

Cellphone-Mate, Inc.

TEST REPORT FOR

5 Band Mobile Consumer Booster Model: Fusion2go 3.0

Tested to The Following Standard:

FCC Part 20.21 / 22 / 24 / 27

Report No.: 100637-15

Date of issue: November 30, 2017



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:**

Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 100637

November 9, 2017

November 9-15, 2017

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.

A handwritten signature in black ink that reads "Steve Behm".

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

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	2.1051/22/24/27	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	2.1049/22/24/27	Occupied Band Width	NA	Pass

NA = Not Applicable

SUMMARY OF RESULTS CONTINUED

Standard / Specification: FCC Part 20.21

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/ 22/24/27	Spurious Emission	Note1	Pass
7.13 a) - c)	Spectrum Block Filter	NA ¹	NA ¹	NA	NA ¹

NA = Not Applicable

NA¹ = 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

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:

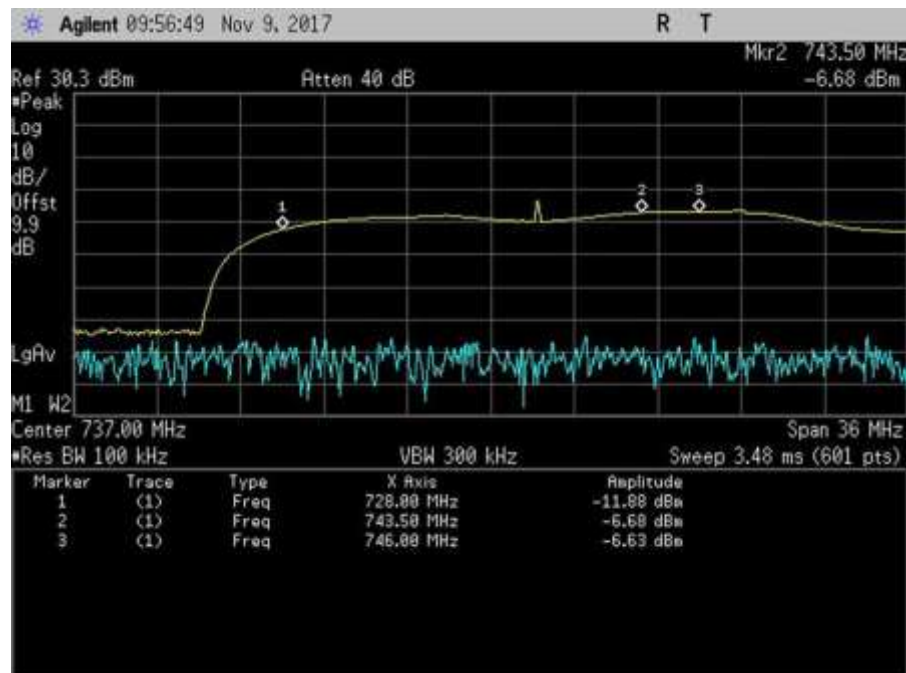
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	6/19/2017	6/19/2019
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator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

Summary of Results

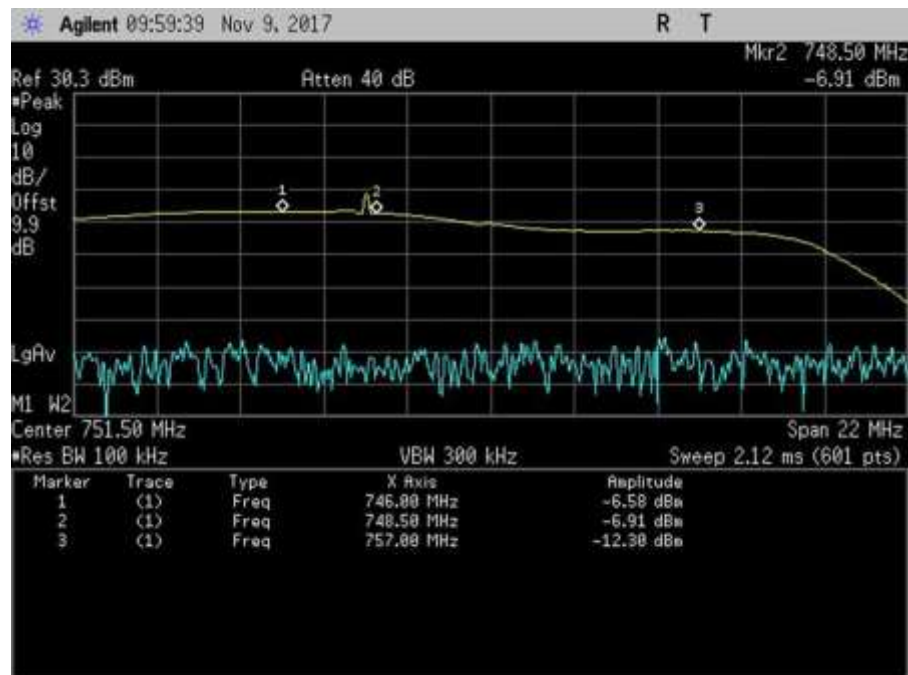
Pass: The plots above show the device only operates on the CMRS frequency bands authorized for use by the NPS.

Plots

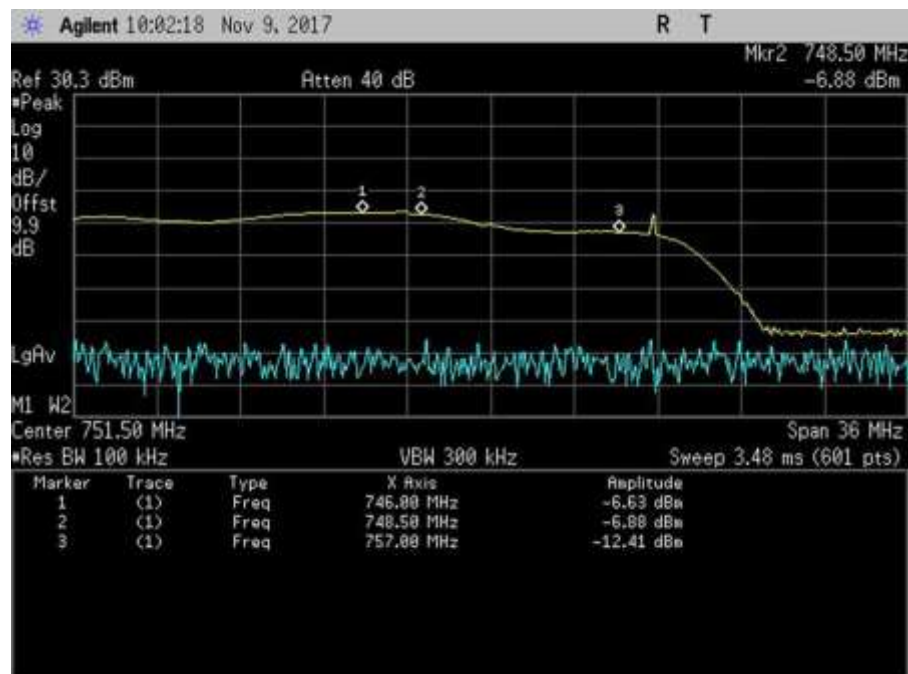
DL



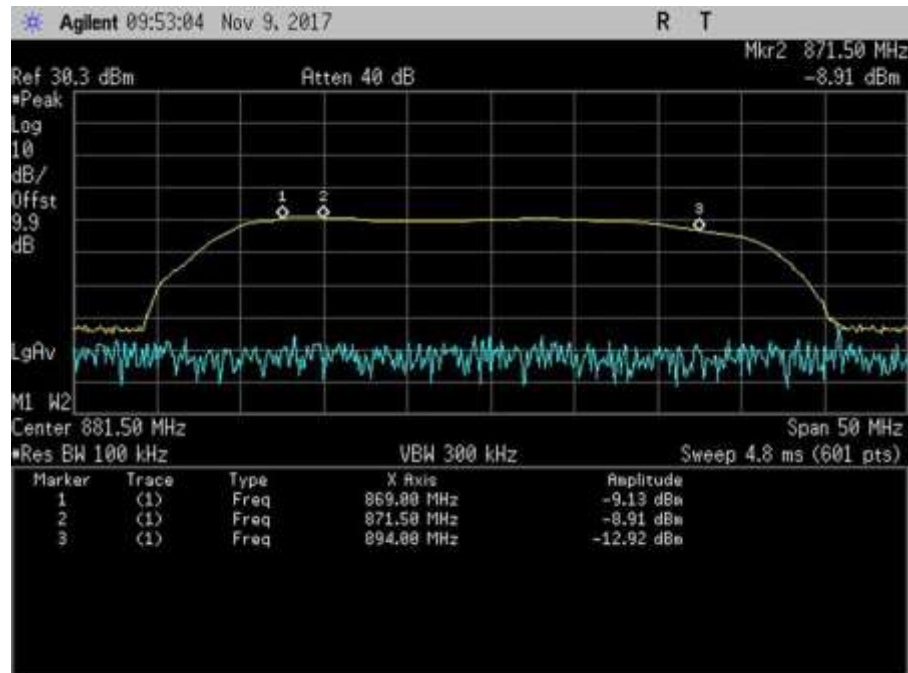
7.1_Band Verify_DL_728-746MHz



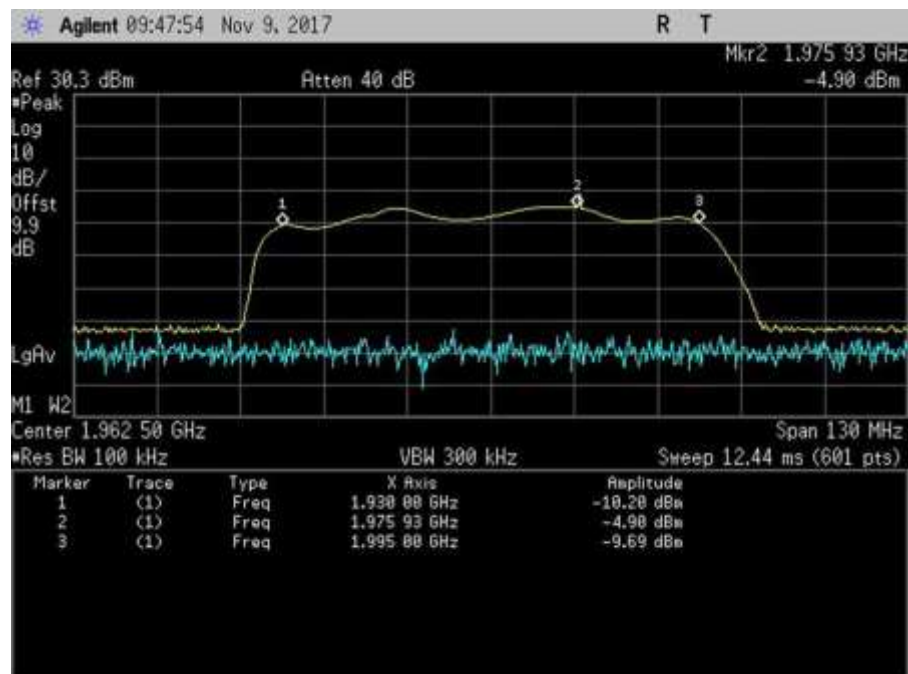
7.1_Band Verify_DL_746-757MHz



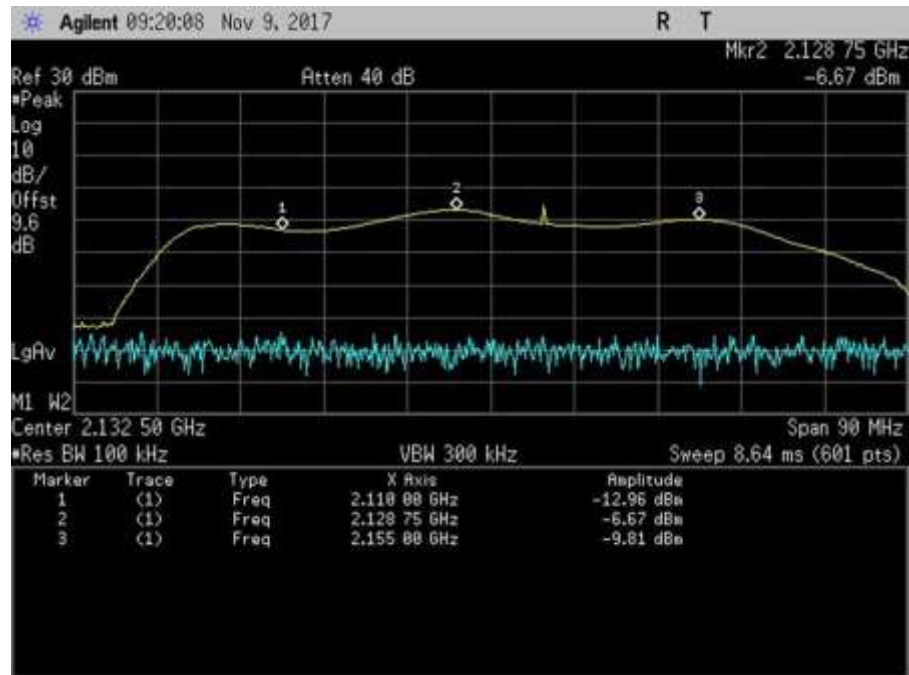
7.1_Band Verify_DL_746-757MHz_Zoom



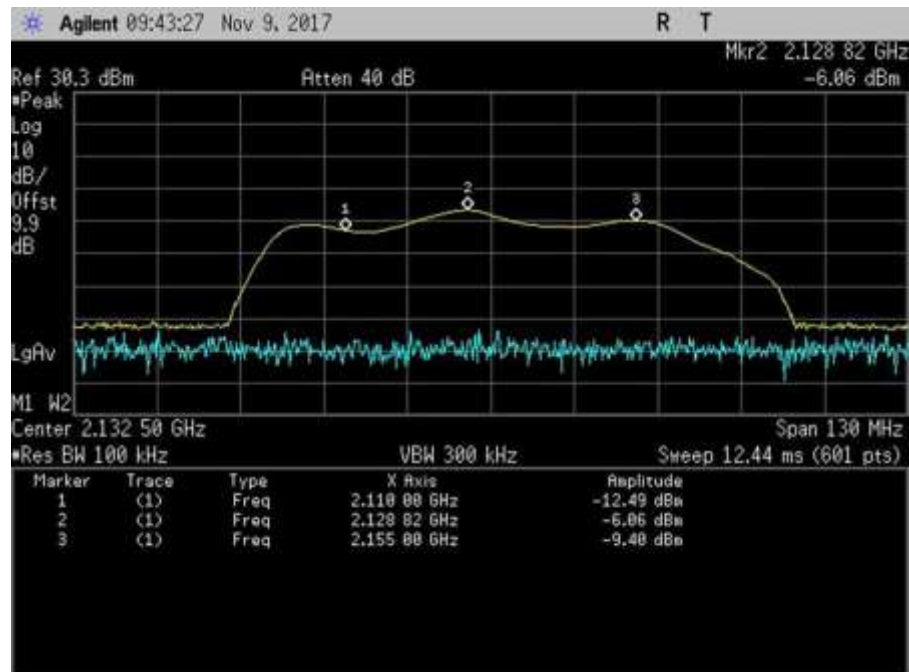
7.1_Band Verify_DL_869-894MHz



7.1_Band Verify_DL_1930-1995MHz

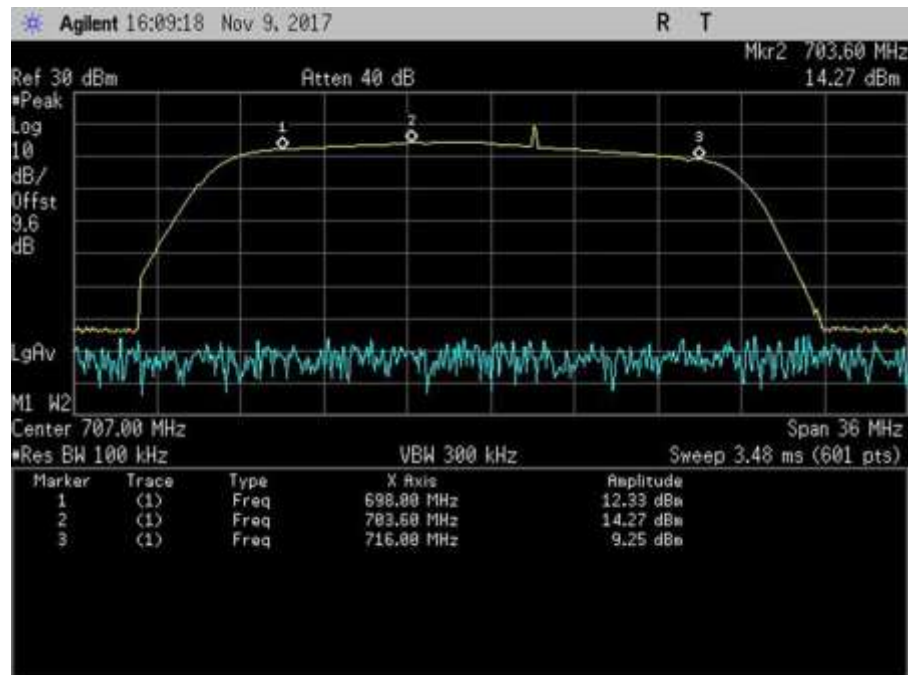


7.1_Band Verify_DL_2110-2155MHz

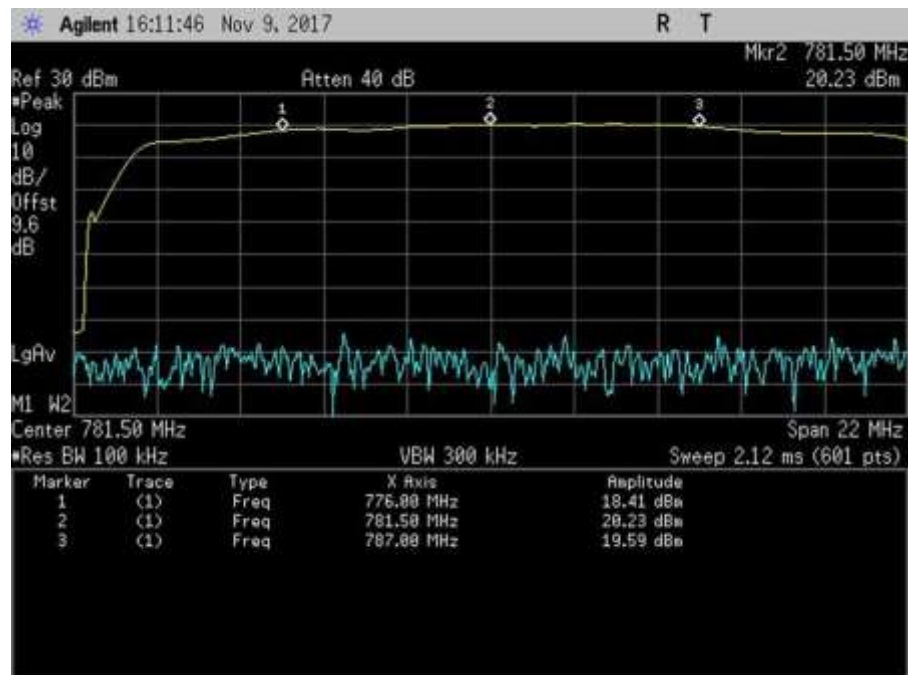


7.1_Band Verify_DL_2110-2155MHz_Zoom

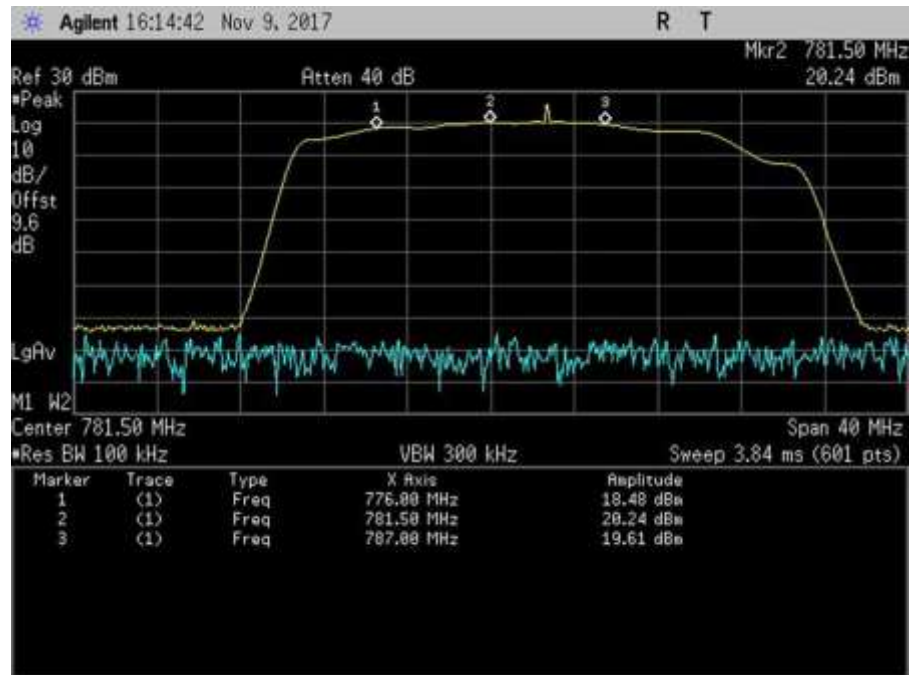
UL



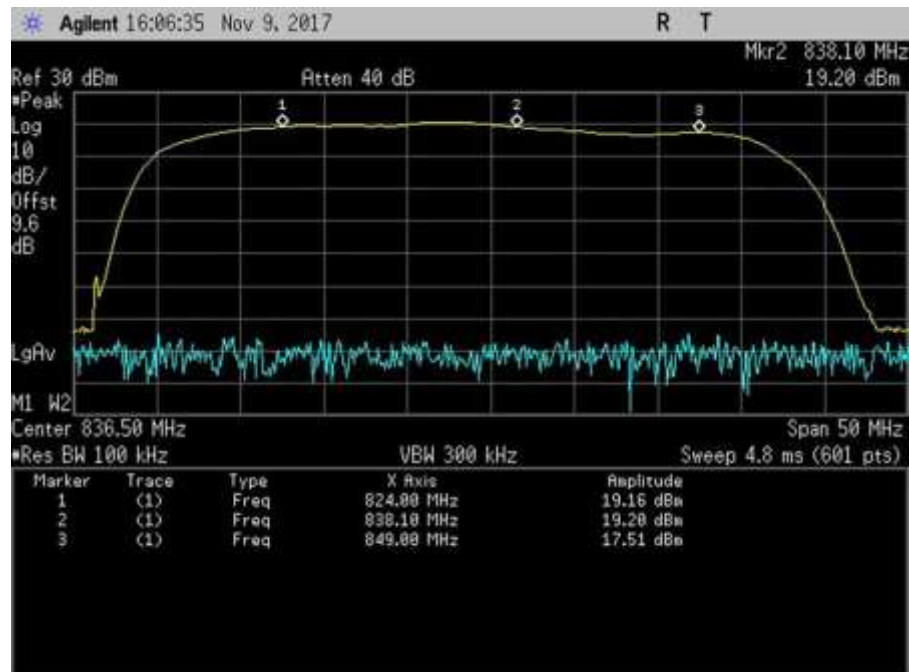
7.1_Band Verify_UL_698-716MHz



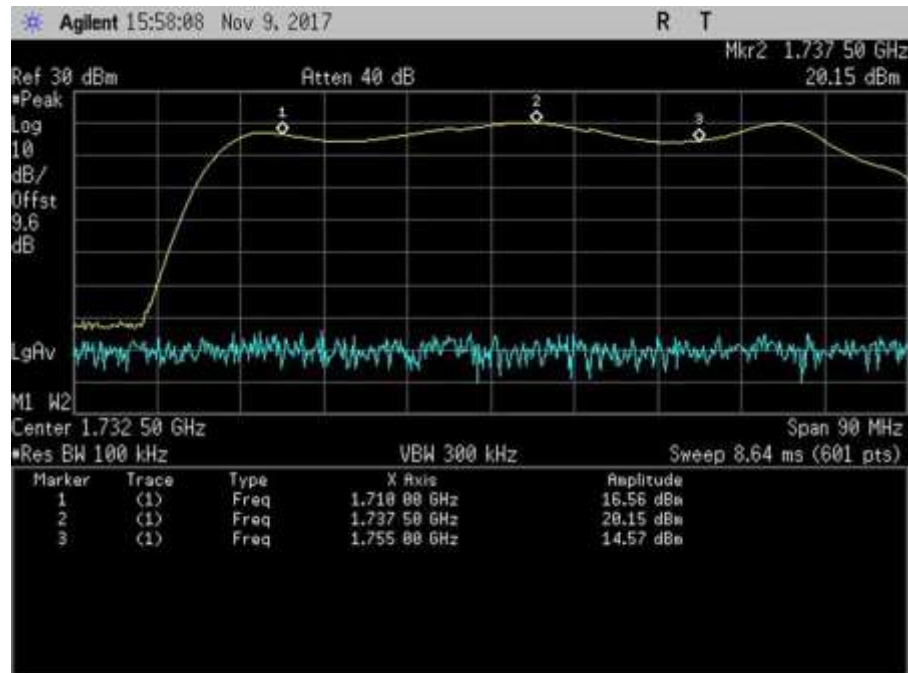
7.1_Band Verify_UL_776-787MHz



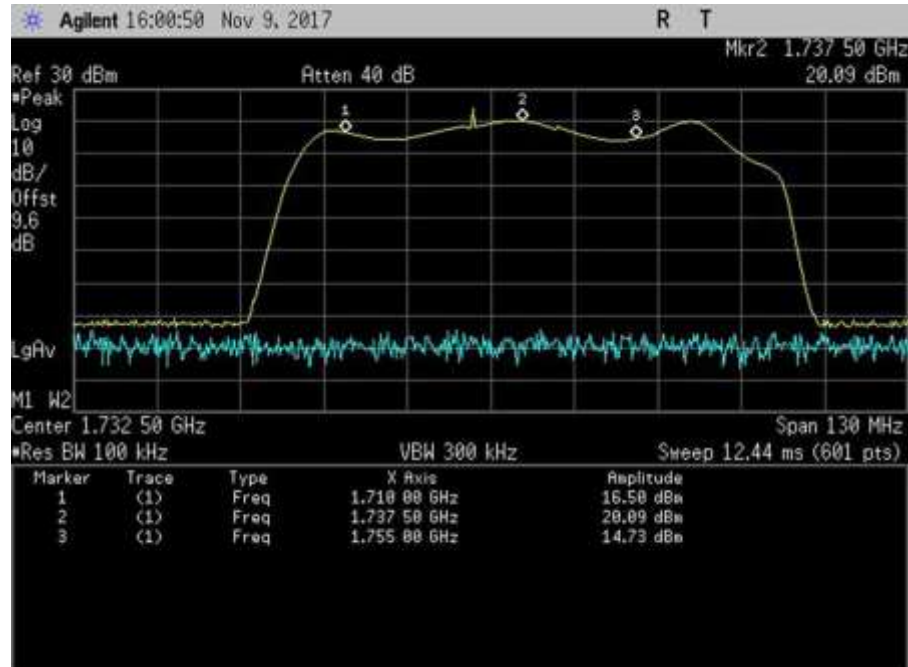
7.1_Band Verify_UL_776-787MHz_Zoom



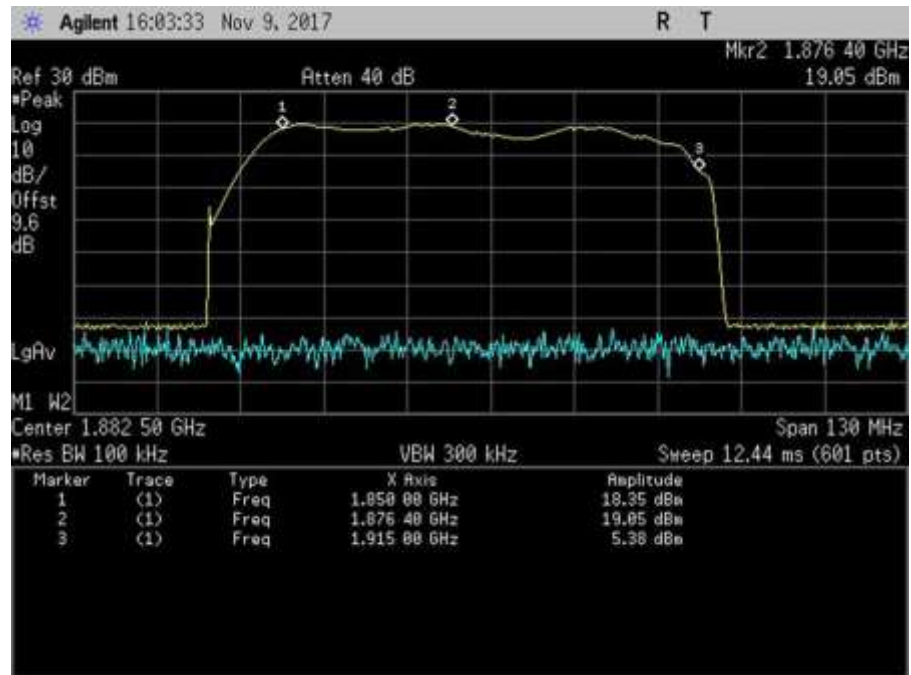
7.1_Band Verify_UL_824-849MHz



7.1_Band Verify_UL_1710-1755MHz



7.1_Band Verify_UL_1710-1755MHz_Zoom



7.1_Band Verify_UL_1850-1915MHz

7.2 Maximum Power / 7.3 Maximum Gain

Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: Cellphone-Mate, Inc
 Specification: **7.2 Maximum Power Measurement**
7.3 Maximum Booster Gain
 Work Order #: **100637** Date: 11/9/2017
 Test Type: **Conducted Emissions** Time: 10:10:00 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 7.2 and 7.3 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: as summarized in table below, measured EIRP, Gain and UL/DL gain ratio are within limits.

Pre AGC				Pre AGC		
Frequency (MHz)	Pulse GSM			4.1 MHz AWGN		
	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 Output (dBm)	Gain (dB)	Input (dBm)	4.1 MHz AWGN 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.

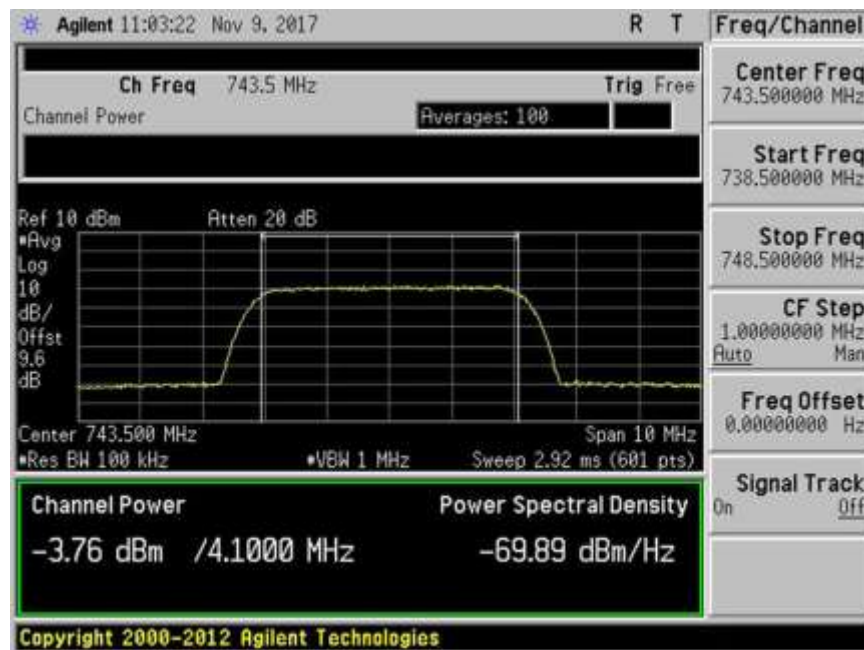
UL gain vs DL gain	Pulse GSM (dB)	4.1MHz AWGN (dB)	Limit (dB)
UL gain vs DL gain 1710/2110	-0.9	-4.8	9.0
UL gain vs DL gain 1850/1930	0.2	-0.6	9.0
UL gain vs DL gain 824/869	1.7	1.7	9.0
UL gain vs DL gain 776/728	0.6	1.7	9.0
UL gain vs DL gain 776/746	4.0	2.1	9.0

