

Cellphone-Mate, Inc.

ADDENDUM TO TEST REPORT 97776-10

Consumer Booster
Model: EZ-4G

Tested To The Following Standard:

FCC Part 20.21

Report No.: 97776-10A

Date of issue: January 13, 2016



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:

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Project Number: 97776

DATE OF EQUIPMENT RECEIPT:

November 18, 2015

DATE(S) OF TESTING:

November 18 – December 1, 2015
January 12, 2016

Revision History

Original: Testing of Consumer Booster, Model: EZ-4G to FCC Part 20

Addendum A: To add revised MSCL parameters data to Section 7.9.

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	5.02.00
EMITest Immunity	5.02.00

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont	US0082	SL2-IN-E-1148R	3082B-1	958979	A-0149

SUMMARY OF RESULTS

Standard / Specification: FCC Part 20.21

KDB 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v03, June 5, 2015		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	NA ¹
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

NA=Not Applicable

NA¹ = A different standard applies; see applicable test report.

NA² = Not applicable. See the section in the report for the reason.

Standard / Specification: FCC Part 20.21 - continued

KDB 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v03, June 5, 2015		FCC Part Section Correlation		Mods	Results
Guidance Sec #	Guidance Description	FCC Sec #	FCC Rule Description		
7.8 a) - l)	Uplink inactivity	20.21(e)(8)(i)(l)	Uplink Inactivity	NA	Pass
7.9.1 a) - l)	Variable Booster Gain	20.21(e)(8)(i)(C) (1), (2)(i)	Booster Gain	NA	Pass
7.9.2 a) - f)	Variable Uplink Gain Timing	20.21(e)(8)(i)(H)	Transmit Power Off Mode		
7.10.a) - j)	Occupied Band Width	2.1049/22/24/27	Occupied Band Width	NA	NA ¹
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	NA	Pass
7.12a) - f)	Radiated Spurious Emission	2.1053/ 22/24/27	Spurious Emission	NA	NA ¹
7.13 a) - c)	Spectrum Block Filter ²	NA ²	NA ²	NA	NA ²

NA=Not Applicable

NA¹ = A different standard applies; see applicable test report.

NA² = Not applicable. See the section in the report for the reason.

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
On the Inside (Server) antenna port, which is a 75 ohm impedance port, an impedance matching pad is used. Readings are compensated by adding the additional loss on the Spectrum Analyzer. On the Outside (Donor) antenna port, which is a 50 ohm impedance port, readings are taken using injection signals compensated. The level of these signals are corrected by adding the additional loss due to the usage of the impedance matching pad to create equivalent power at the Server antenna port.

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
Consumer Booster	Cellphone-Mate, Inc.	EZ-4G	01
Switching Power Adapter	GME	GME18A-050300FUR	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260

FCC PART 20.21

7.1 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 #: **97776** Date: 11/18/2015
 Test Type: **Conducted Emissions** Time: 13:57:17
 Tested By: Daniel Bertran Sequence#: 1
 Software: EMITest 5.02.00

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed Wideband Consumer Booster.
 The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.

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 environment conditions:
 Temperature: 22.8°C, Relative Humidity: 42%, Atmospheric Pressure: 102.4 kPa

Test procedure: The test was performed in accordance with section 7.1 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v03 Dated June 5, 2015.
 Firmware: V2.0

