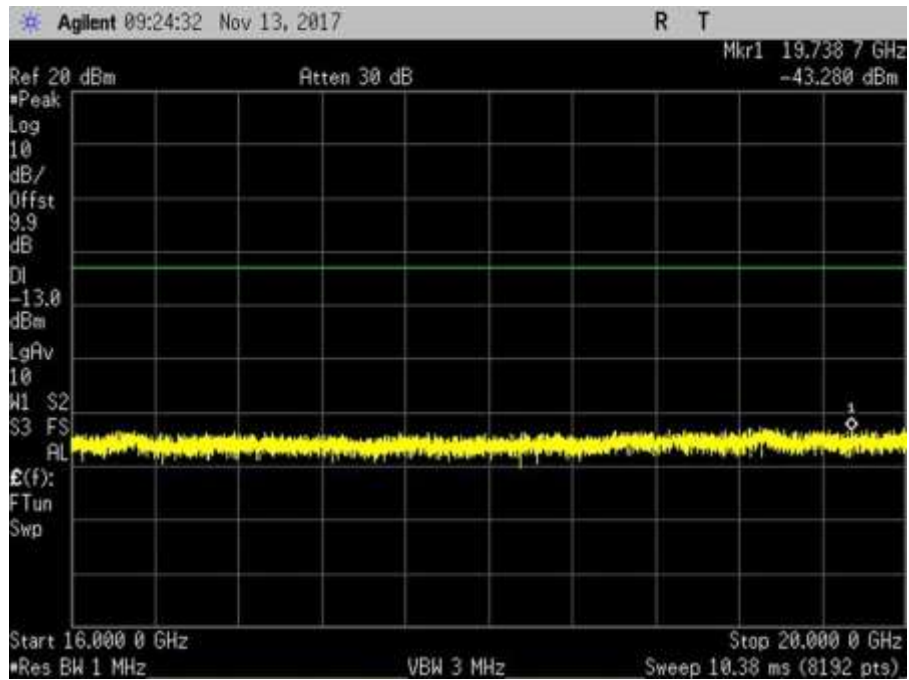
7.6\_CSE\_UL\_1710-1755MHz\_R2



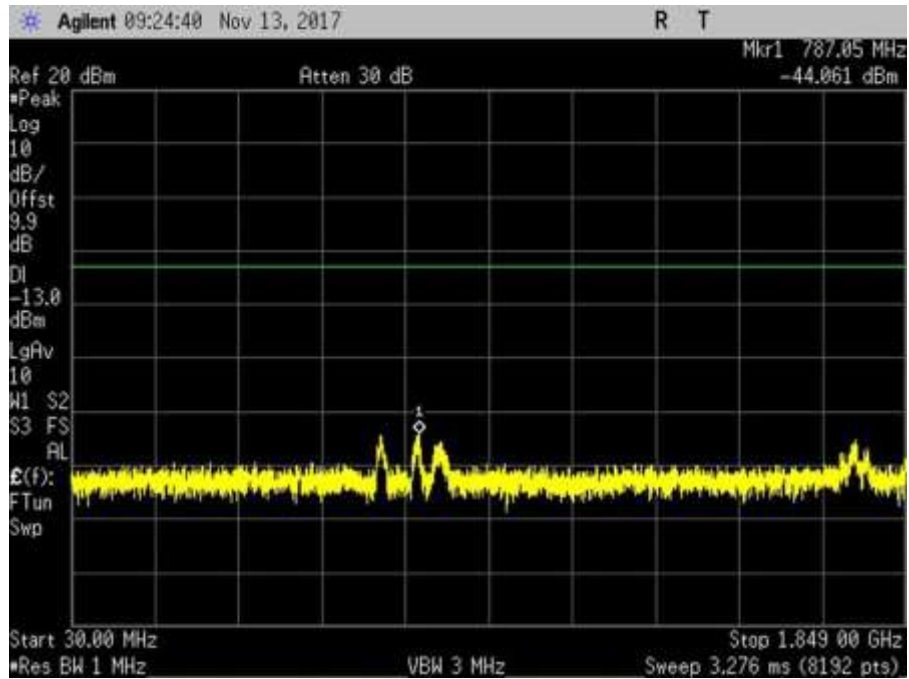
7.6\_CSE\_UL\_1710-1755MHz\_R3



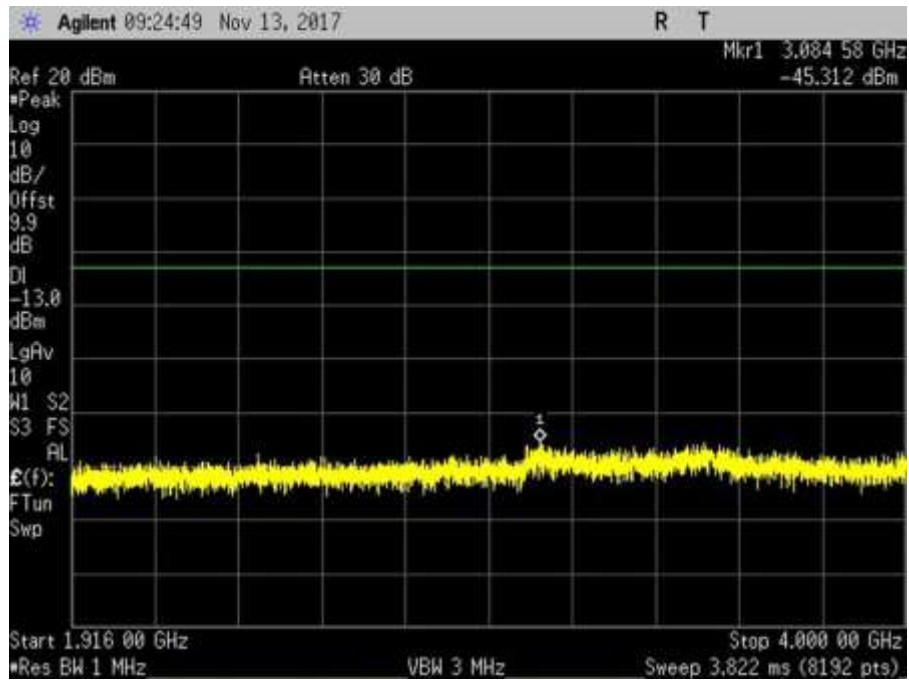
7.6\_CSE\_UL\_1710-1755MHz\_R4



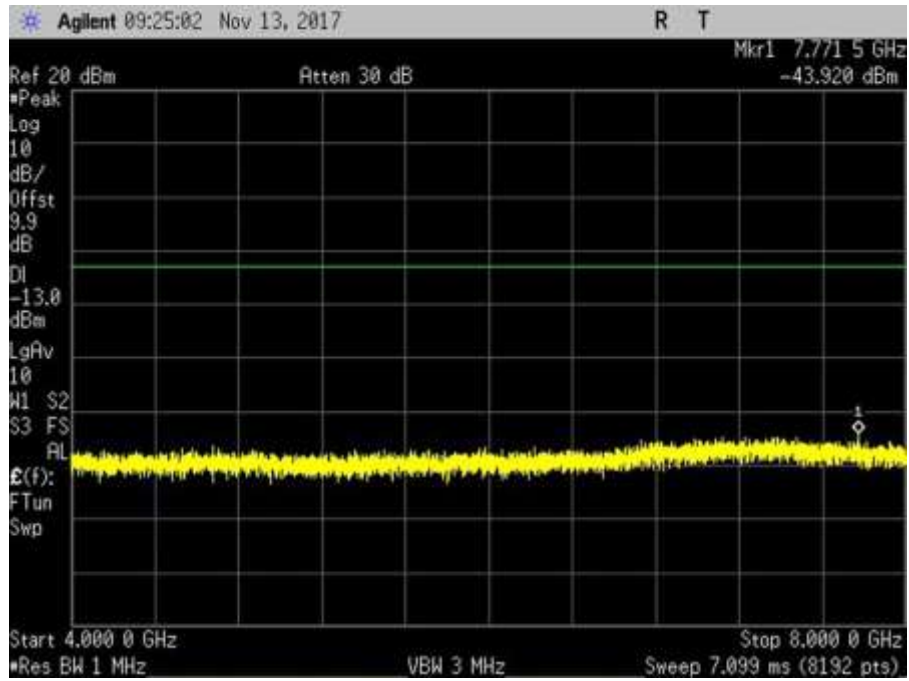
7.6\_CSE\_UL\_1710-1755MHz\_R5



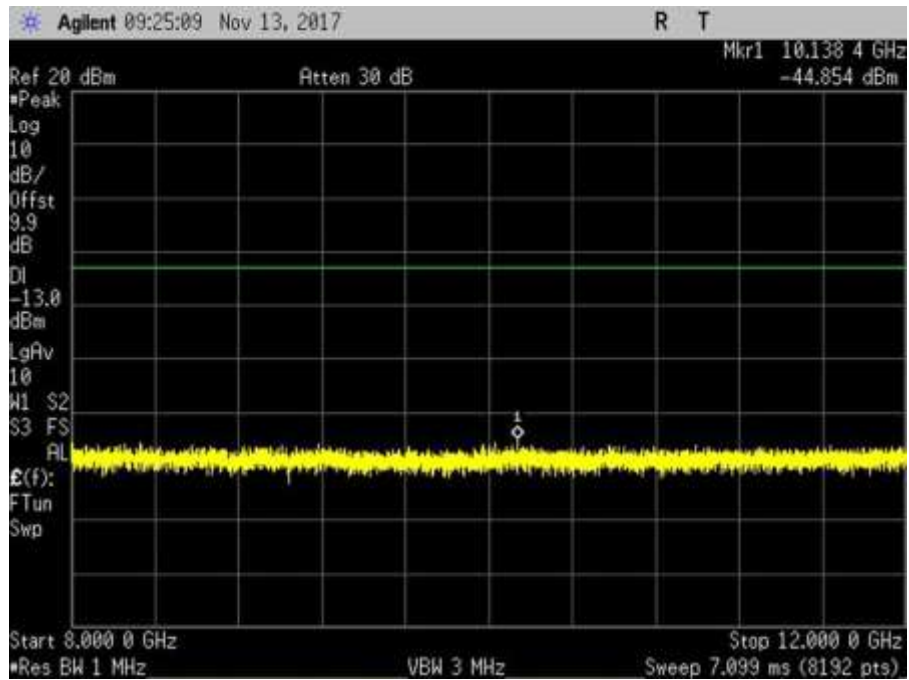
7.6\_CSE\_UL\_1850-1915MHz\_L1



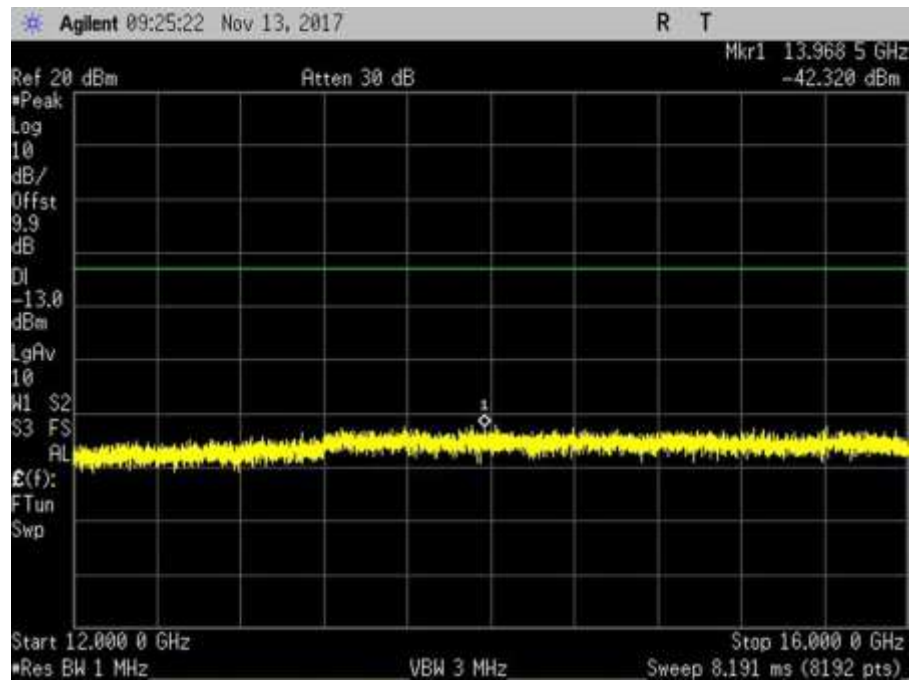
7.6\_CSE\_UL\_1850-1915MHz\_R1



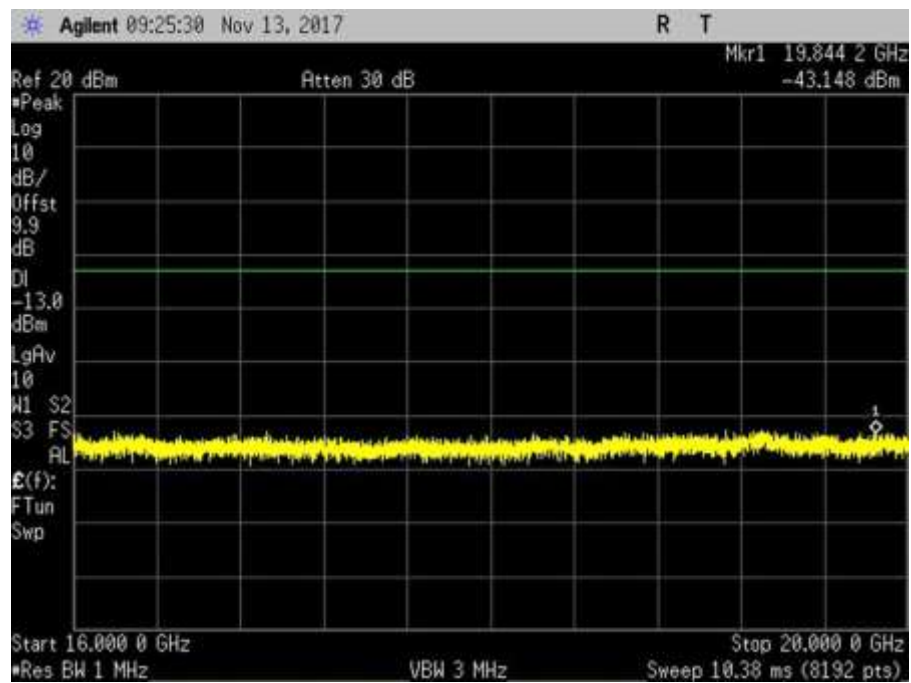
7.6\_CSE\_UL\_1850-1915MHz\_R2



7.6\_CSE\_UL\_1850-1915MHz\_R3



7.6\_CSE\_UL\_1850-1915MHz\_R4



7.6\_CSE\_UL\_1850-1915MHz\_R5