Plots

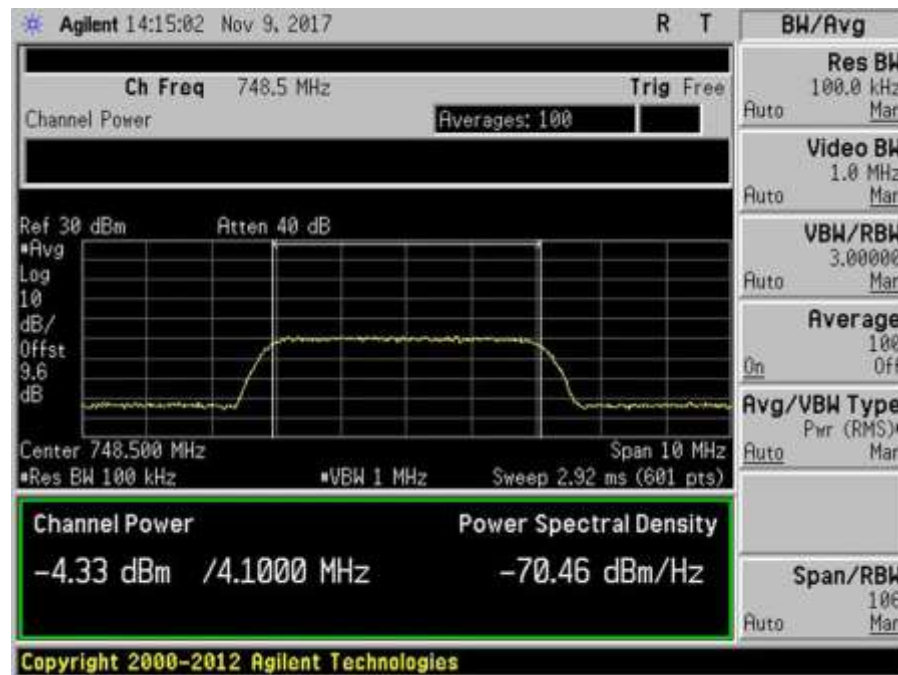
AWGN, DL



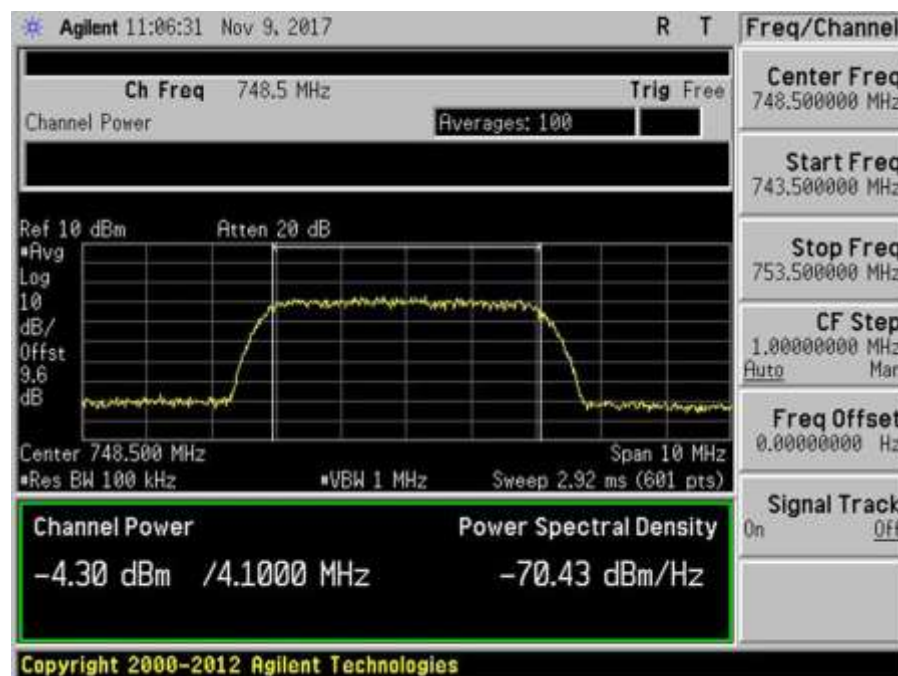
7.2_Power_DL_728-746MHz_AWGN



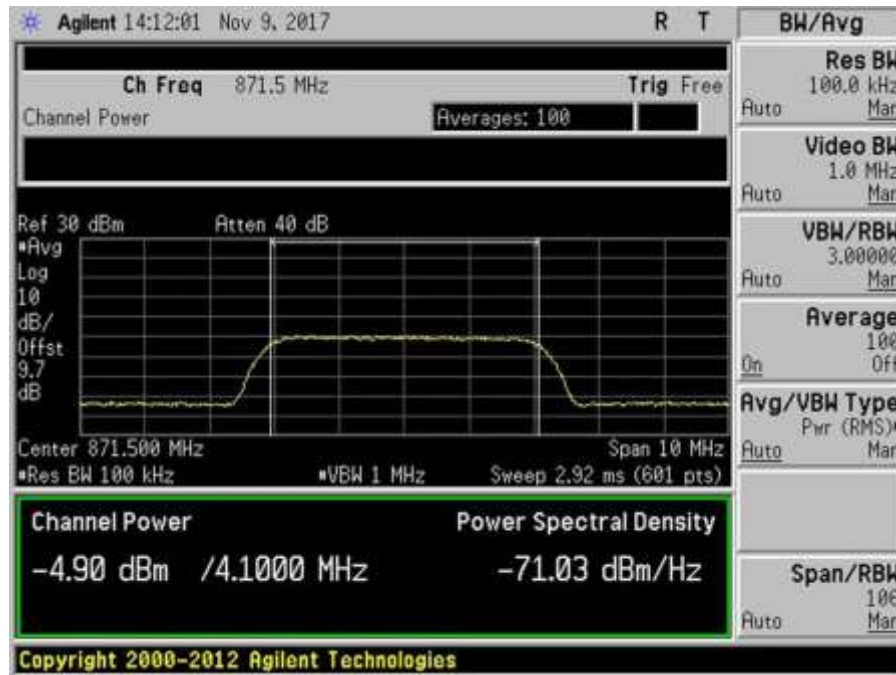
7.2_Power_DL_728-746MHz_AWGN_Max



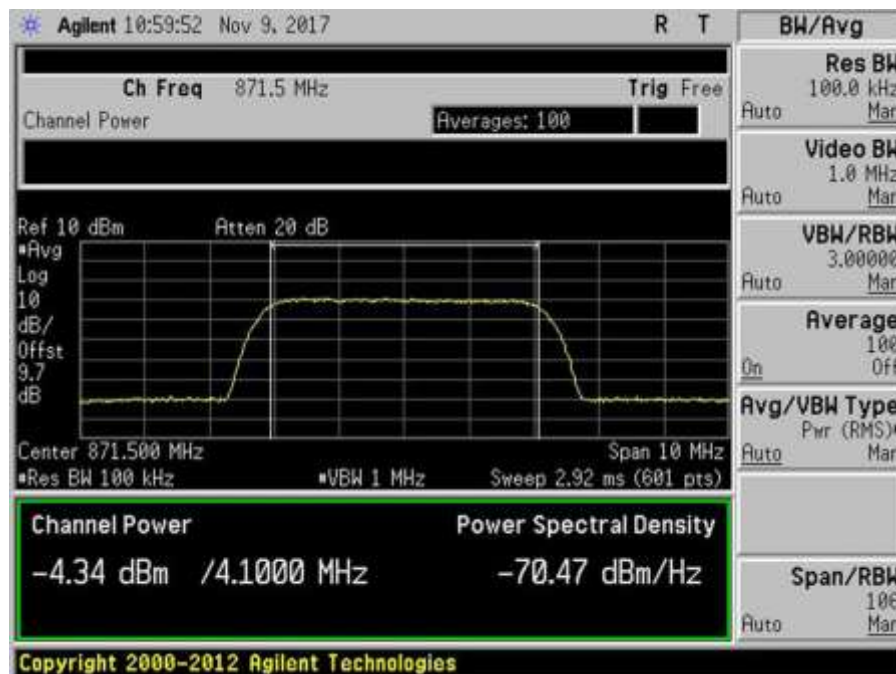
7.2_Power_DL_746-757MHz_AWGN



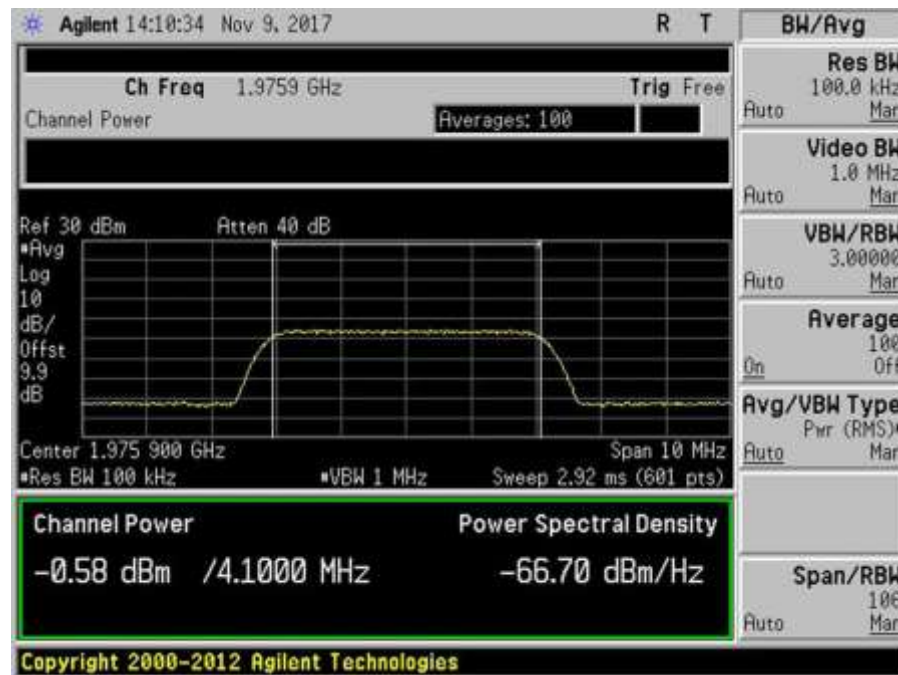
7.2_Power_DL_746-757MHz_AWGN_Max



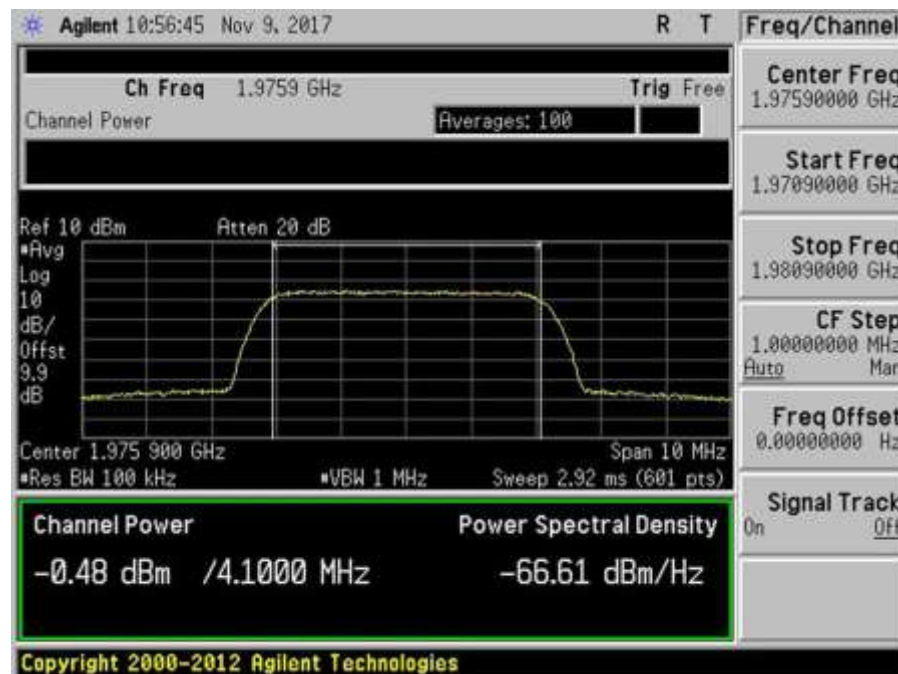
7.2_Power_DL_869-894MHz_AWGN



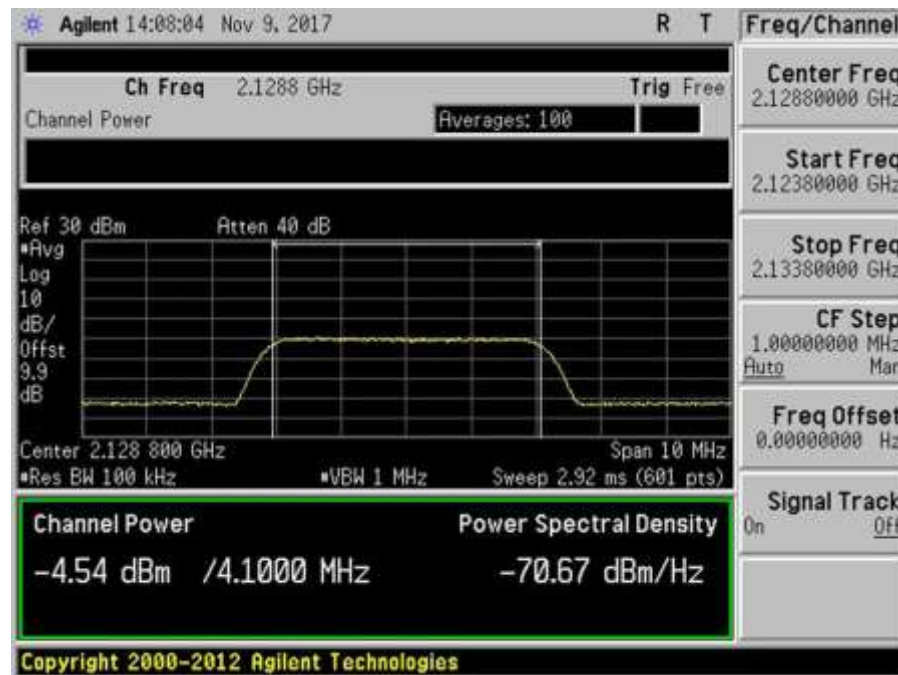
7.2_Power_DL_869-894MHz_AWGN_Max



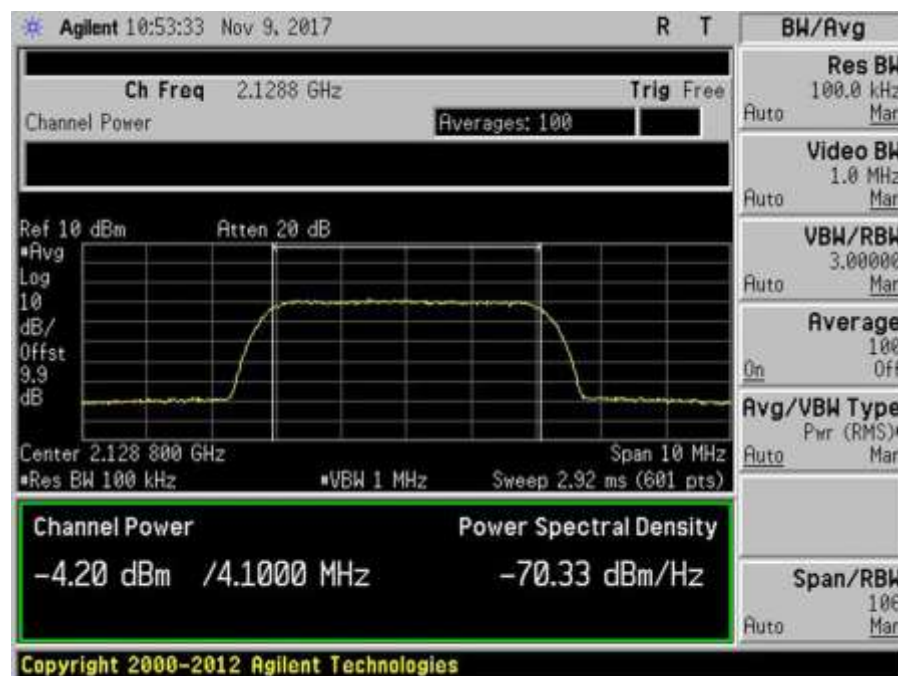
7.2_Power_DL_1930-1995MHz_AWGN



7.2_Power_DL_1930-1995MHz_AWGN_Max



7.2_Power_DL_2110-2155MHz_AWGN



7.2_Power_DL_2110-2155MHz_AWGN_Max

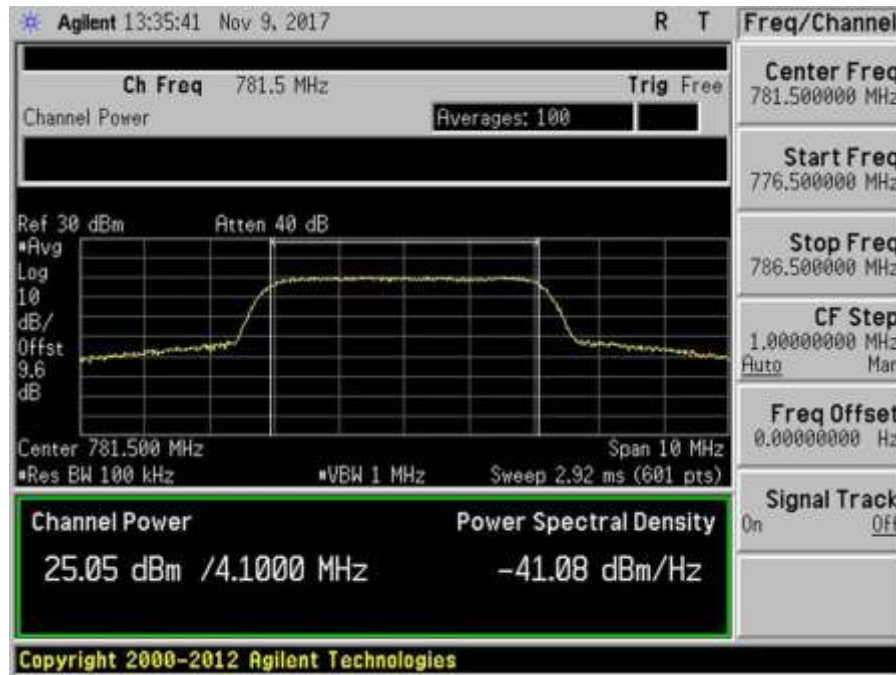
AWGN, UL



7.2_Power_UL_698-716MHz_AWGN



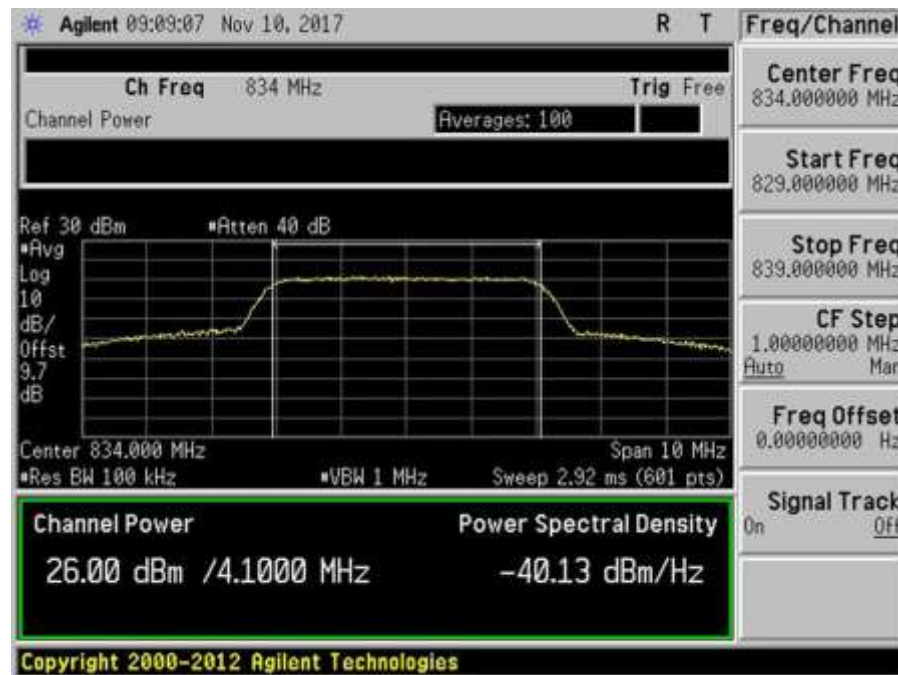
7.2_Power_UL_698-716MHz_AWGN_Max



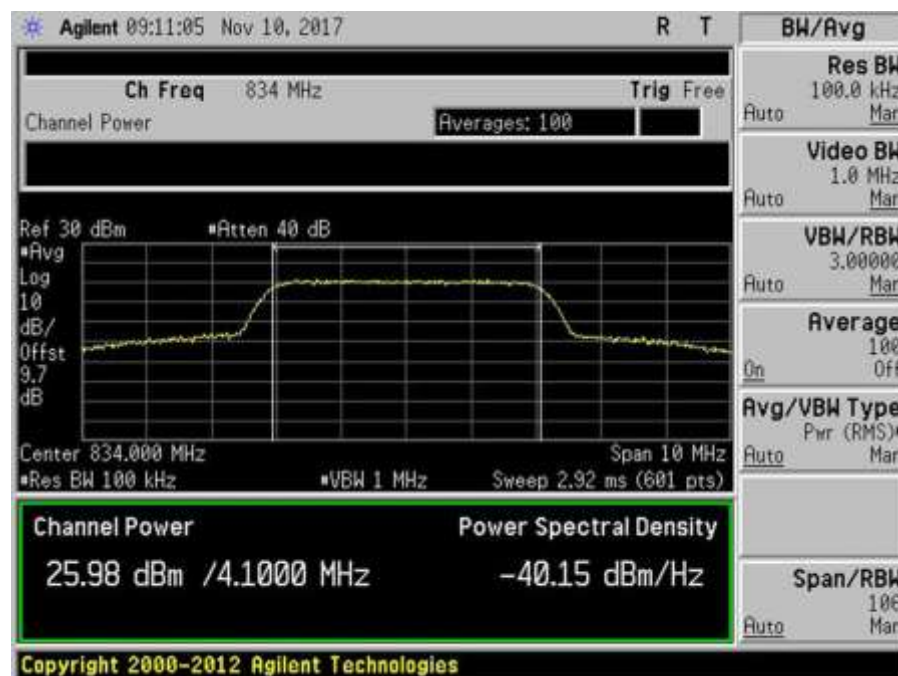
7.2_Power_UL_776-787MHz_AWGN



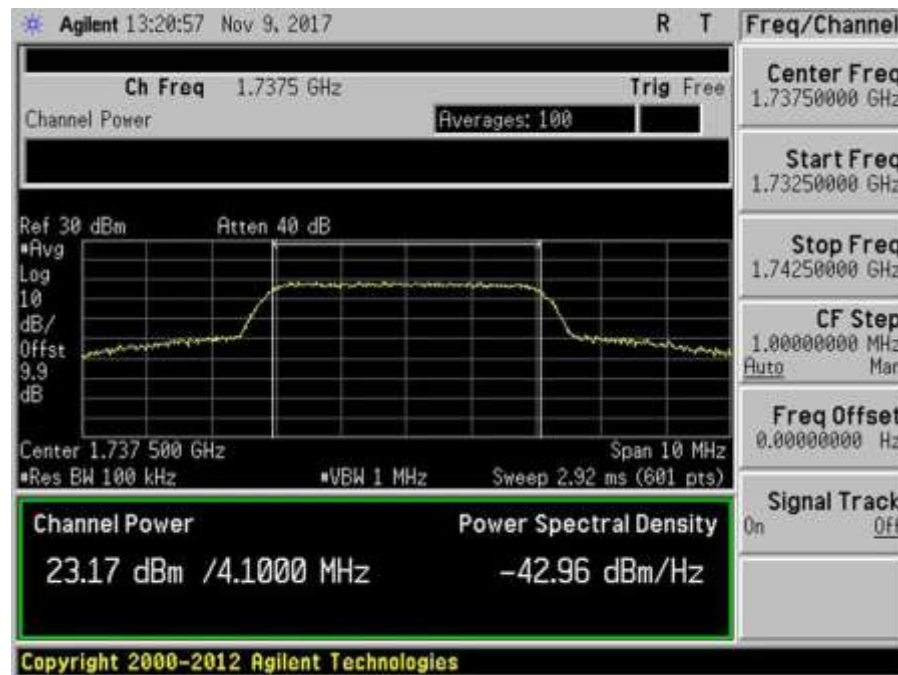
7.2_Power_UL_776-787MHz_AWGN_Max



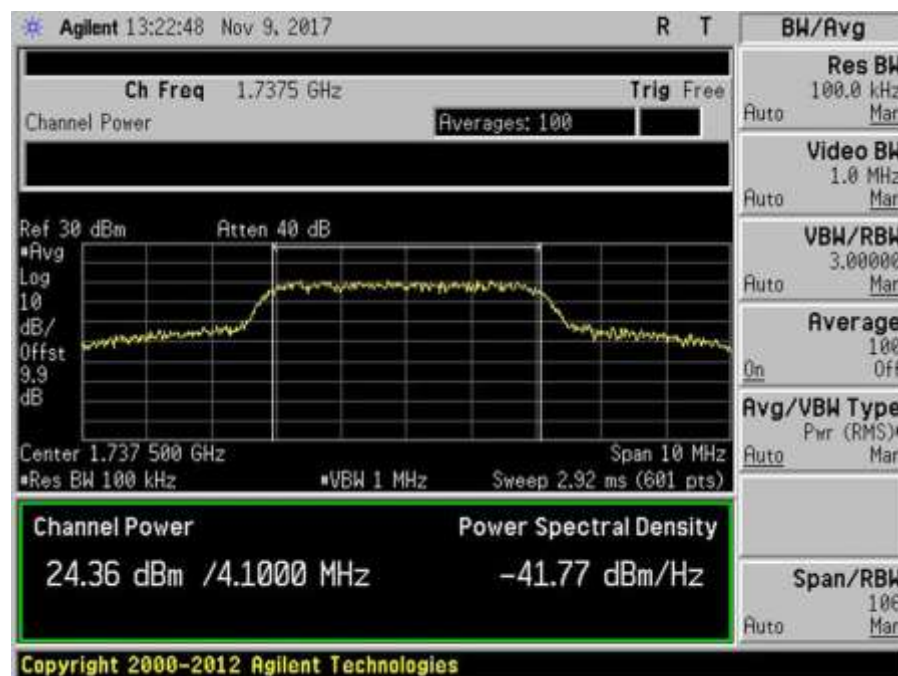
7.2_Power_UL_824-849MHz_AWGN



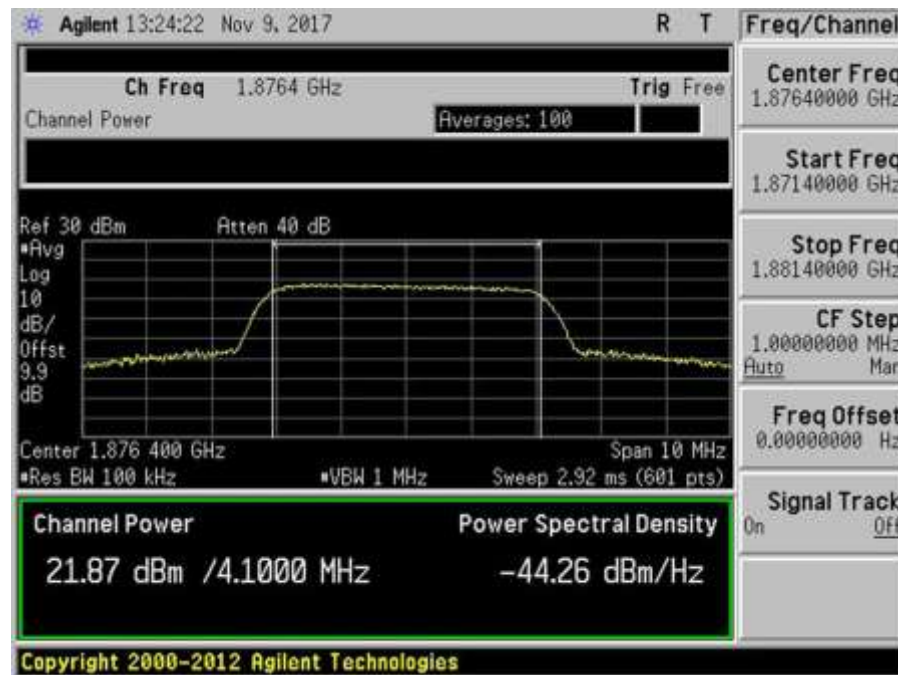
7.2_Power_UL_824-849MHz_AWGN_Max



7.2_Power_UL_1710-1755MHz_AWGN



7.2_Power_UL_1710-1755MHz_AWGN_Max

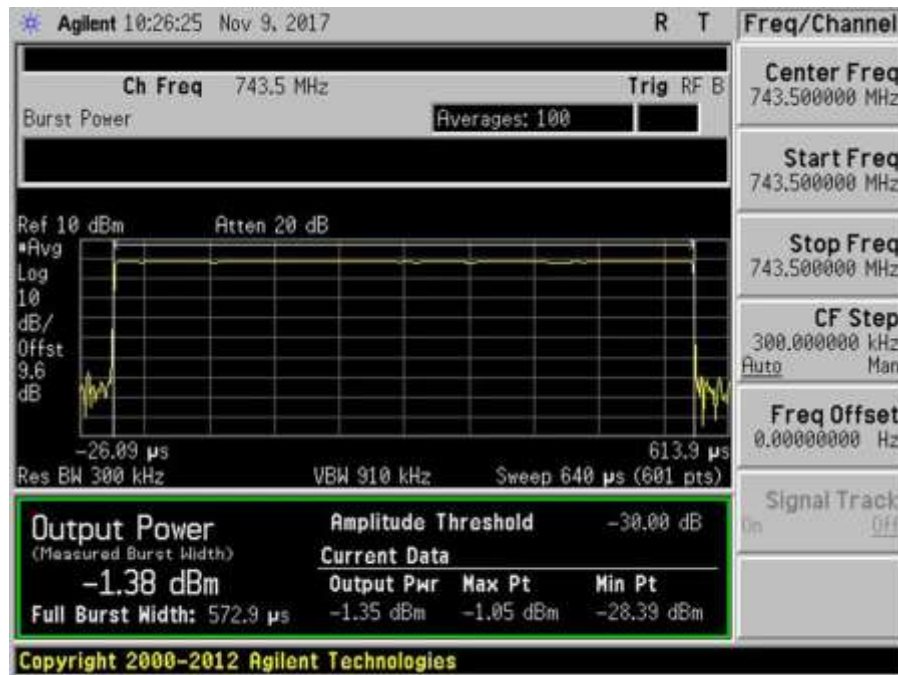


7.2_Power_UL_1850-1915MHz_AWGN

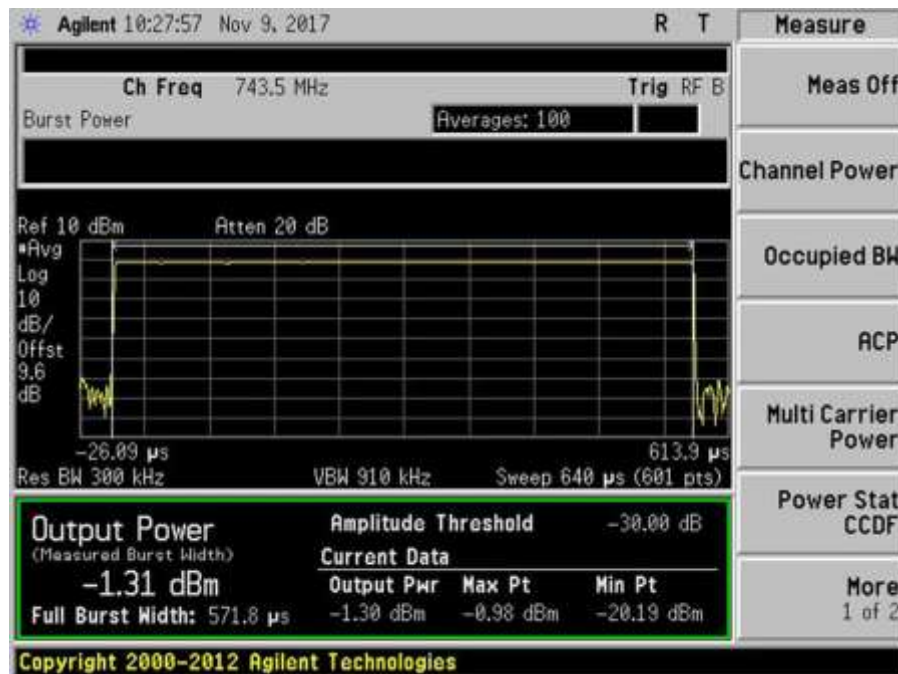


7.2_Power_UL_1850-1915MHz_AWGN_Max

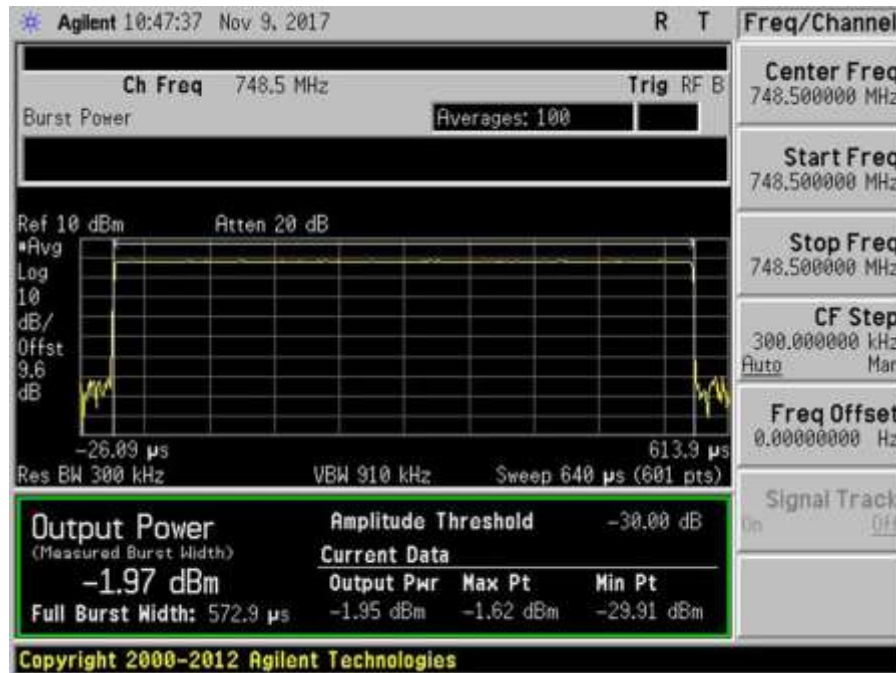
GSM, DL



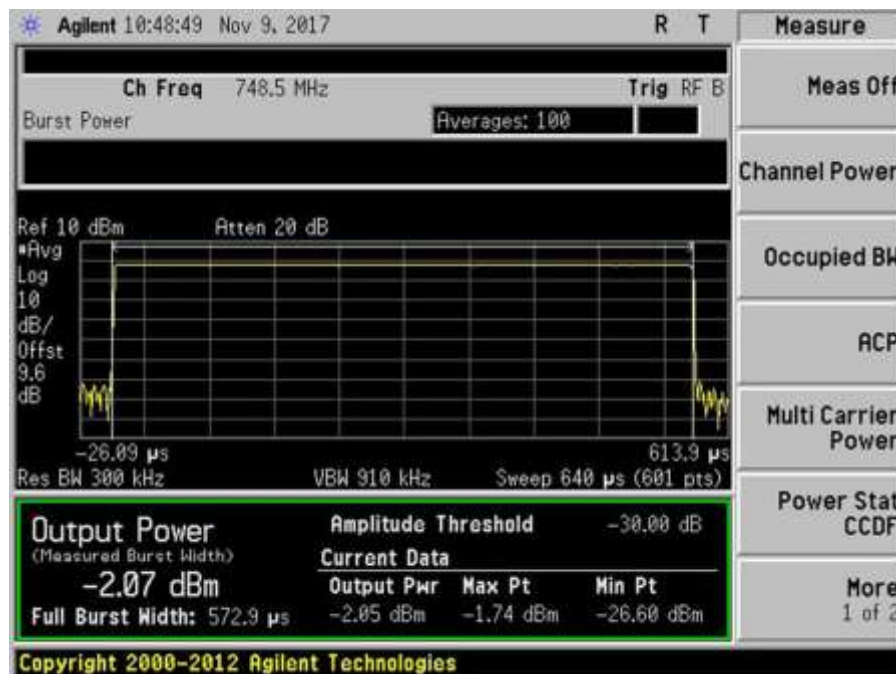
7.2_Power_DL_728-746MHz_GSM



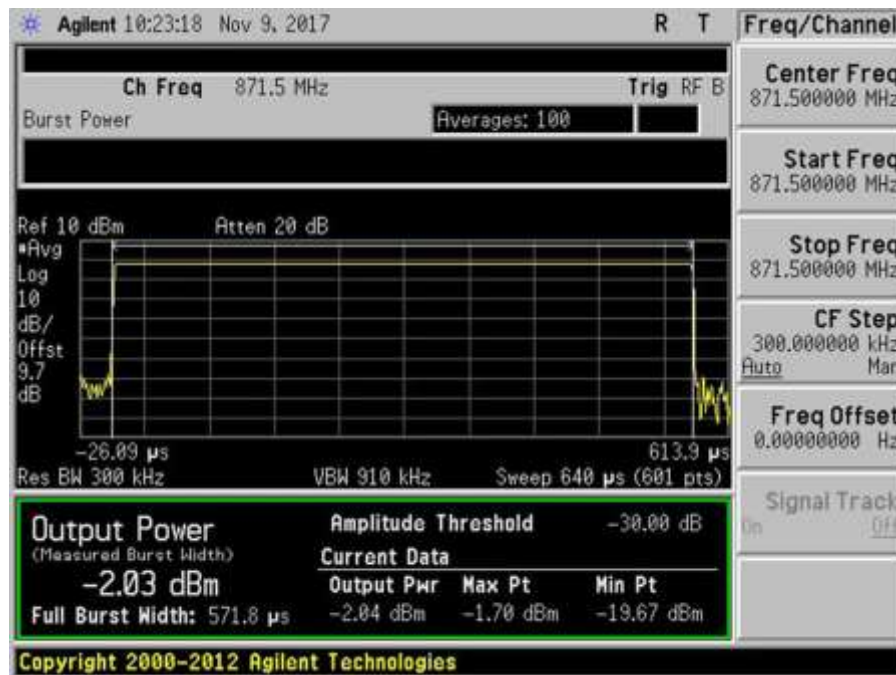
7.2_Power_DL_728-746MHz_GSM_Max



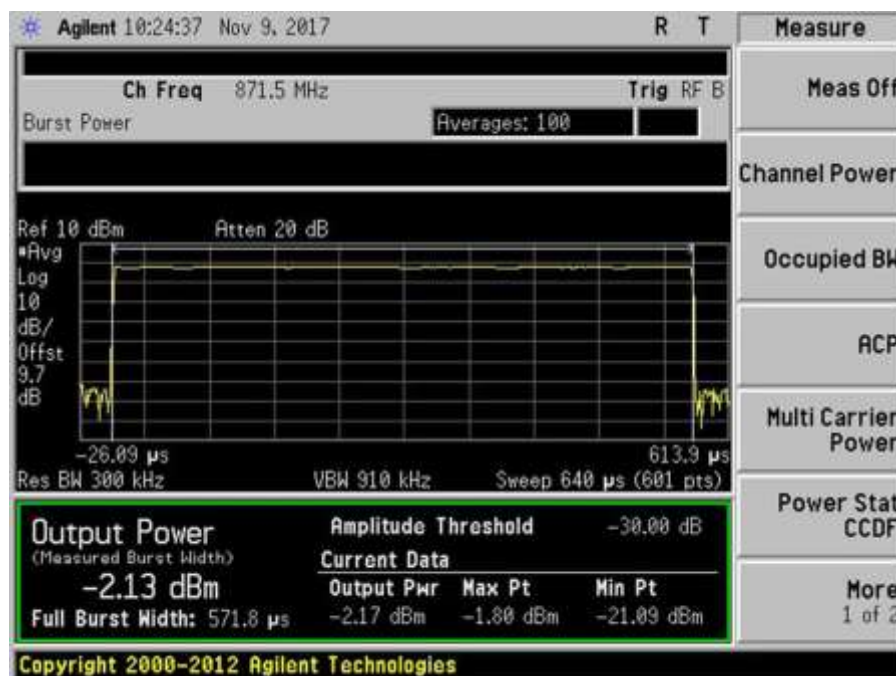
7.2_Power_DL_746-757MHz_GSM



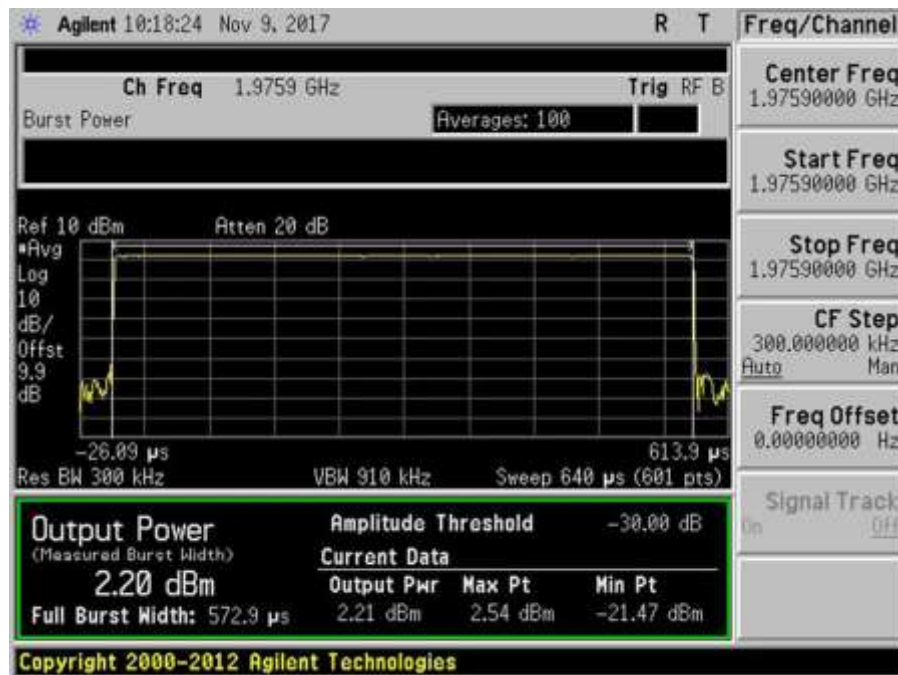
7.2_Power_DL_746-757MHz_GSM_Max



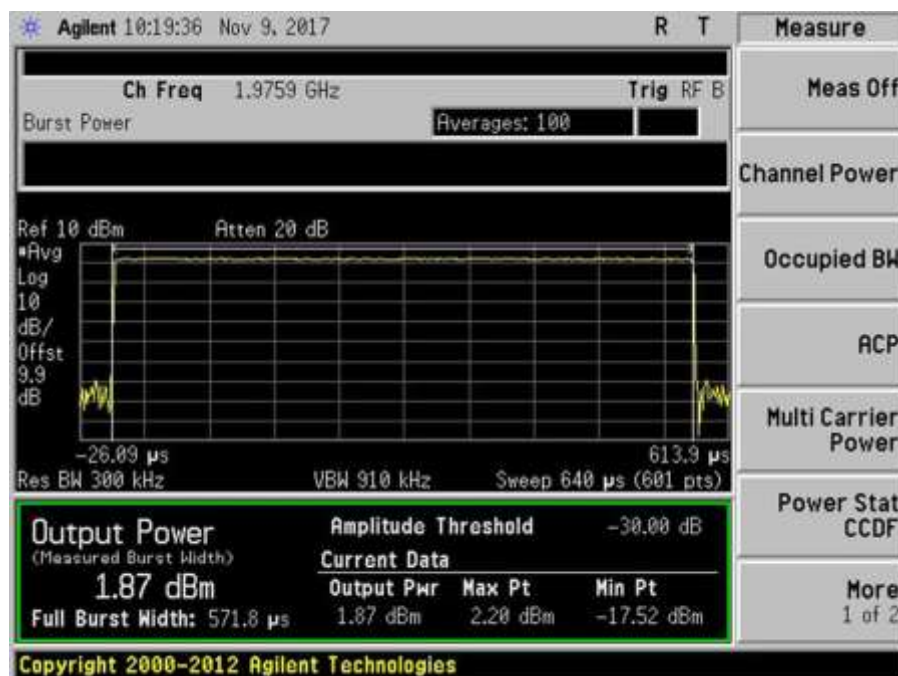
7.2_Power_DL_869-894MHz_GSM



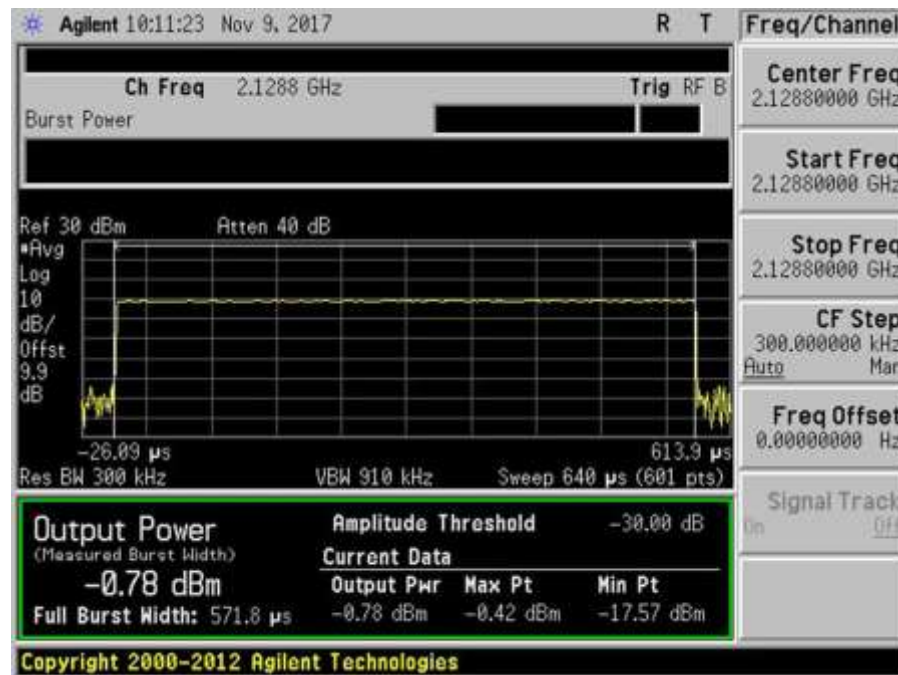
7.2_Power_DL_869-894MHz_GSM_Max



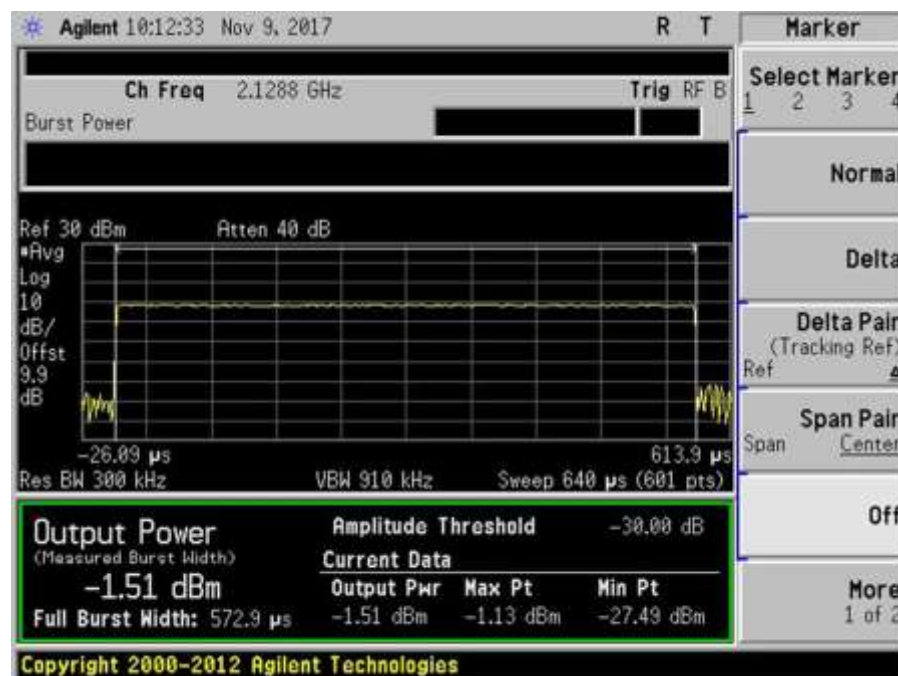
7.2_Power_DL_1930-1995MHz_GSM



7.2_Power_DL_1930-1995MHz_GSM_Max

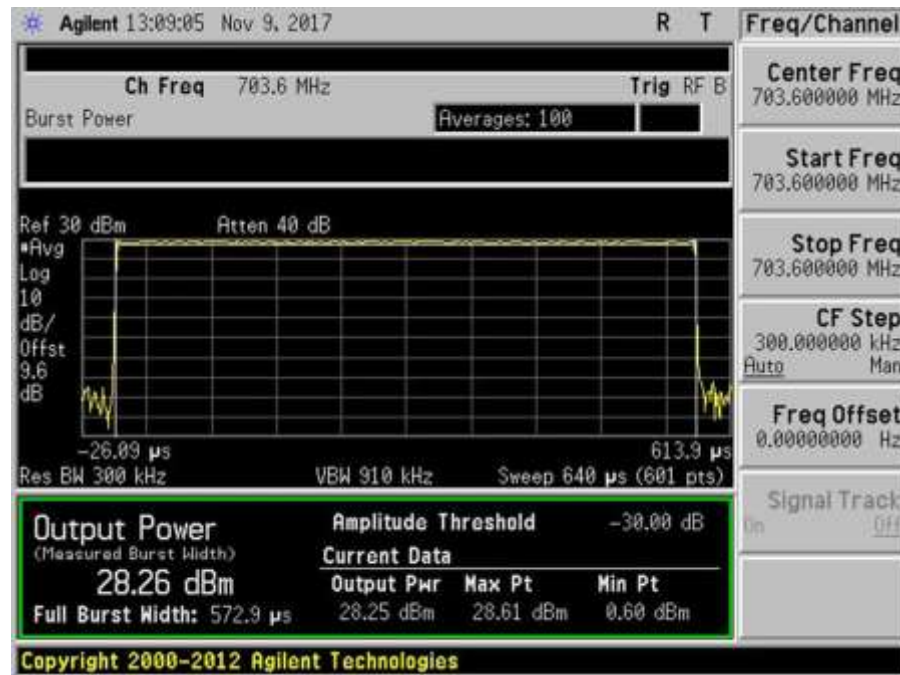


7.2_Power_DL_2110-2155MHz_GSM

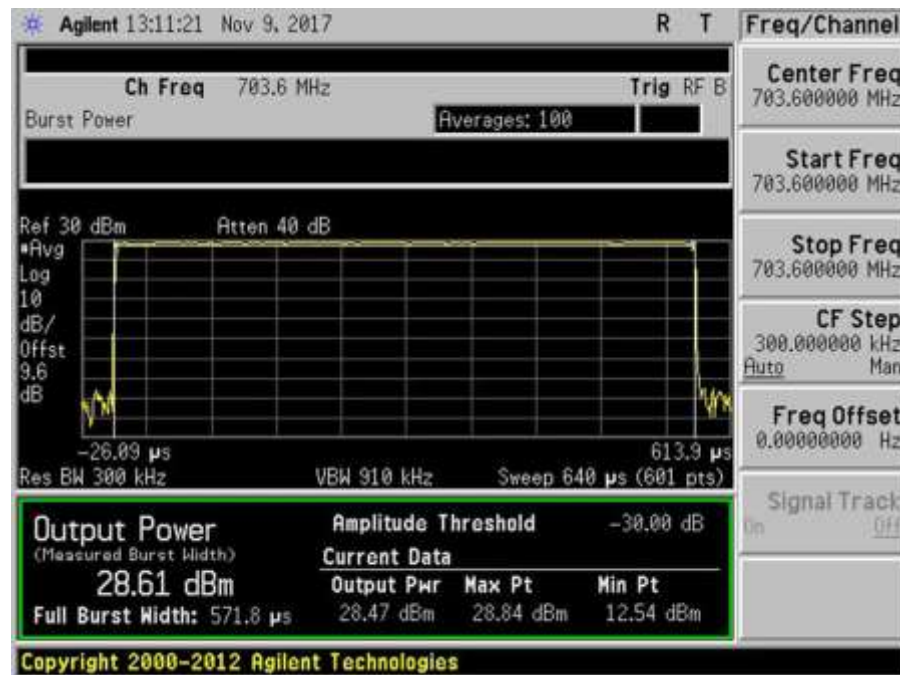


7.2_Power_DL_2110-2155MHz_GSM_Max

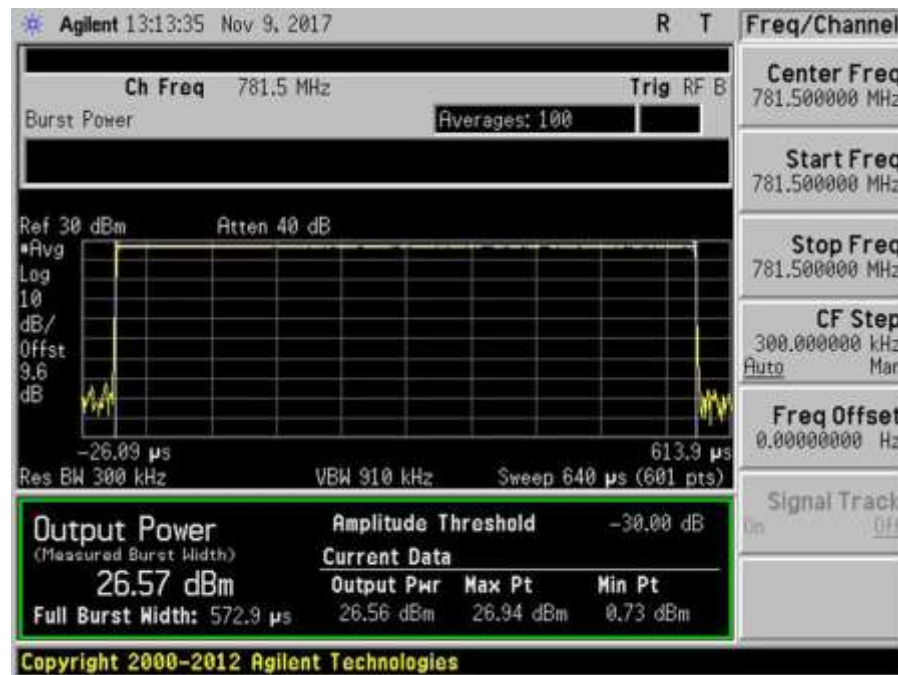
GSM, UL



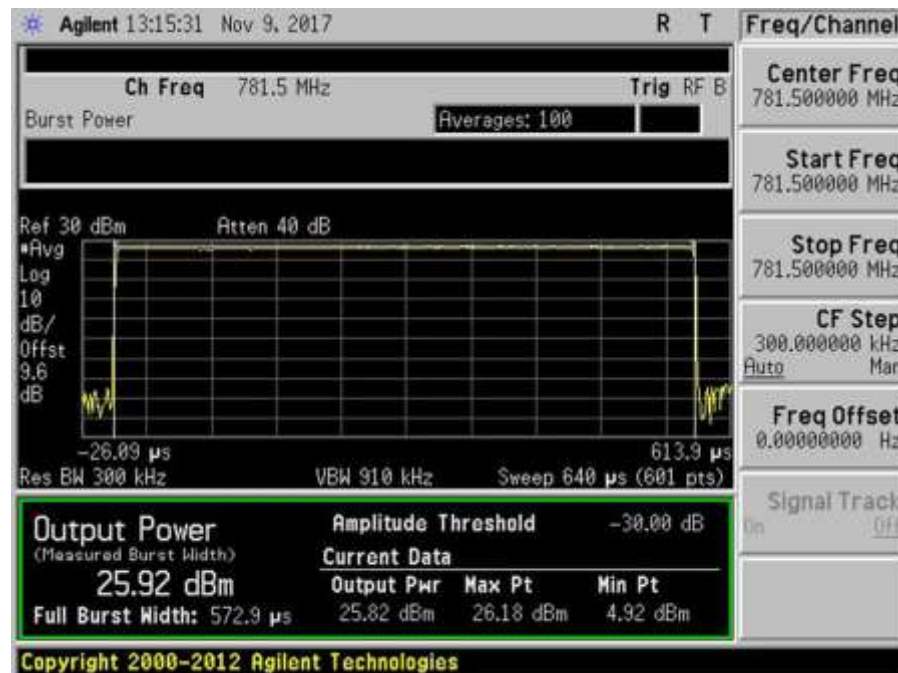
7.2_Power_UL_698-716MHz_GSM



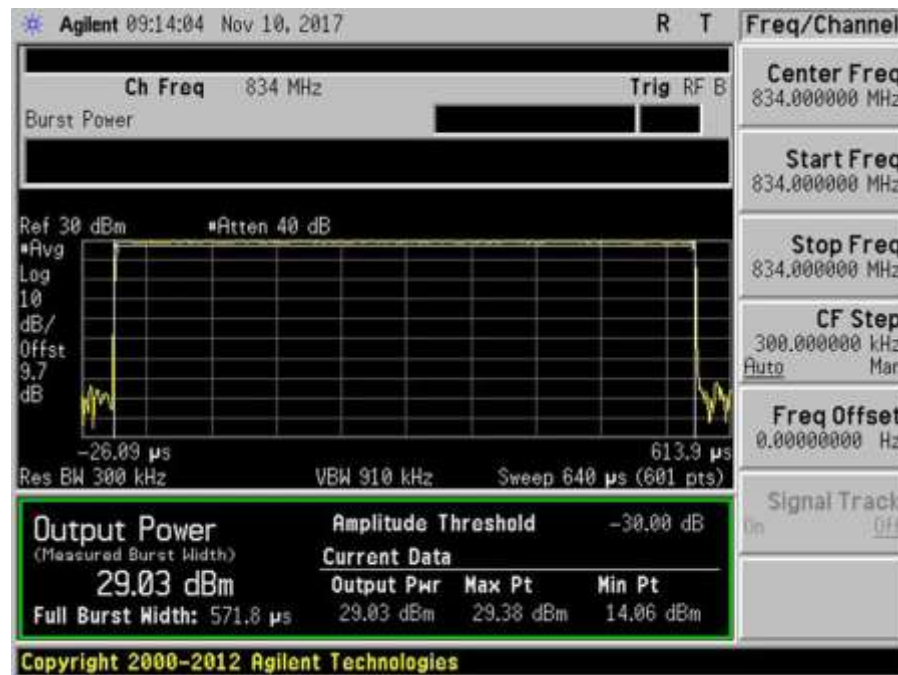
7.2_Power_UL_698-716MHz_GSM_Max



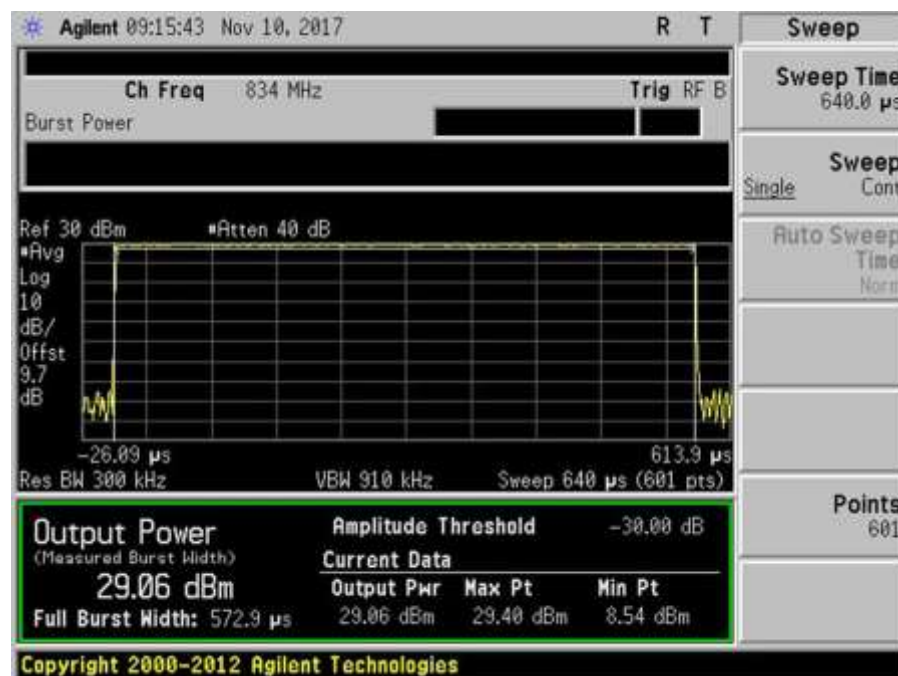
7.2_Power_UL_776-787MHz_GSM



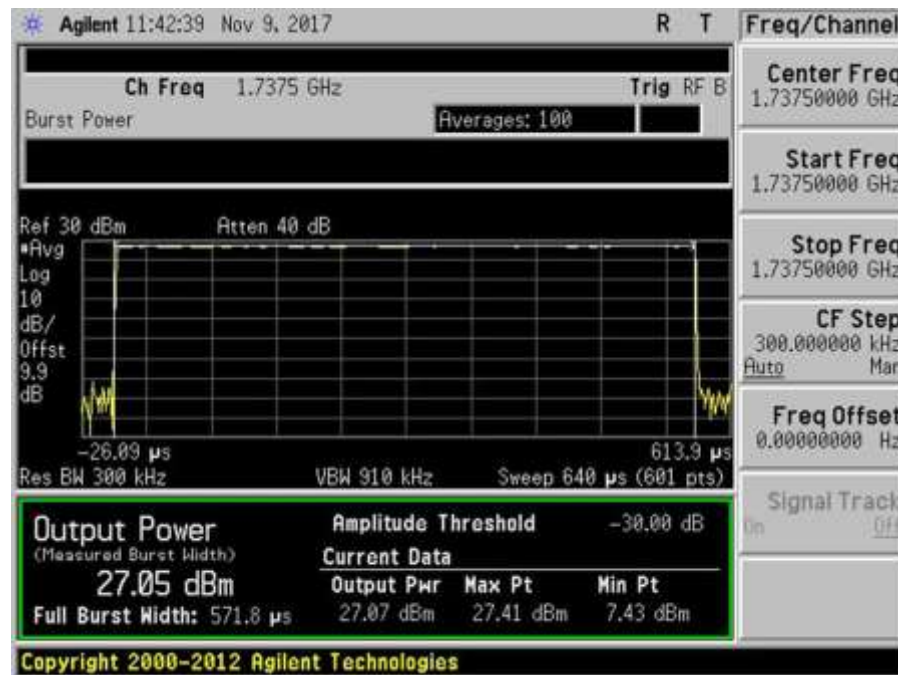
7.2_Power_UL_776-787MHz_GSM_Max



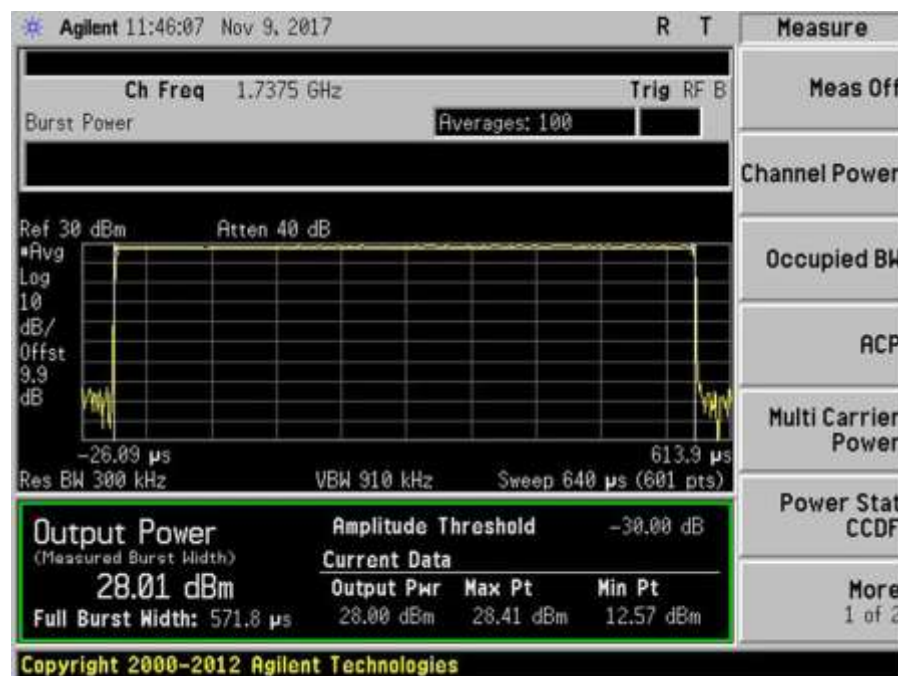
7.2_Power_UL_824-849MHz_GSM



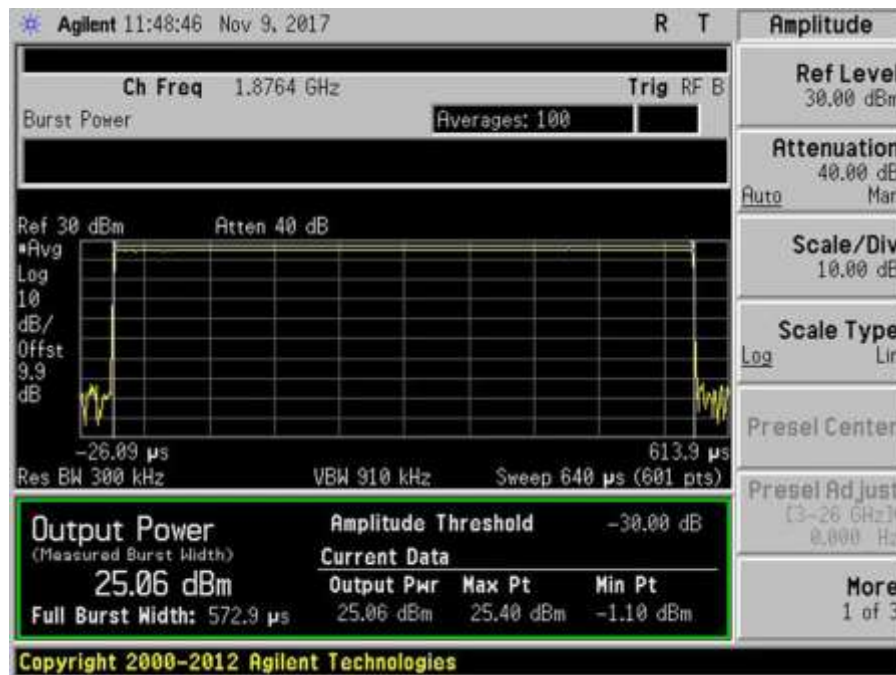
7.2_Power_UL_824-849MHz_GSM_Max



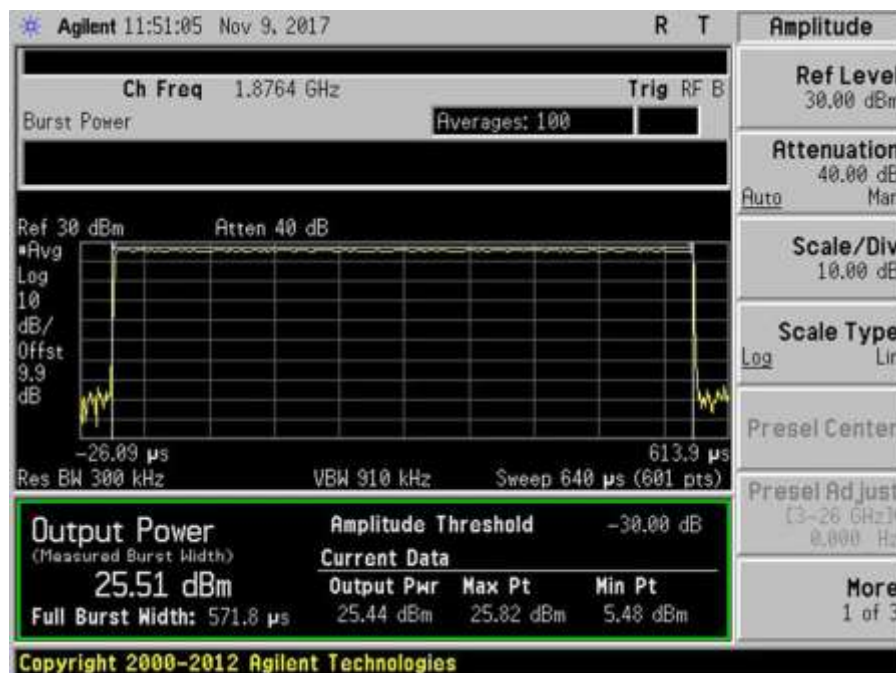
7.2_Power_UL_1710-1755MHz_GSM



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: 11/9/2017
 Test Type: **Conducted Emissions** Time: 3:26:00 PM
 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 7.4 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

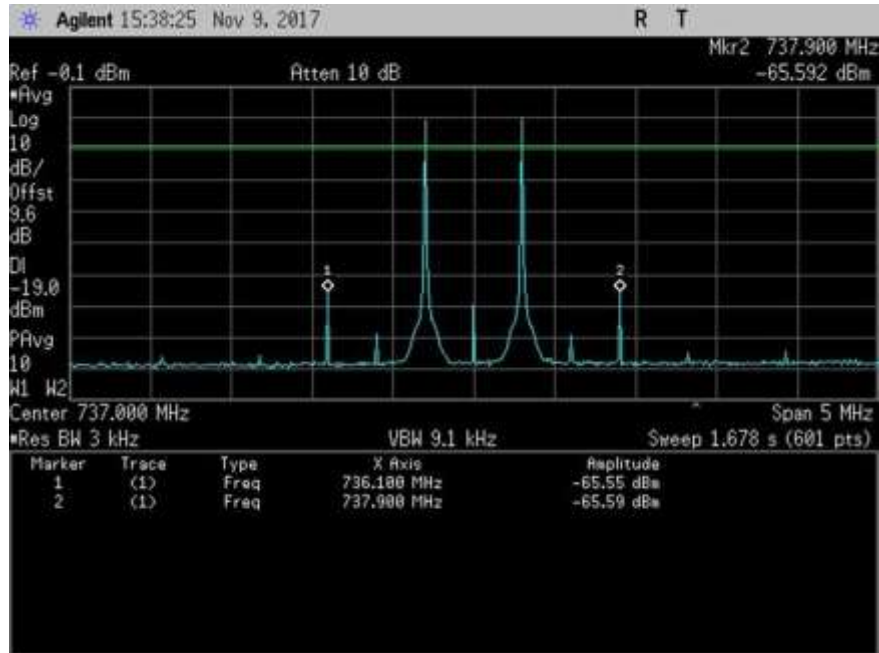
Pass: As shown on the plots, all intermodulation products are measured below -19dbm limit.