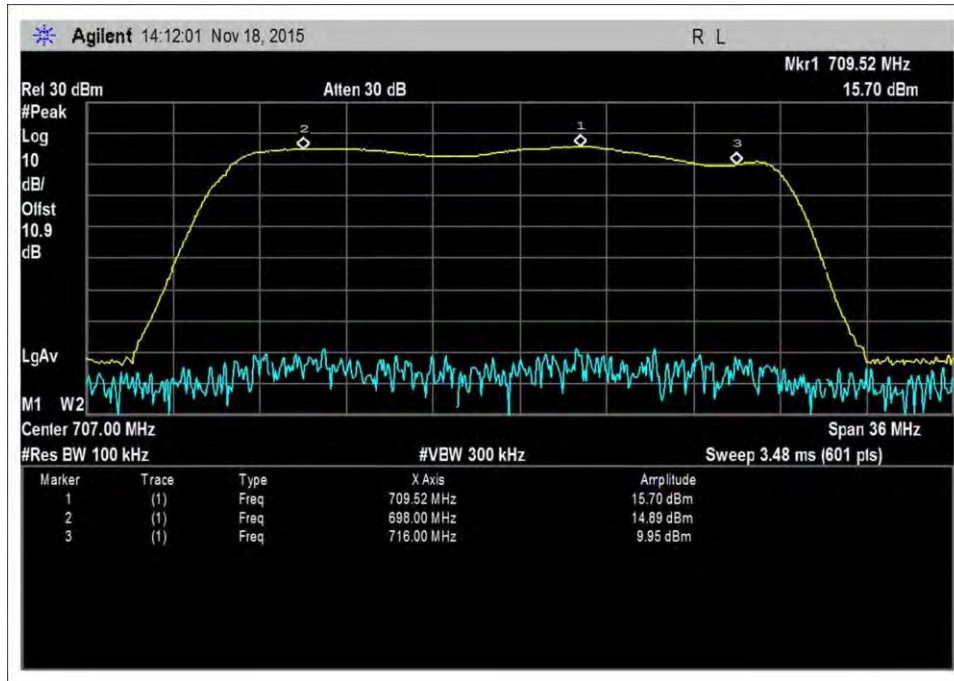
Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANP06709	Cable	32026-29094K- 29094K-72TC	9/18/2014	9/18/2016
	ANP06710	Cable	32026-29094K- 29094K-72TC	9/18/2014	9/18/2016
	AN03470	Spectrum Analyzer	E4440A	12/2/2013	12/2/2015
	ANP06467	Attenuator	PE7014-10	5/13/2015	5/13/2017
	ANP06239	Attenuator	54A-10	7/9/2014	7/9/2016