## 7.7 Noise limit

### Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170  
 Customer: Cellphone-Mate, Inc  
 Specification: **7.7 Noise Limit (Maximum Transmitter Noise Power Level / Variable UL Noise Timing)**  
 Work Order #: **100637** Date: 11/13/2017  
 Test Type: **Conducted Emissions** Time: 10:07:00 AM  
 Tested By: **Daniel Bertran** Sequence#: 1  
 Software: EMITest 5.03.11

**Equipment Tested:**

Device	Manufacturer	Model #	S/N
Configuration 1			

**Support Equipment:**

Device	Manufacturer	Model #	S/N

**Test Conditions / Notes:**

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.  
 The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.  
 The EUT Server port is a type FME connector and 50-ohm impedance.  
 The EUT Donor port is type FME connector and 50-ohm impedance.

Part 22  
 UL: 824-849MHz  
 DL: 869-894MHz  
 Part 24  
 UL: 1850-1915MHz  
 DL: 1930-1995MHz  
 Part 27  
 UL: 1710-1755MHz, 698-716MHz, 776-787MHz  
 DL: 2110-2155MHz, 728-746MHz, 746-757MHz

**Test procedure:**  
 The test was performed in accordance with section 7.7 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04r01 Dated October 27, 2017.  
 Firmware: V 3.0  
 Test environment conditions: 22°C, 40% Relative Humidity, 102 kPa  
**Note:**  
 7.7.1 Maximum Transmitter Noise Power Level  
 Per figure 3, input port was terminated with 50 Ohm Pasternack load (MN: PE6187 and SN: 1443).  
 Input donor port was terminated with 50 Ohm Pasternack load via a 75/50 Ohm impedance matching pad.

7.7.2 Variable UL Noise Timing  
 Per figure 4, server port was terminated with 50 Ohm Pasternack load (MN: PE6187 and SN: 1443).

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	6/19/2017	6/19/2019
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	12/9/2015	12/9/2017
	ANC00082	RF Coupler	722-10-1.500V	9/18/2017	9/18/2019