Inter Modulation Product			
Freq (MHz)	Pre AGC (dBm)	Limit (dBm)	Results
UL 1710-1755	-26.0	-19	Pass
UL 1850-1915	-31.3	-19	Pass
UL 824-894	-25.2	-19	Pass
UL 698-716	-29.8	-19	Pass
UL 776-787	-29.7	-19	Pass
DL 2110-2155	-58.1	-19	Pass
DL 1930-1995	-63.8	-19	Pass
DL 869-894	-69.5	-19	Pass
DL 728-746	-65.6	-19	Pass
DL 746-757	-66.8	-19	Pass

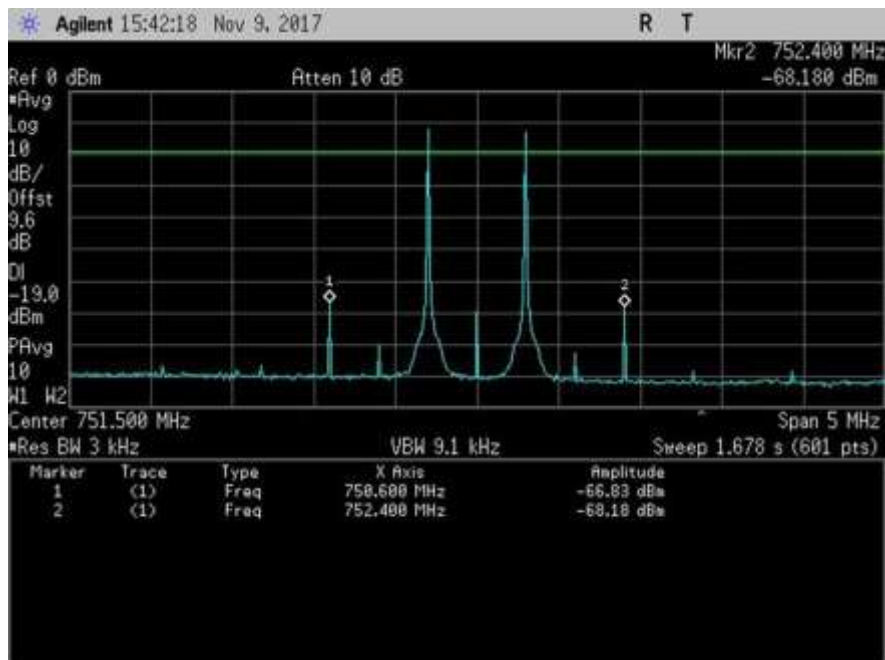
Note: The EUT maintains compliance with the intermodulation limit at input power of AGC+10dB.

Plots

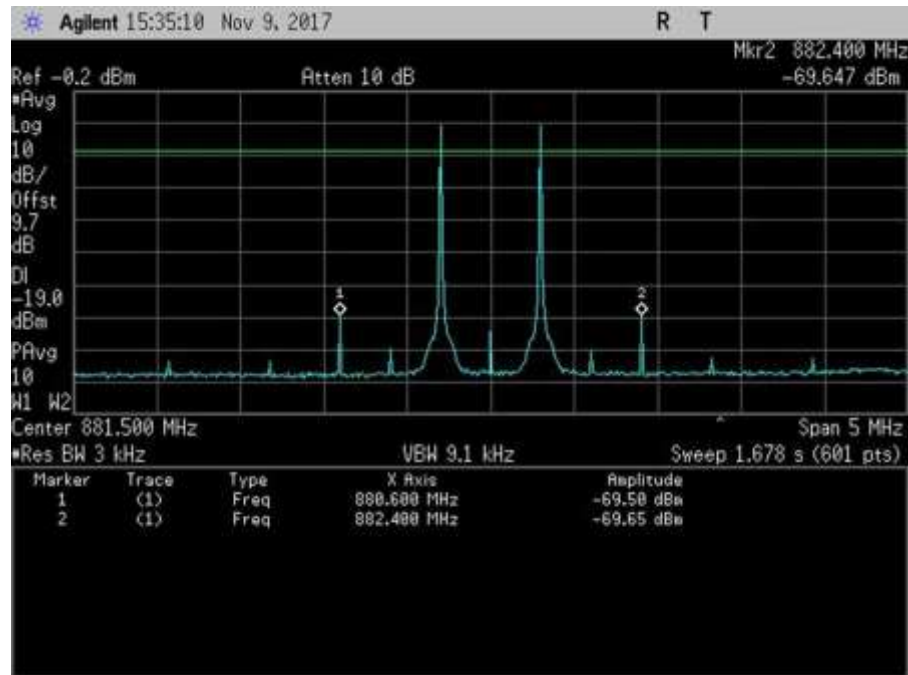
DL



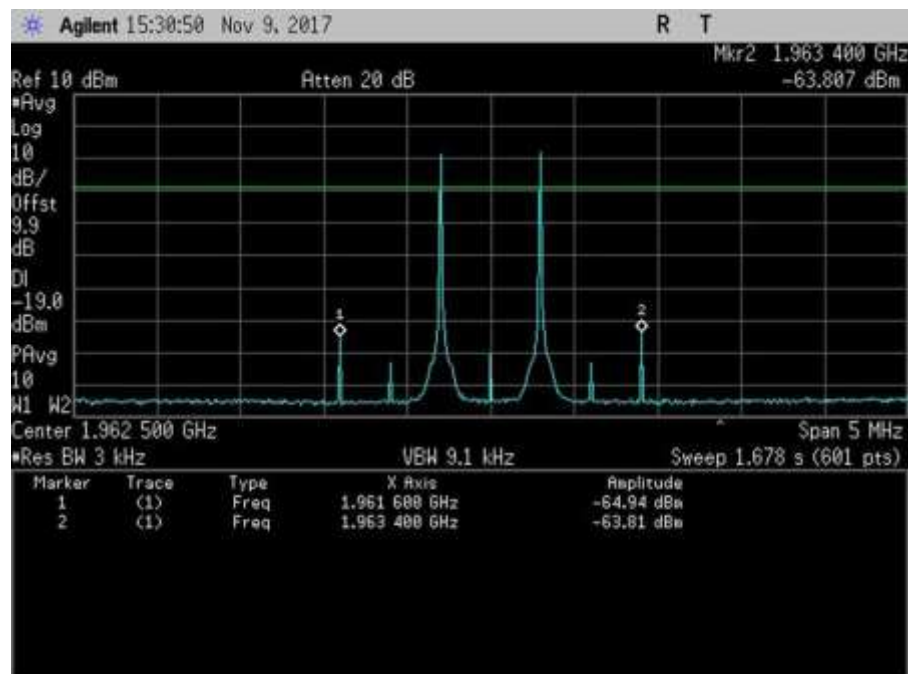
7.4_Internod_DL_728-746MHz



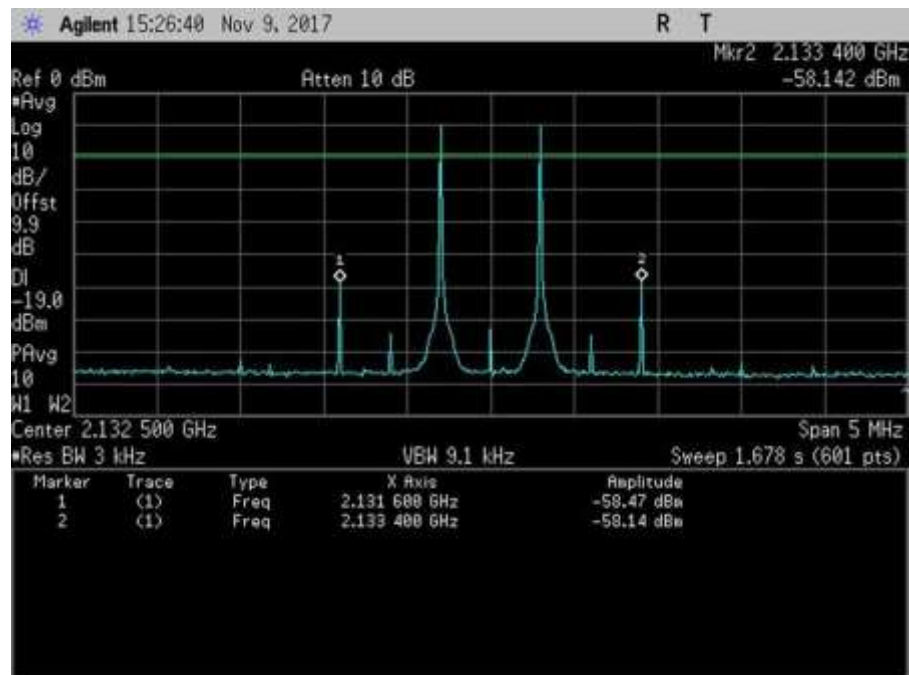
7.4_Internod_DL_746-757MHz



7.4_Internod_DL_869-894MHz

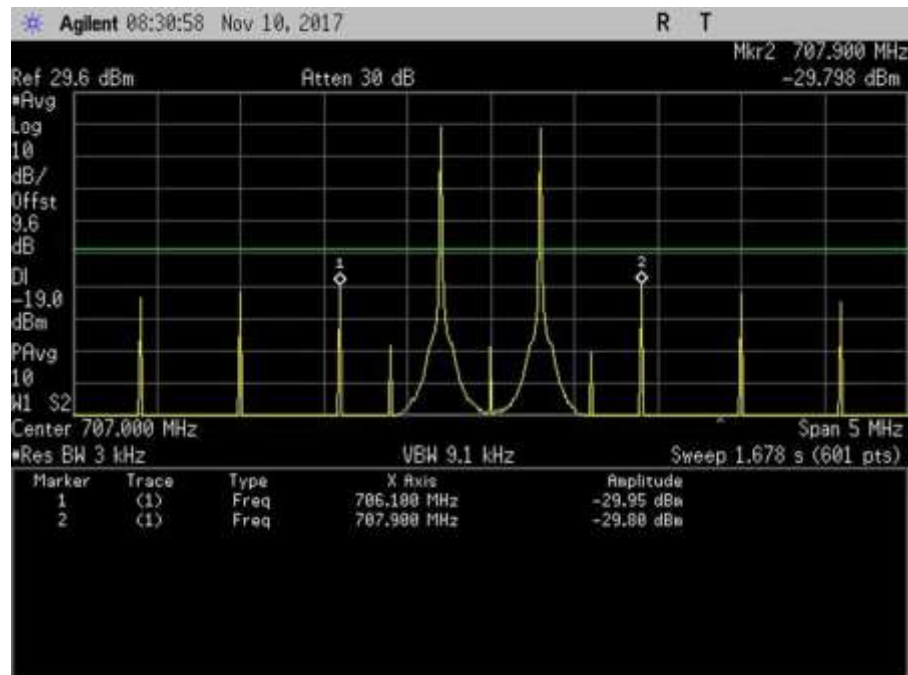


7.4_Internod_DL_1930-1995MHz

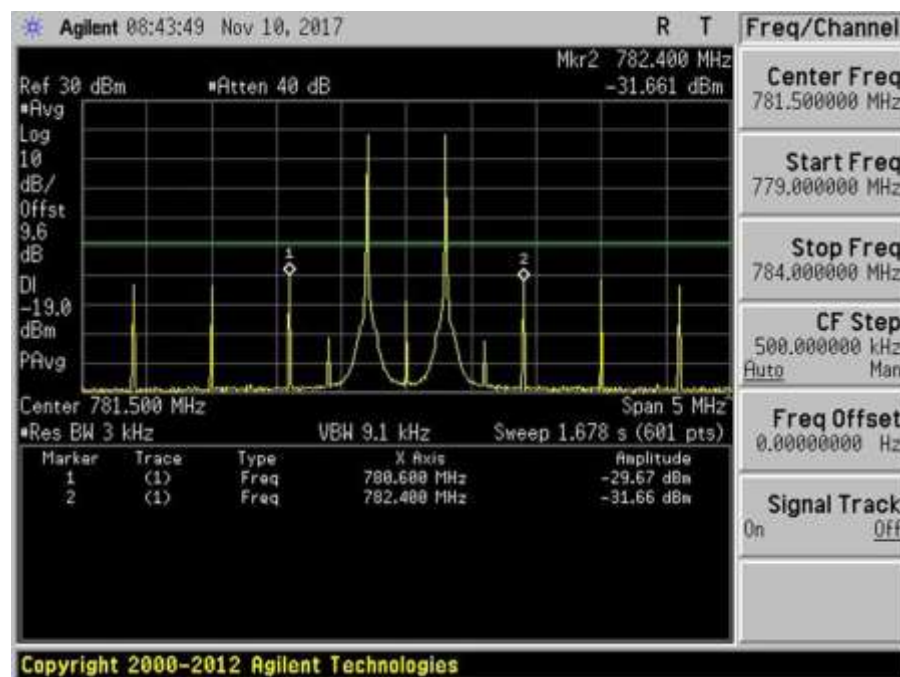


7.4_Internod_DL_2110-2155MHz

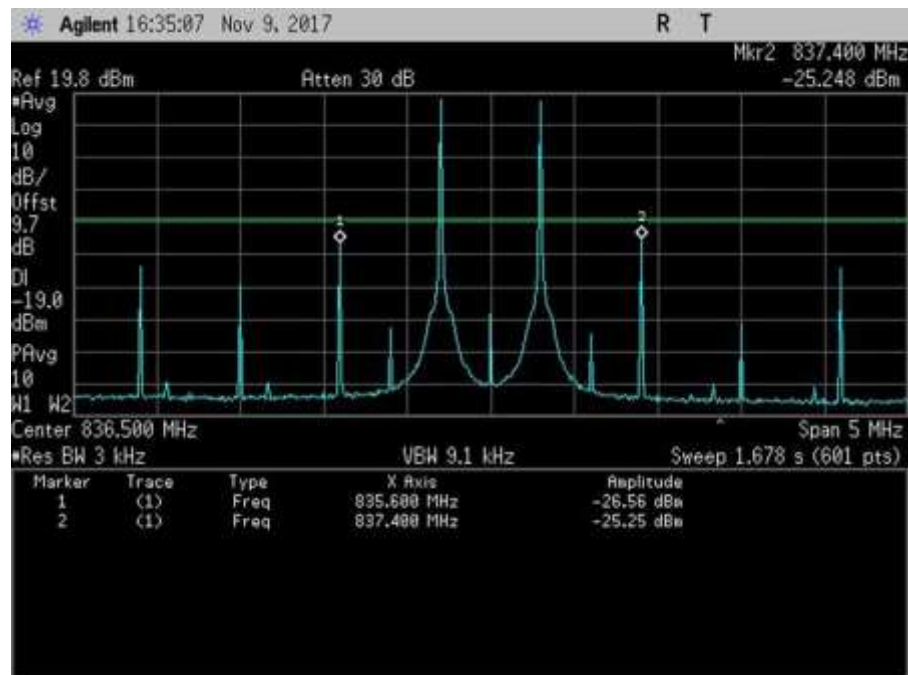
UL



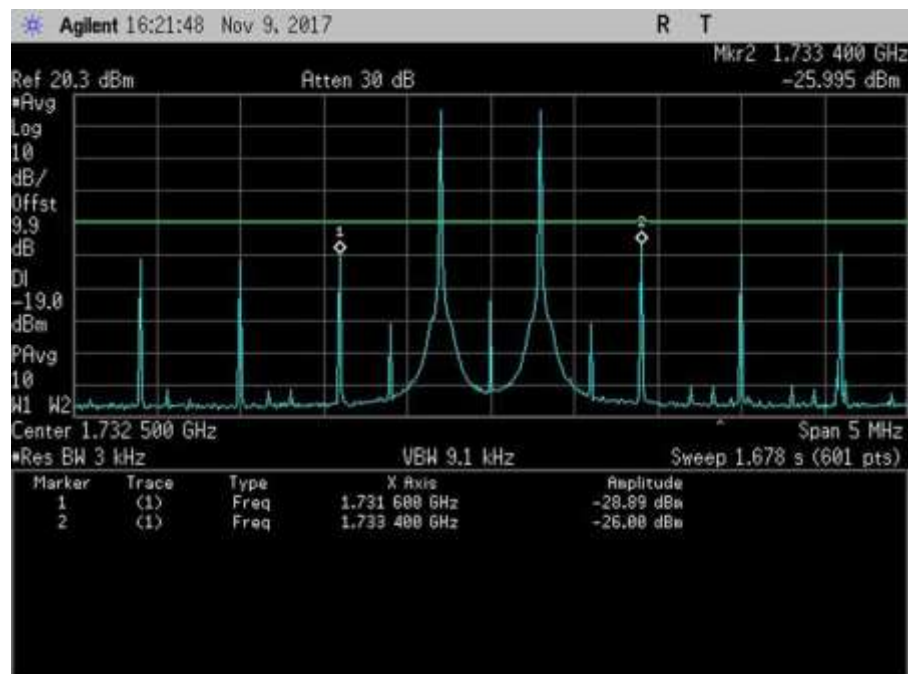
7.4_Internod_UL_698-716MHz



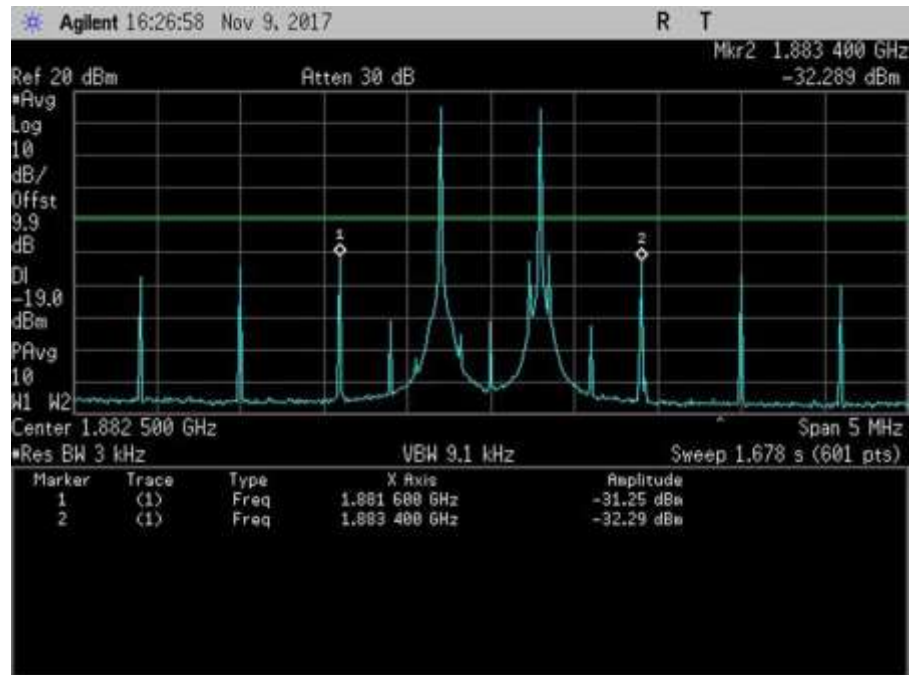
7.4_Internod_UL_776-787MHz



7.4_Internod_UL_824-849MHz



7.4_Internod_UL_1710-1755MHz



7.4_Internod_UL_1850-1915MHz

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

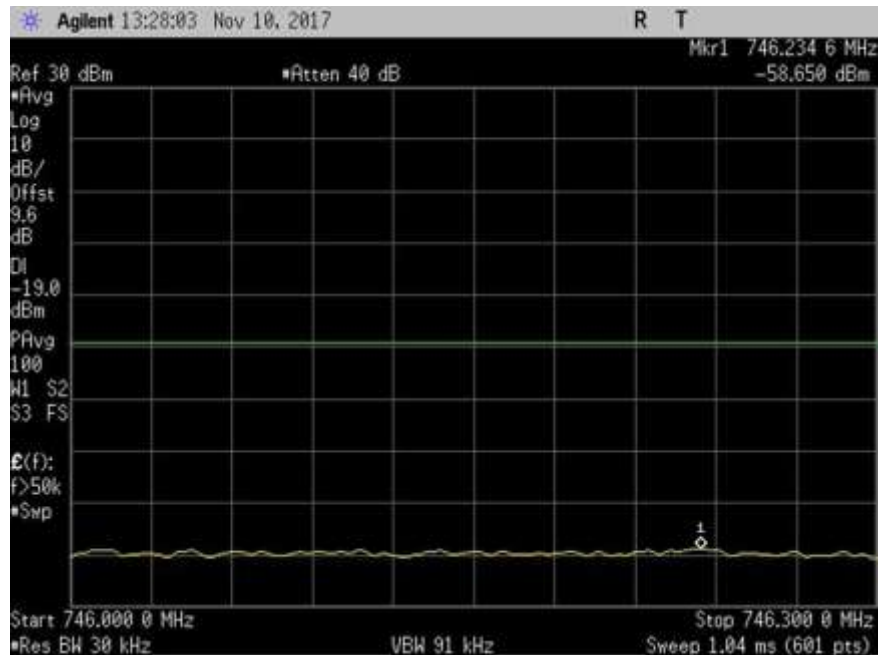
LTE (alternative 4.1MHz AWGN)

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

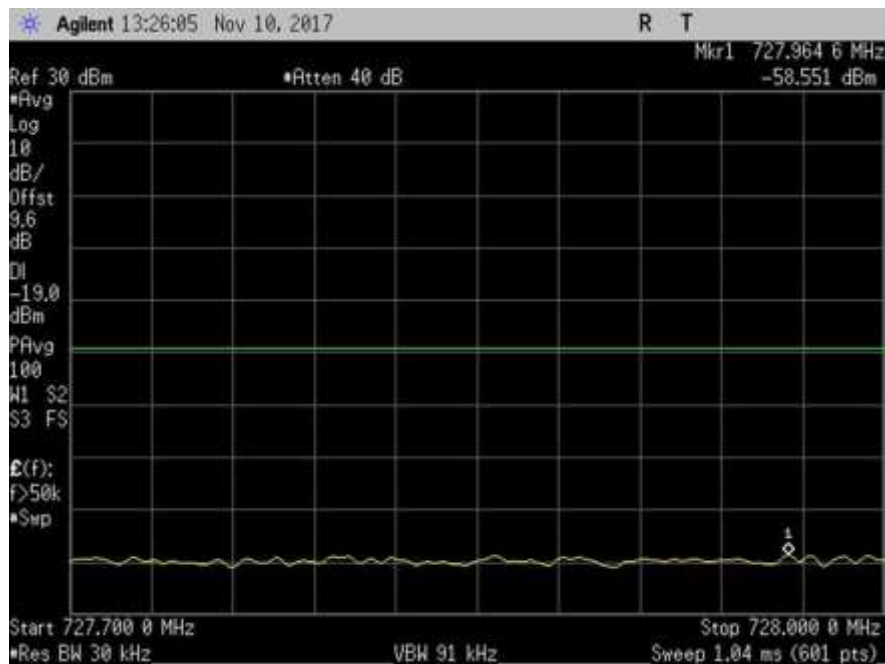
Note: The EUT also maintains compliance with the out-of-band emissions limit at input power indicated in section 5.5.