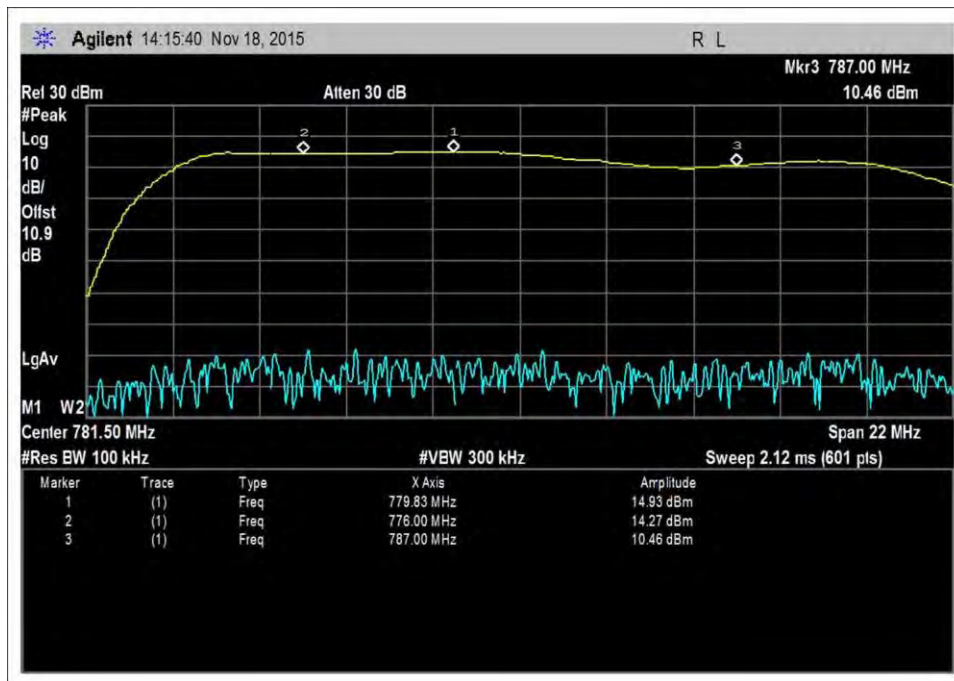
Summary of Results

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

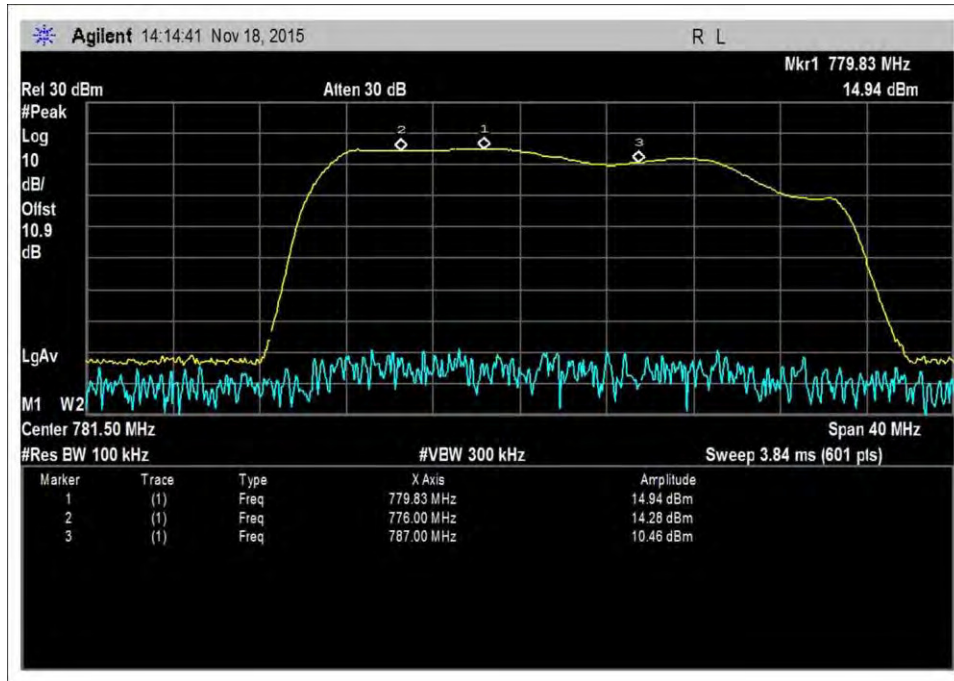
Plots