**Summary of Results**

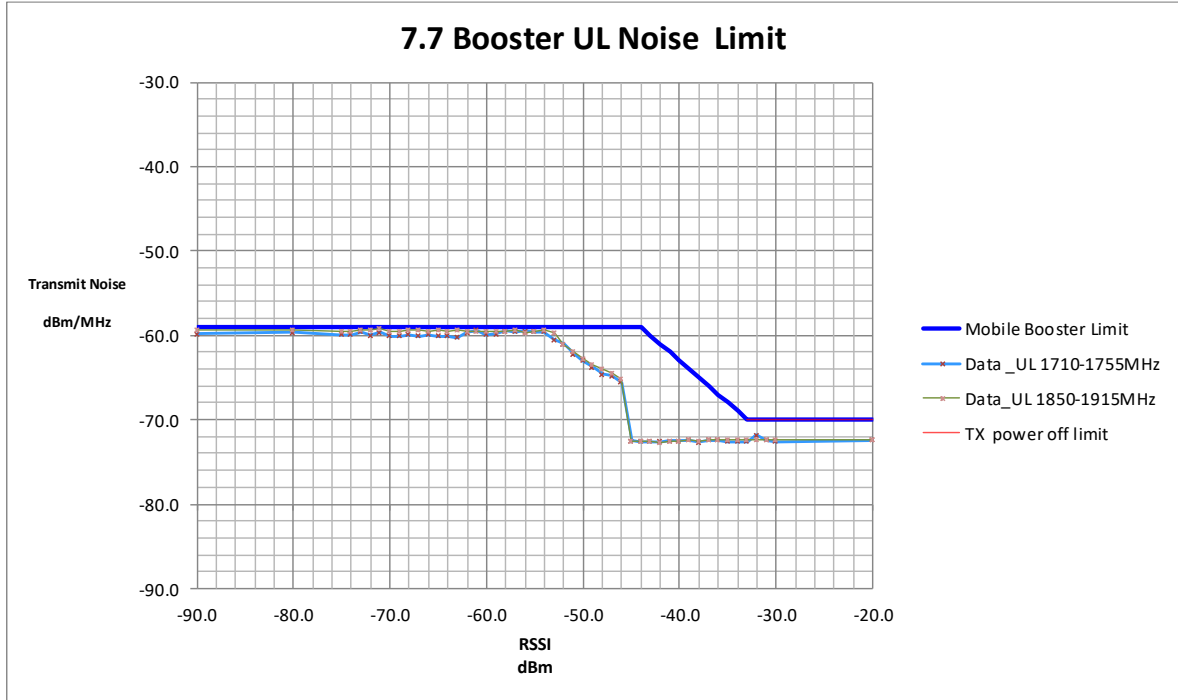
**7.7.1 Maximum transmitter noise power level**

- 7.7.1 a-g: Maximum transmitter noise with 50-ohm shielded load

Maximum Noise Power			
Freq	Measured	Limit	Margin
MHz	dBm./MHz	dBm/MHz	
UL 1710-1755	-60.5	-59.0	-1.5
UL 1850-1915	-59.8	-59.0	-0.8
UL 824-849	-61.1	-59.0	-2.1
UL 698-716	-59.9	-59.0	-0.9
UL 776-787	-59.3	-59.0	-0.3
DL 2110-2155	-60.4	-59.0	-1.4
DL 1930-1995	-60.7	-59.0	-1.7
DL 869-894	-60.4	-59.0	-1.4
DL 728-746	-61.8	-59.0	-2.8
DL 746-757	-60.2	-59.0	-1.2