Plots

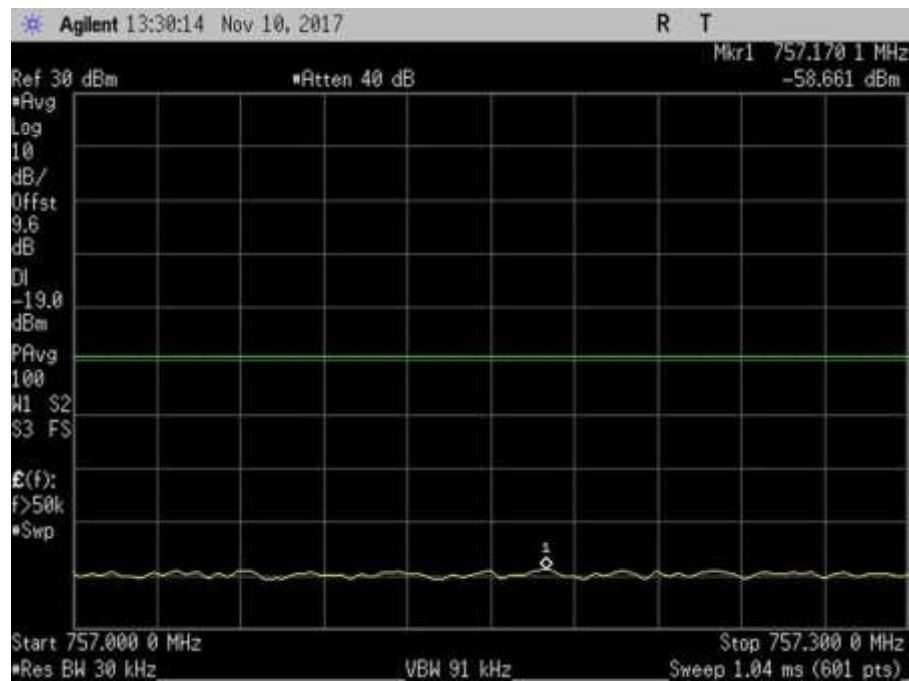
CDMA, DL



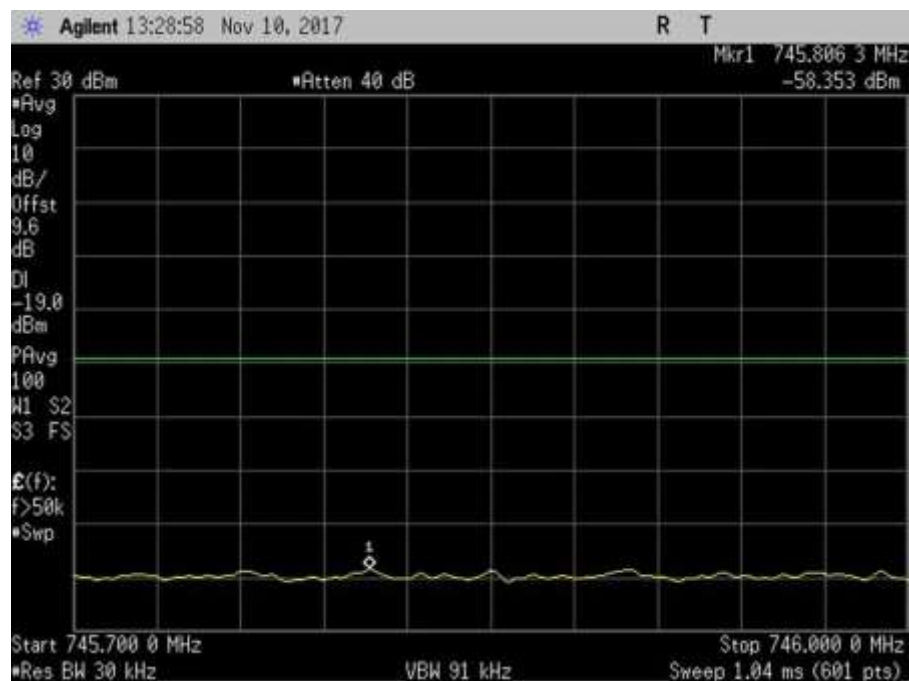
7.5_OBE_DL_728-746MHz_H_PreAGC_CDMA



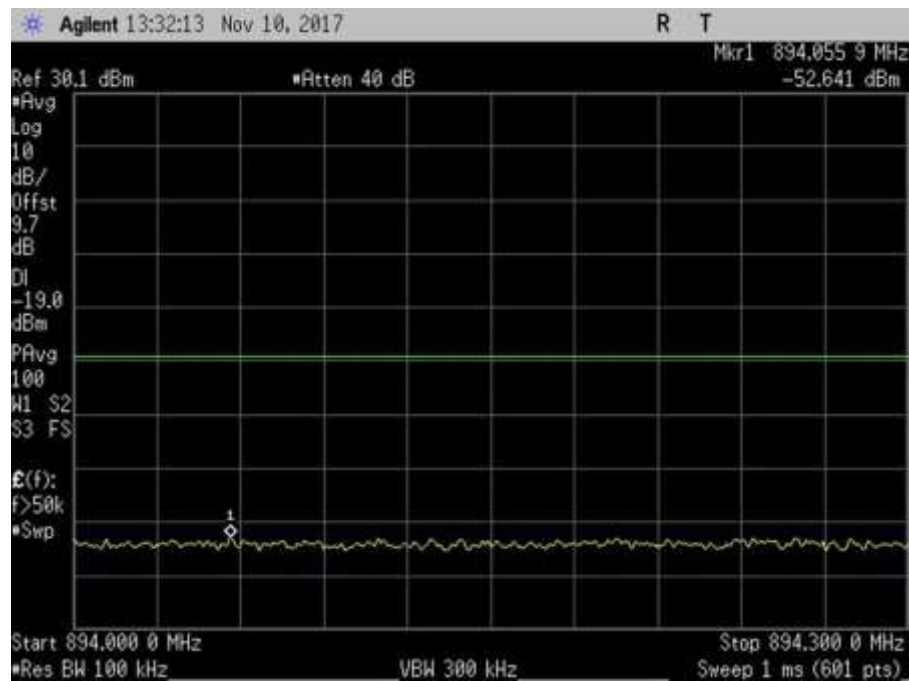
7.5_OBE_DL_728-746MHz_L_PreAGC_CDMA



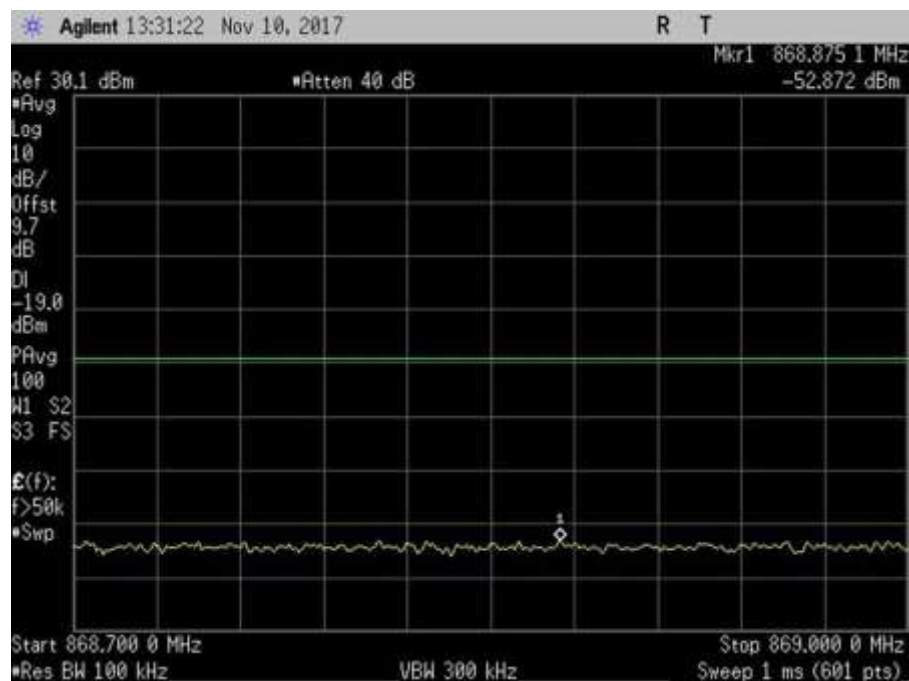
7.5_OBE_DL_746-757MHz_H_PreAGC_CDMA



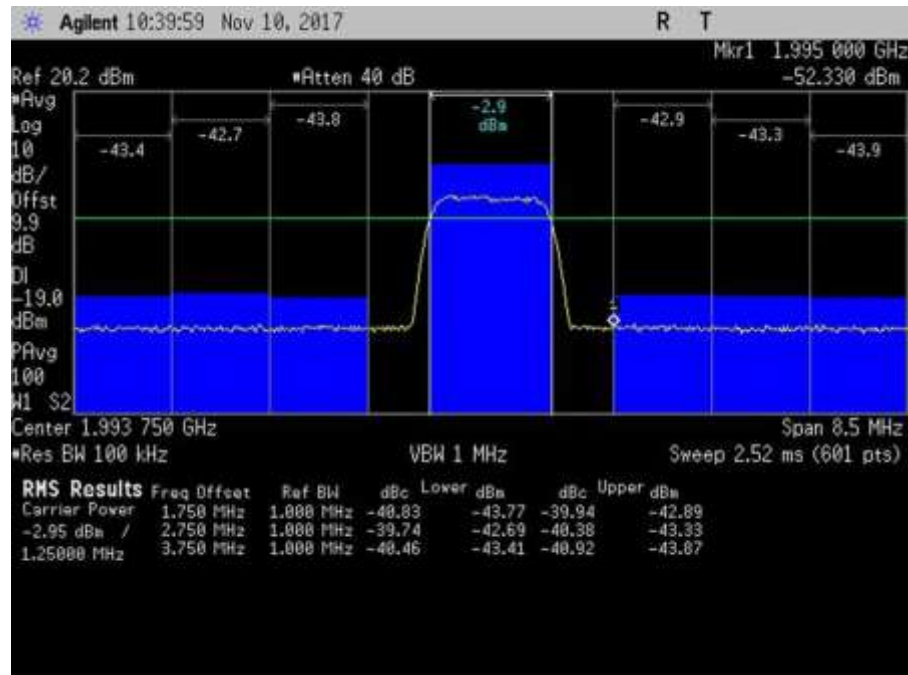
7.5_OBE_DL_746-757MHz_L_PreAGC_CDMA



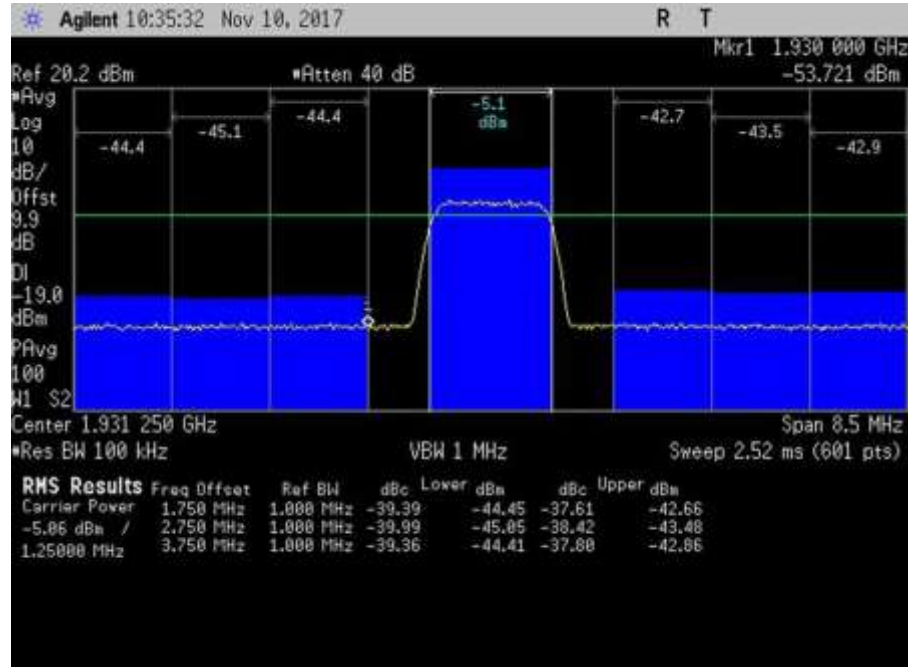
7.5_OBE_DL_896-894MHz_H_PreAGC_CDMA



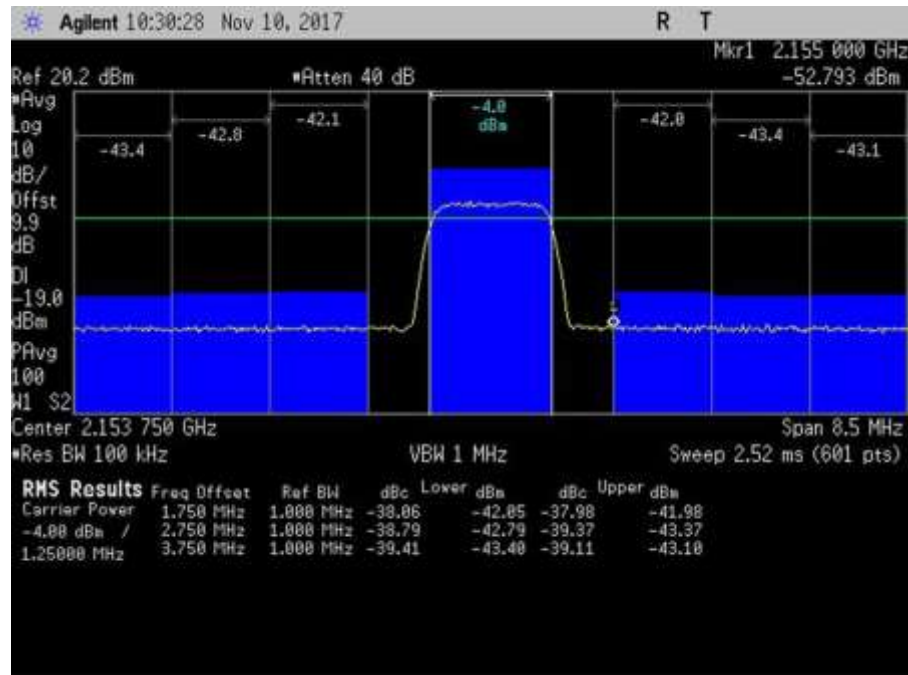
7.5_OBE_DL_896-894MHz_L_PreAGC_CDMA



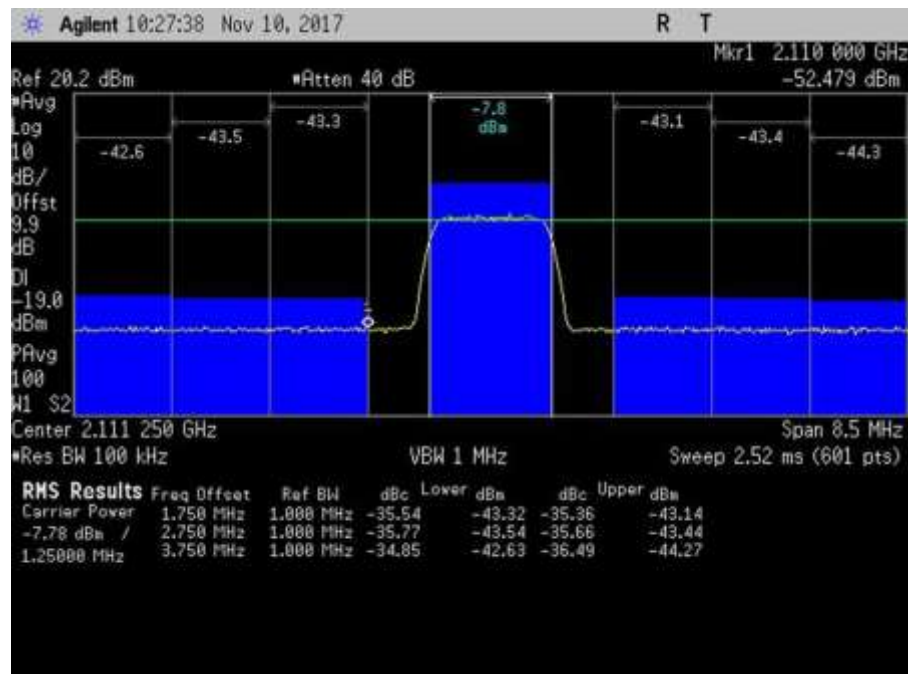
7.5_OBE_DL_1930-1995MHz_H_PreAGC_CDMA



7.5_OBE_DL_1930-1995MHz_L_PreAGC_CDMA

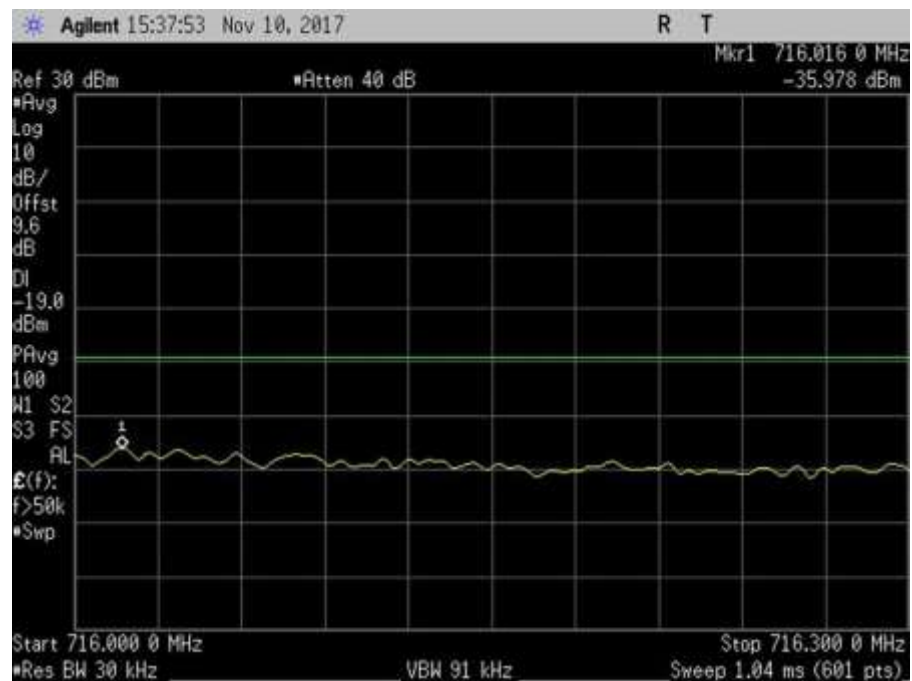


7.5_OBE_DL_2110-2155MHz_H_PreAGC_CDMA

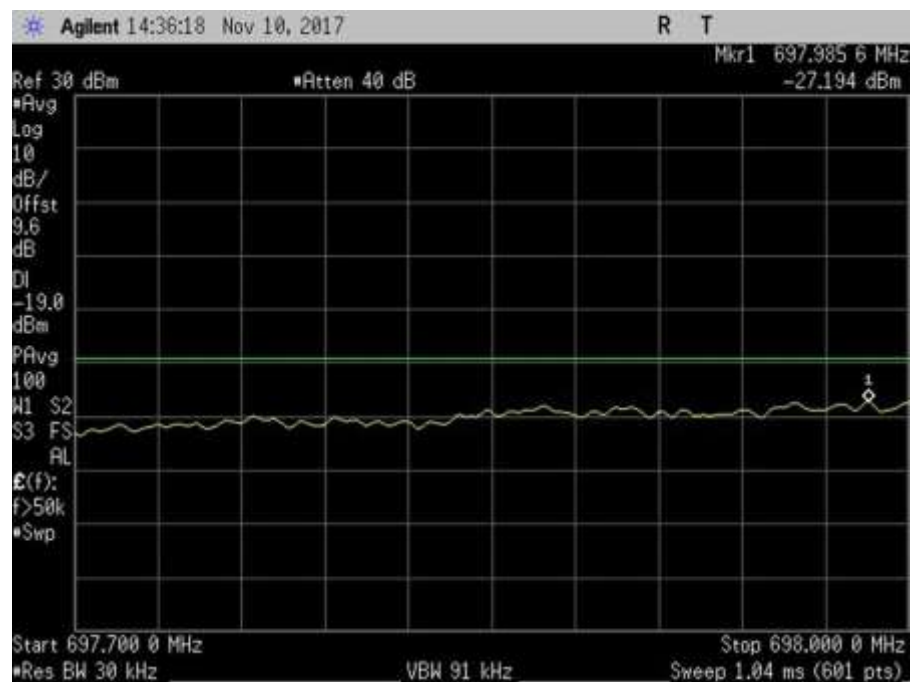


7.5_OBE_DL_2110-2155MHz_L_PreAGC_CDMA

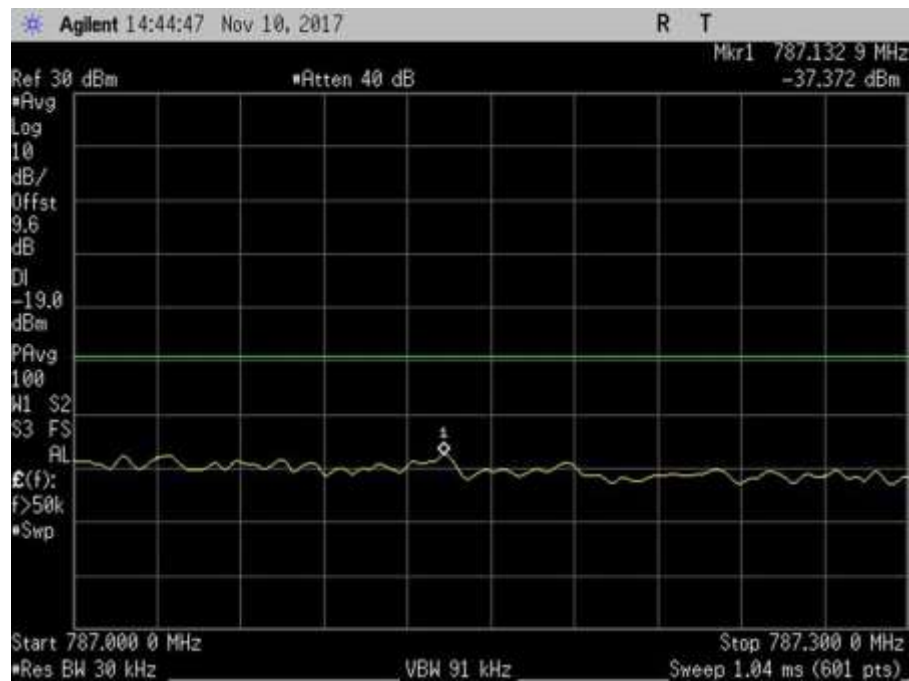
CDMA, UL



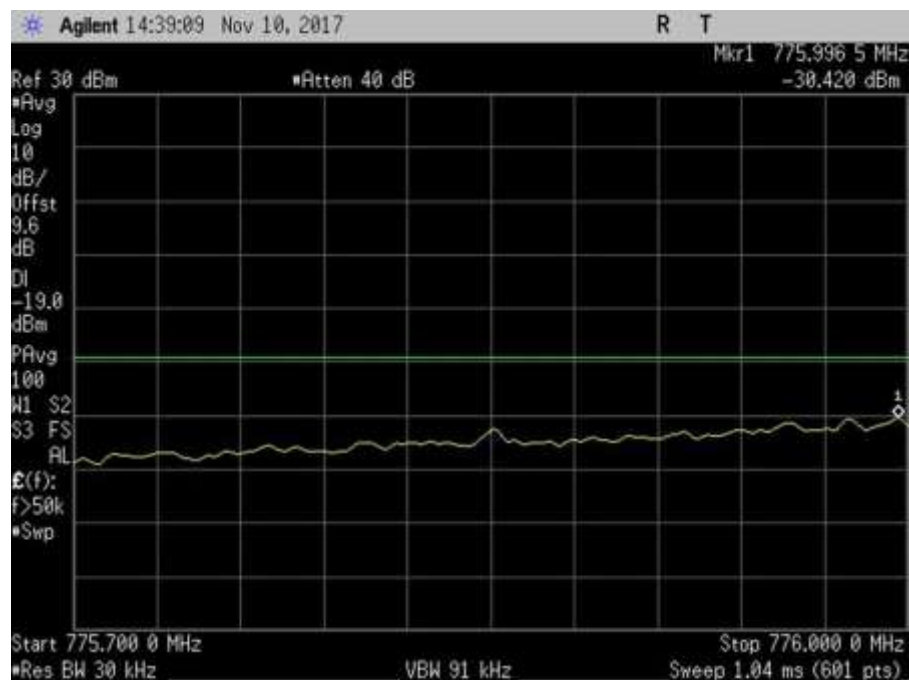
7.5_OBE_UL_698-716MHz_H_PreAGC_CDMA



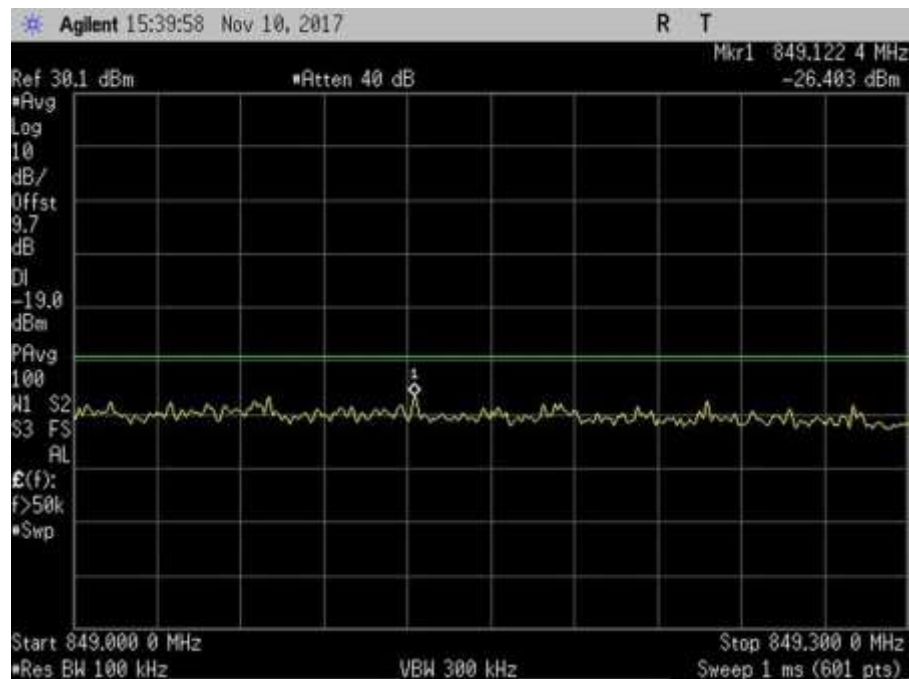
7.5_OBE_UL_698-716MHz_L_PreAGC_CDMA



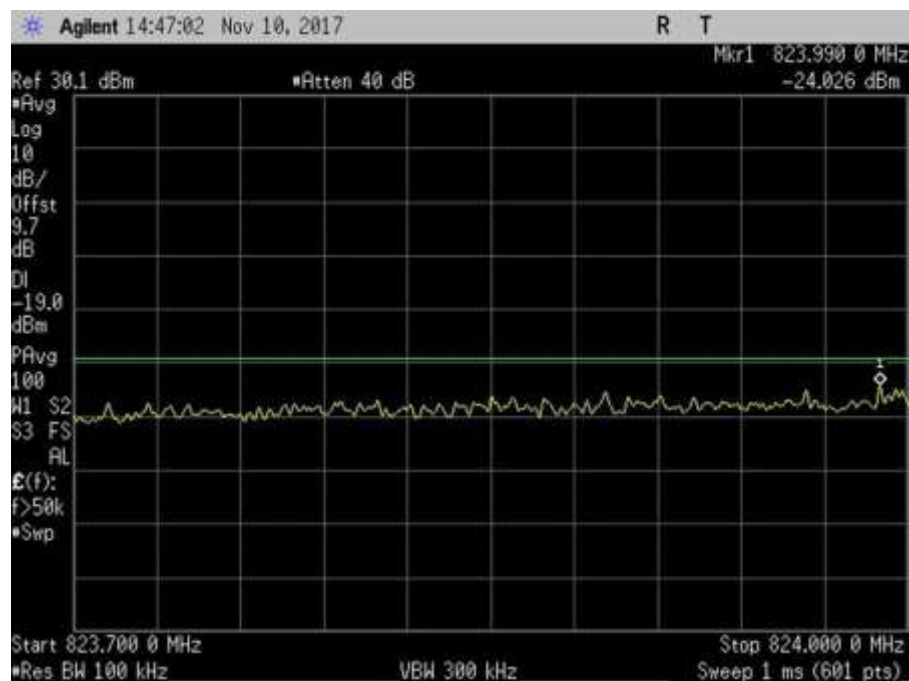
7.5_OBE_UL_776-787MHz_H_PreAGC_CDMA



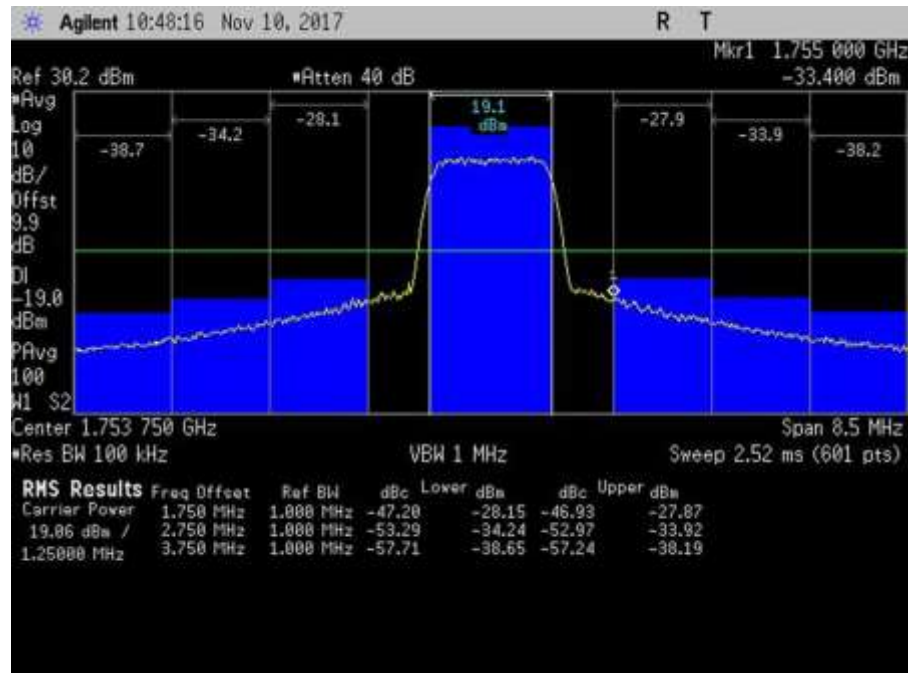
7.5_OBE_UL_776-787MHz_L_PreAGC_CDMA



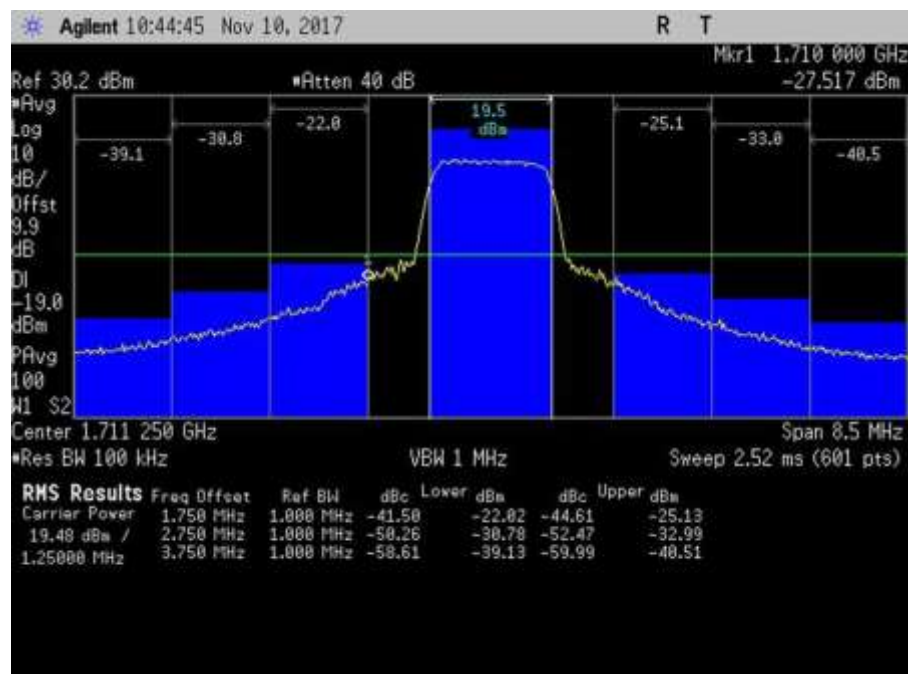
7.5_OBE_UL_824-849MHz_H_PreAGC_CDMA



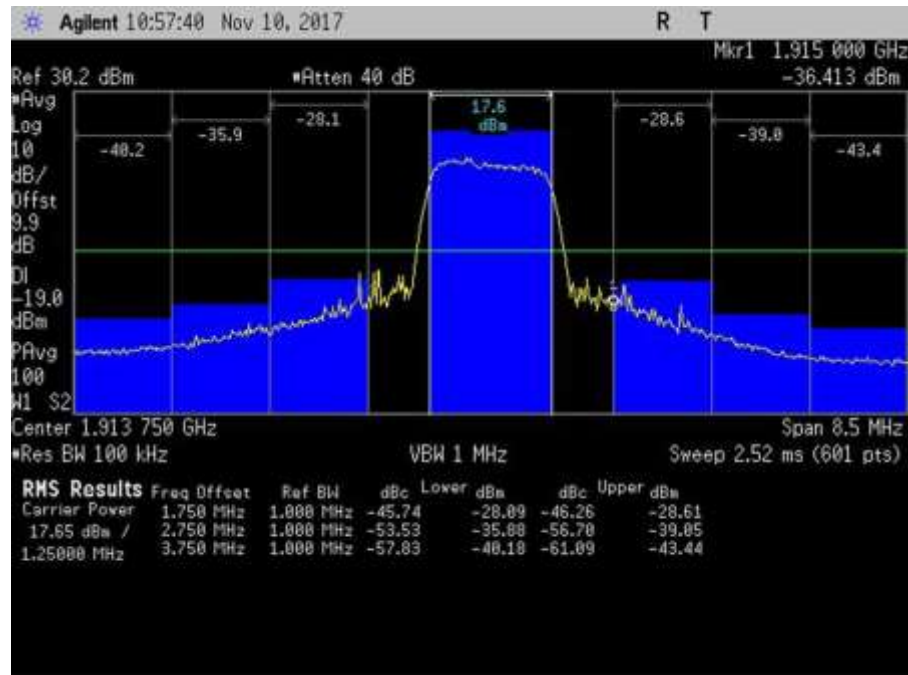
7.5_OBE_UL_824-849MHz_L_PreAGC_CDMA



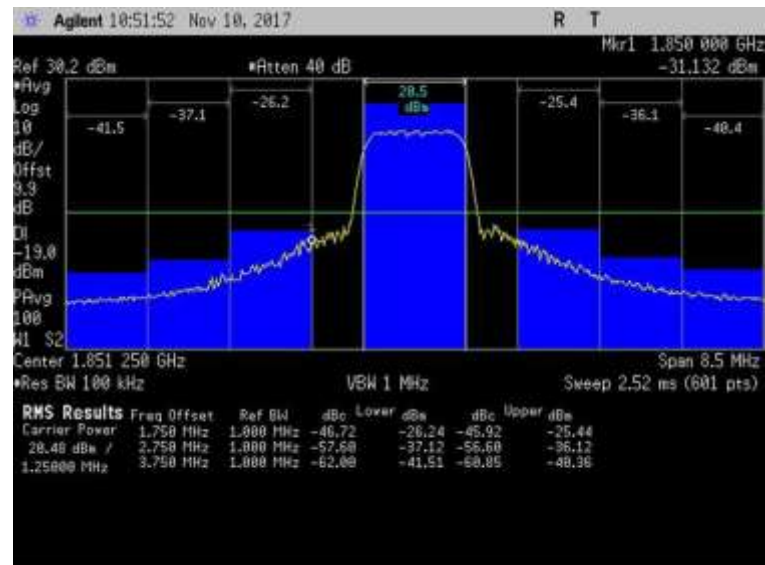
7.5_OBE_UL_1710-1755MHz_H_PreAGC_CDMA



7.5_OBE_UL_1710-1755MHz_L_PreAGC_CDMA

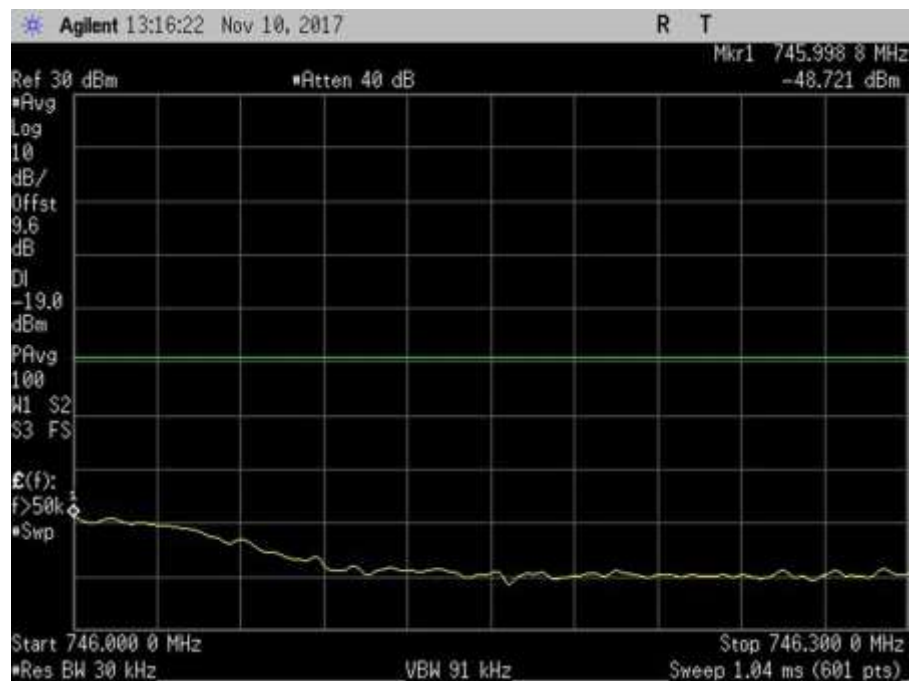


7.5_OBE_UL_1850-1915MHz_H_PreAGC_CDMA

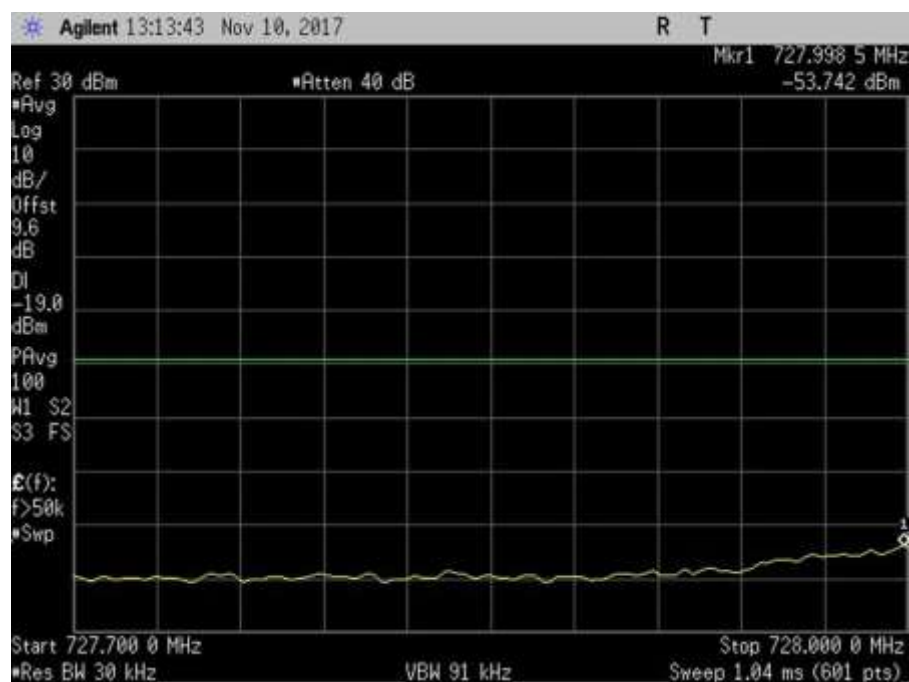


7.5_OBE_UL_1850-1915MHz_L_PreAGC_CDMA

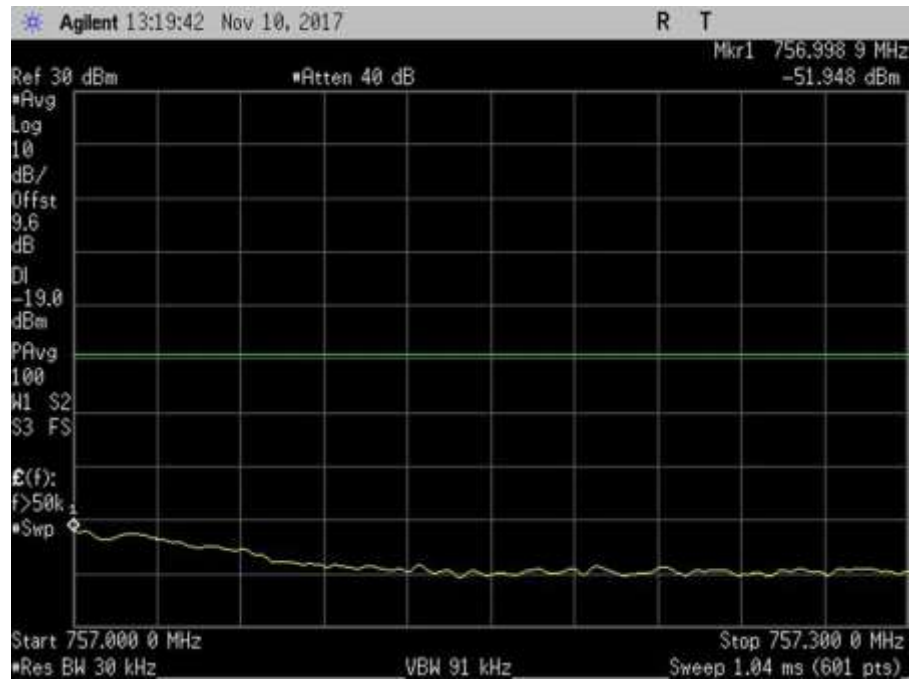
GSM, DL



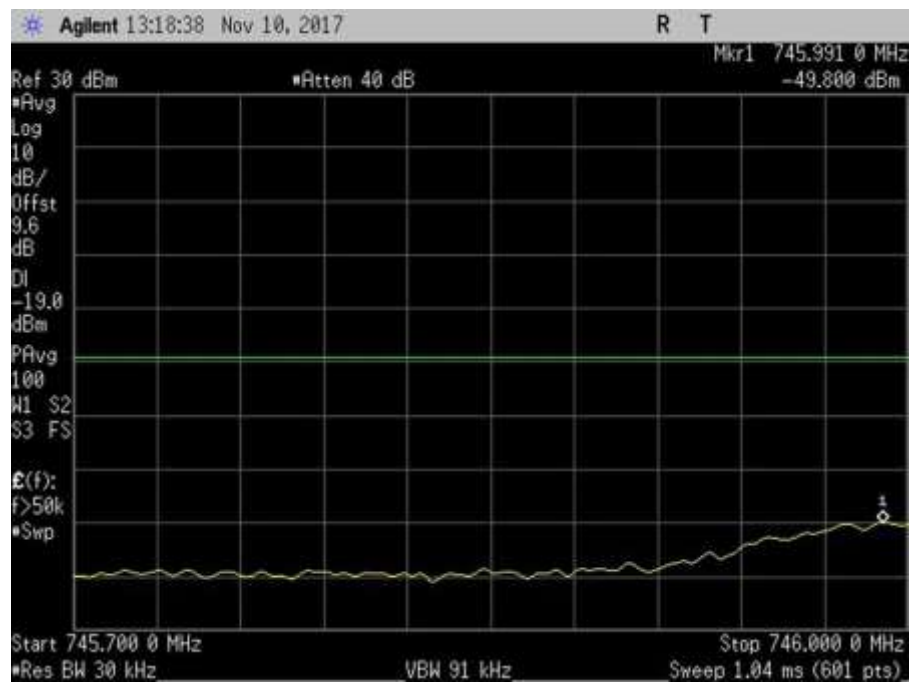
7.5_OBE_DL_728-746MHz_H_PreAGC_GSM



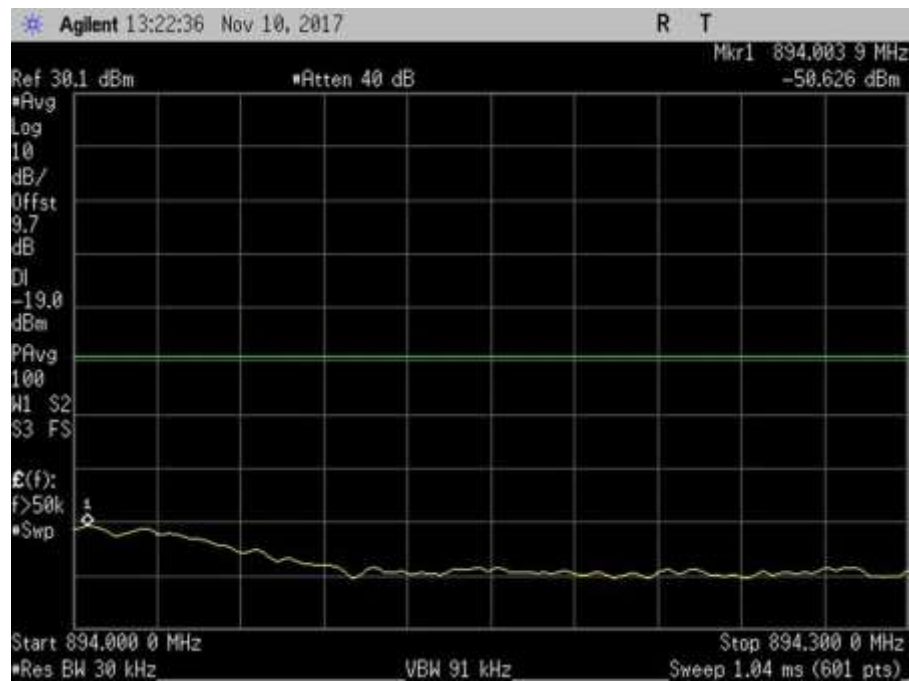
7.5_OBE_DL_728-746MHz_L_PreAGC_GSM



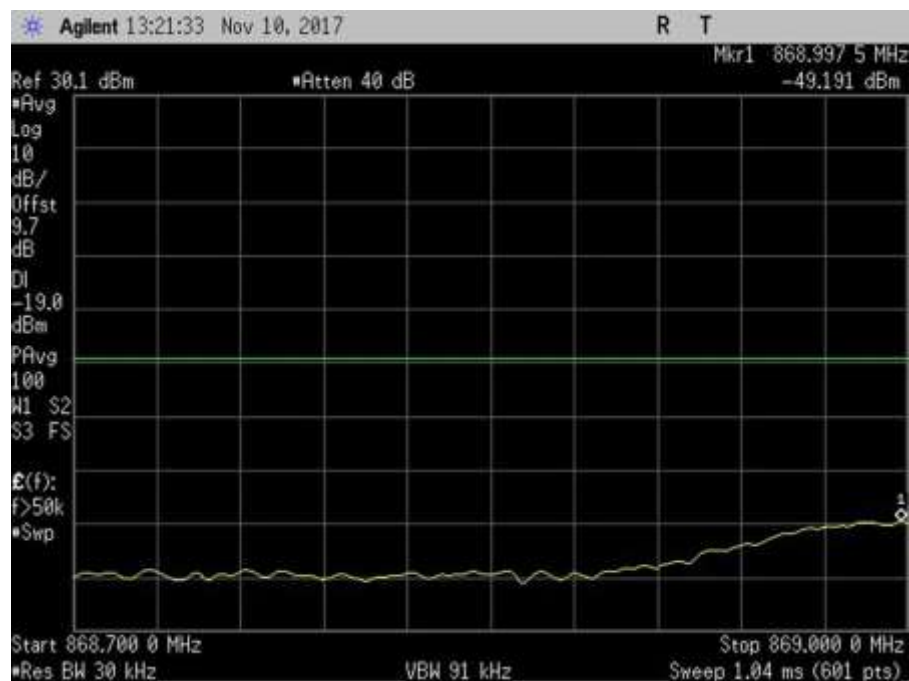
7.5_OBE_DL_746-757MHz_H_PreAGC_GSM



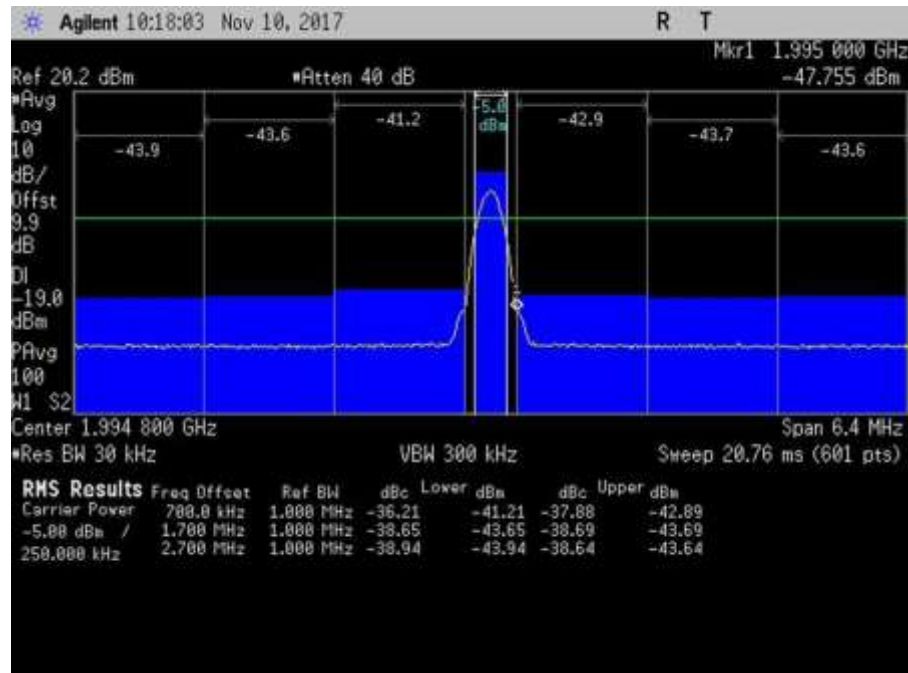
7.5_OBE_DL_746-757MHz_L_PreAGC_GSM



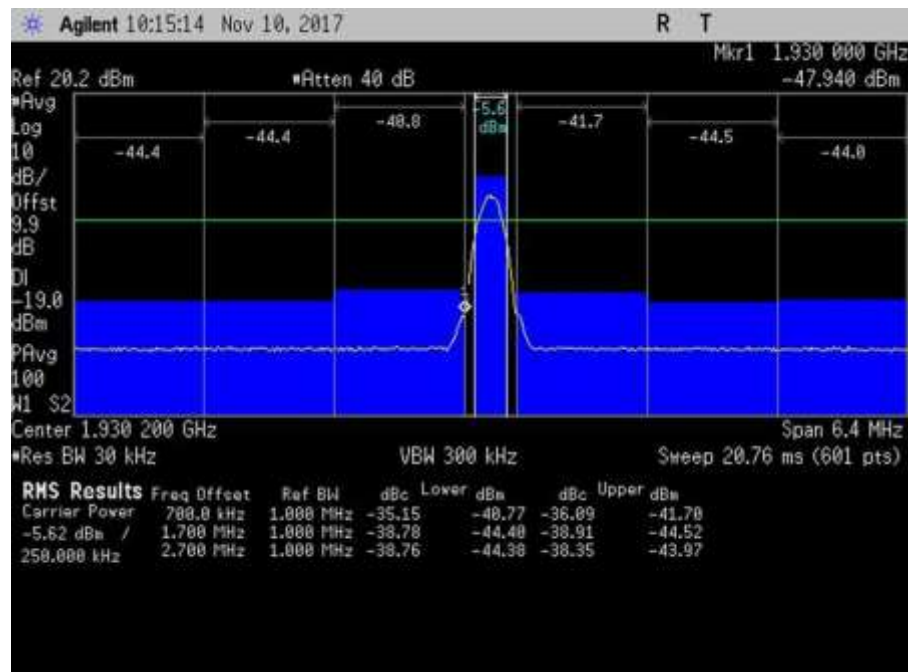
7.5_OBE_DL_896-894MHz_H_PreAGC_GSM



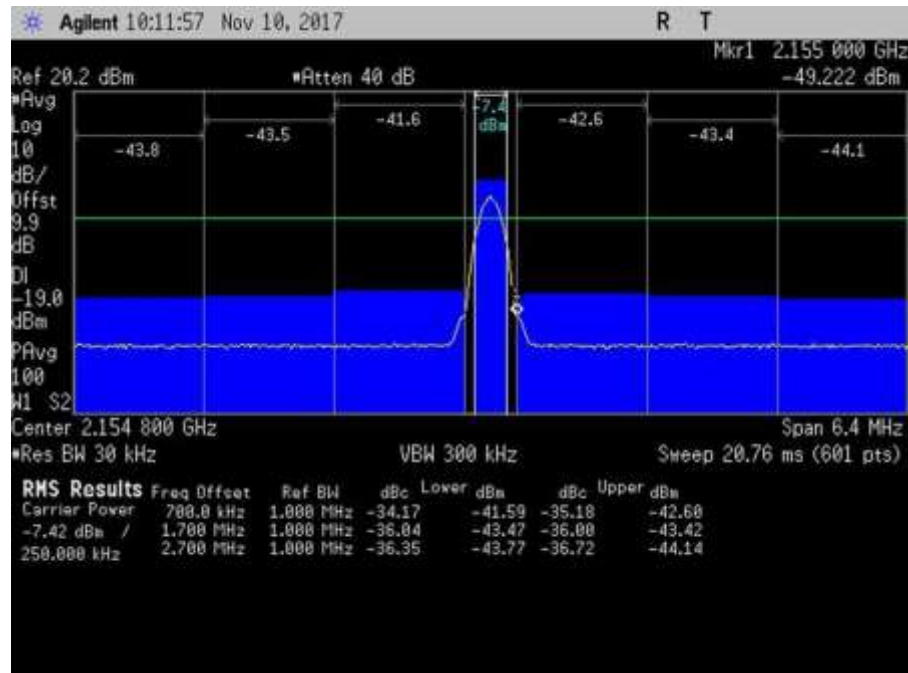
7.5_OBE_DL_896-894MHz_L_PreAGC_GSM



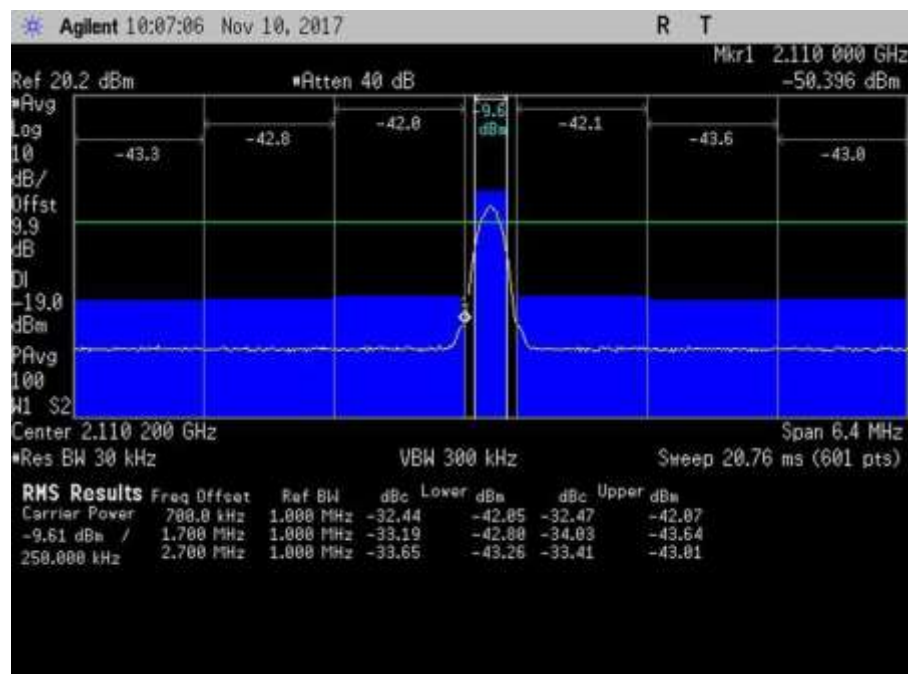
7.5_OBE_DL_1930-1995MHz_H_PreAGC_GSM



7.5_OBE_DL_1930-1995MHz_L_PreAGC_GSM

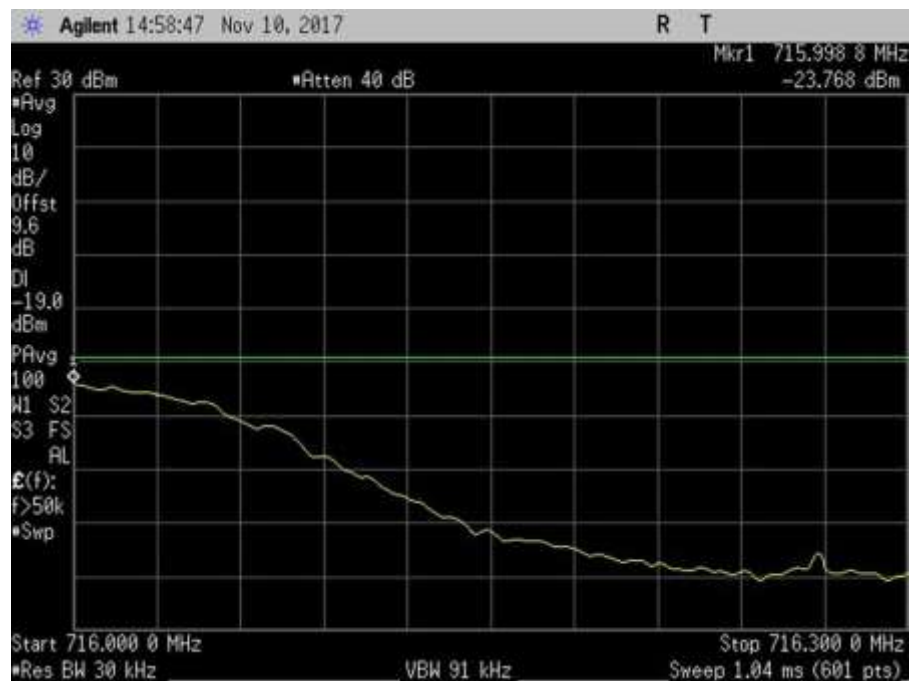


7.5_OBE_DL_2110-2155MHz_H_PreAGC_GSM



7.5_OBE_DL_2110-2155MHz_L_PreAGC_GSM

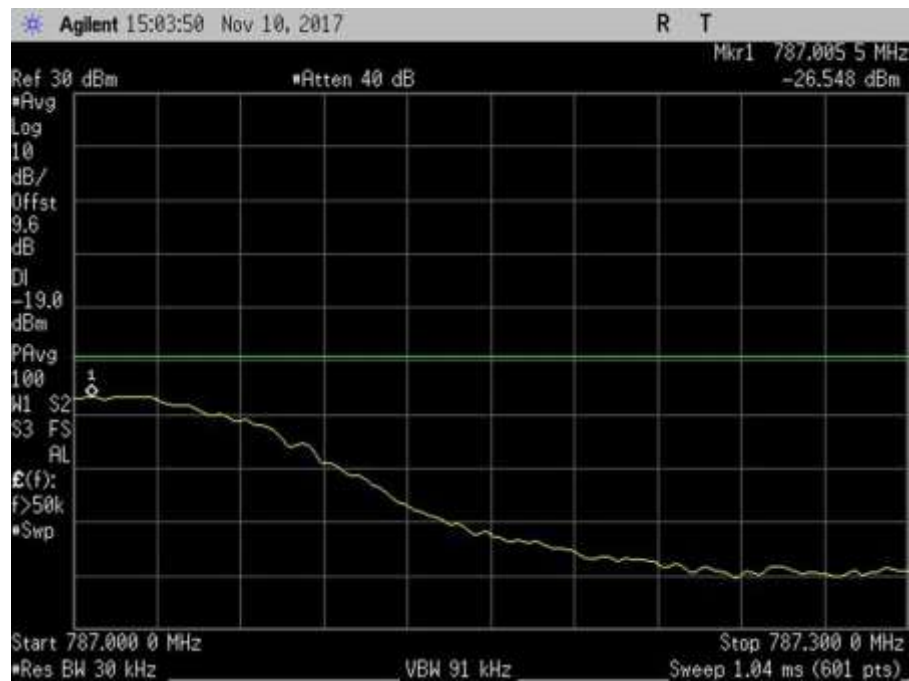
GSM, UL



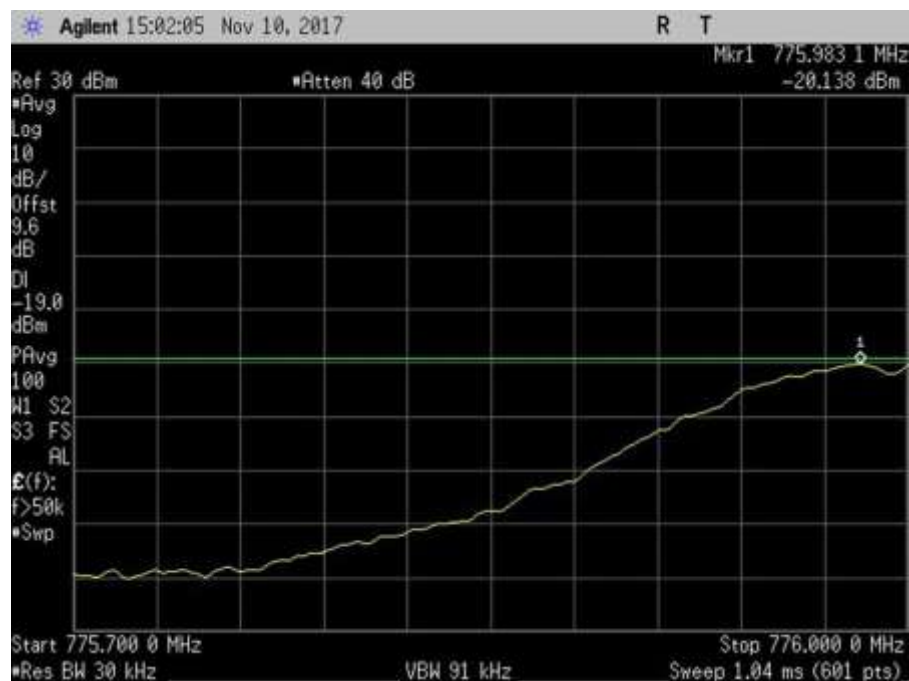
7.5_OBE_UL_698-716MHz_H_PreAGC_GSM



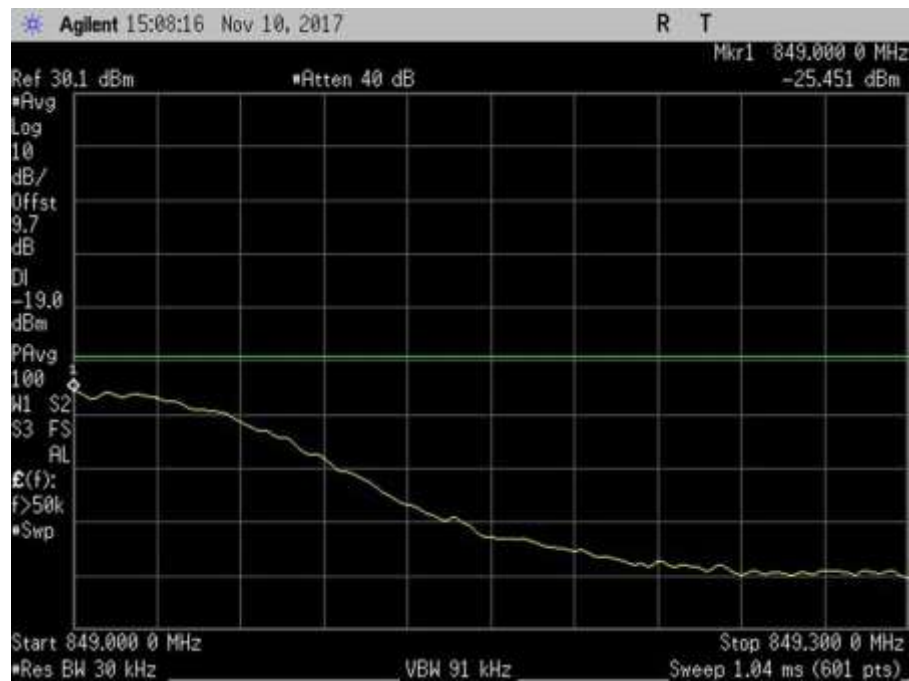
7.5_OBE_UL_698-716MHz_L_PreAGC_GSM



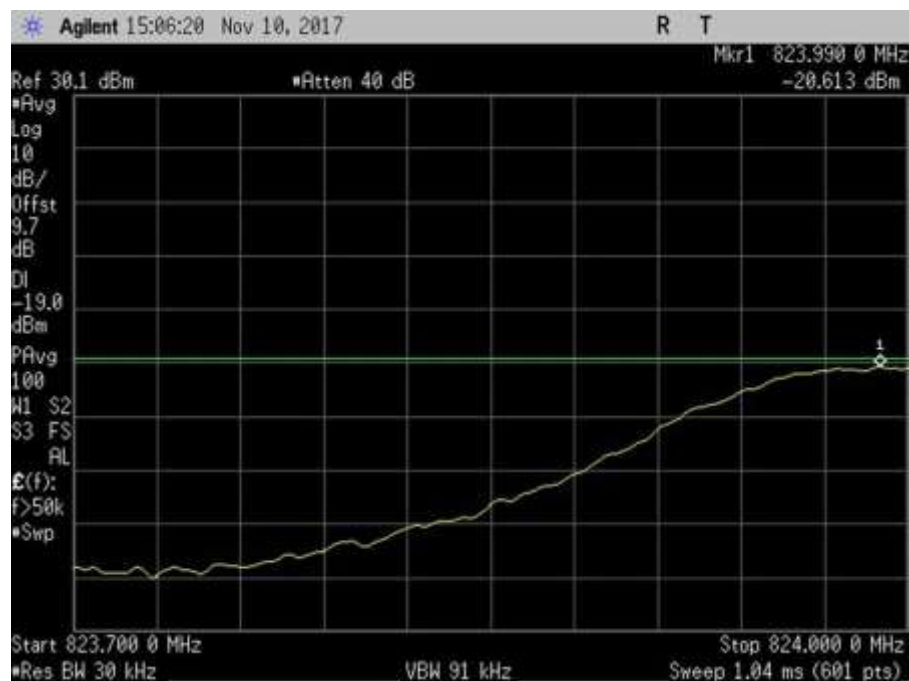
7.5_OBE_UL_776-787MHz_H_PreAGC_GSM



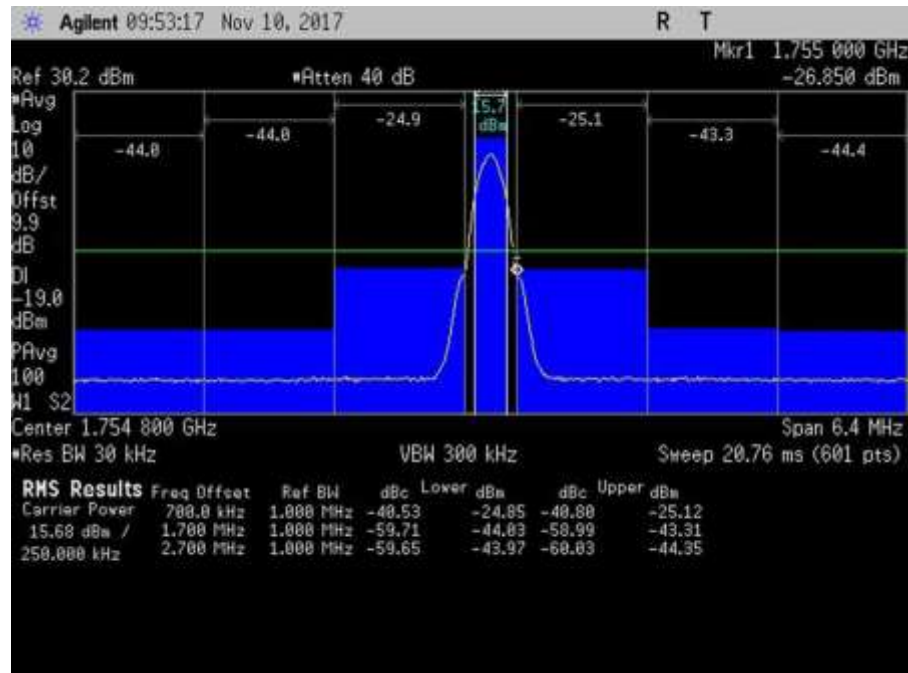