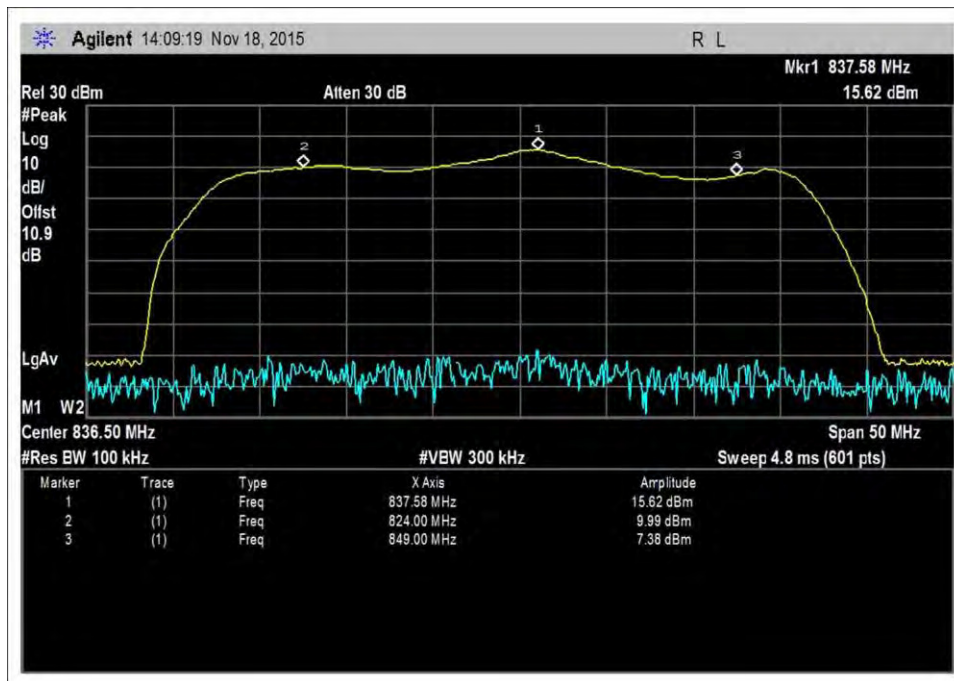
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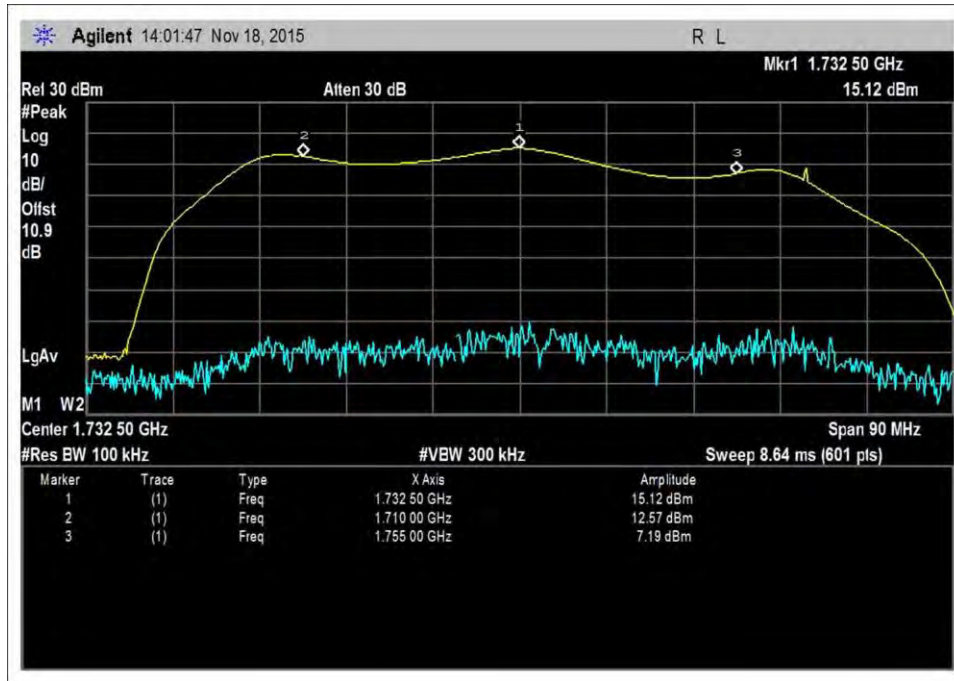
7.1_band verify_UL_776-787MHz