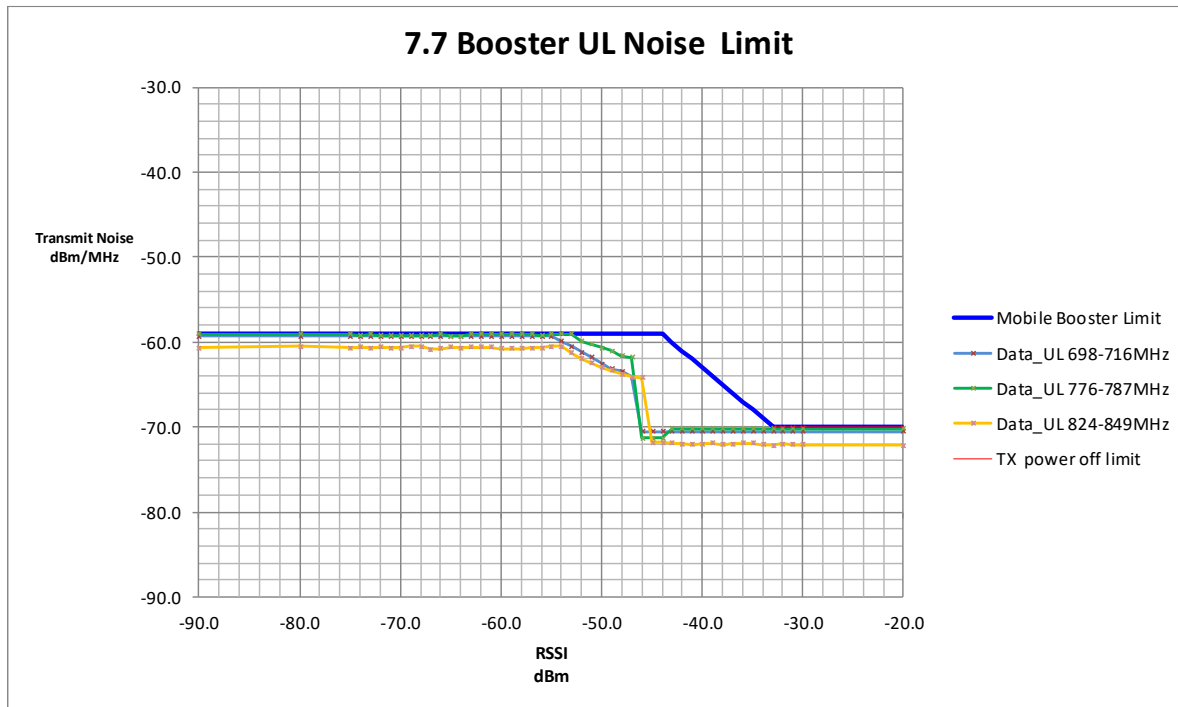


- 7.7.1 h-n: Maximum transmitter noise when varying the DL signal generator output level with a 4.1MHz AWGN signal



1710.0		1755.0		MHz			
				Limit		Margin	
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	Mobile Booster Limit	TX off			
-73.0	-59.6		-59.0				-0.6
-71.0	-59.7		-59.0				-0.7
-36.0	-72.4	-67.0					-5.4
-35.0	-72.6	-68.0					-4.6
-34.0	-72.6	-69.0					-3.6
-33.0	-72.6	-70.0					-2.6
-32.0	-71.8				-70		-12.8

1850.0		1915.0		MHz			
				Limit		Margin	
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	Mobile Booster Limit	TX off			
-71.0	-59.2		-59.0				-0.2
-67.0	-59.3		-59.0				-0.3
-36.0	-72.4	-67.0					-5.4
-35.0	-72.4	-68.0					-4.4
-34.0	-72.4	-69.0					-3.4
-33.0	-72.4	-70.0					-2.4
-32.0	-72.4				-70		-13.4



824.0		849.0		MHz		Limit		Margin
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	Mobile Booster Limit	TX off				
-69.0	-60.5		-59.0					-1.5
-68.0	-60.5		-59.0					-1.5
-36.0	-71.9	-67.0						-4.9
-35.0	-71.9	-68.0						-3.9
-34.0	-72.1	-69.0						-3.1
-33.0	-72.2	-70.0						-2.2
-32.0	-72.0			-70				-13.0

698.0		716.0		MHz		Limit		Margin
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	RSSI Dependent	Mobile Booster Limit	TX off			
-71.0	-59.3			-59.0				-0.3
-60.0	-59.3			-59.0				-0.3
-36.0	-70.5	-67.0						-3.5
-35.0	-70.5	-68.0						-2.5
-34.0	-70.5	-69.0						-1.5
-33.0	-70.5	-70.0						-0.5
-32.0	-70.5				-70			-11.5

776.0		787.0		MHz		Limit		Margin
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	RSSI Dependent	Mobile Booster Limit	TX off			
-73.0	-59.1			-59.0				-0.1
-66.0	-59.1			-59.0				-0.1
-36.0	-70.2	-67.0						-3.2
-35.0	-70.2	-68.0						-2.2
-34.0	-70.2	-69.0						-1.2
-33.0	-70.2	-70.0						-0.2
-32.0	-70.2				-70			-11.2