7.5_OBE_UL_776-787MHz_L_PreAGC_GSM



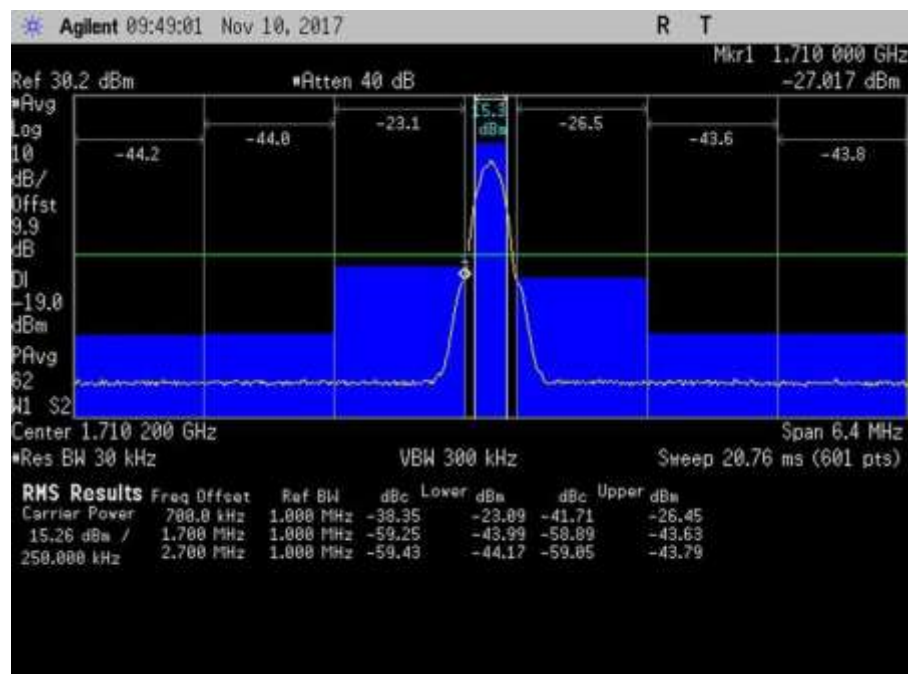
7.5_OBE_UL_824-849MHz_H_PreAGC_GSM



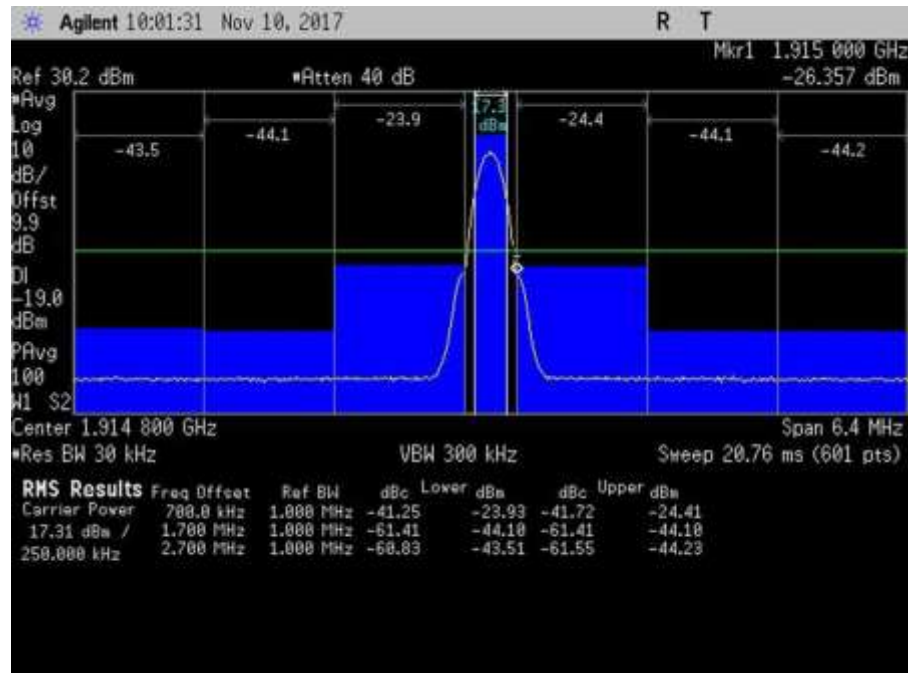
7.5_OBE_UL_824-849MHz_L_PreAGC_GSM



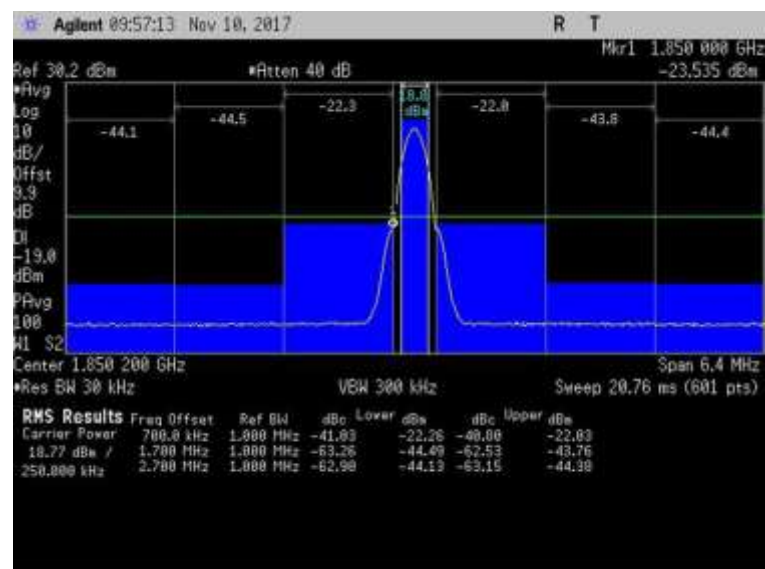
7.5_OBE_UL_1710-1755MHz_H_PreAGC_GSM



7.5_OBE_UL_1710-1755MHz_L_PreAGC_GSM

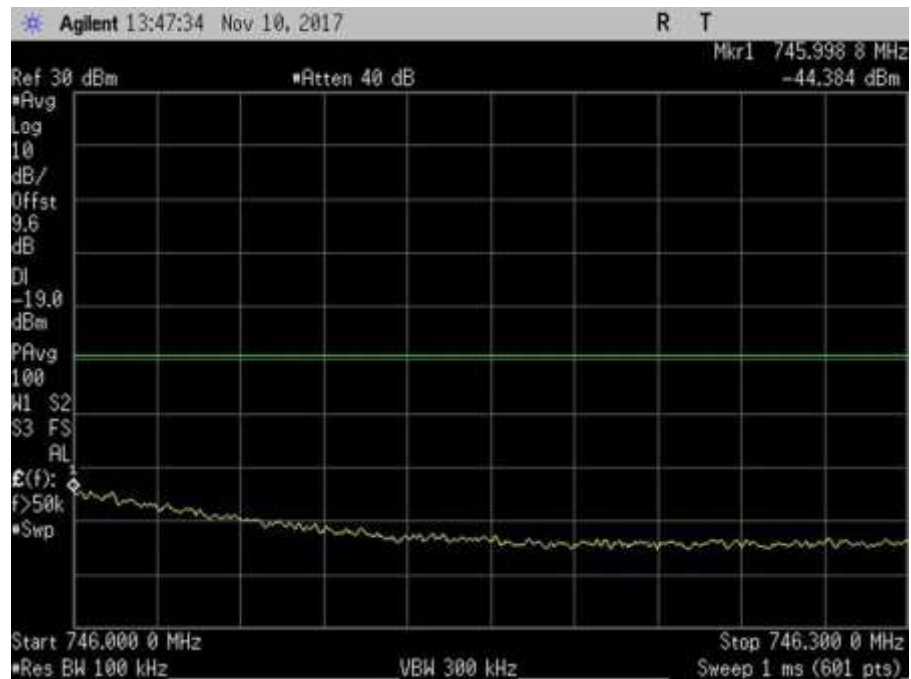


7.5_OBE_UL_1850-1915MHz_H_PreAGC_GSM

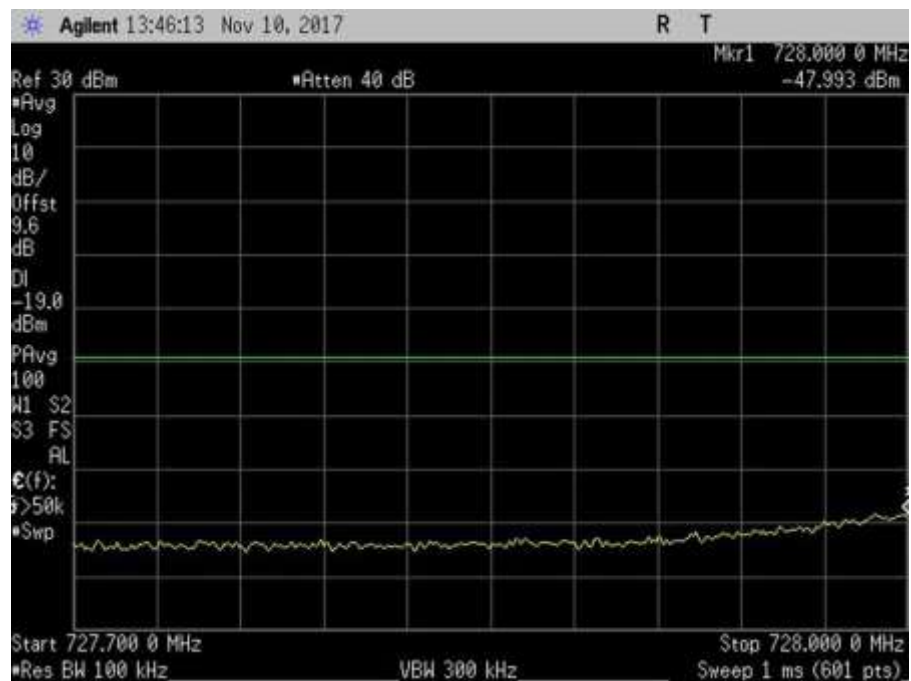


7.5_OBE_UL_1850-1915MHz_L_PreAGC_GSM

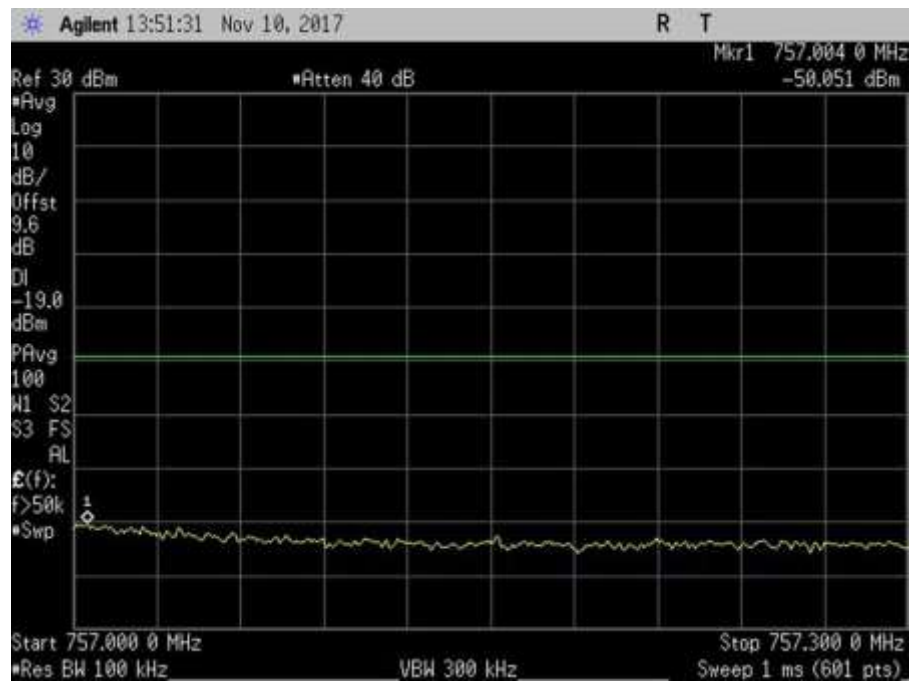
LTE, DL



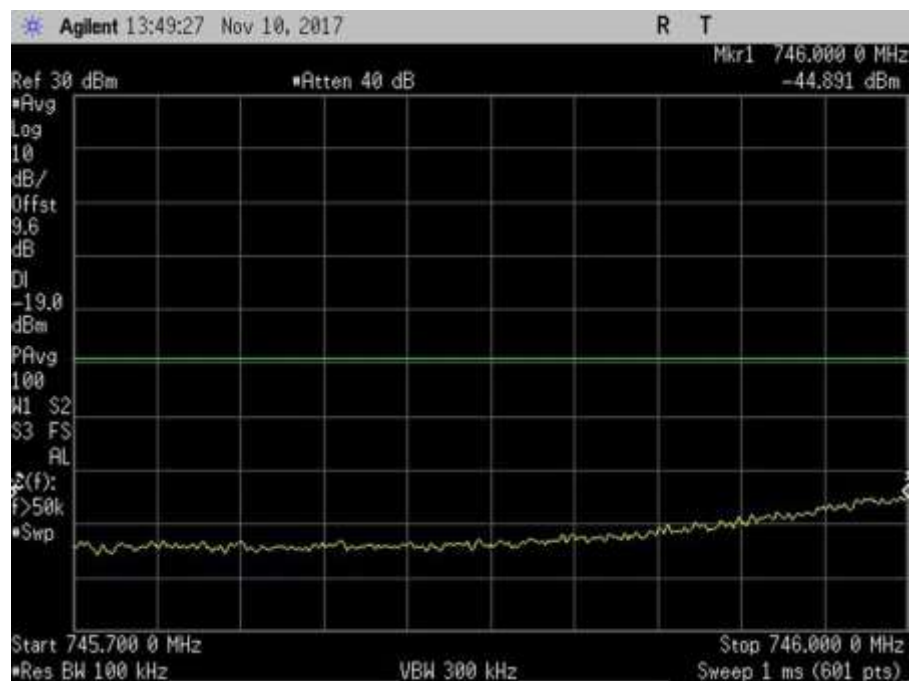
7.5_OBE_DL_728-746MHz_H_PreAGC_LTE



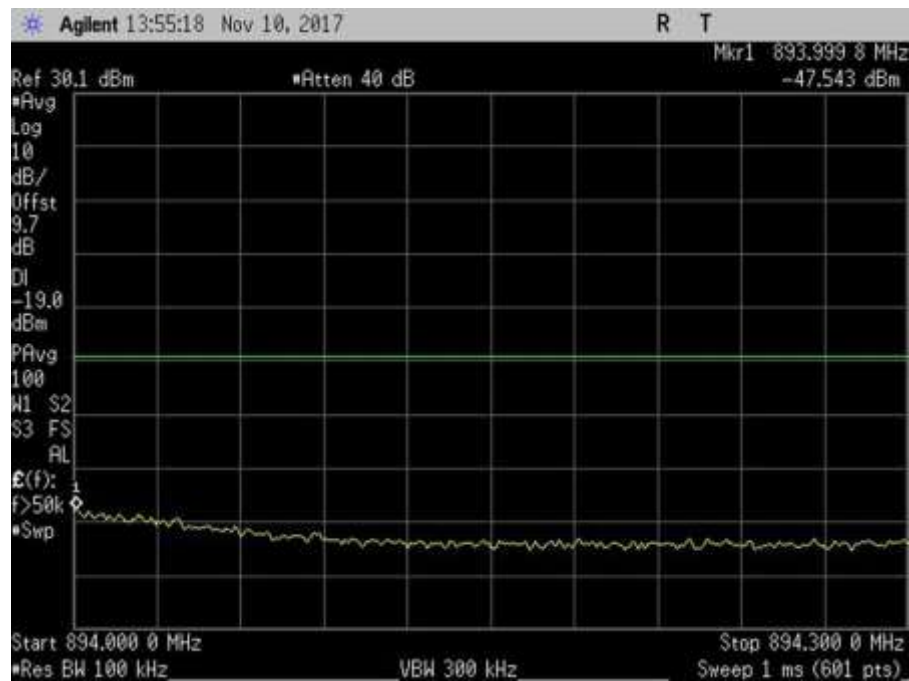
7.5_OBE_DL_728-746MHz_L_PreAGC_LTE



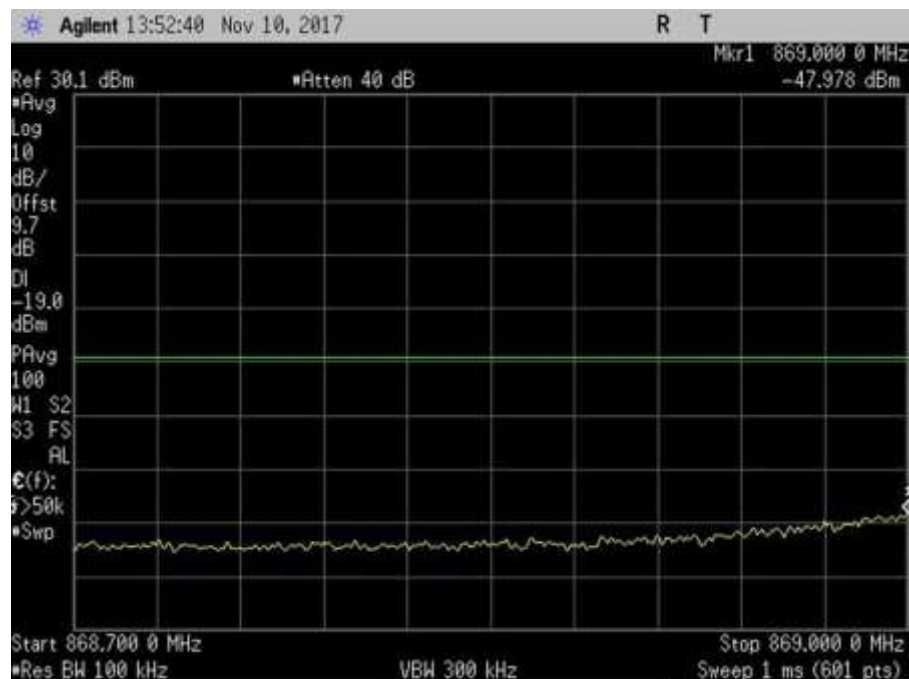
7.5_OBE_DL_746-757MHz_H_PreAGC_LTE



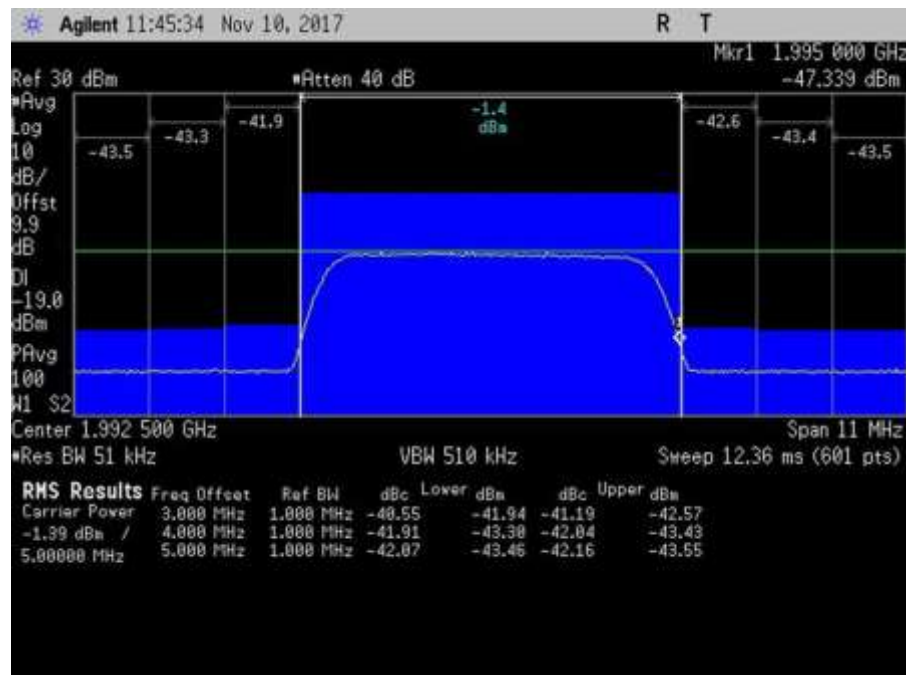
7.5_OBE_DL_746-757MHz_L_PreAGC_LTE



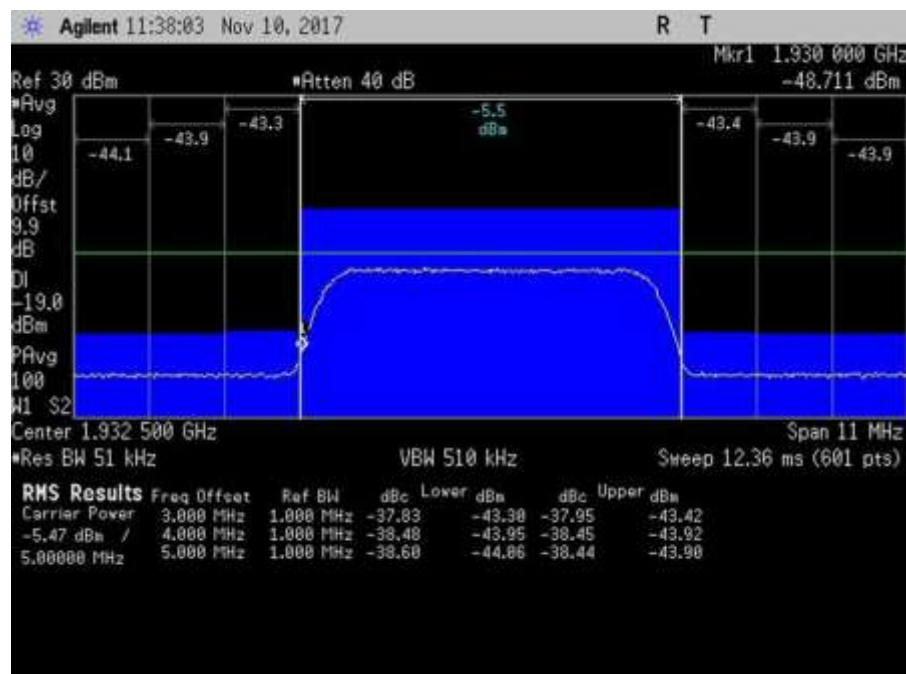
7.5_OBE_DL_896-894MHz_H_PreAGC_LTE



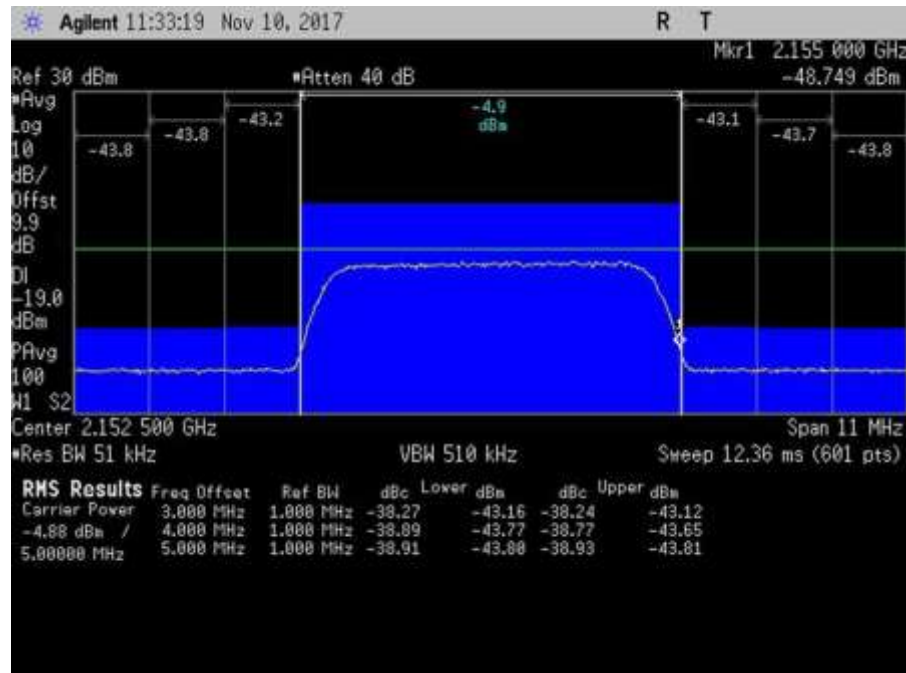
7.5_OBE_DL_896-894MHz_L_PreAGC_LTE



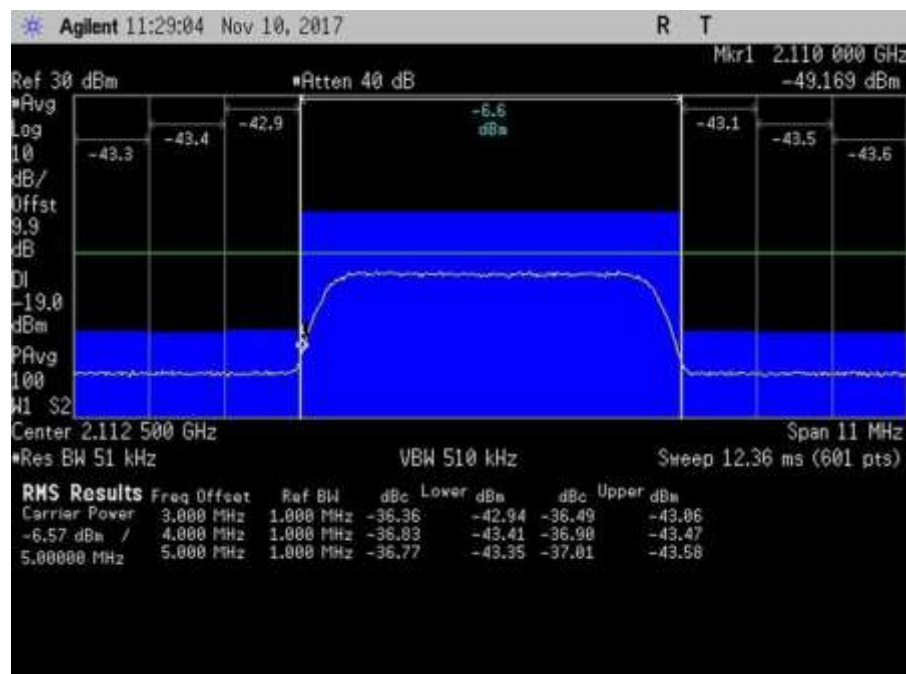
7.5_OBE_DL_1930-1995MHz_H_PreAGC_LTE



7.5_OBE_DL_1930-1995MHz_L_PreAGC_LTE

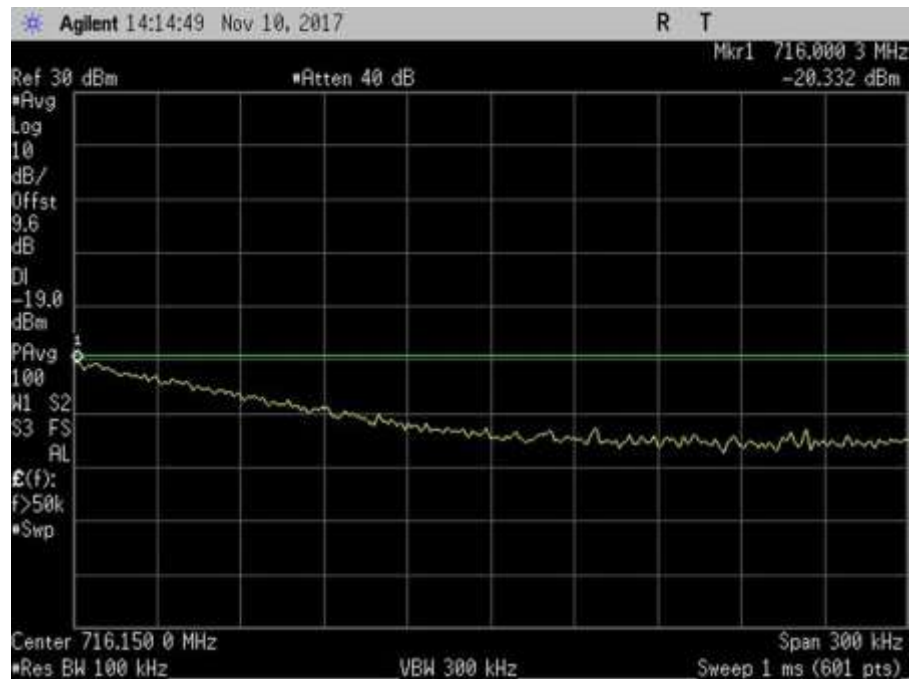


7.5_OBE_DL_2110-2155MHz_H_PreAGC_LTE



7.5_OBE_DL_2110-2155MHz_L_PreAGC_LTE

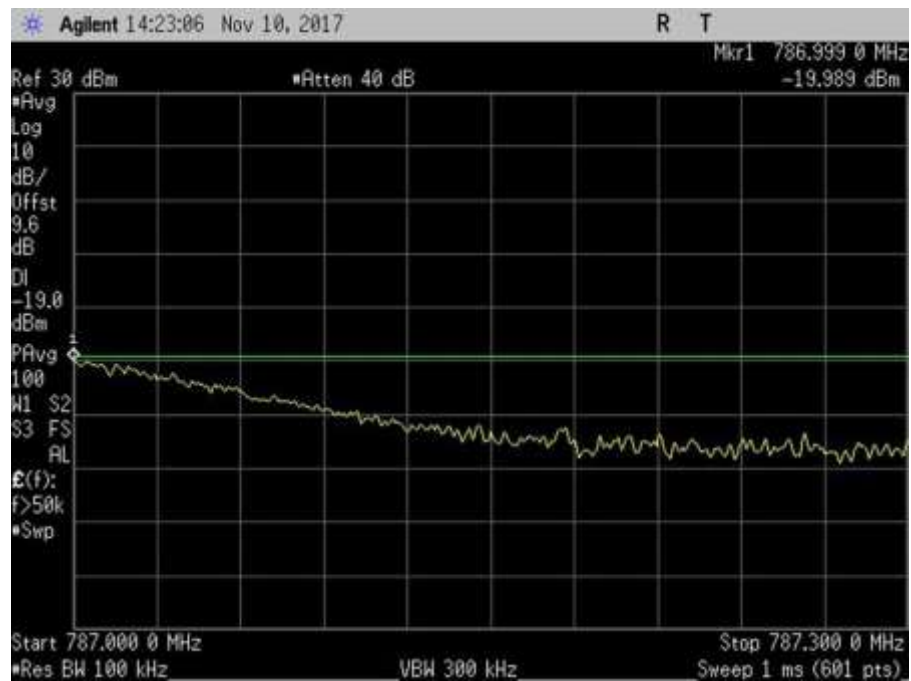
LTE, UL



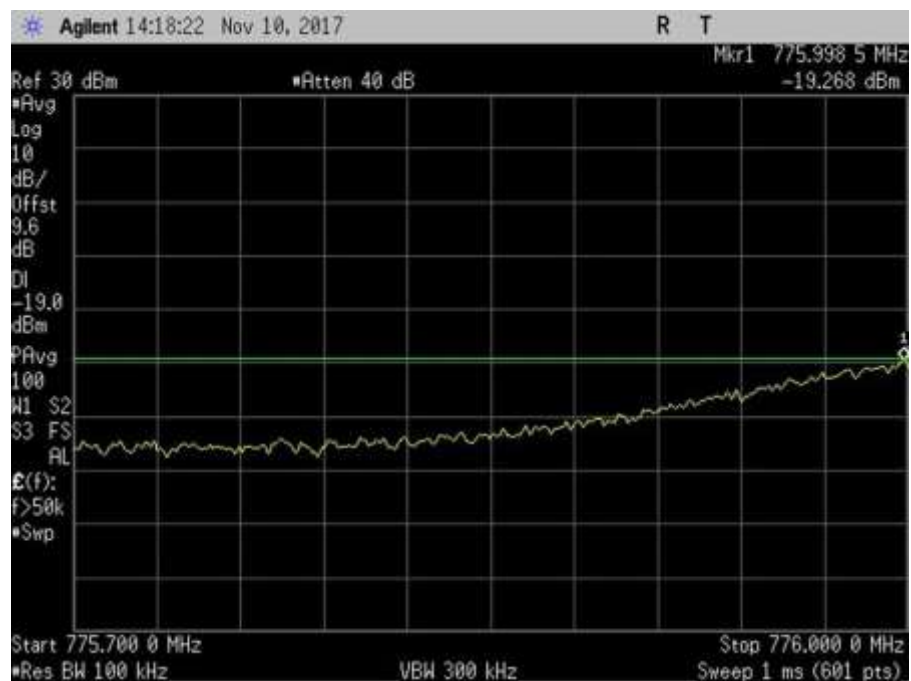
7.5_OBE_UL_698-716MHz_H_PreAGC_LTE



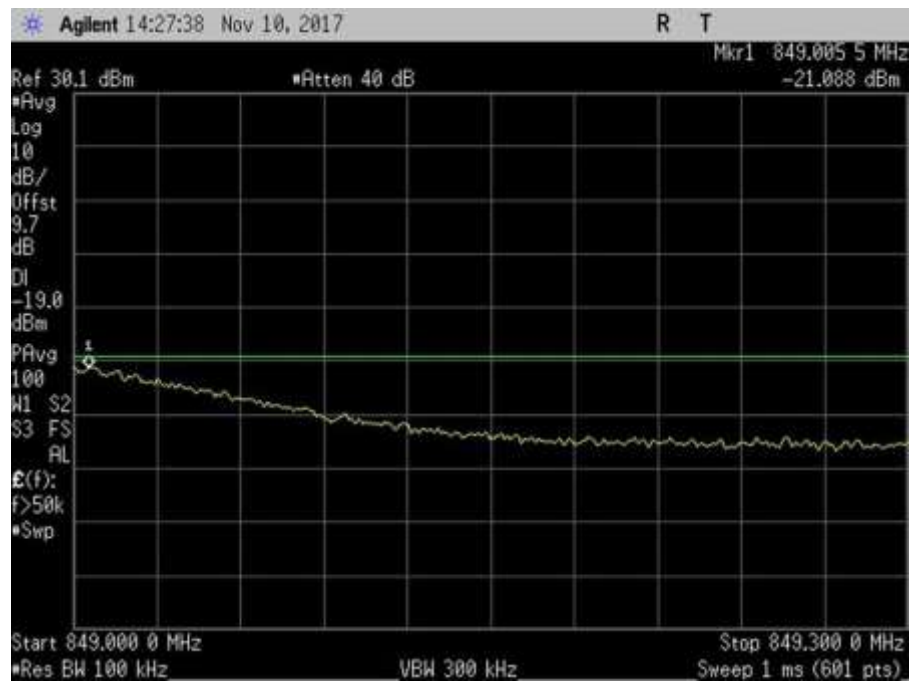
7.5_OBE_UL_698-716MHz_L_PreAGC_LTE



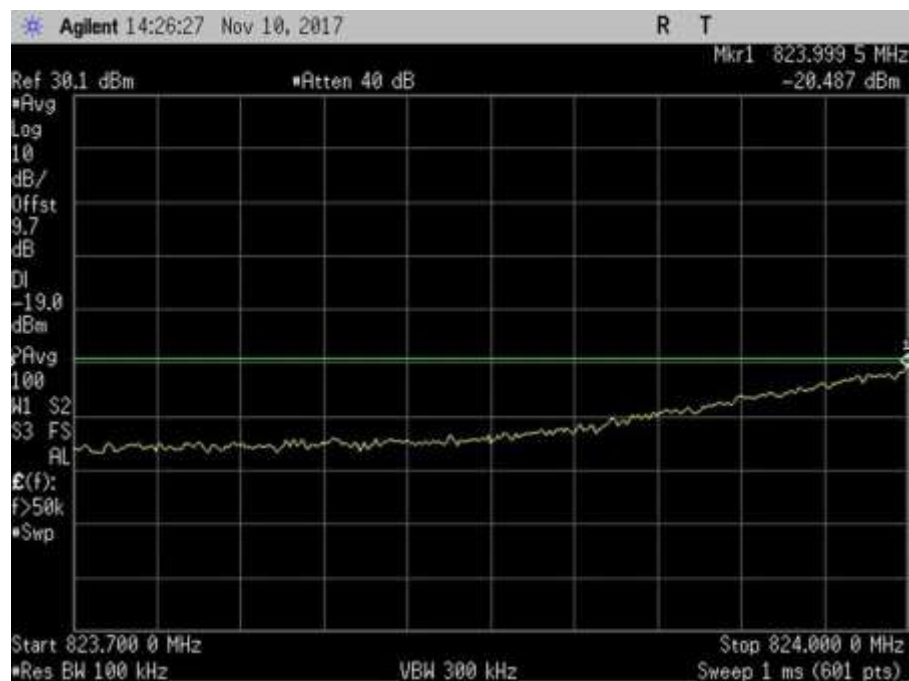
7.5_OBE_UL_776-787MHz_H_PreAGC_LTE



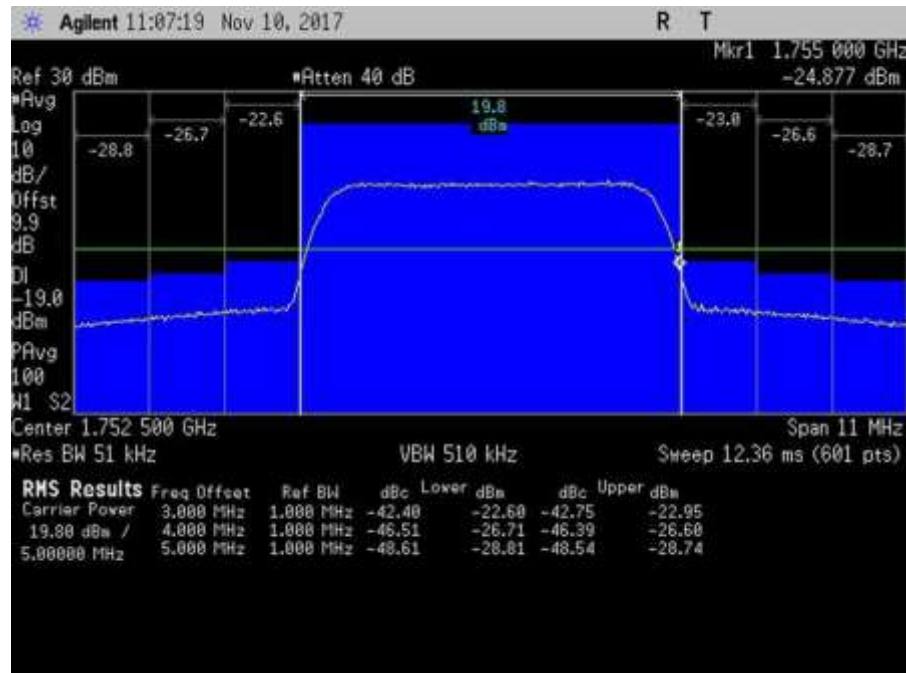
7.5_OBE_UL_776-787MHz_L_PreAGC_LTE



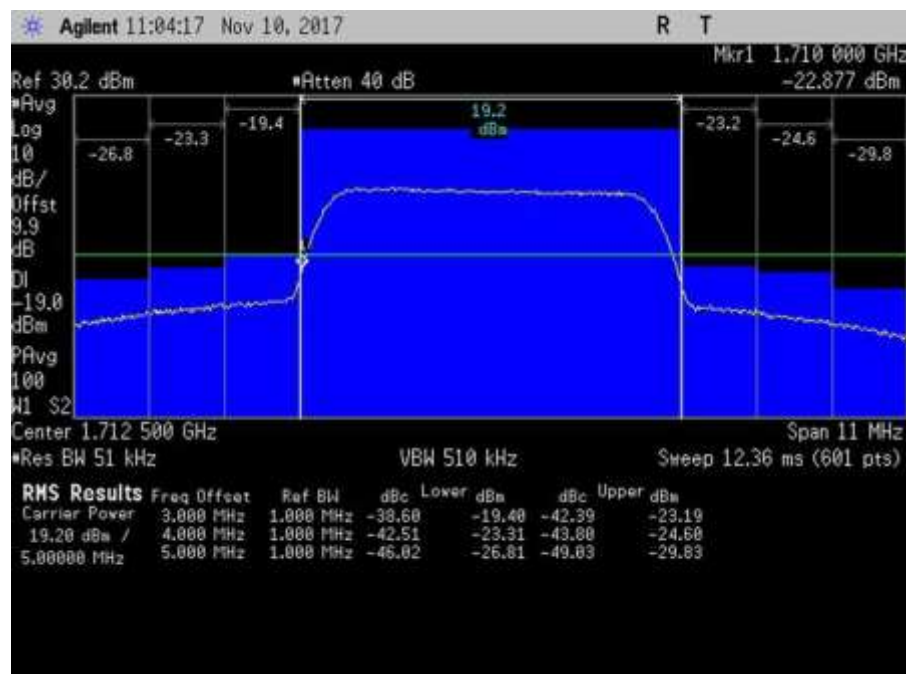
7.5_OBE_UL_824-849MHz_H_PreAGC_LTE



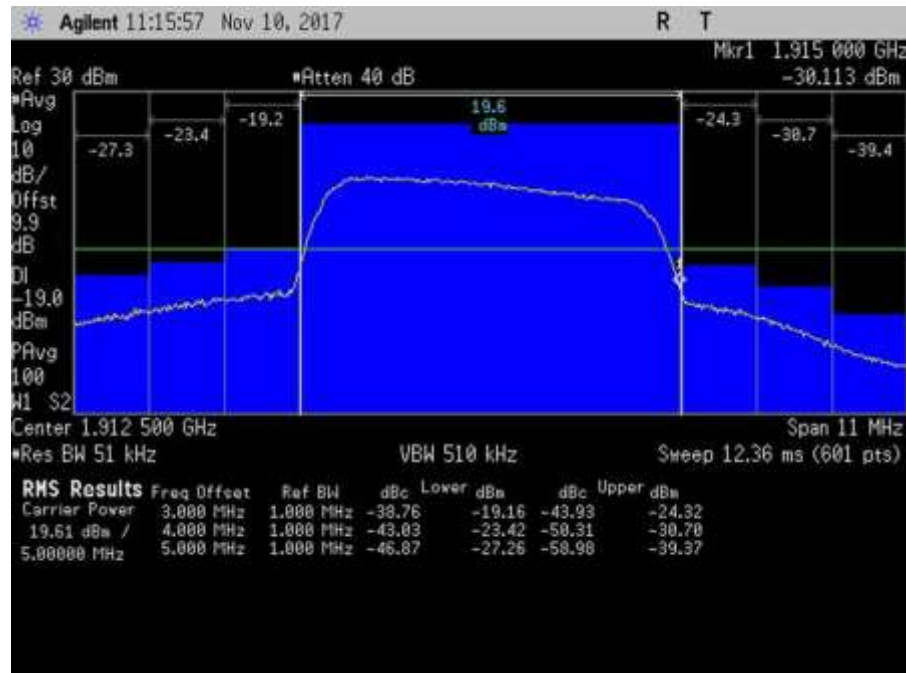
7.5_OBE_UL_824-849MHz_L_PreAGC_LTE



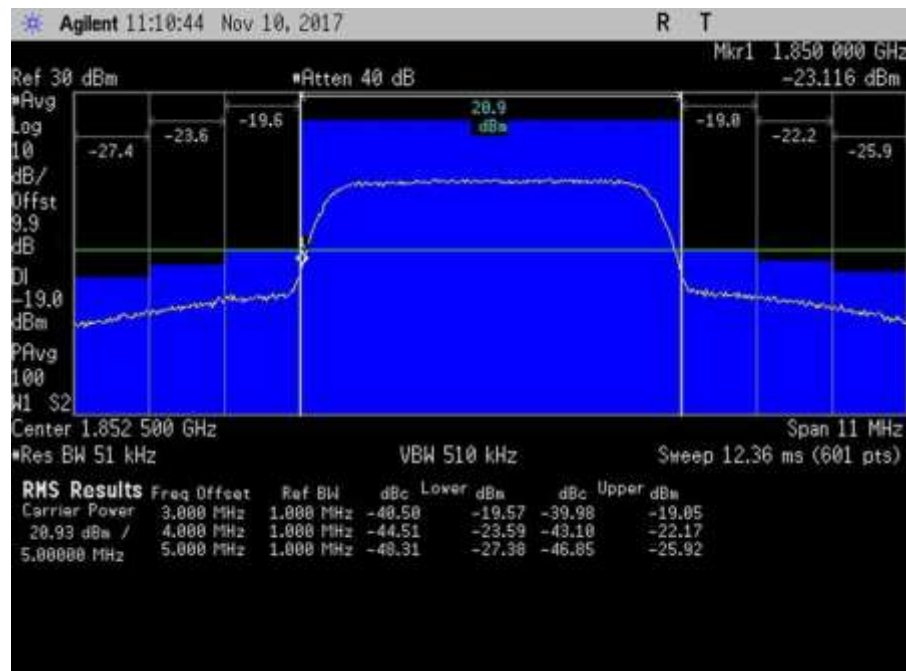
7.5_OBE_UL_1710-1755MHz_H_PreAGC_LTE



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

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

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

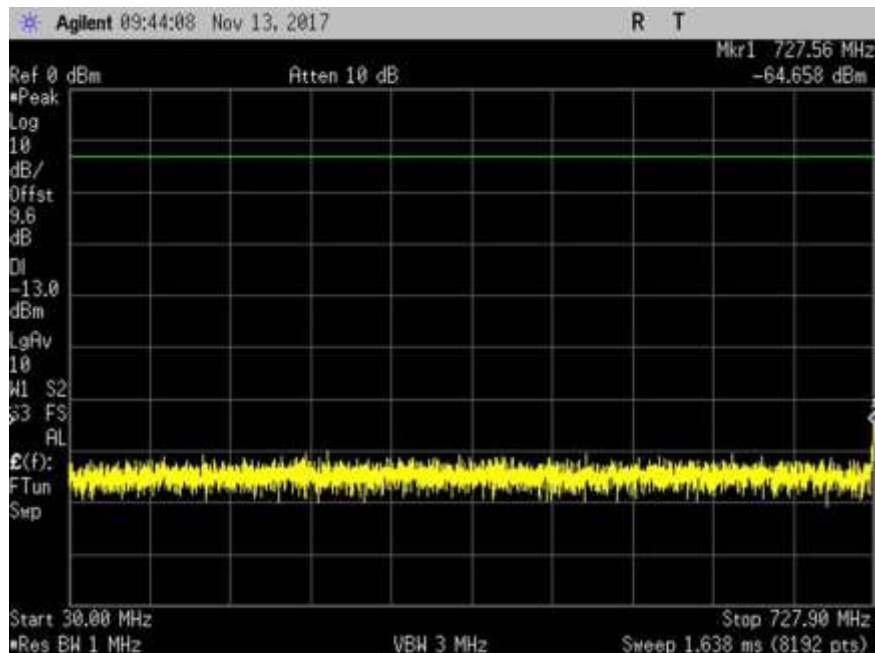
$$\begin{aligned} V_{\text{dBuV}} &= 20 \log \frac{V}{1 \times 10^{-6}} \\ &= 20 (\log V - \log 1 \times 10^{-6}) \\ &= 20 \log V - 20 \log 1 \times 10^{-6} \\ &= 20 \log V - 20 (-6) \\ &= 20 \log V + 120 \end{aligned}$$

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

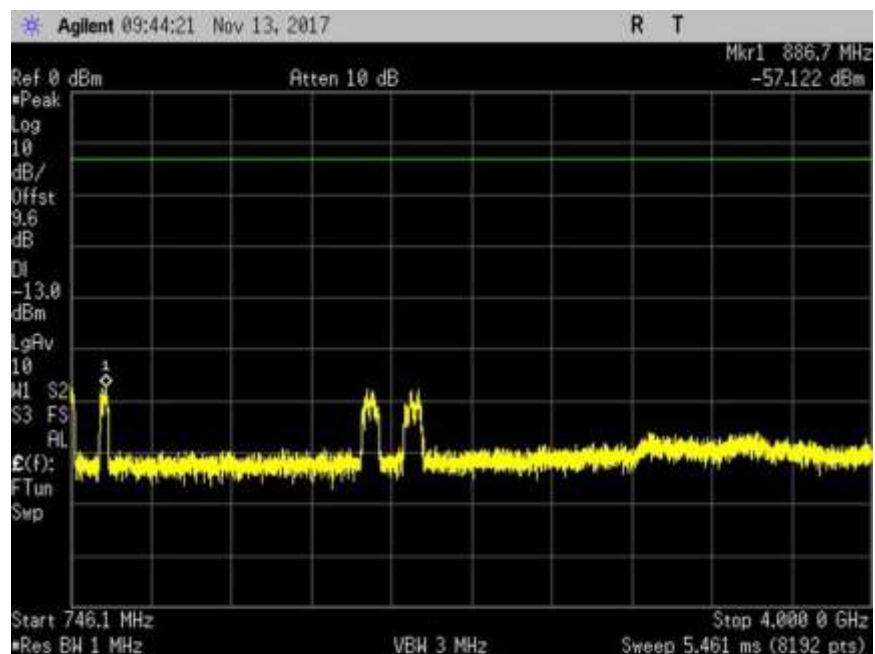
$$\begin{aligned} \text{Limit line} &= V_{\text{dBuV}} - \text{Attenuation} \\ &= 20 \log V + 120 - (43 + 20 \log V - 10 \log R) \\ &= 20 \log V + 120 - 43 - 20 \log V + 10 \log R \\ &= 20 \log V + 120 - 43 - 20 \log V + 10 \log R \\ &= 120 - 43 + 10 \log 50 \quad \text{Note : } R = 50 \Omega \\ &= 120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