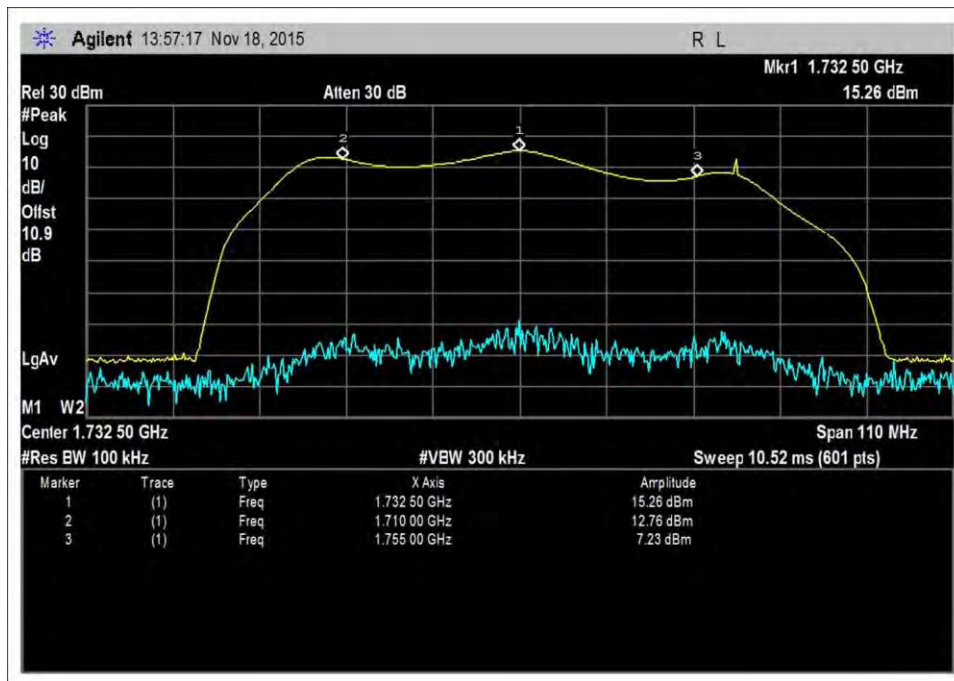
7.1_band verify_UL_776-787MHz_Zoom



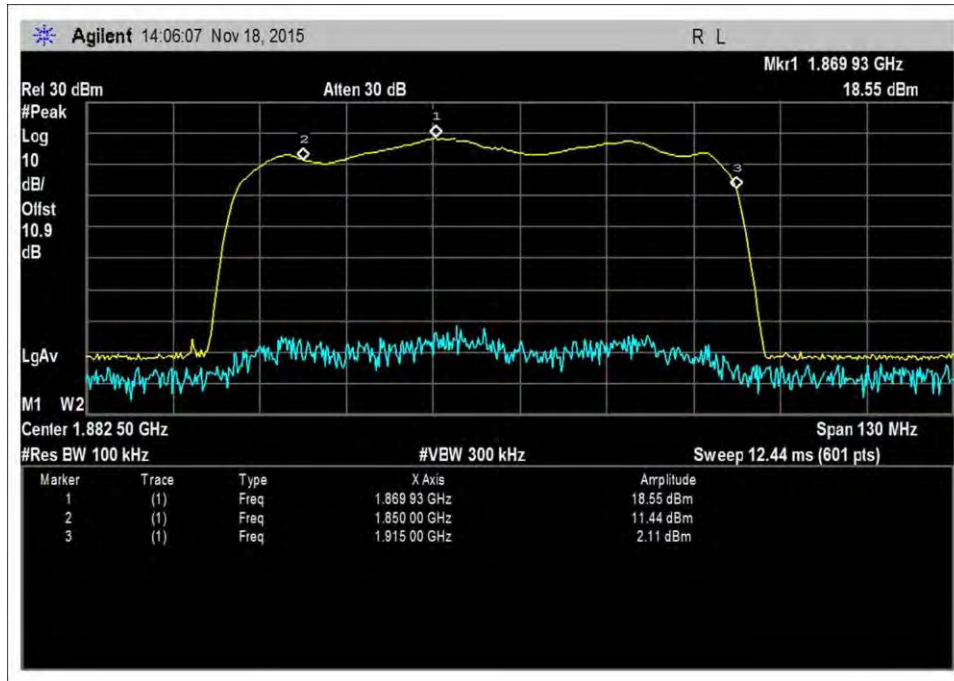
7.1_band verify_UL_824-849MHz