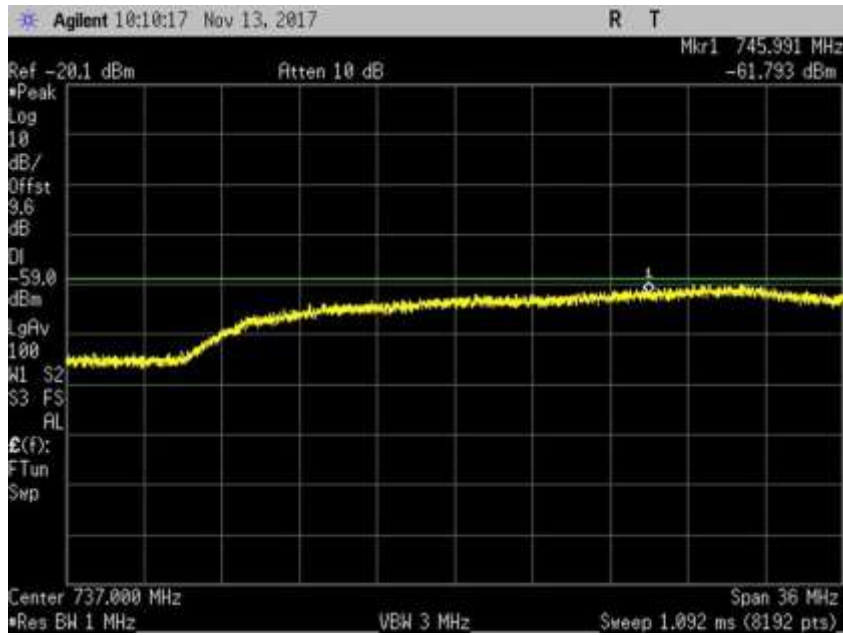
### 7.7.2 Variable uplink noise timing

Uplink Noise Timing		
Freq	Measured	Limit
MHz	Sec	sec
UL1710-1755	0.71	1
UL1850-1915	0.51	1
UL824-849	0.60	1
UL 698-716	0.49	1
UL776-787	0.60	1

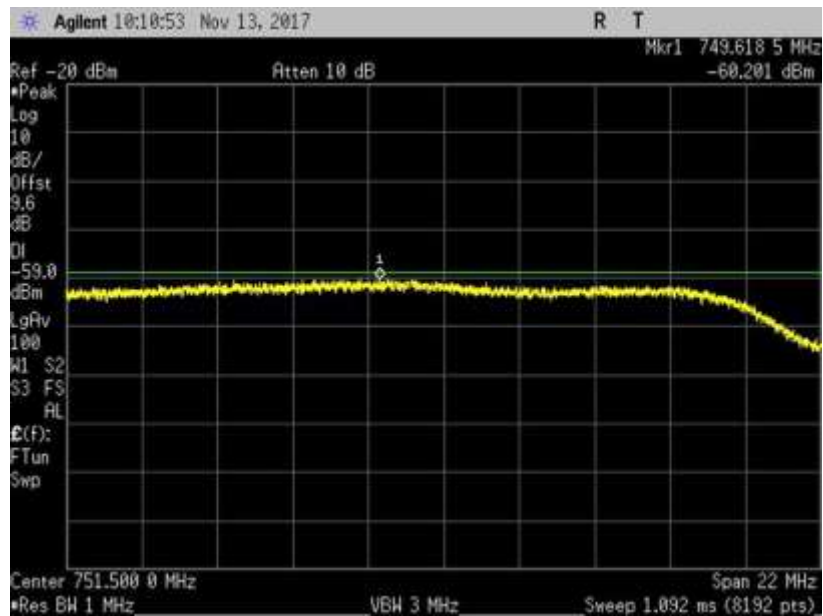
**7.7.1 Maximum Transmitter Noise Power Level**