Plots

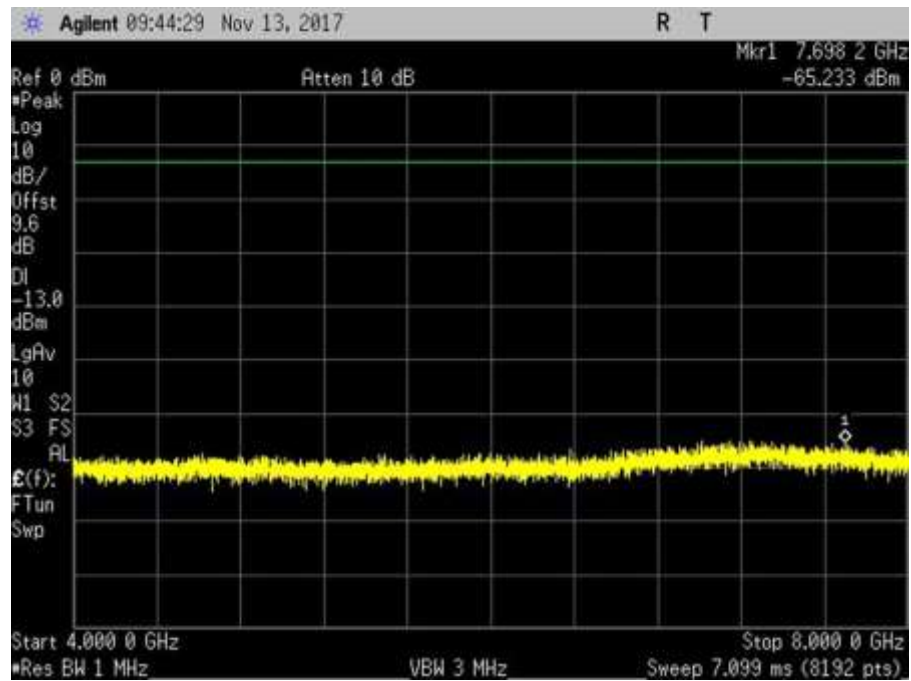
DL



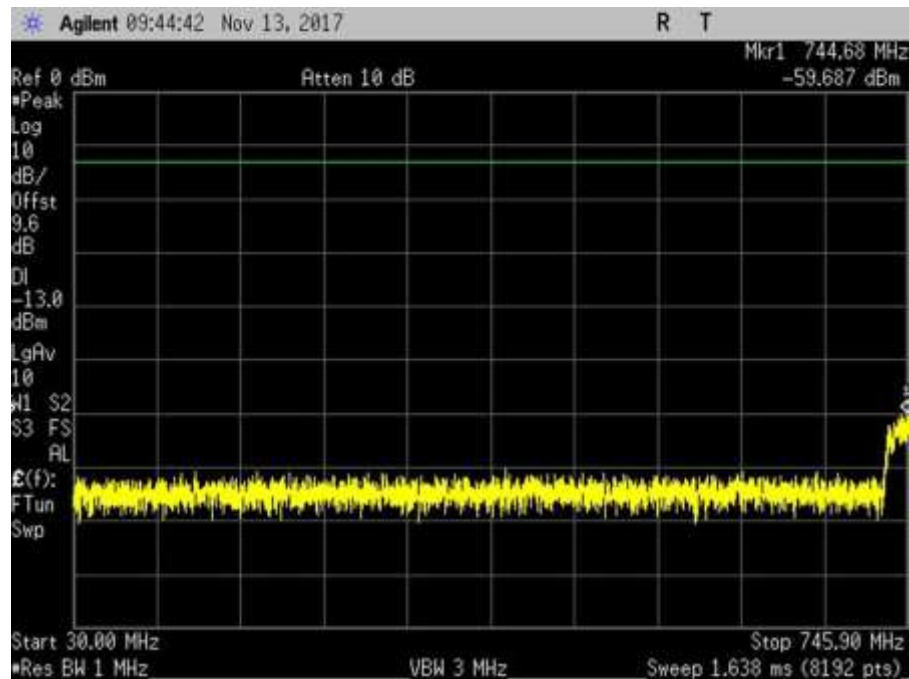
7.6_CSE_DL_728-746MHz_L



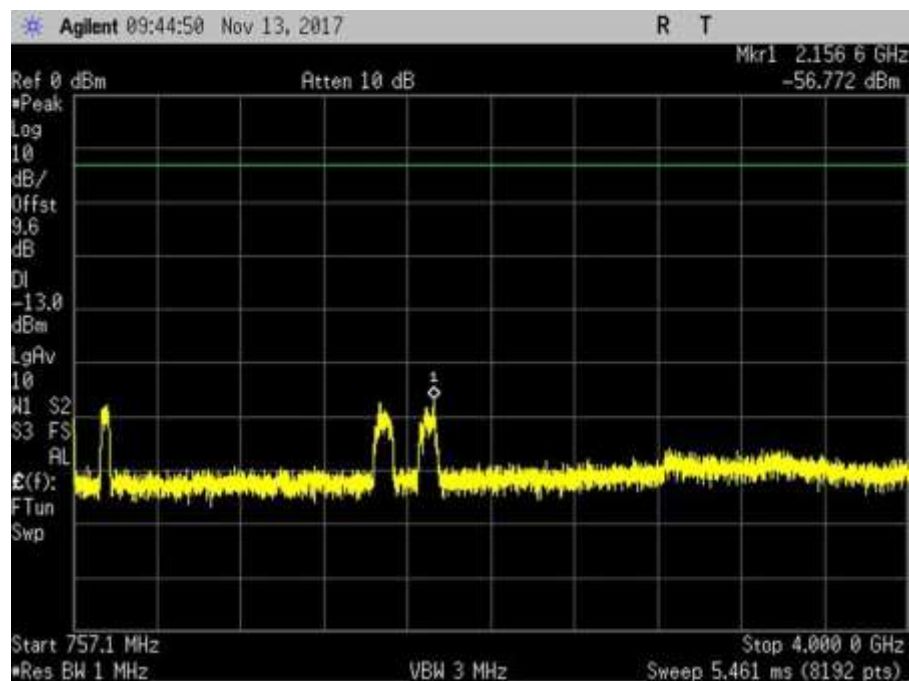
7.6_CSE_DL_728-746MHz_R1



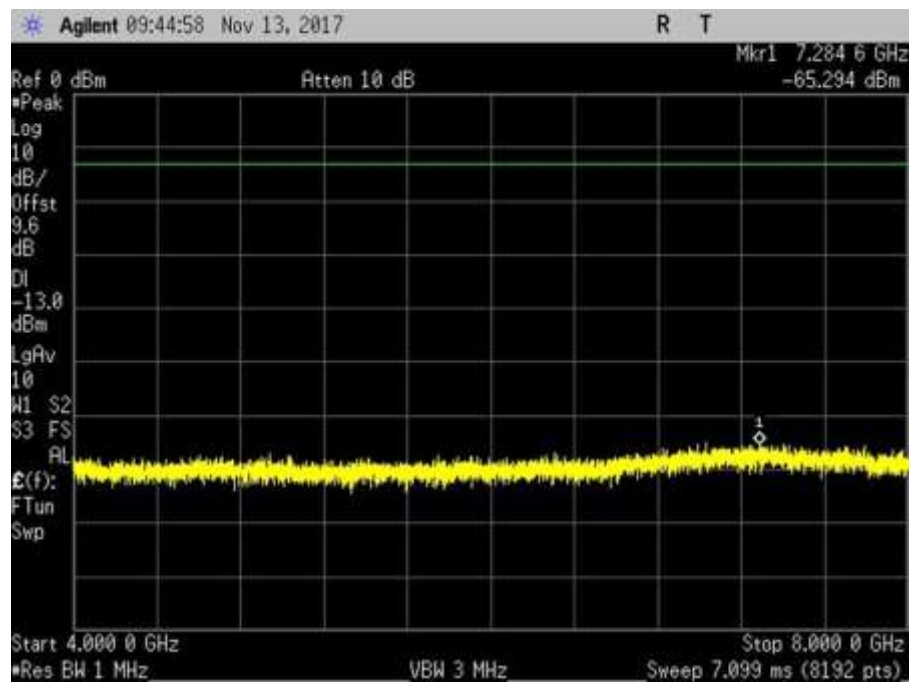
7.6_CSE_DL_728-746MHz_R2



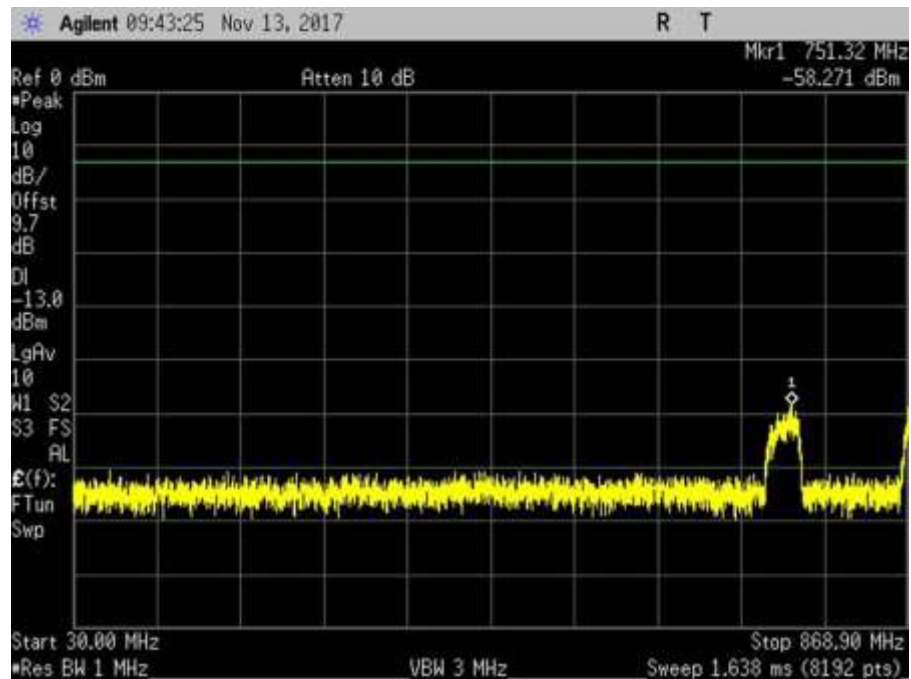
7.6_CSE_DL_746-757_MHz_L



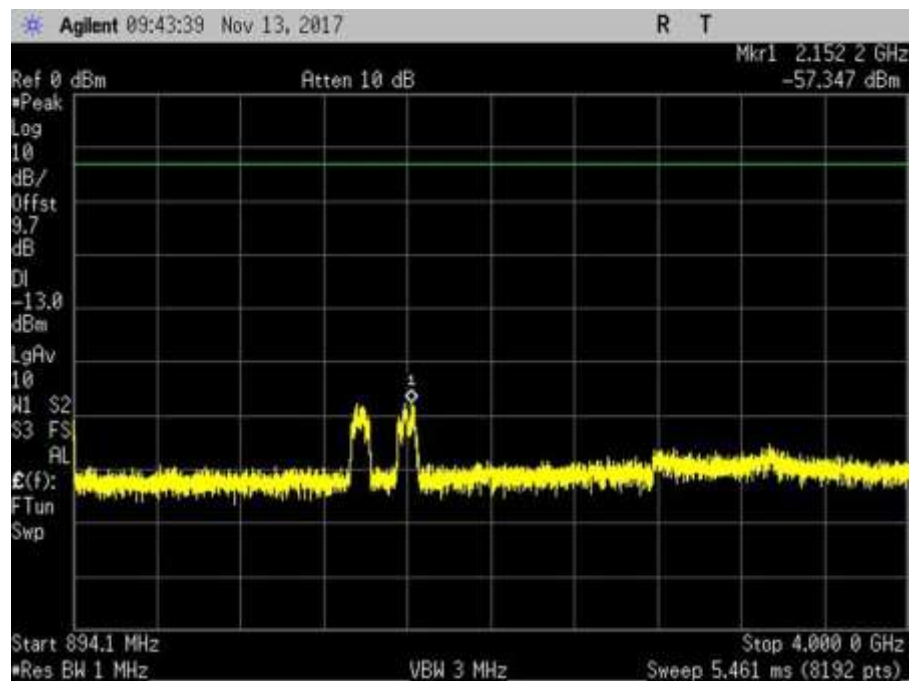
7.6_CSE_DL_746-757_MHz_R1



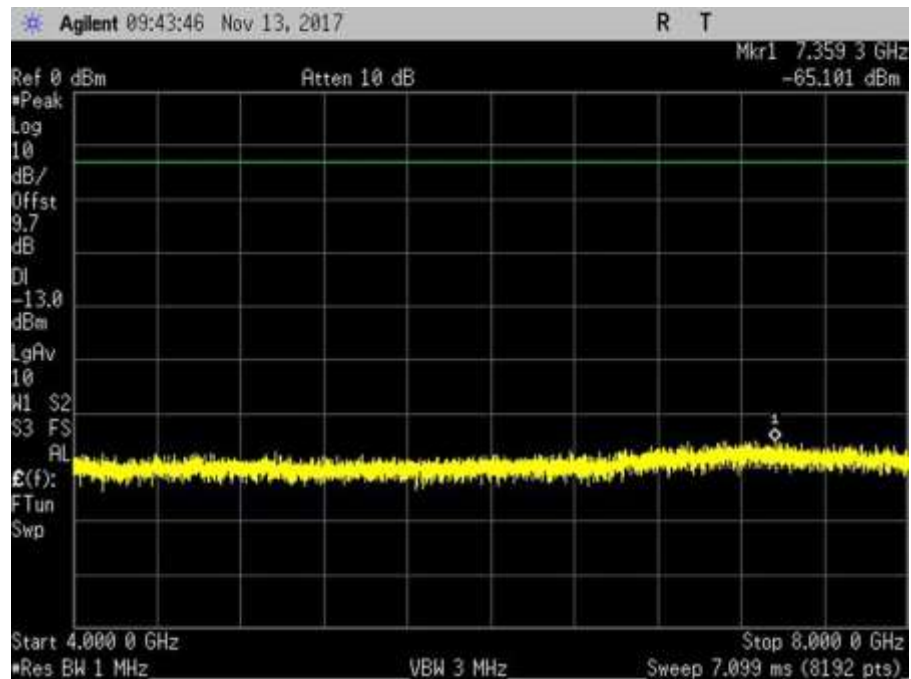
7.6_CSE_DL_746-757_MHz_R2



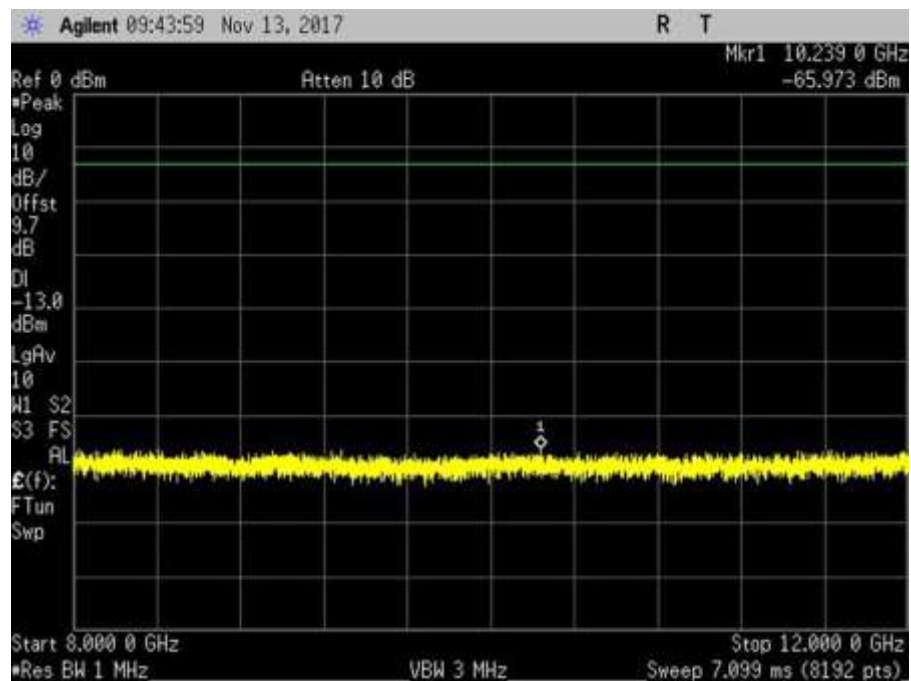
7.6_CSE_DL_869-894_MHz_L



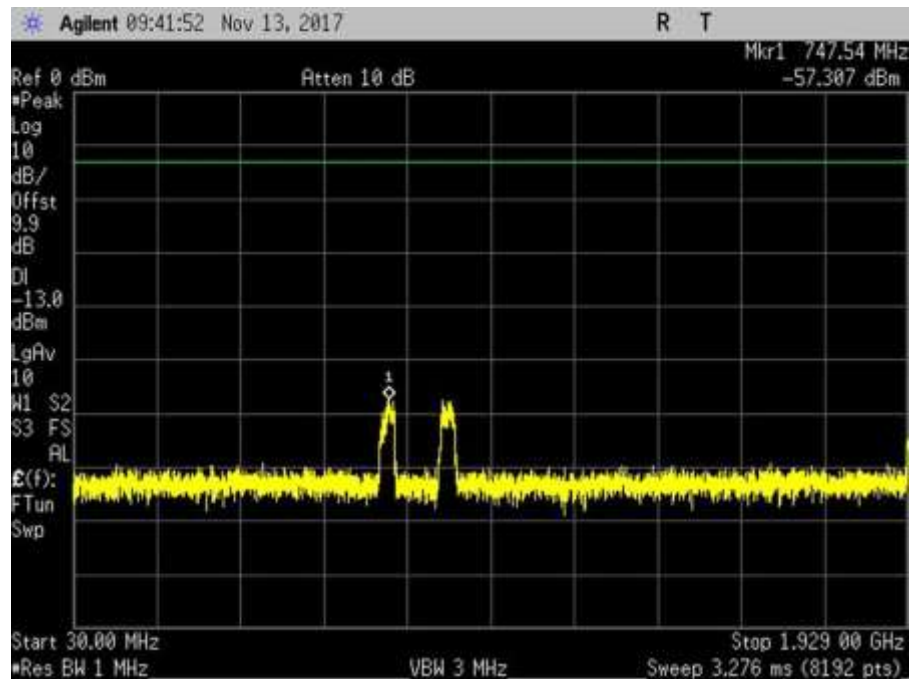
7.6_CSE_DL_869-894_MHz_R1



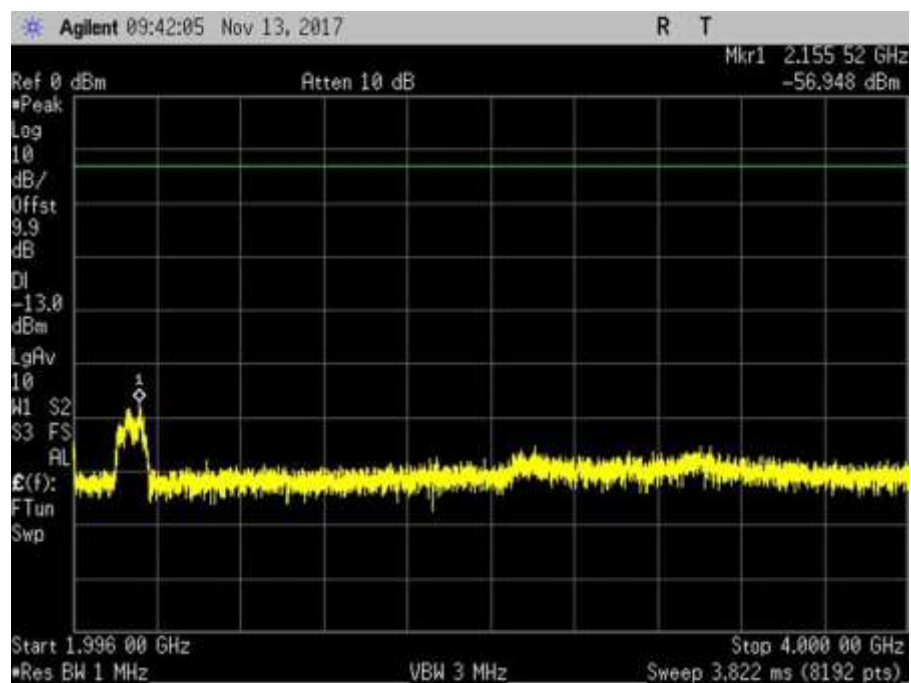
7.6_CSE_DL_869-894_MHz_R2



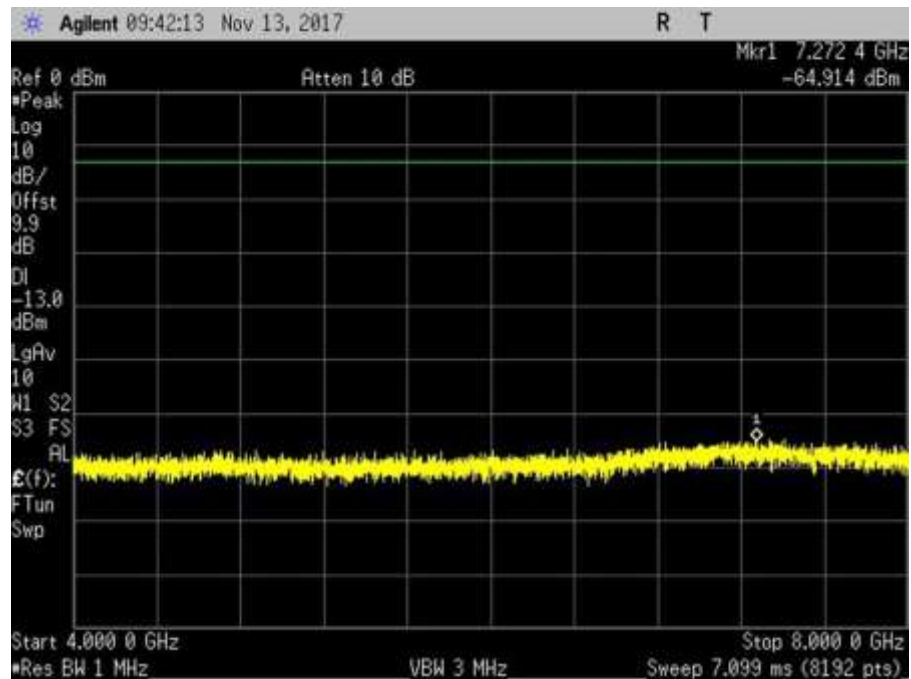
7.6_CSE_DL_869-894MHz_R3



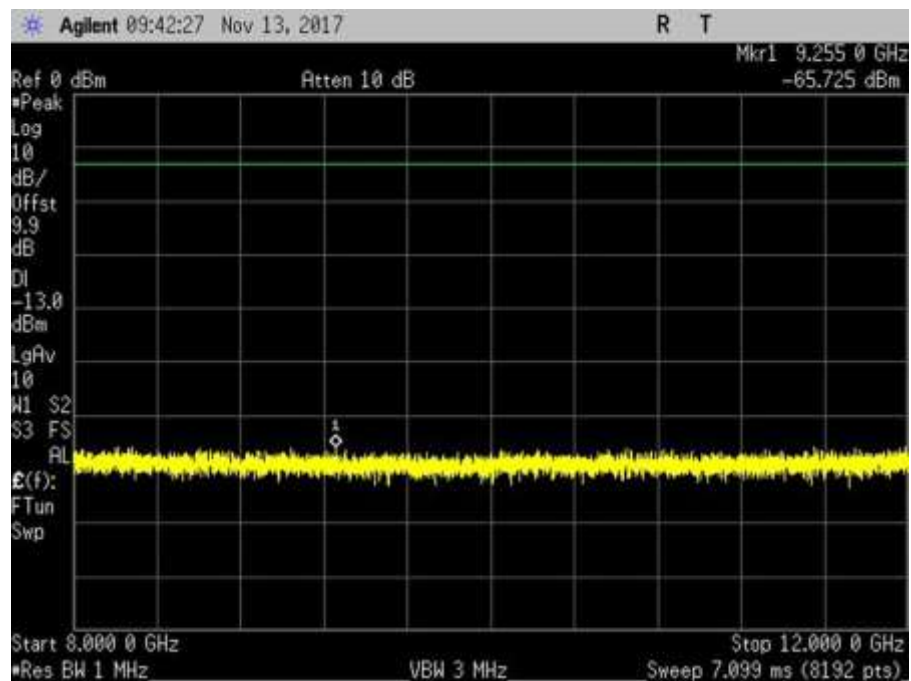
7.6_CSE_DL_1930-1995MHz_L



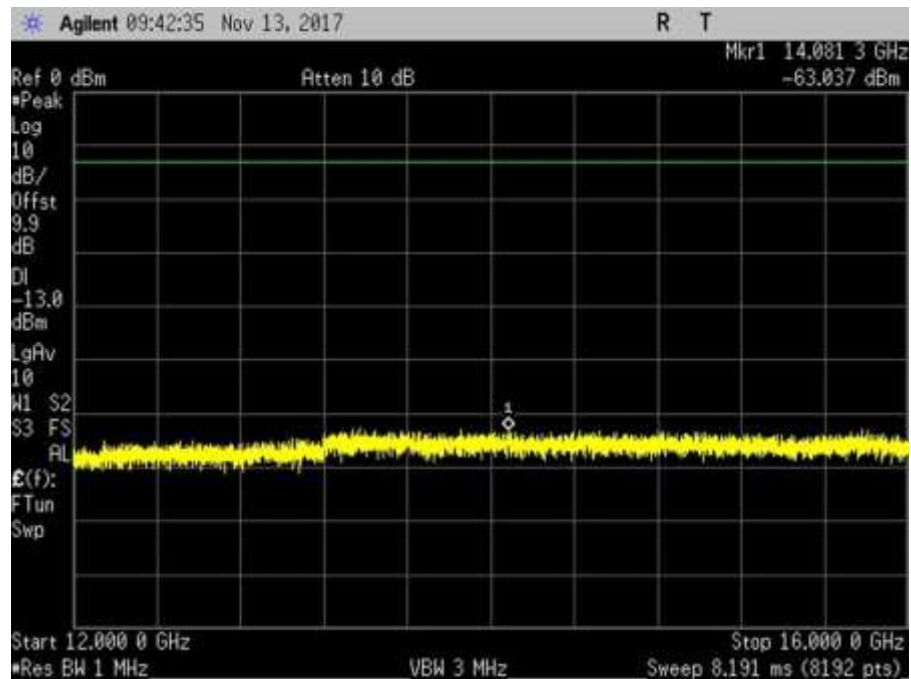
7.6_CSE_DL_1930-1995MHz_R1



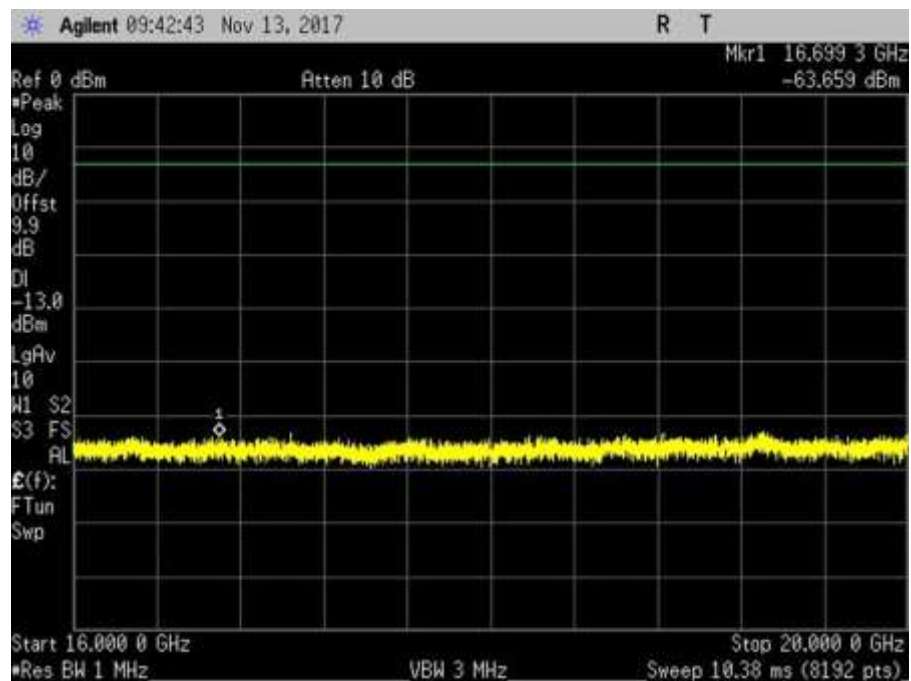
7.6_CSE_DL_1930-1995MHz_R2



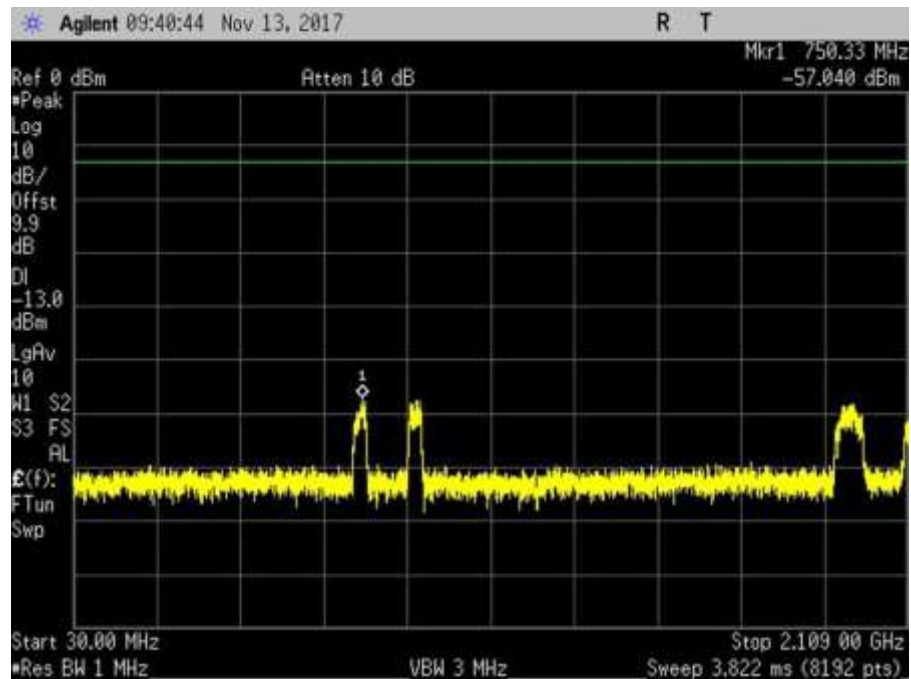
7.6_CSE_DL_1930-1995MHz_R3



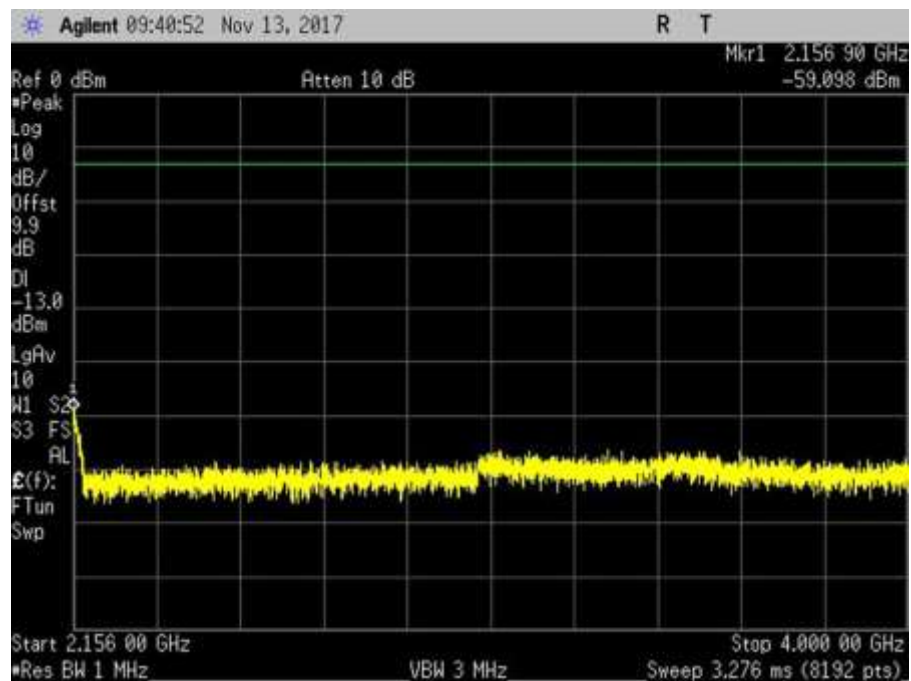
7.6_CSE_DL_1930-1995MHz_R4



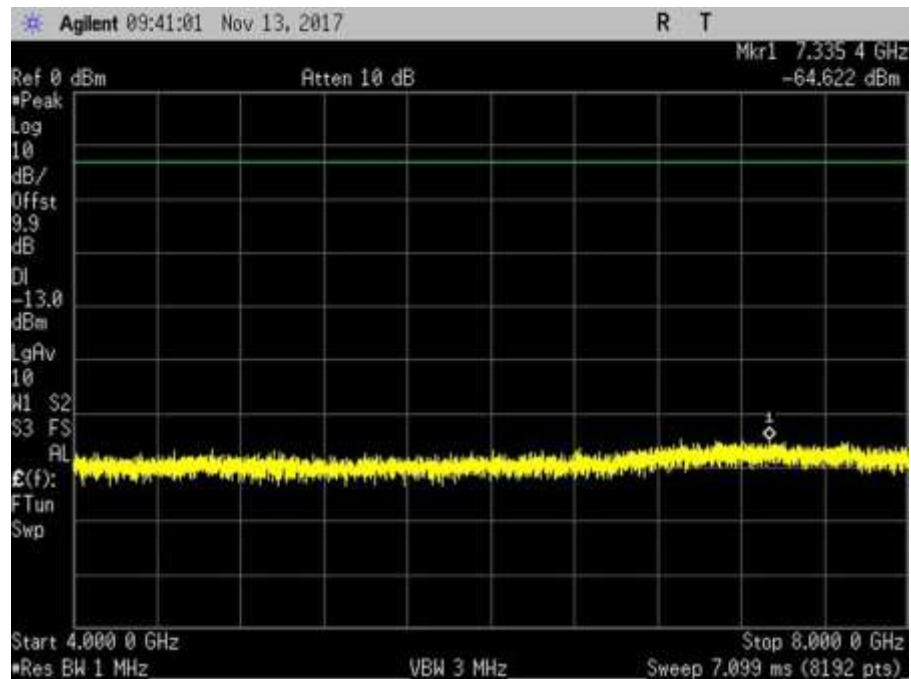
7.6_CSE_DL_1930-1995MHz_R5



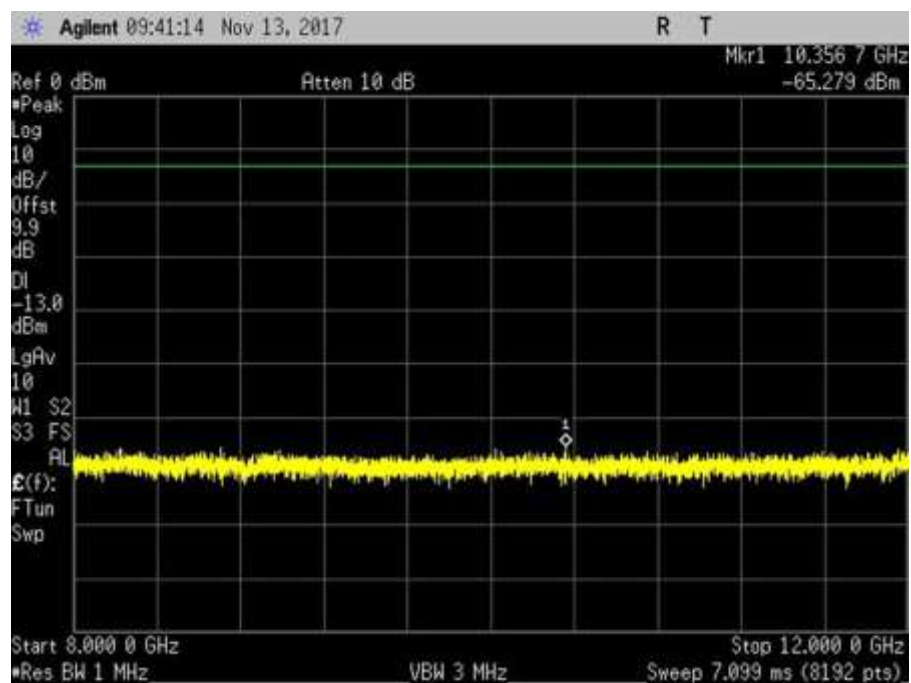
7.6_CSE_DL_2110-2155MHz_L



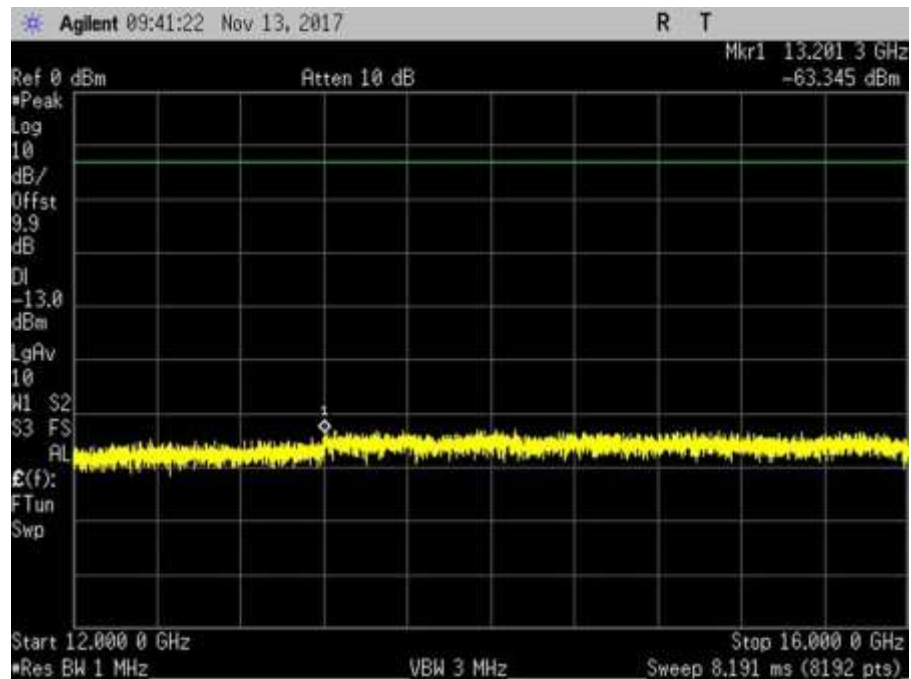
7.6_CSE_DL_2110-2155MHz_R1



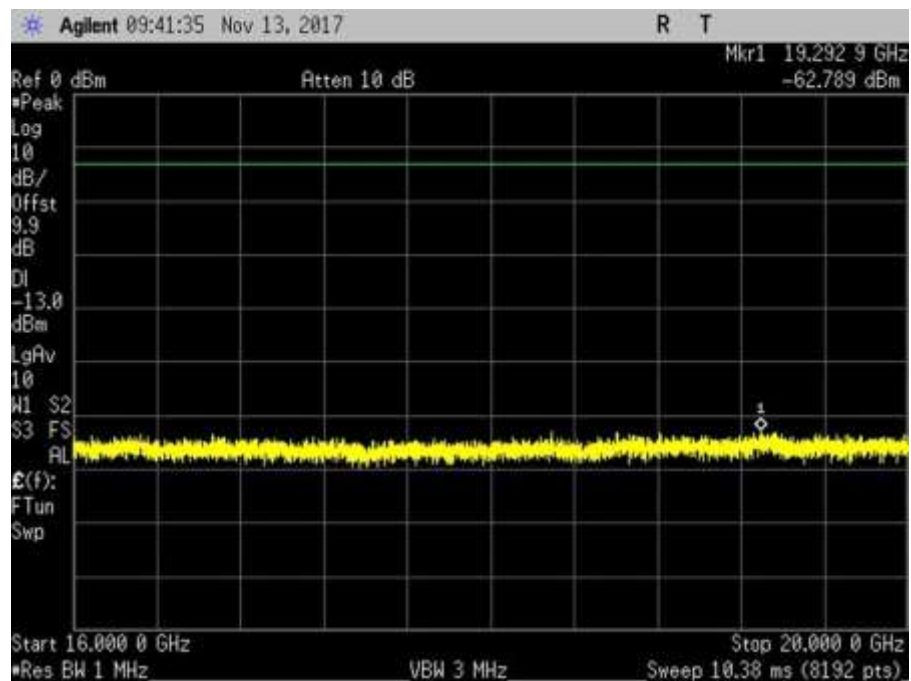
7.6_CSE_DL_2110-2155MHz_R2



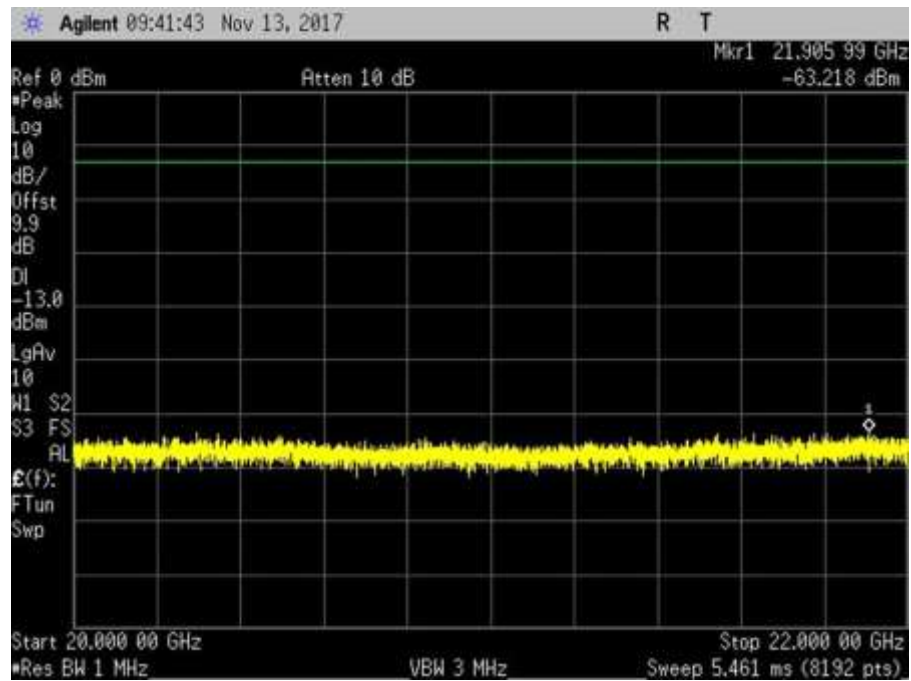
7.6_CSE_DL_2110-2155MHz_R3



7.6_CSE_DL_2110-2155MHz_R4

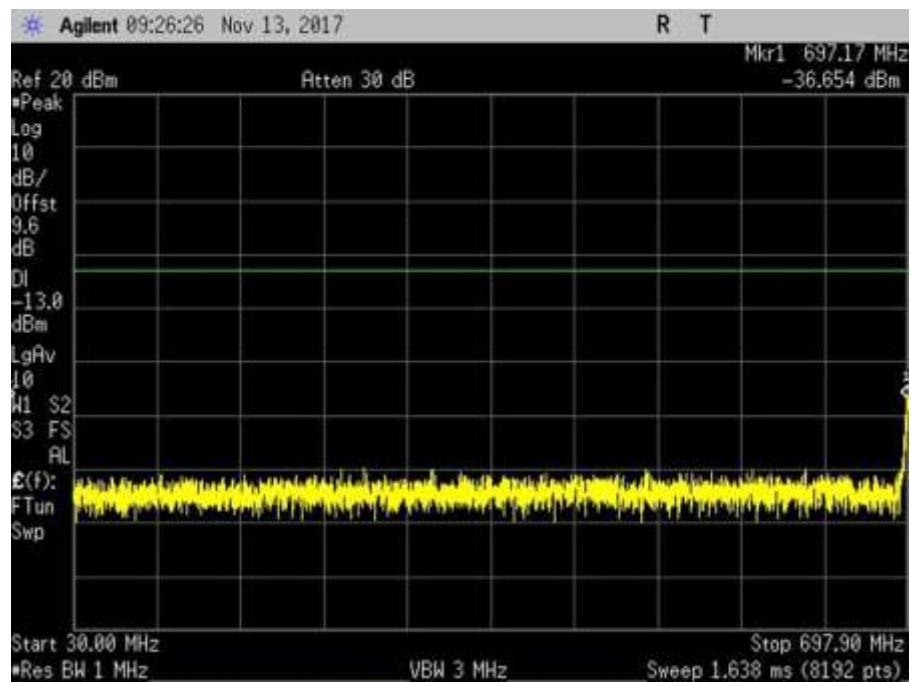


7.6_CSE_DL_2110-2155MHz_R5

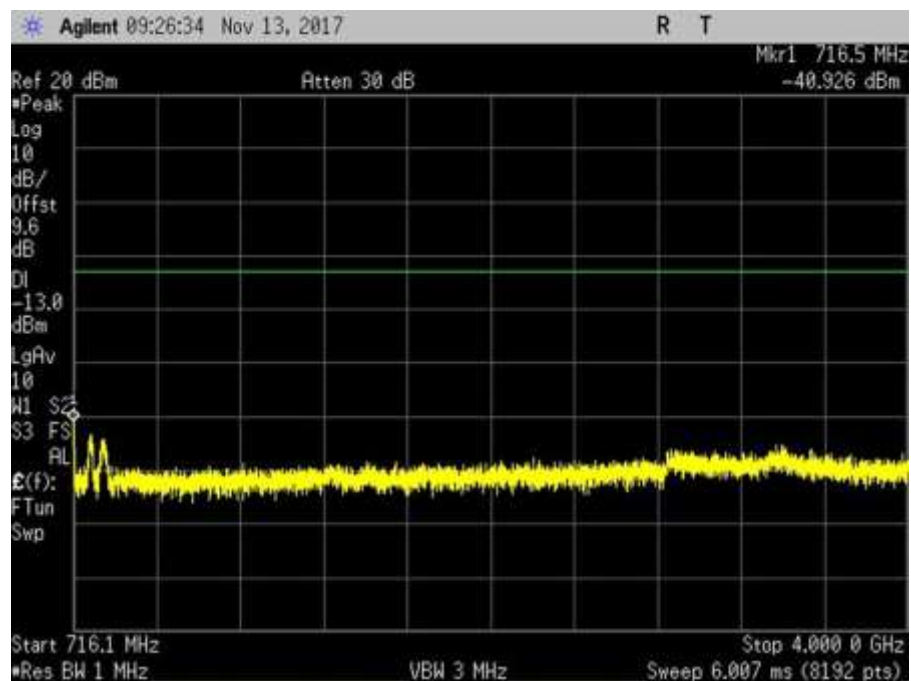


7.6_CSE_DL_2110-2155MHz_R6

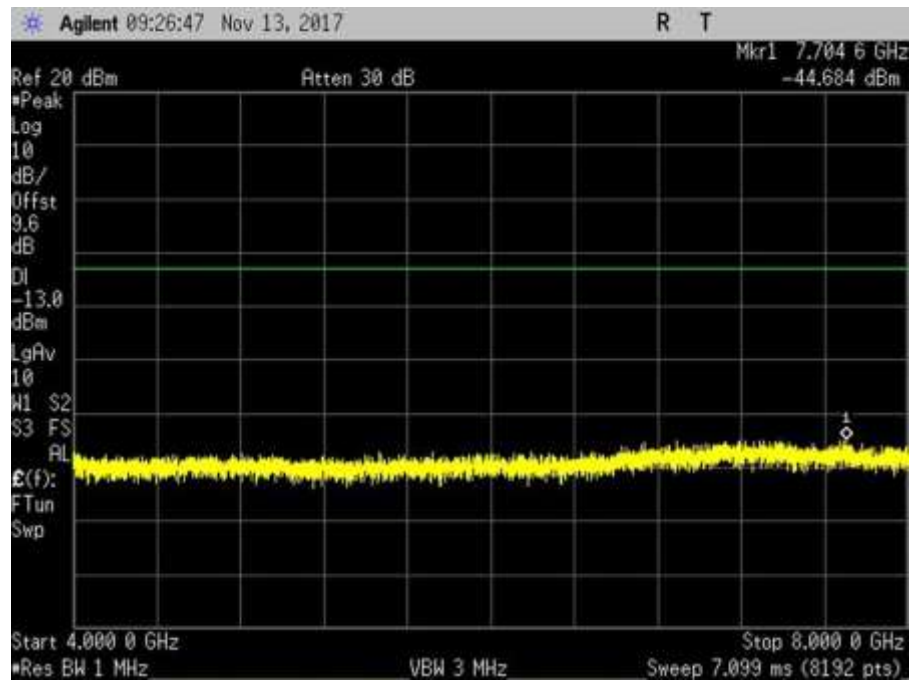
UL



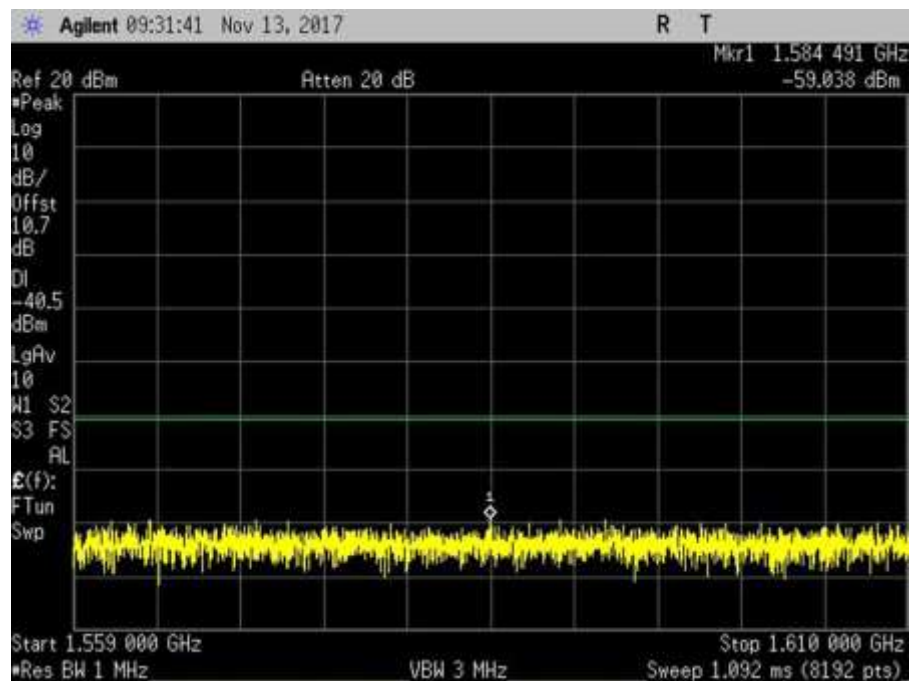
7.6_CSE_UL_698-716MHz_L



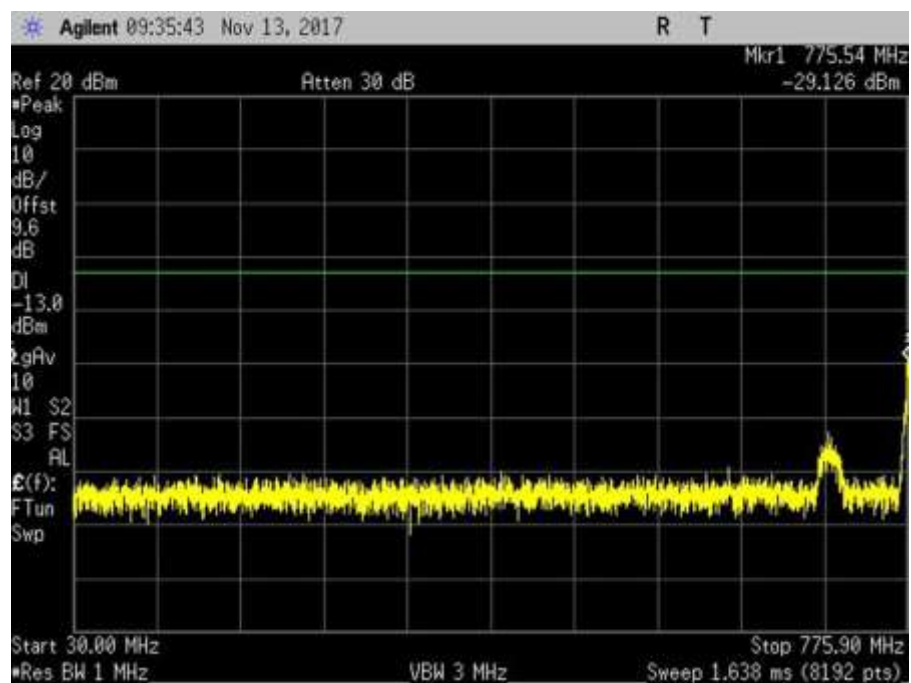
7.6_CSE_UL_698-716MHz_R1



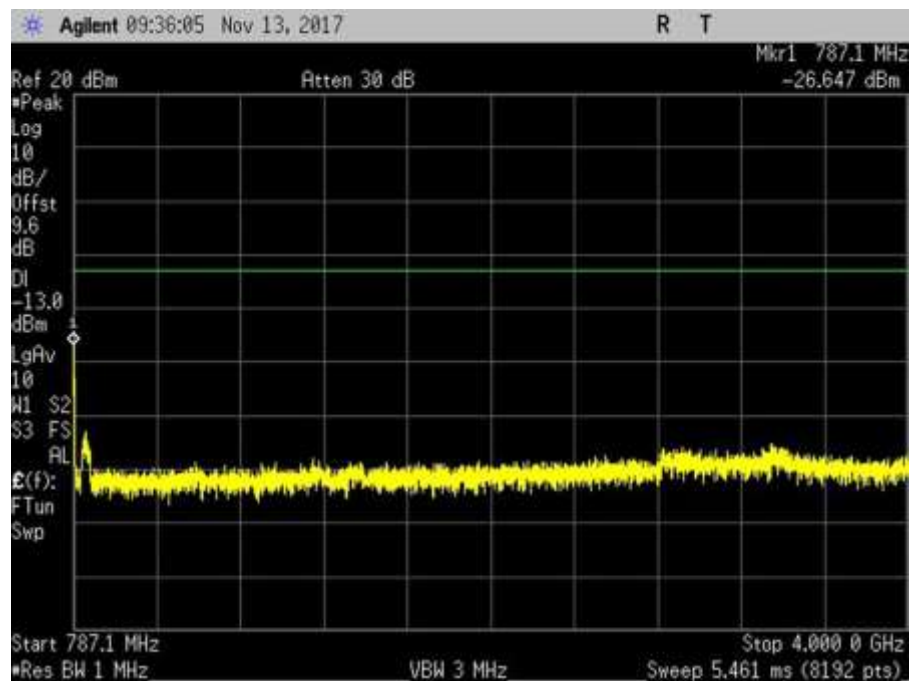
7.6_CSE_UL_698-716MHz_R2



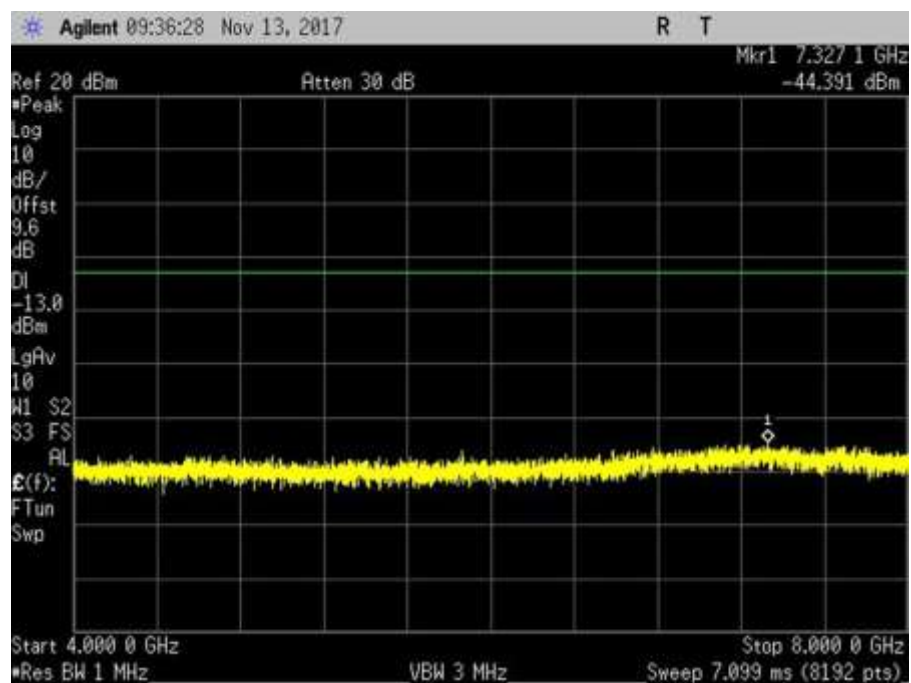
7.6_CSE_UL_776-787MHz_GPS



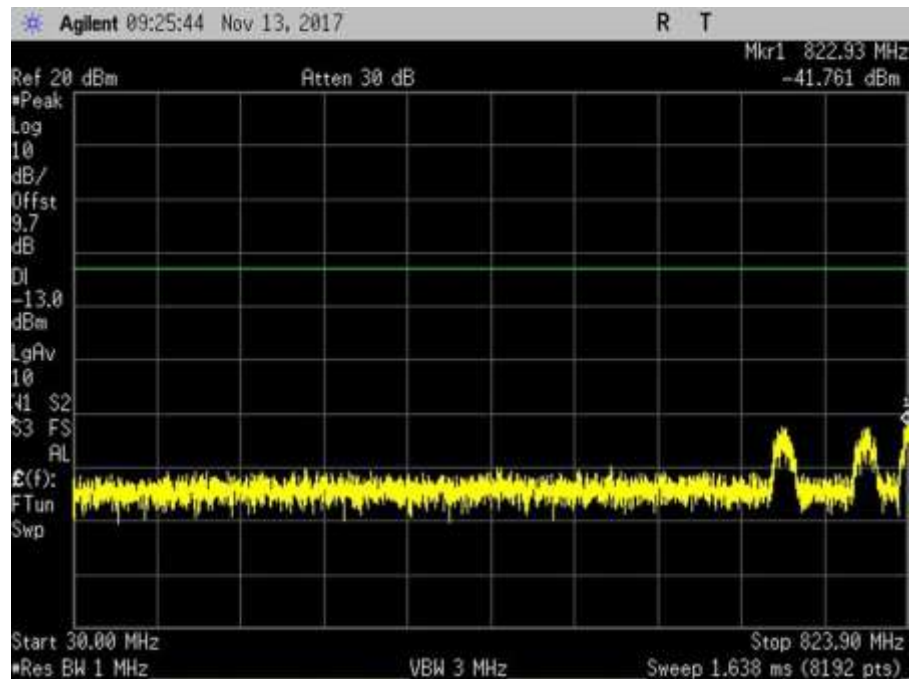
7.6_CSE_UL_776-787MHz_L