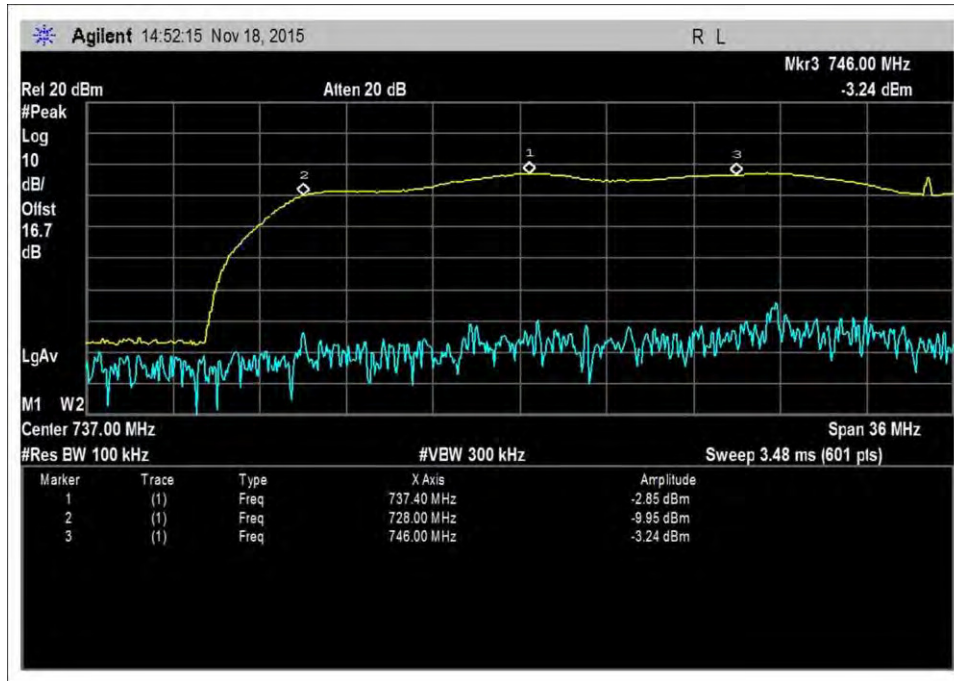
7.1_band verify_UL_1710-1755MHz



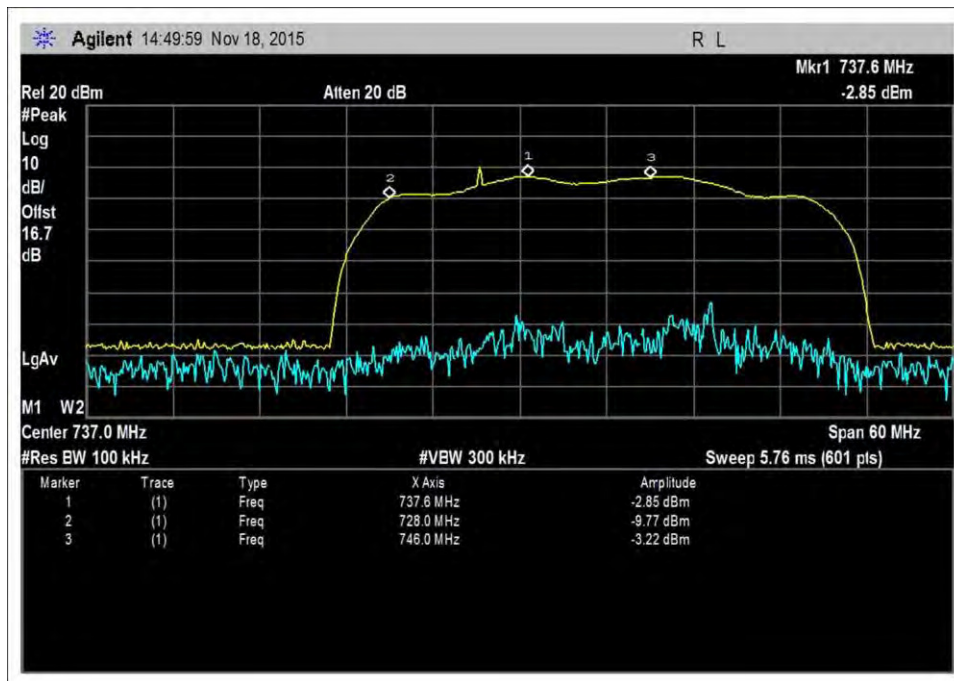
7.1_band verify_UL_1710-1755MHz_Zoom