**Plots**

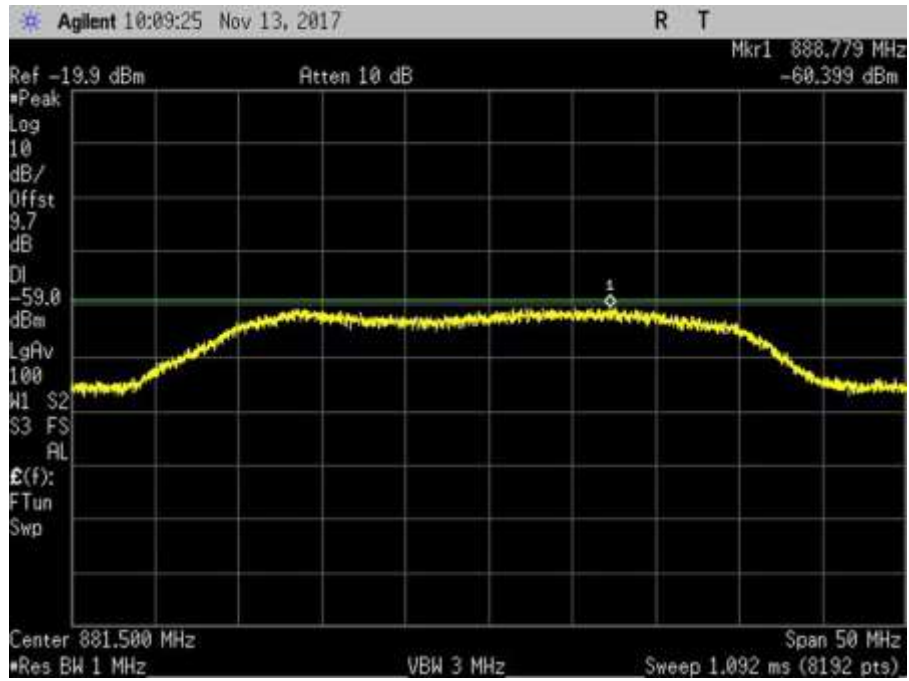
DL



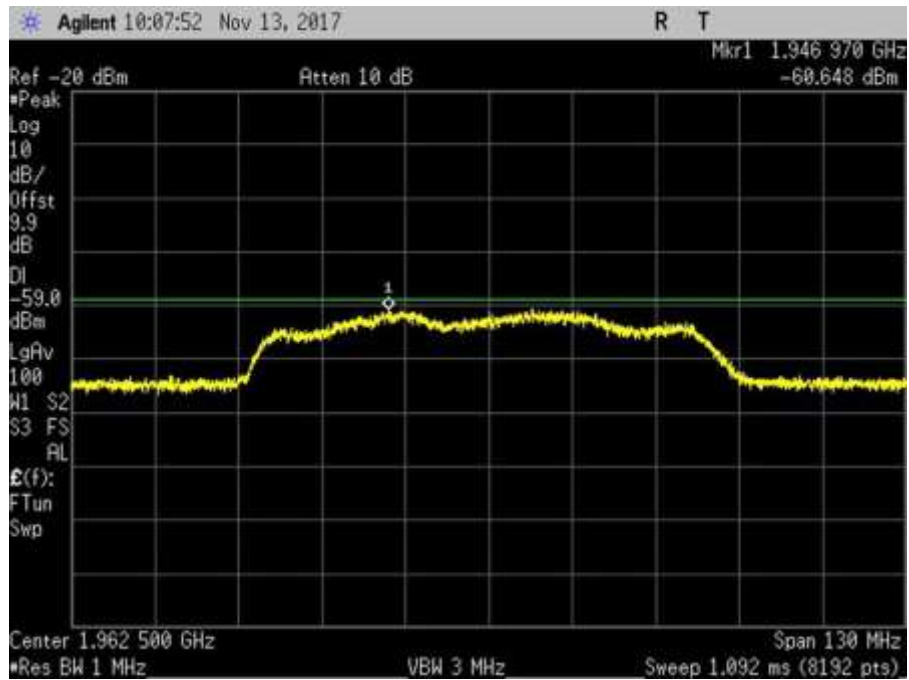
7.7.1\_Noise\_DL\_728-746MHz



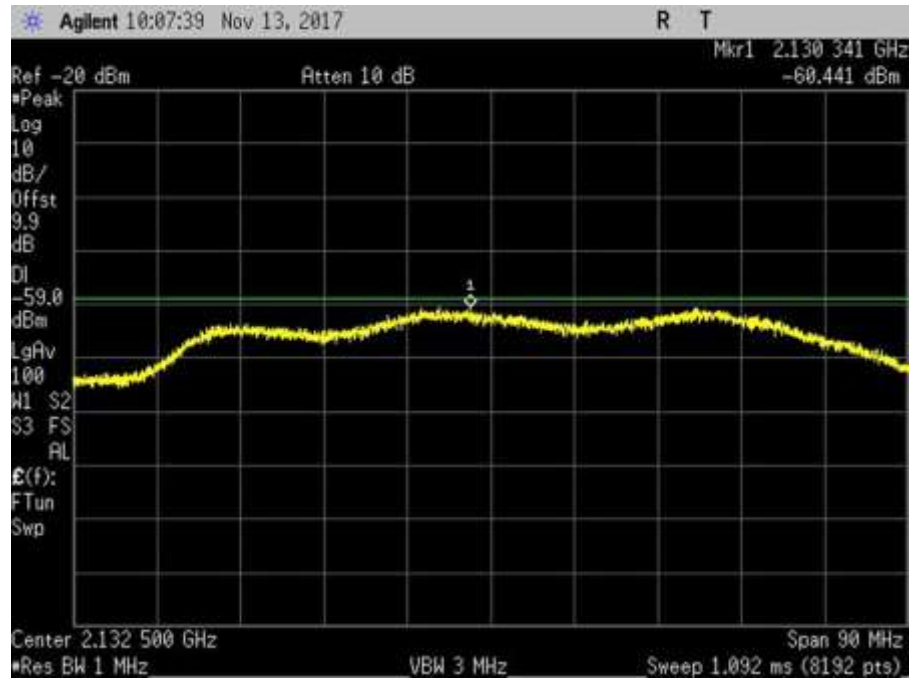
7.7.1\_Noise\_DL\_746-757MHz



7.7.1\_Noise\_DL\_869-894MHz



7.7.1\_Noise\_DL\_1930-1995MHz



7.7.1\_Noise\_DL\_2110-2155MHz