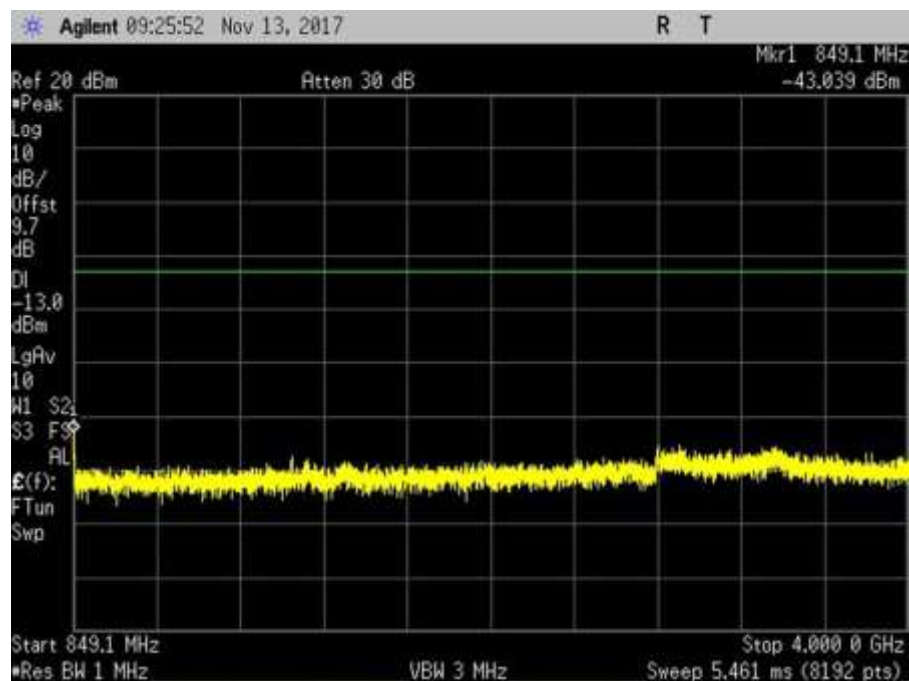
7.6_CSE_UL_776-787MHz_R1



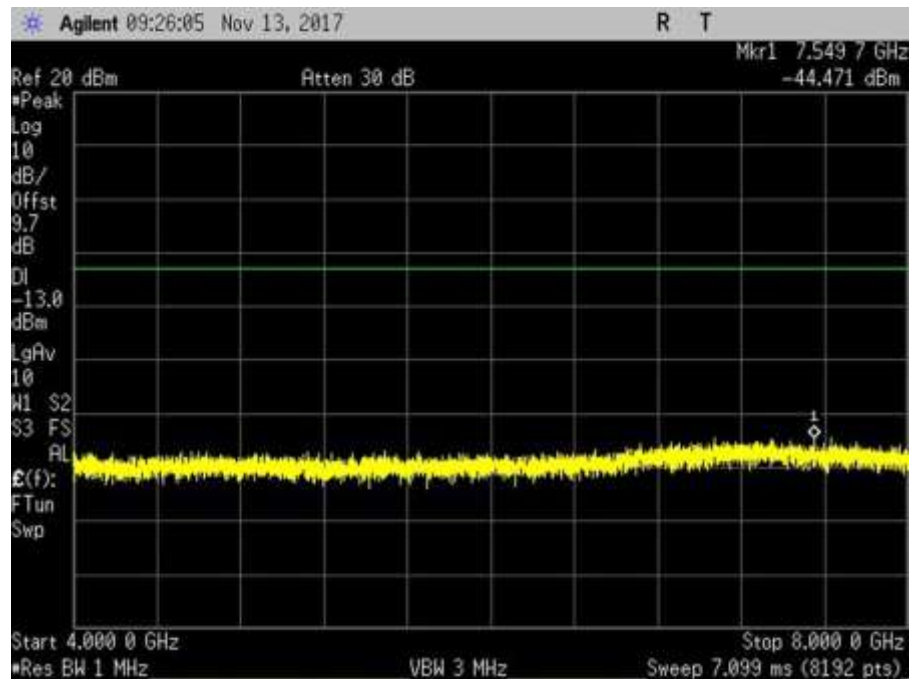
7.6_CSE_UL_776-787MHz_R2



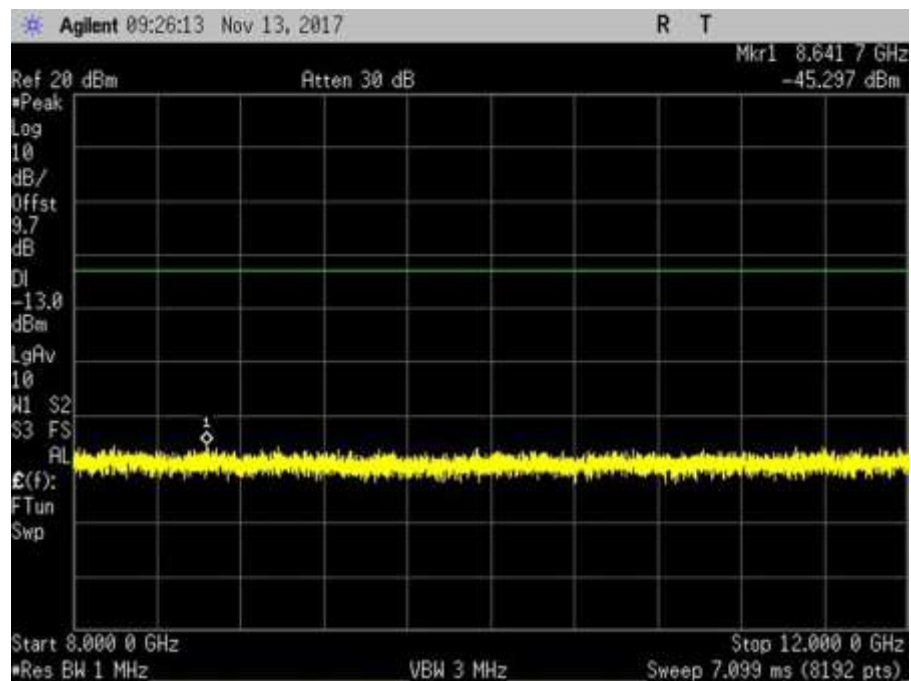
7.6_CSE_UL_824-849MHz_L



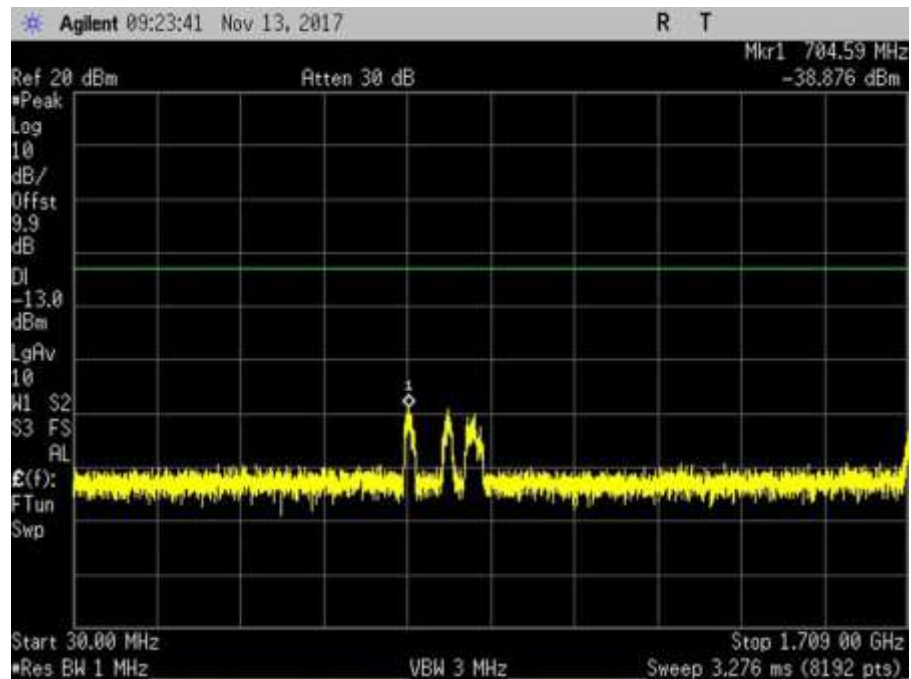
7.6_CSE_UL_824-849MHz_R1



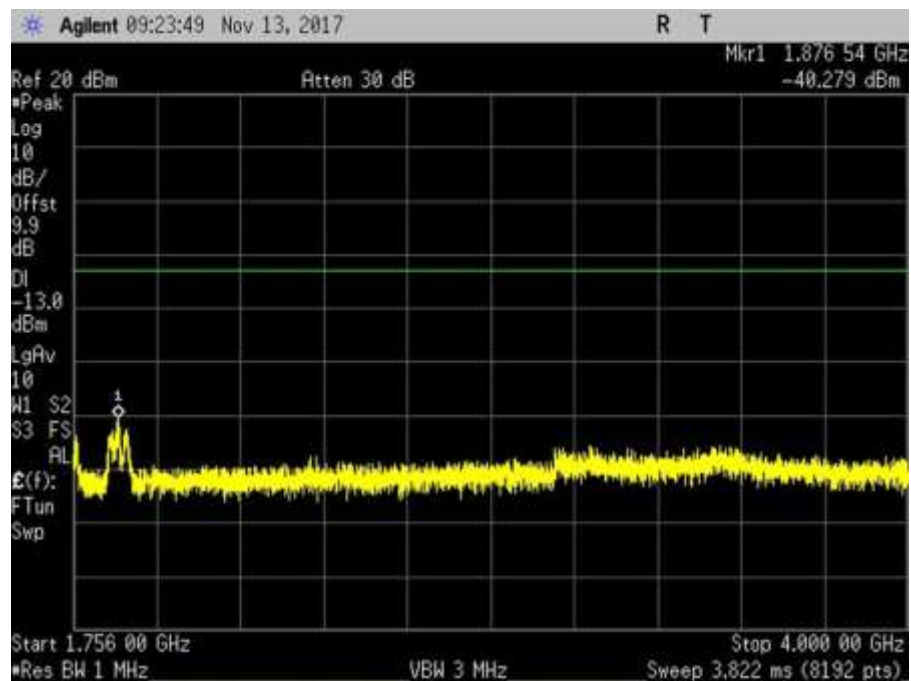
7.6_CSE_UL_824-849MHz_R2



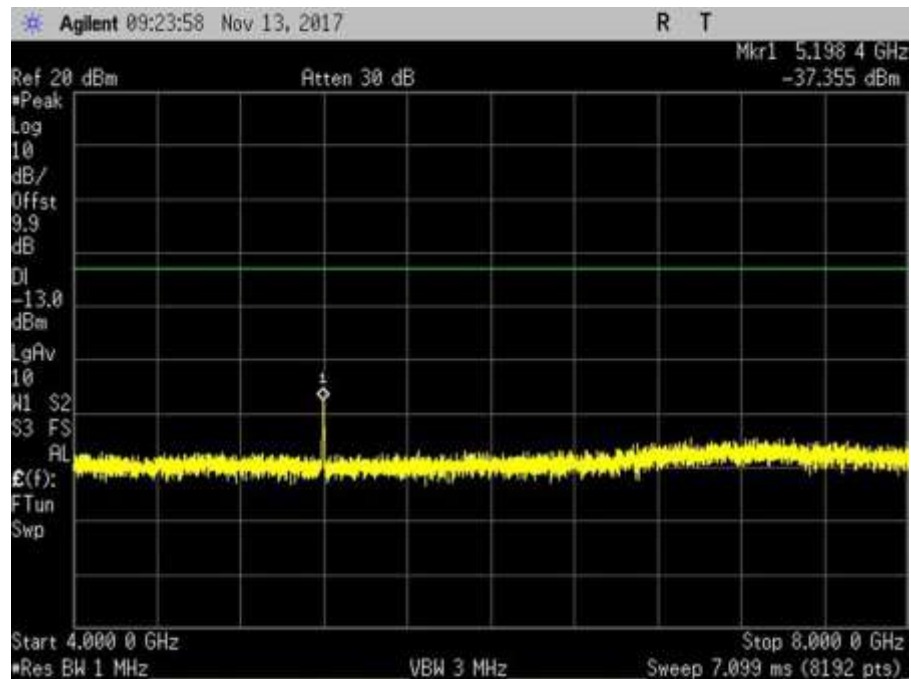
7.6_CSE_UL_824-849MHz_R3



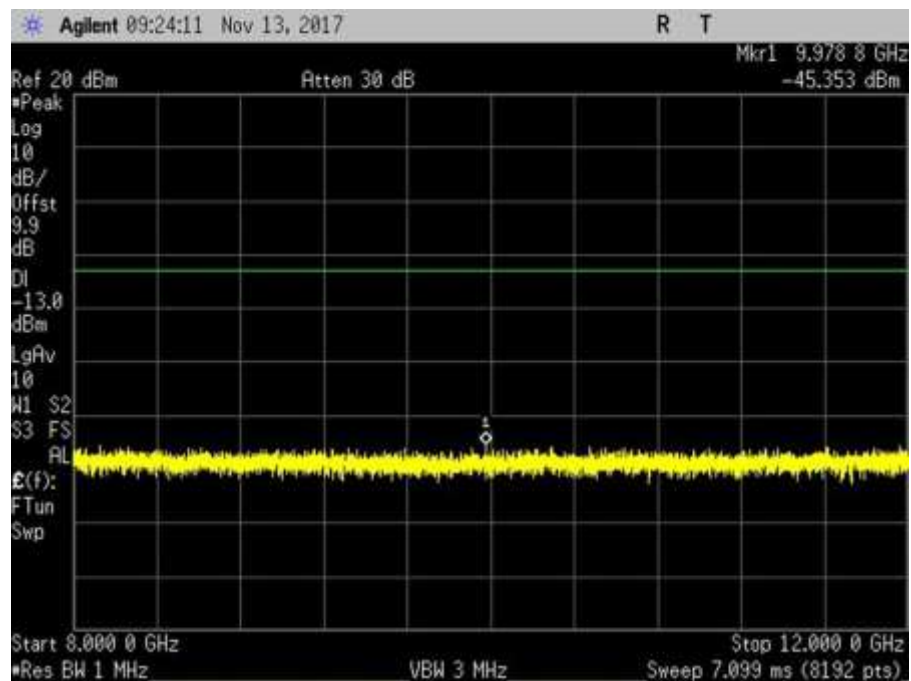
7.6_CSE_UL_1710-1755MHz_L



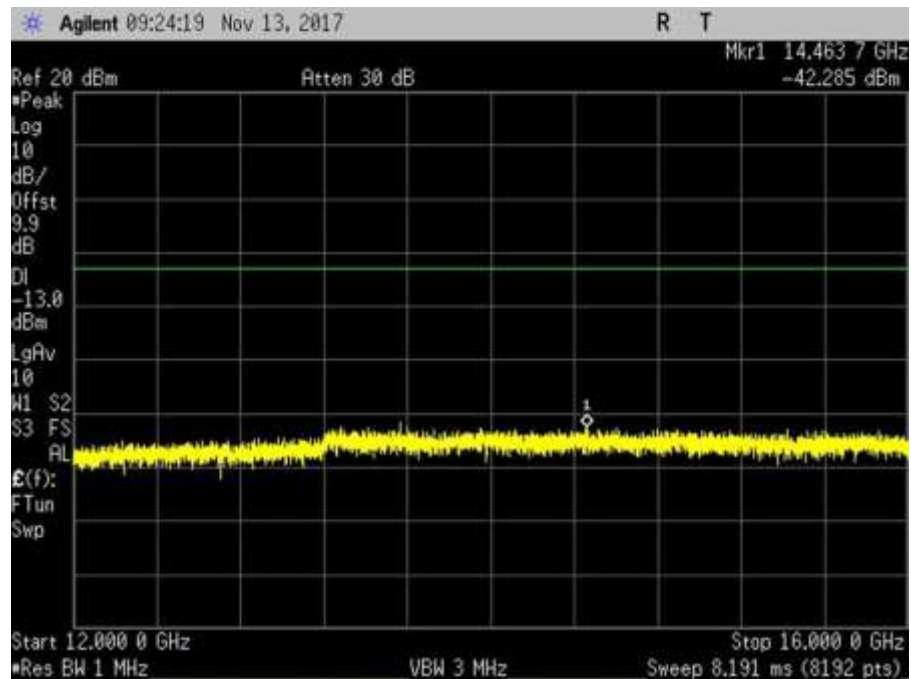
7.6_CSE_UL_1710-1755MHz_R1



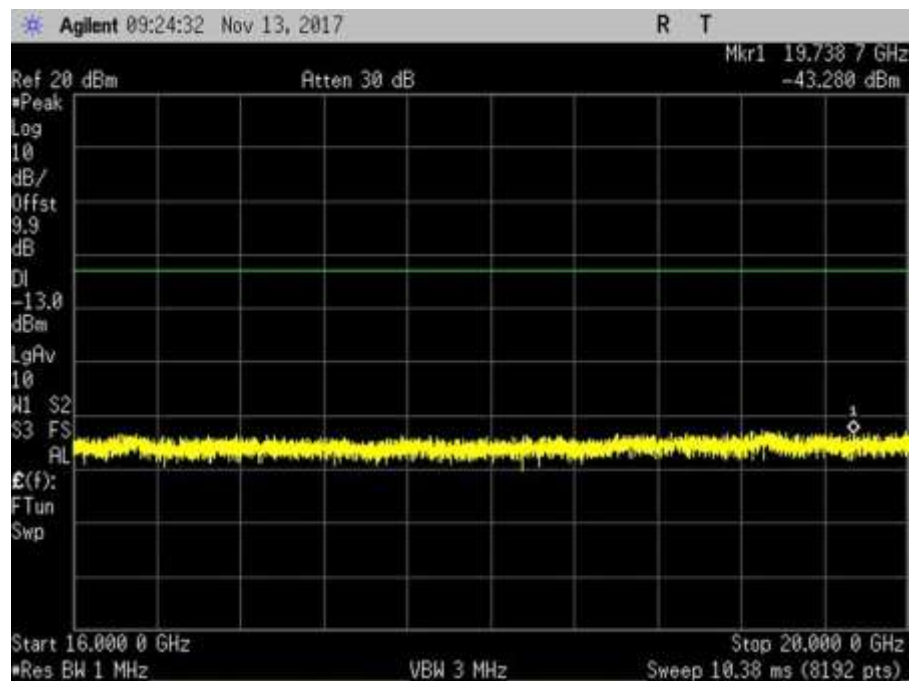
7.6_CSE_UL_1710-1755MHz_R2



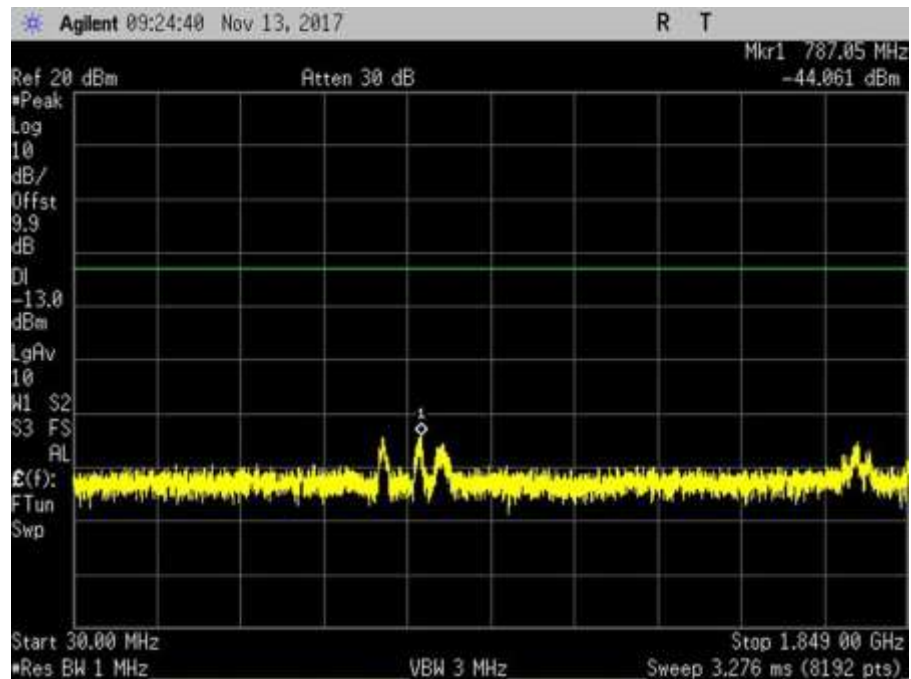
7.6_CSE_UL_1710-1755MHz_R3



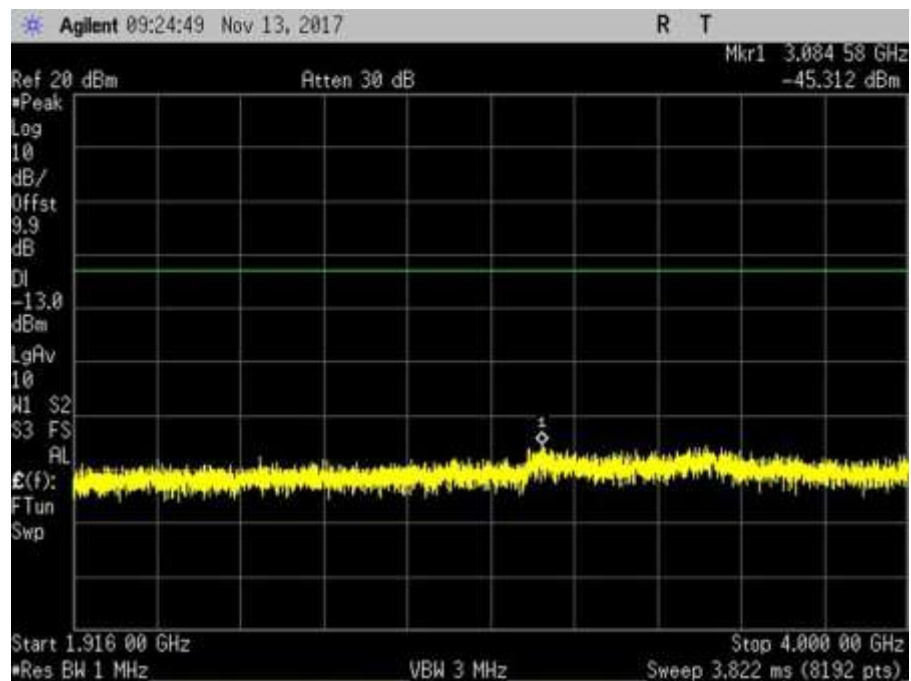
7.6_CSE_UL_1710-1755MHz_R4



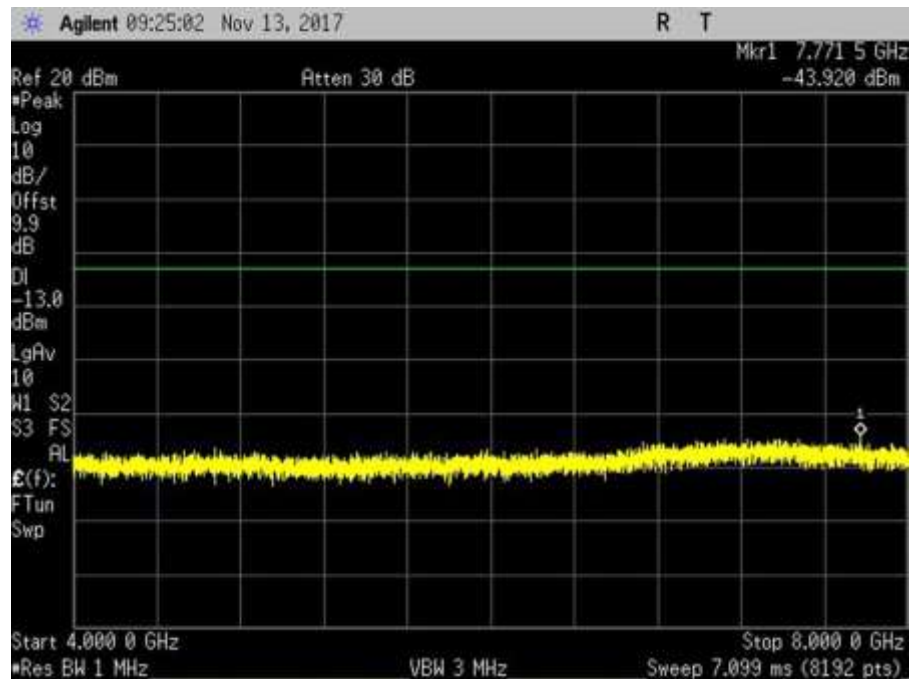
7.6_CSE_UL_1710-1755MHz_R5



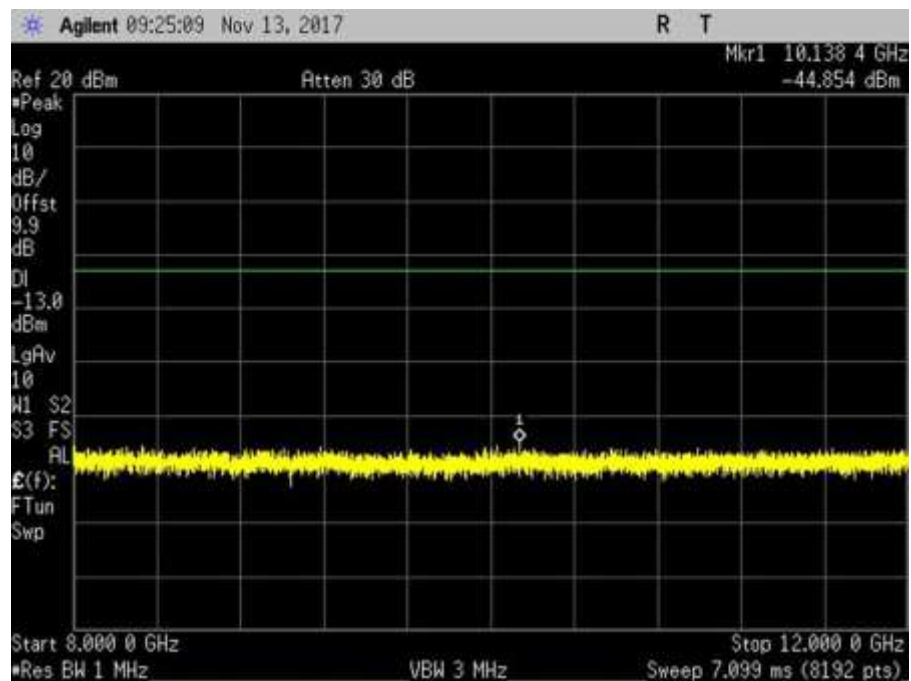
7.6_CSE_UL_1850-1915MHz_L1



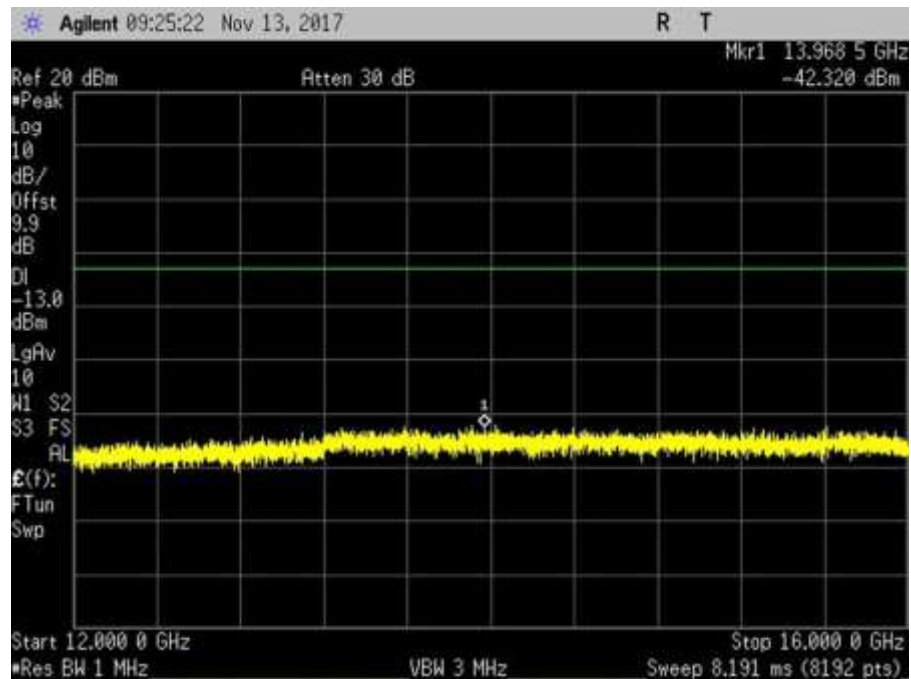
7.6_CSE_UL_1850-1915MHz_R1



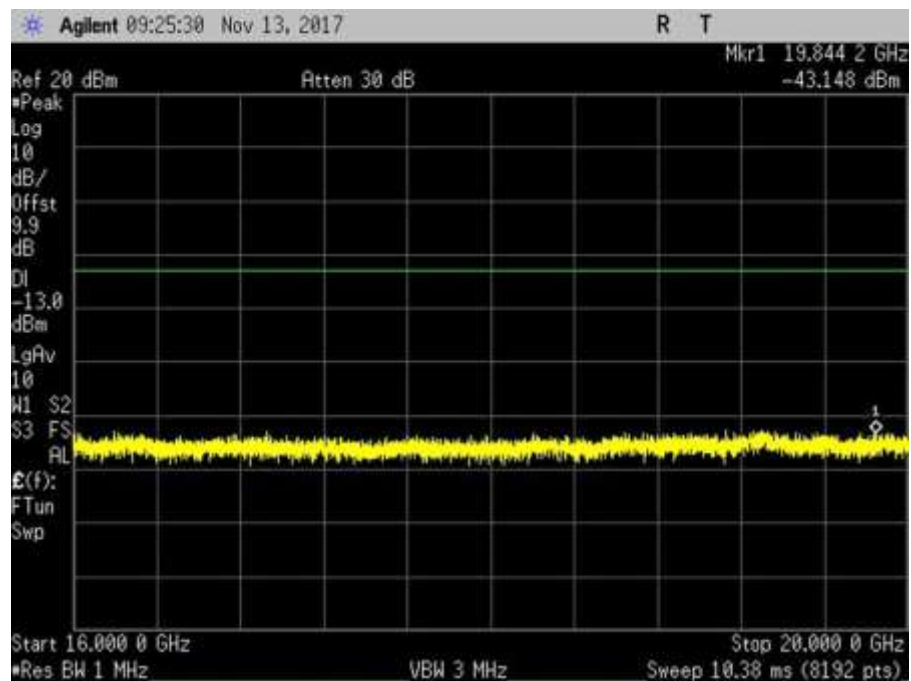
7.6_CSE_UL_1850-1915MHz_R2



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

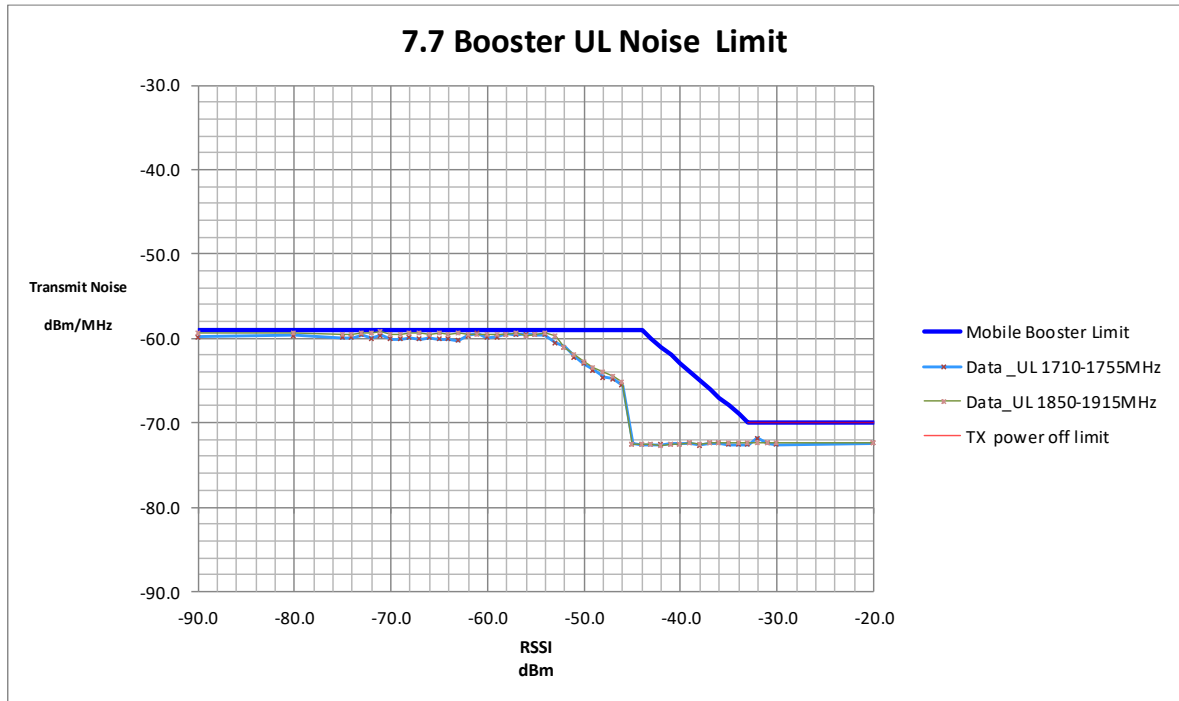
Summary of Results

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

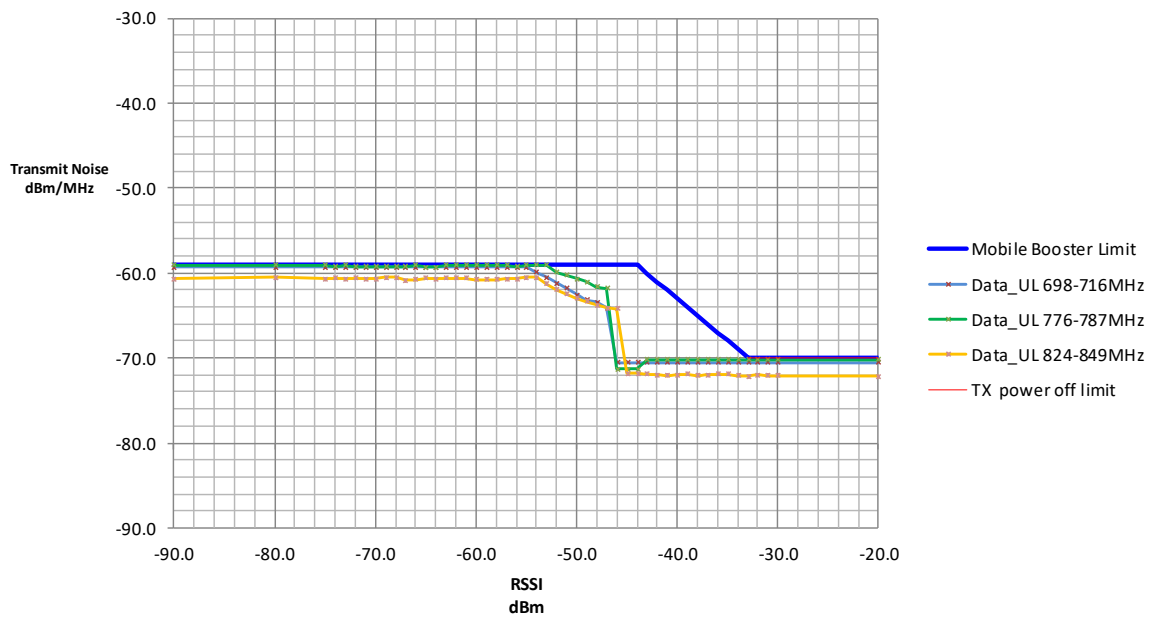
- 7.7.1 h-n: Maximum transmitter noise when varying the DL signal generator output level with a 4.1MHz AWGN signal



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

7.7 Booster UL Noise Limit



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	Measured	RSSI	Mobile	TX off	
(dBm)	Noise	Dependent	Booster		
	(dBm/MHz)		Limit		
-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	Measured	RSSI	Mobile	TX off	
(dBm)	Noise	Dependent	Booster		
	(dBm/MHz)		Limit		
-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

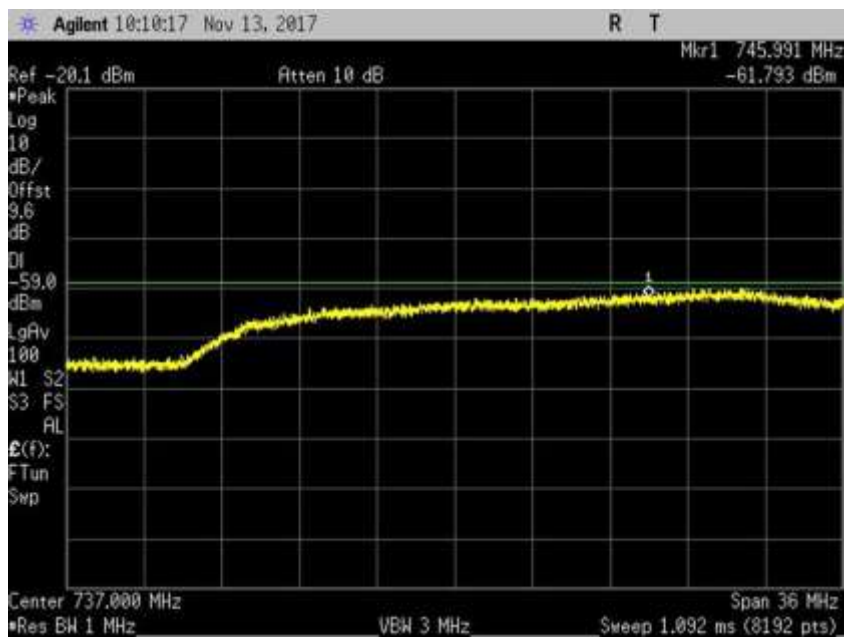
7.7.2 Variable uplink noise timing

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

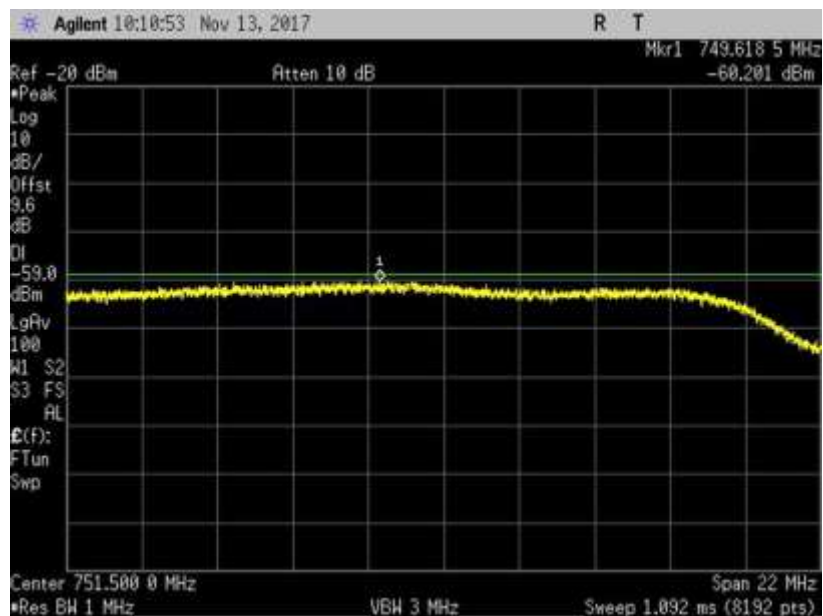
7.7.1 Maximum Transmitter Noise Power Level