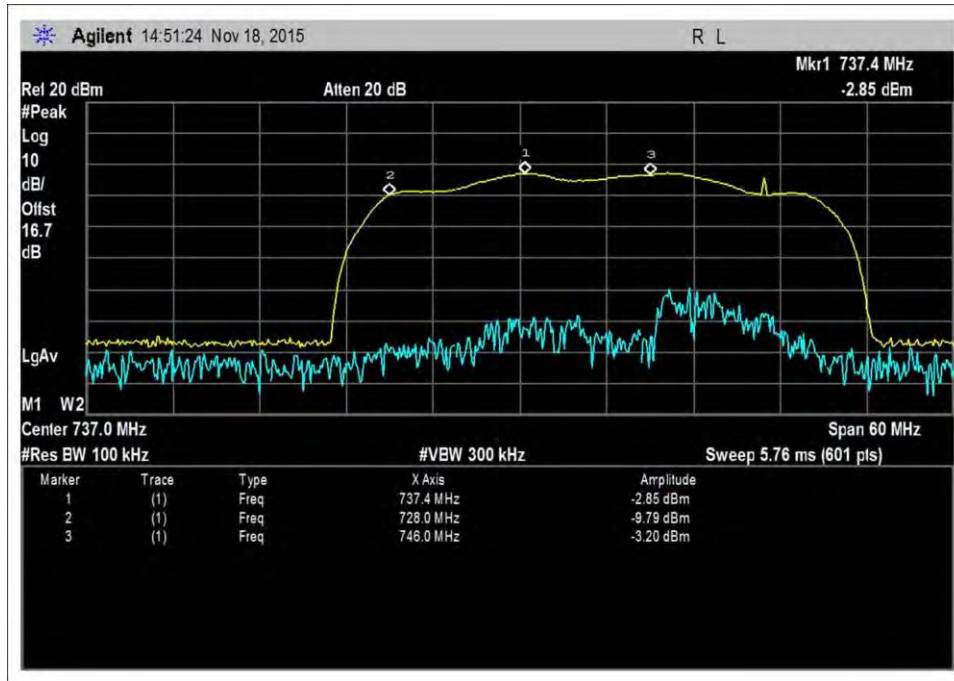
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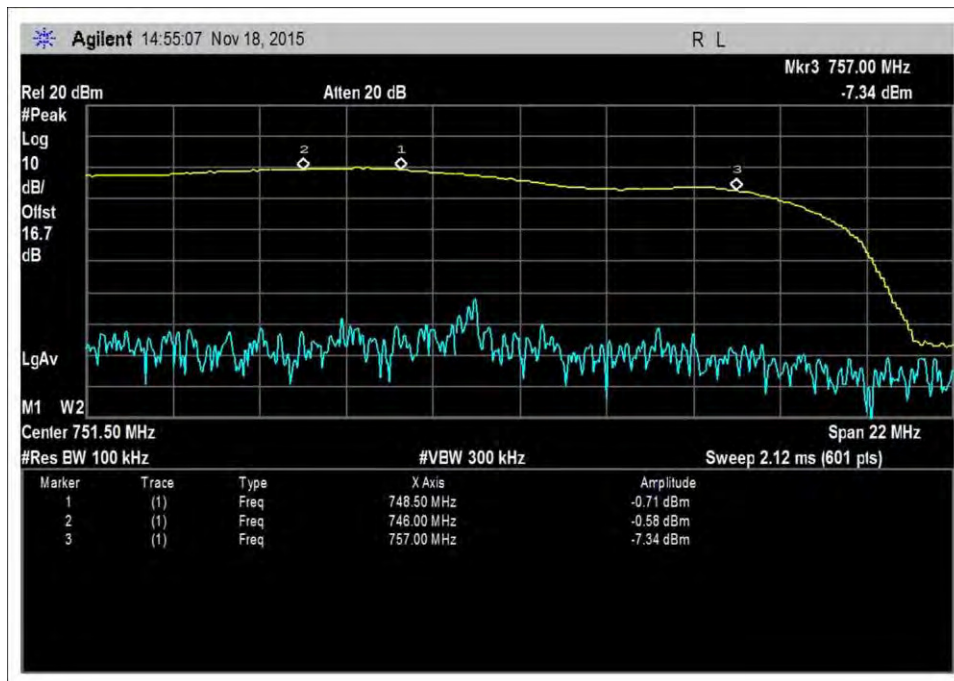
7.1_band verify_DL_728-746MHz