Plots

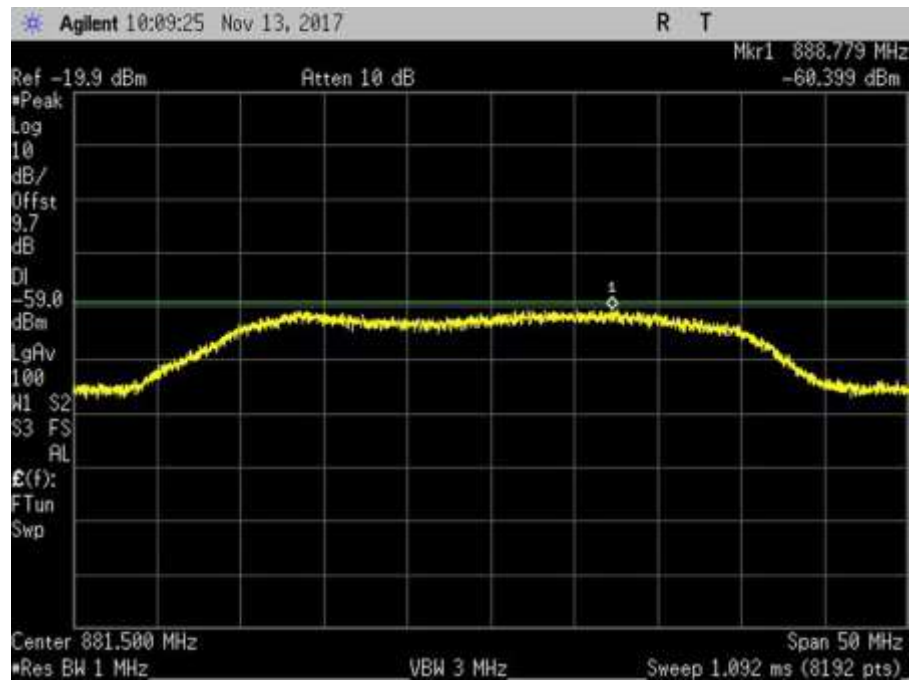
DL



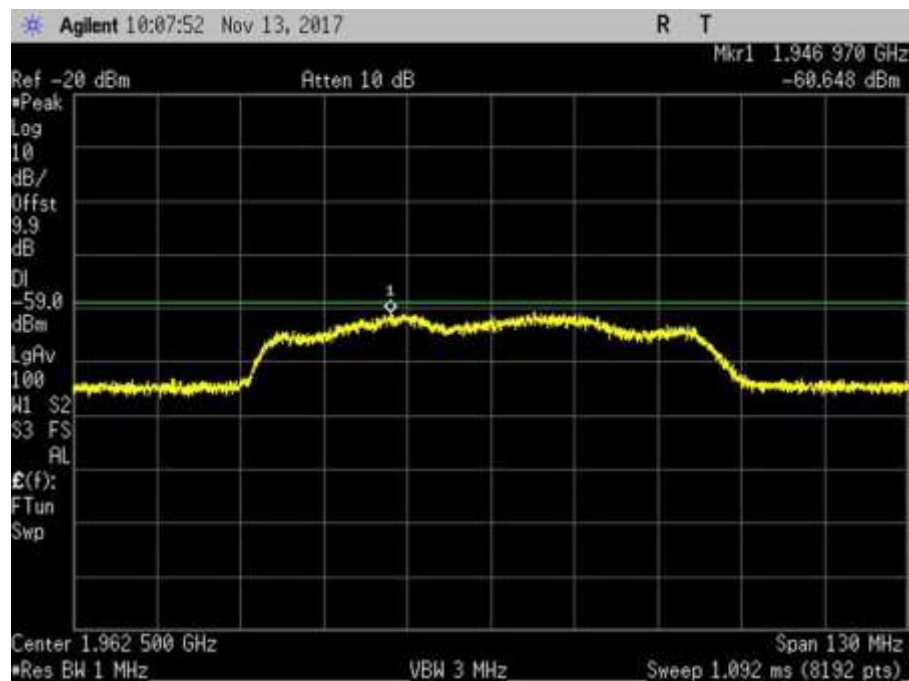
7.7.1_Noise_DL_728-746MHz



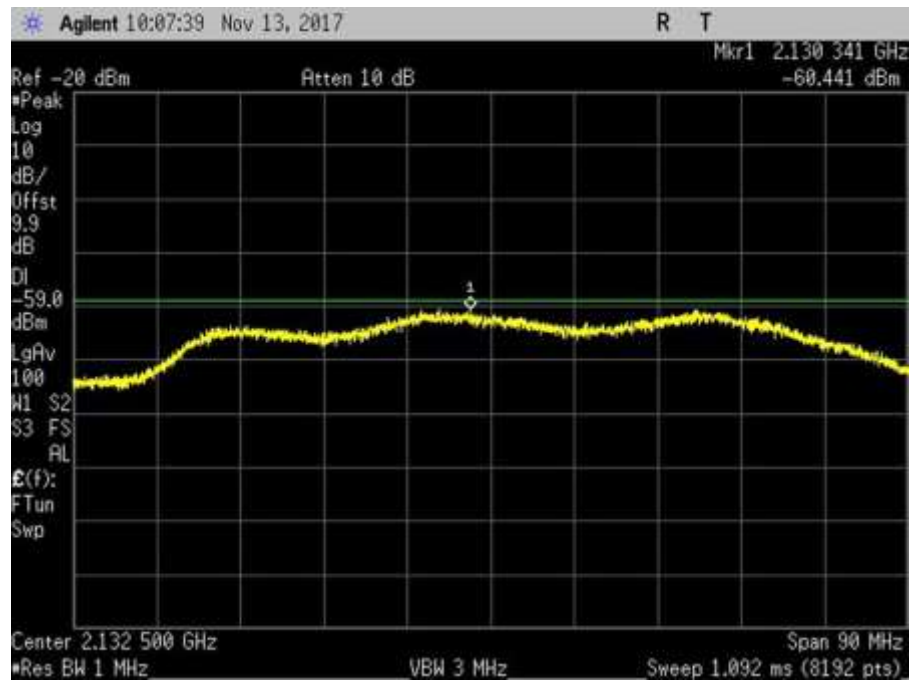
7.7.1_Noise_DL_746-757MHz



7.7.1_Noise_DL_869-894MHz

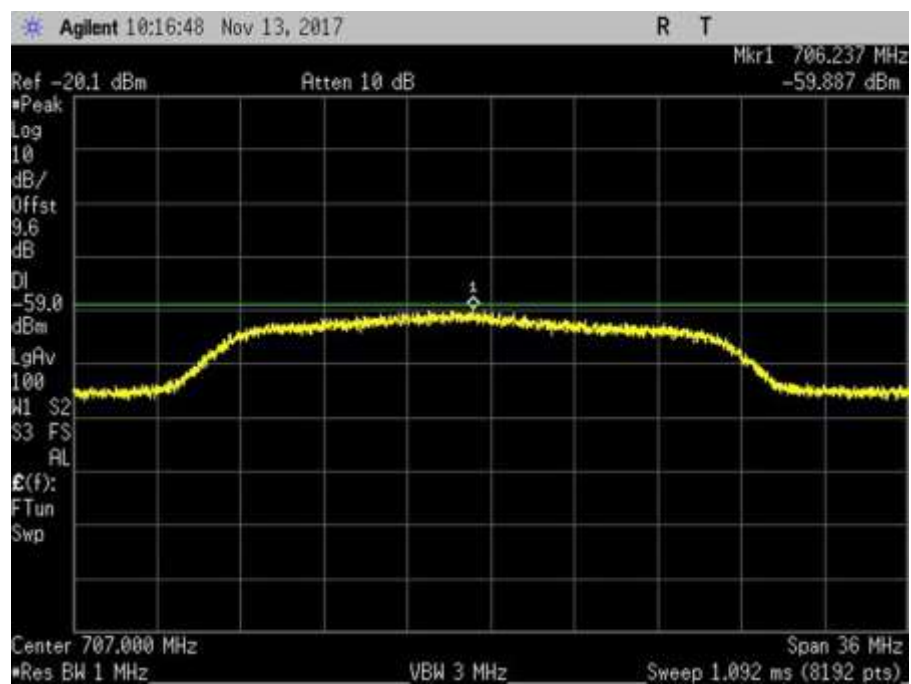


7.7.1_Noise_DL_1930-1995MHz

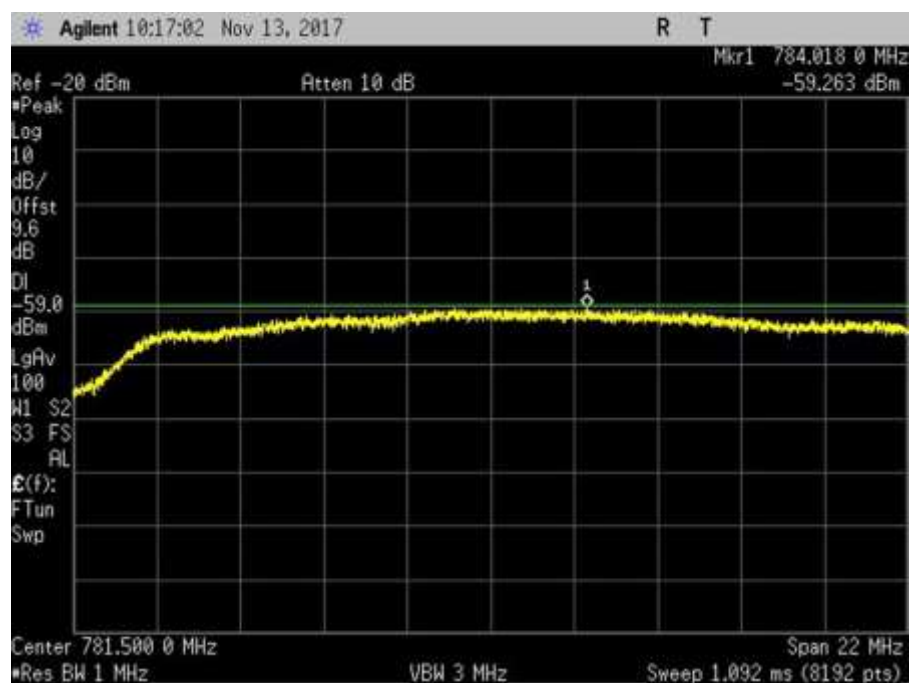


7.7.1_Noise_DL_2110-2155MHz

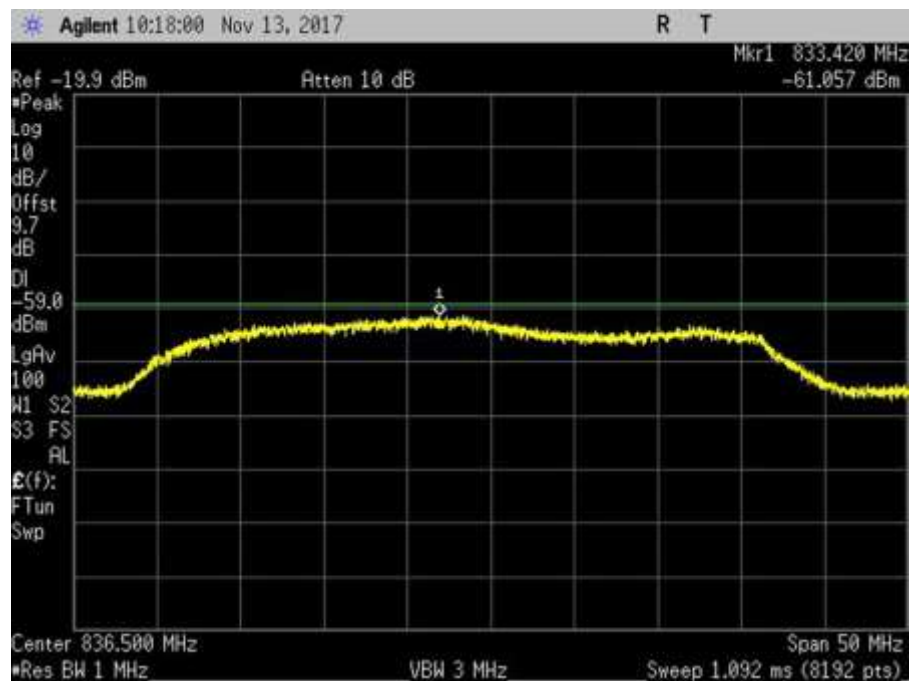
UL



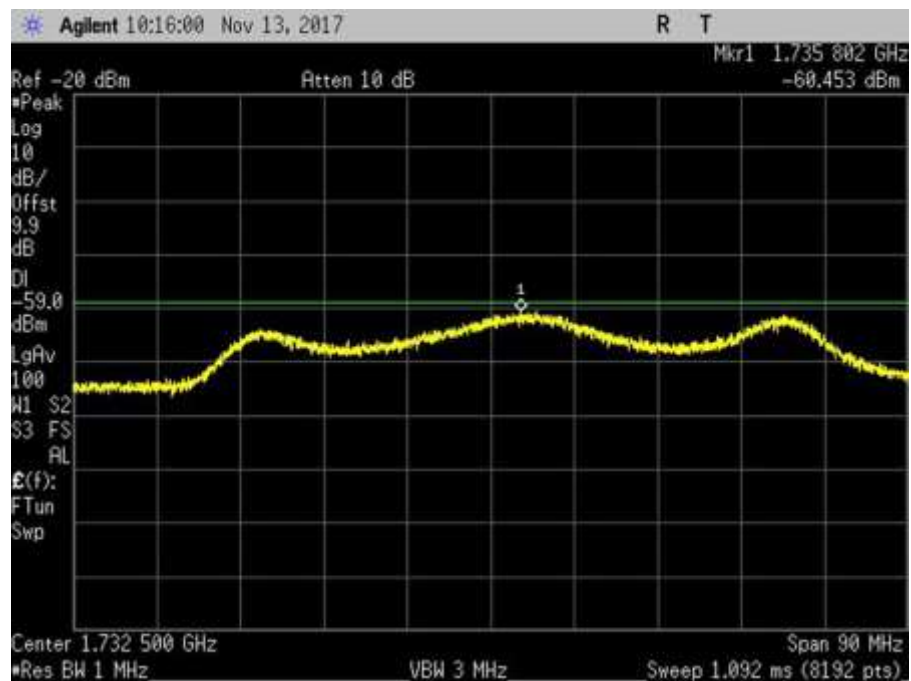
7.7.1_Noise_UL_698-716MHz



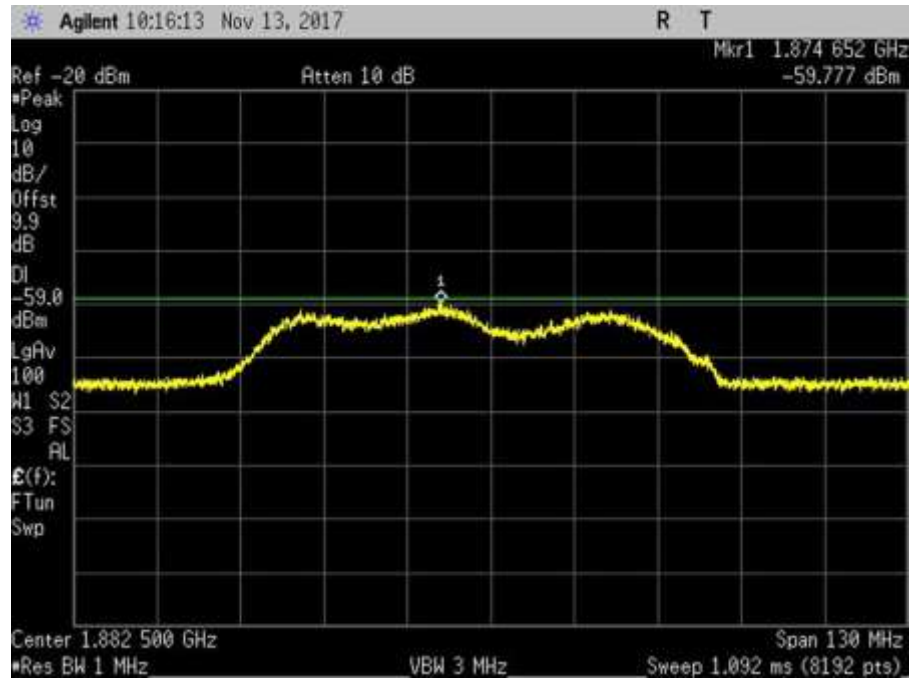
7.7.1_Noise_UL_776-787MHz



7.7.1_Noise_UL_824-849MHz



7.7.1_Noise_UL_1710-1755MHz

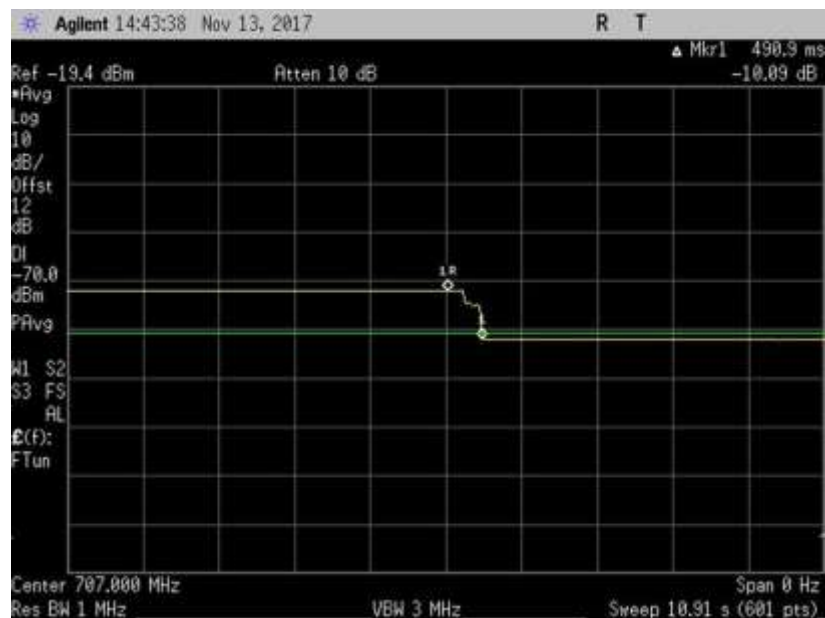


7.7.1_Noise_UL_1850-1915MHz

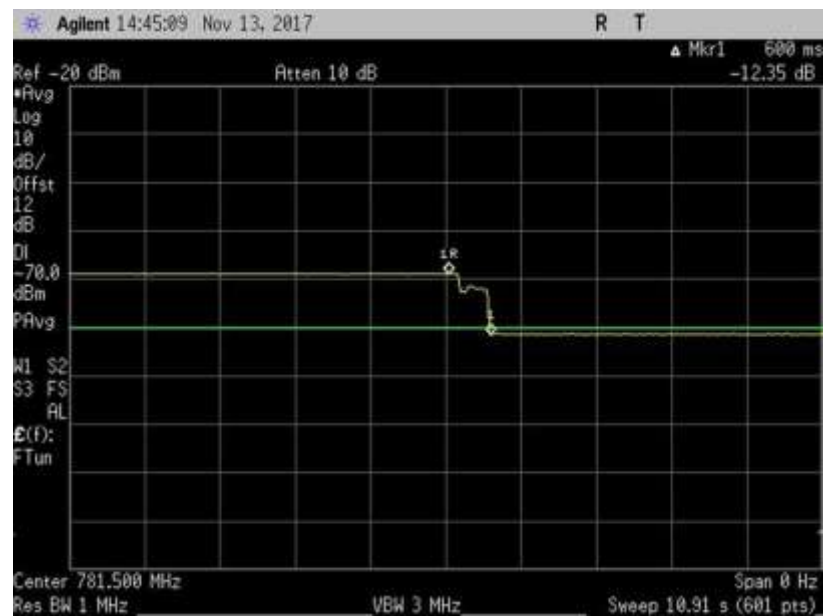
7.7.2 Variable UL Noise Timing

Plots

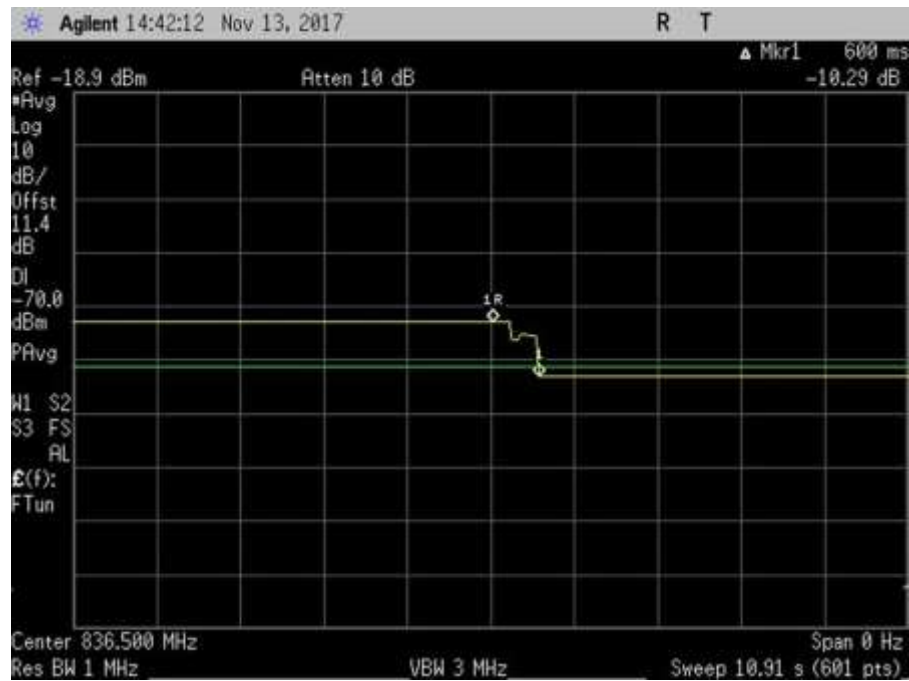
UL



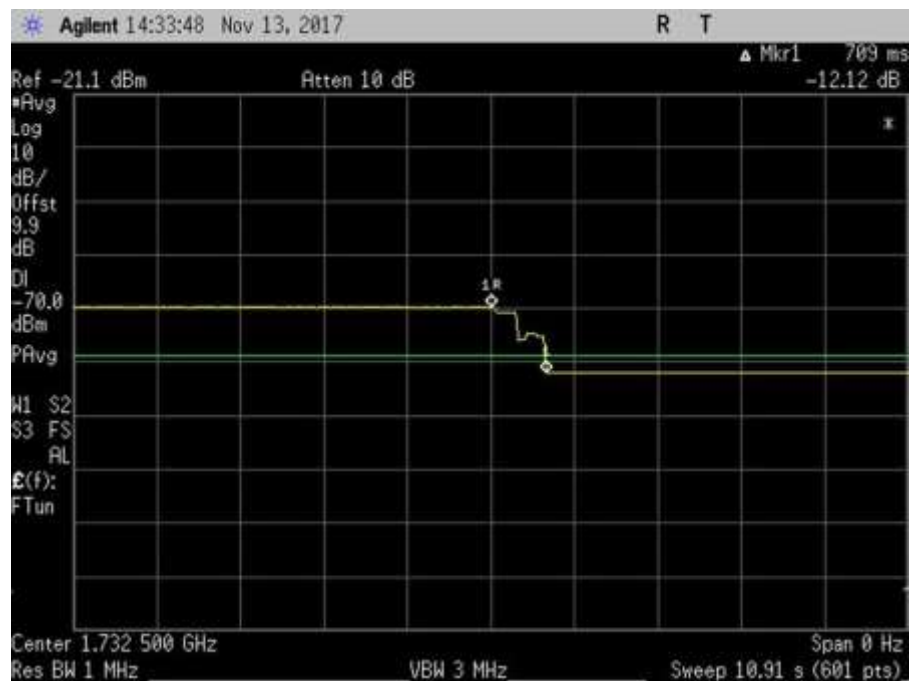
7.7.2_VarNoise_UL_698-716MHz



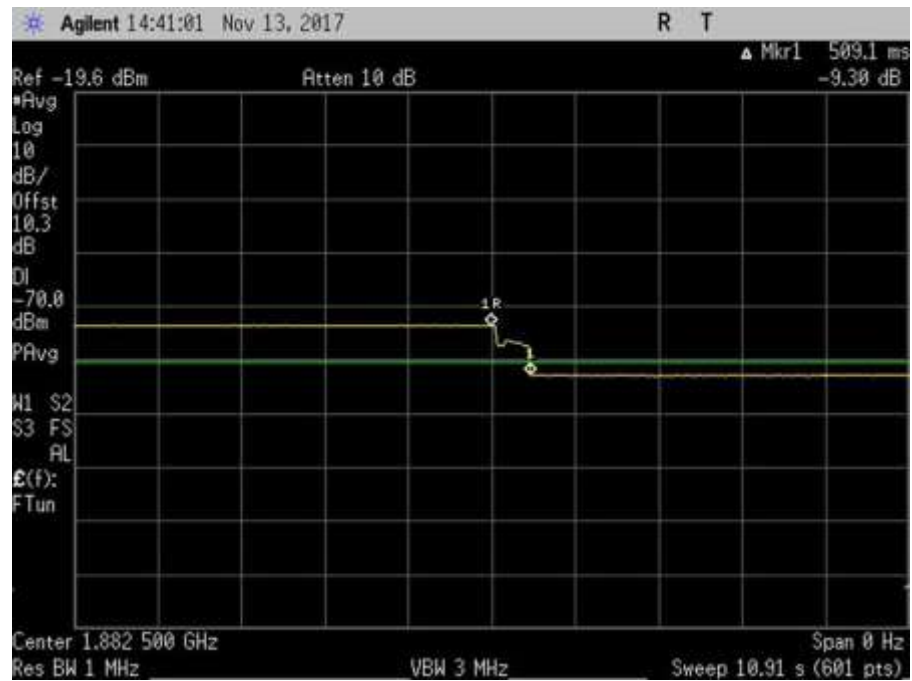
7.7.2_VarNoise_UL_776-787MHz



7.7.2_VarNoise_UL_824-849MHz



7.7.2_VarNoise_UL_1710-1755MHz



7.7.2_VarNoise_UL_1850-1915MHz

7.8 Uplink Inactivity

Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: Cellphone-Mate, Inc
 Specification: **7.8 Uplink Inactivity**
 Work Order #: **100637** Date: 11/13/2017
 Test Type: **Conducted Emissions** Time: 3:18:00 PM
 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 7.8 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

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

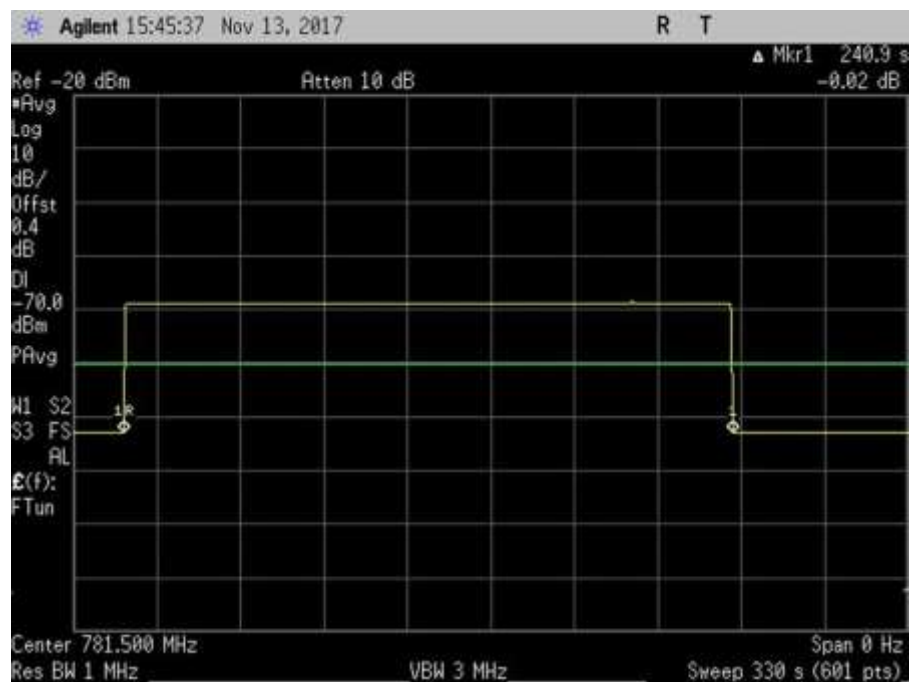
Pass: As demonstrated, when the booster is not serving an active device connection after 5 minutes the uplink noise power does not exceed -70dBm/MHz

Uplink Inactivity		
Freq	Measured	Limit
MHz	Min	Min
UL1710-1755	4.0	5.0
UL1850-1915	4.0	5.0
UL824-849	4.0	5.0
UL 698-716	4.0	5.0
UL776-787	4.0	5.0

Plots



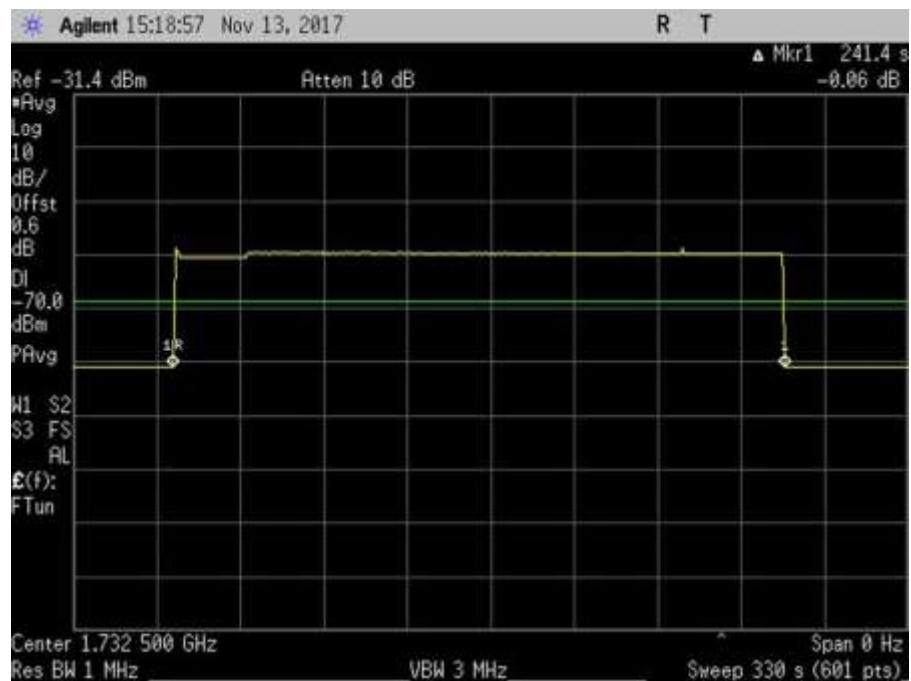
7.8_Inactivity_UL_698-716MHz



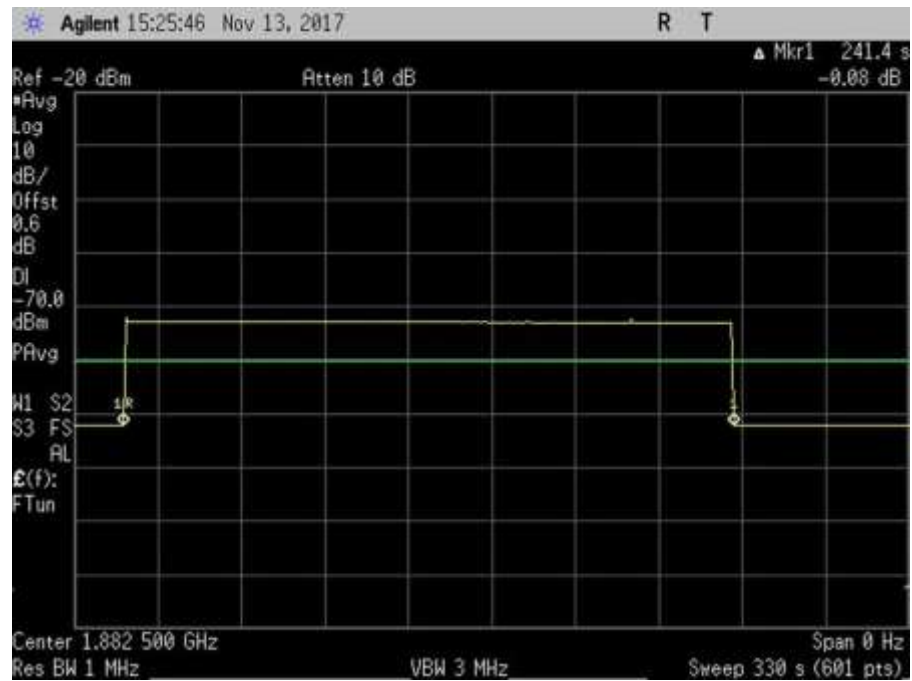
7.8_Inactivity_UL_776-787MHz



7.8_Inactivity_UL_824-849MHz



7.8_Inactivity_UL_1710-1755MHz



7.8_Inactivity_UL_1850-1915MHz

7.9 Booster Gain Limit

Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: Cellphone-Mate, Inc
 Specification: **7.9 Variable Booster gain(Max Gain / Variable Uplink Gain Timing)**
 Work Order #: **100637** Date: 11/15/2017
 Test Type: **Conducted Emissions** Time: 3:32:00 PM
 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 7.9 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, 101.5 kPa
 Note:
 Used MSCL provided by the manufacturer's antenna kitting.

Mobile station coupling loss (MSCL): the minimum coupling loss (in dB) between the wireless device and the input (server) port of the consumer booster. MSCL must be calculated or measured for each band of operation and provided in compliance test reports. MSCL includes the path loss from the wireless device, and the booster's server antenna gain and cable loss. The wireless device is assumed to be an isotropic (0 dBi) antenna reference. Minimum standoff distances from inside wireless devices to the booster's server antenna must be reasonable and specified by the manufacturer in customer provided installation manuals.

$$L P = 20 \log f + 20 \log d - 27.5$$

Where:

L P = basic free space path loss,
f = Center frequency,
d = 0.6, 1.0 and 1.5 meters

Frequency (MHz)	MSCL (dB)
PCS (1850-1915)	37.8
Cellular(824-849)	32.5
LTE(698-716)	30.6
LTE(776-787)	31.5
AWS(1710-1755)	37

Note:

PCS(1850-1915) 37.8 is from Desk top RV-1 Kit d=1m
Cellular(824-849) 32.5 is from Vehicle Kit2 d=0.6m
LTE(698-716) 30.6 from Vehicle Kit2 d=0.6m
LTE(776-787) 31.5 from Vehicle Kit2 d=0.6m
AWS(1710-1755) 37 is from Marine-1 Kit d=1.5m

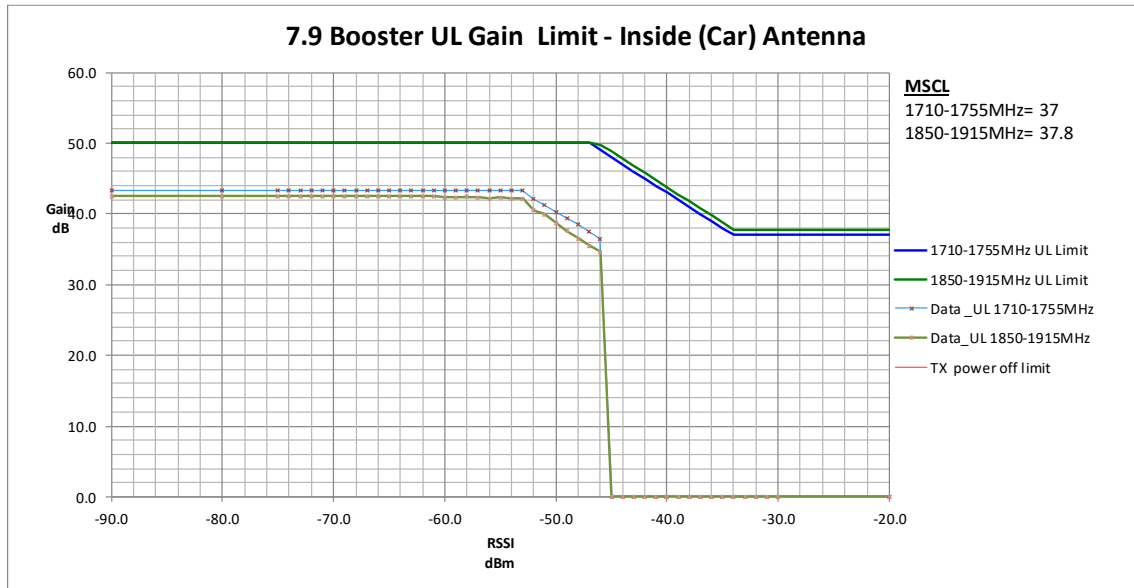
Test Equipment:

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

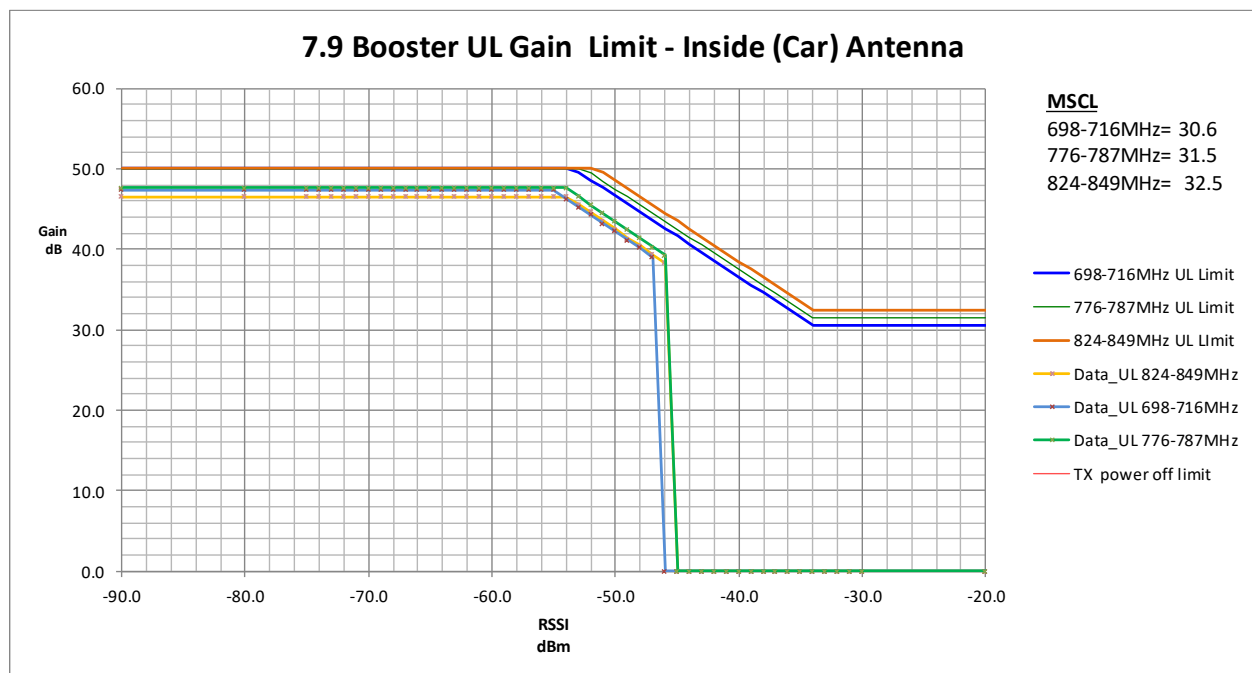
Pass: As demonstrated, computed gains are within the gain limit. All maximum variable uplink gain timings are within 1 second limit.

7.9.1 Maximum gain



1710.0 1755.0 MHz						
				Limit		Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off
-67.0	-25.1	18.2	43.3		50.0	-6.7
-55.0	-25.1	18.2	43.3		50.0	-6.7
-46.0	-25.1	11.4	36.5	49.0		-12.5
-37.0	-25.1	-57.4	0.0	40.0		-40.0
-36.0	-25.1	-57.4	0.0	39.0		-39.0
-35.0	-25.1	-57.4	0.0	38.0		-38.0

1850.0				1915.0	MHz		
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-75.0	-25.5	17.0	42.5		50.0		-7.5
-55.0	-25.5	16.8	42.3		50.0		-7.7
-46.0	-25.5	9.1	34.6	49.8			-15.2
-37.0	-25.5	-60.6	0.0	40.8			-40.8
-36.0	-25.5	-60.6	0.0	39.8			-39.8
-35.0	-25.5	-60.6	0.0	38.8			-38.8



824.0				849.0	MHz		
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-72.0	-27.1	19.4	46.5		50.0		-3.5
-58.0	-27.1	19.4	46.5		50.0		-3.5
-51.0	-27.1	16.4	43.5	49.5			-6.0
-50.0	-27.1	15.4	42.5	48.5			-6.0
-49.0	-27.1	14.2	41.3	47.5			-6.2
-48.0	-27.1	13.3	40.4	46.5			-6.1

698.0				716.0	MHz		
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-80.0	-27.9	19.5	47.4		50.0		-2.6
-60.0	-27.9	19.5	47.4		50.0		-2.6
-53.0	-27.9	17.3	45.2	49.6			-4.4
-52.0	-27.9	16.4	44.3	48.6			-4.3
-51.0	-27.9	15.3	43.2	47.6			-4.4
-50.0	-27.9	14.3	42.2	46.6			-4.4

776.0				787.0	MHz		
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-73.0	-27.9	19.7	47.6		50.0		-2.4
-58.0	-27.9	19.7	47.6		50.0		-2.4
-52.0	-27.9	17.6	45.5	49.5			-4.0
-51.0	-27.9	16.6	44.5	48.5			-4.0
-50.0	-27.9	15.5	43.4	47.5			-4.1
-49.0	-27.9	14.5	42.4	46.5			-4.1

7.9.2 Variable uplink gain timing

Uplink Gain Timing		
Frequency (MHz)	Measured (Sec)	Limit (Sec)
UL 1710-1755	0.70	1
UL 1850-1915	0.70	1
UL 824-849	0.63	1
UL 698-716	0.55	1
UL 776-787	0.57	1

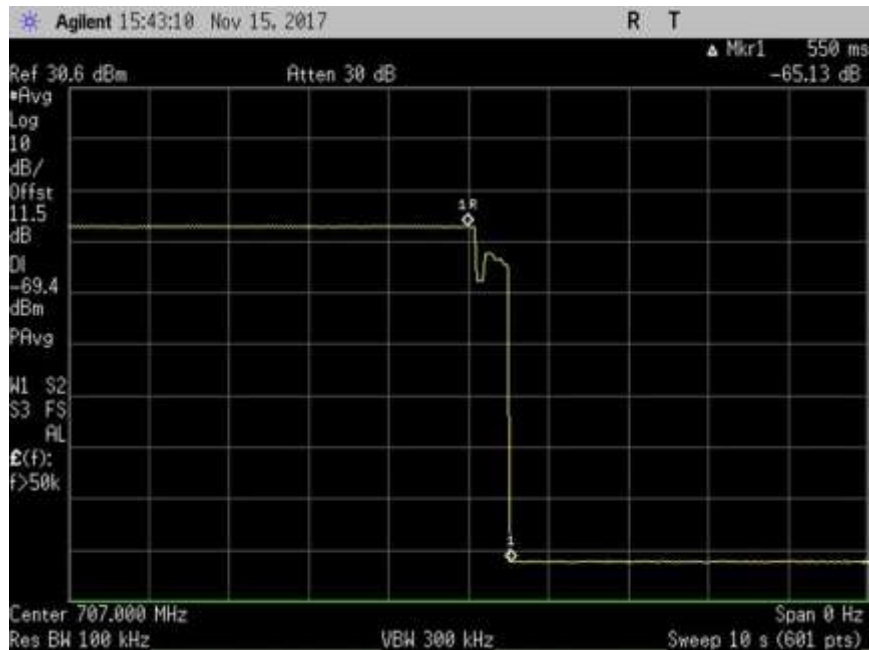
7.9.1 Maximum Gain

For this subsection, see summary of results of 7.9

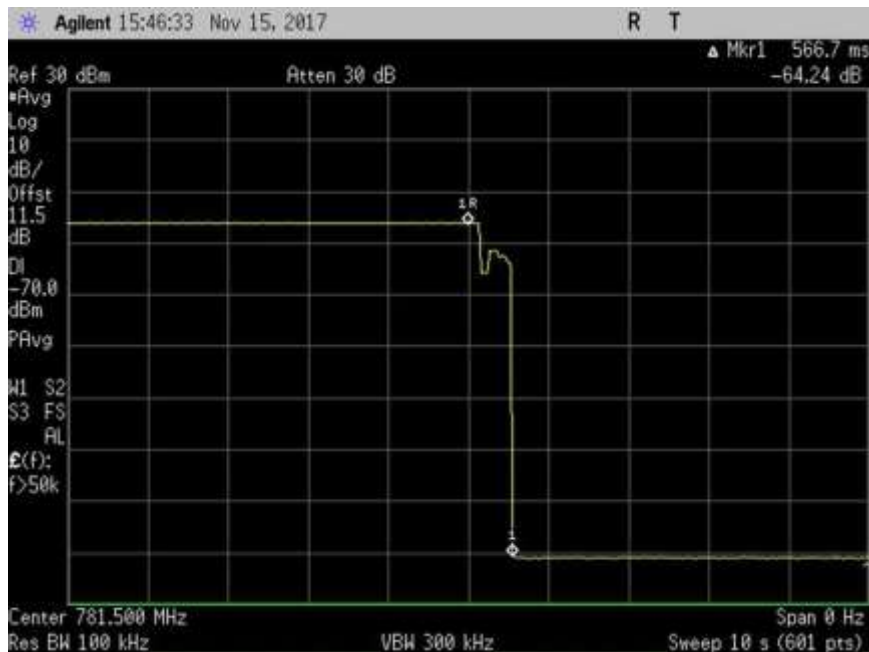
7.9.1 Maximum gain

7.9.2 Variable uplink Gain Timing

Plots



7.9.2_VarULGainTiming_UL_698-716MHz



7.9.2_VarULGainTiming_UL_776-787MHz



7.9.2_VarULGainTiming_UL_824-849MHz



7.9.2_VarULGainTiming_UL_1710-1755MHz



7.9.2_VarULGainTiming_UL_1850-1915MHz

7.10 Occupied Band Width

Test Conditions / Setup

Test Location: CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: Cellphone-Mate, Inc
 Specification: **7.10 Occupied Band Width / 47 CFR §2.1049 Occupied Band Width**
 Work Order #: **100637** Date: 11/13/2017
 Test Type: **Conducted Emissions** Time: 11:12:00 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 7.10 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

Test Equipment:

ID	Asset #/Serial #	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

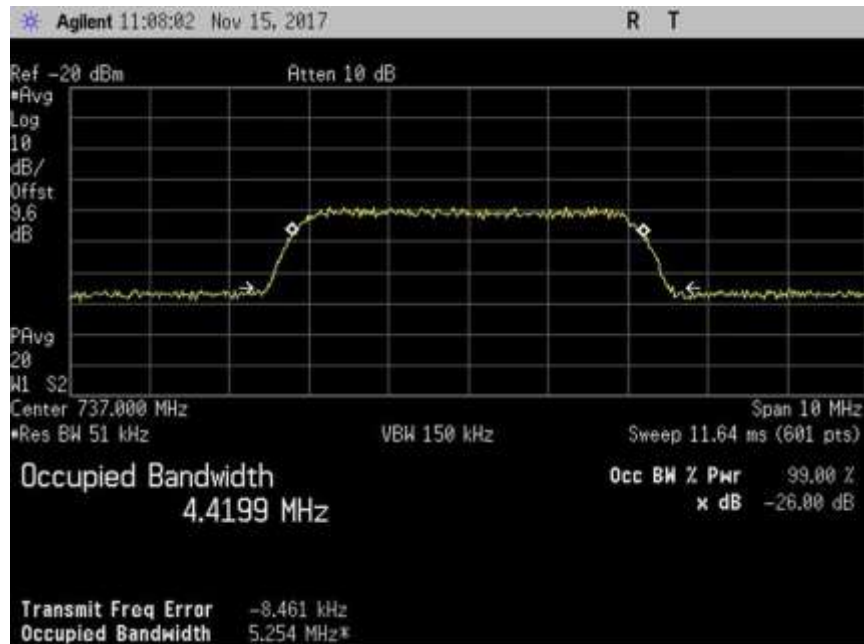
Pass: As summarized in plots and tables below, the uniformity of the output signal relative to the input signal are practically identical. Therefore, the comparison is within limits.

OBW-Input (Hz)					OBW-Output (Hz)				
EDGE	GSM	CDMA	WCDMA	LTE	EDGE	GSM	CDMA	WCDMA	LTE
244655	245180	1213862	4346087	4461993	246124	245982	1216799	4351620	4453649
244788	244592	1208479	4354318	4454206	245514	245897	1210237	4371112	4457154
244960	246511	1208113	4337957	4451246	243747	245211	1214282	4360490	4442727
244827	245609	1213216	4358675	4455535	243509	246514	1209799	4358746	4456366
245006	246593	1210949	4360001	4459303	243544	245517	1208145	4348904	4453717
246079	249014	1206826	4448446	4470159	244948	245496	1206850	4331799	4466085
246307	248086	1214503	4421260	4483061	244757	246504	1212193	4340462	4462137
247021	248207	1208743	4430952	4474680	245256	245077	1208535	4328437	4464499
246757	248817	1215548	4419857	4476132	244724	245355	1209735	4329867	4467423
247116	248698	1212425	4422816	4480149	244816	246211	1211139	4326310	4460842

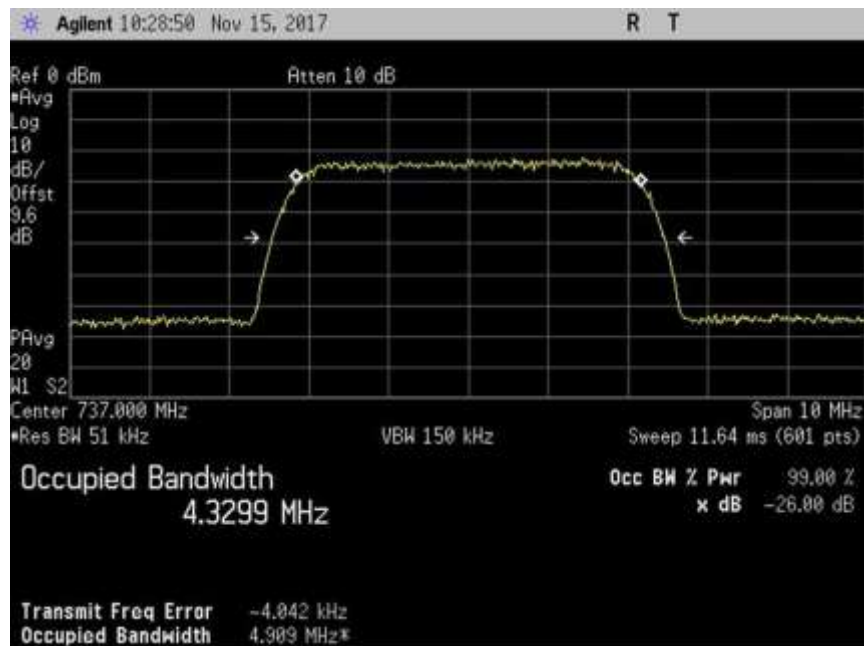
Max Difference In&Out Occ BW 99% Pwr					
Frequency Range	EDGE	GSM	CDMA	WCDMA	LTE
UL_1710-1755MHz	0.60%	0.33%	0.24%	0.13%	0.19%
UL_1850-1915MHz	0.30%	0.53%	0.15%	0.39%	0.07%
UL_824-849MHz	0.50%	0.53%	0.51%	0.52%	0.19%
UL_698-716MHz	0.54%	0.37%	0.28%	0.00%	0.02%
UL_777-787MHz	0.60%	0.44%	0.23%	0.25%	0.13%
DL_2110-2155MHz	0.46%	1.41%	0.00%	2.62%	0.09%
DL_1930-1995MHz	0.63%	0.64%	0.19%	1.83%	0.47%
DL_869-894MHz	0.71%	1.26%	0.02%	2.31%	0.23%
DL_728-746MHz	0.82%	1.39%	0.48%	2.04%	0.19%
DL_746-756MHz	0.93%	1.00%	0.11%	2.18%	0.43%

Plots

AWGN, DL



7.10_OBW_DL_728-746MHz_AWGN_In



7.10_OBW_DL_728-746MHz_AWGN_Out