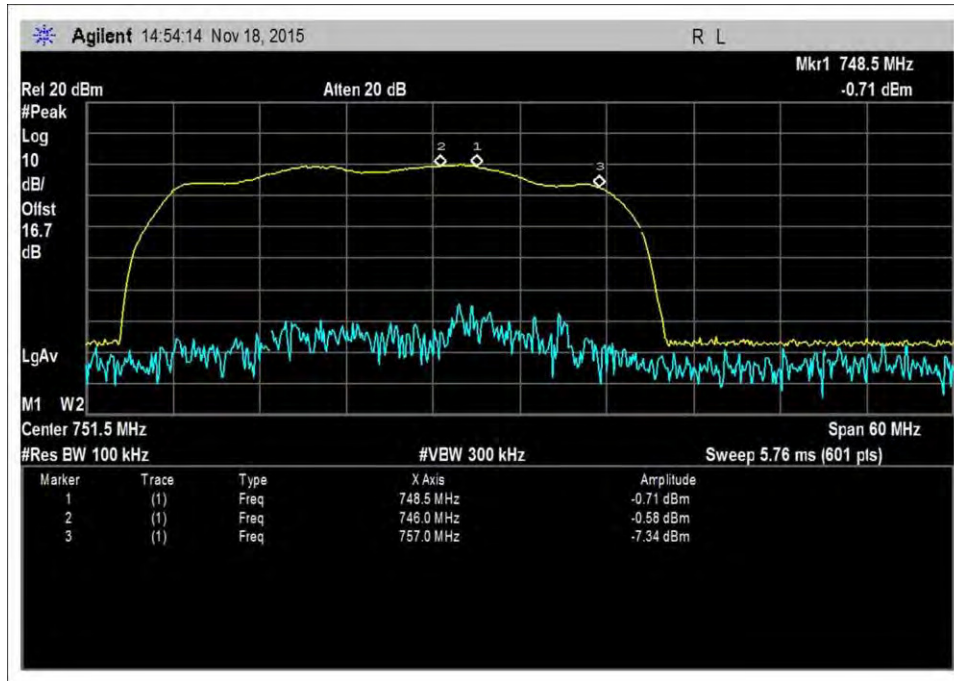
7.1_band verify_DL_728-746MHz_Zoom 1



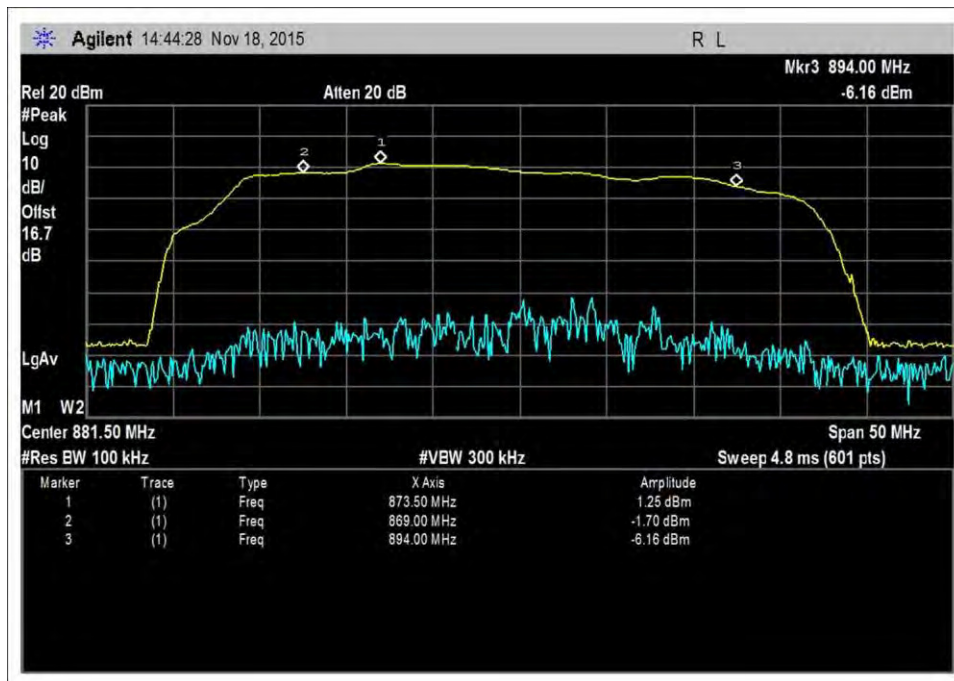
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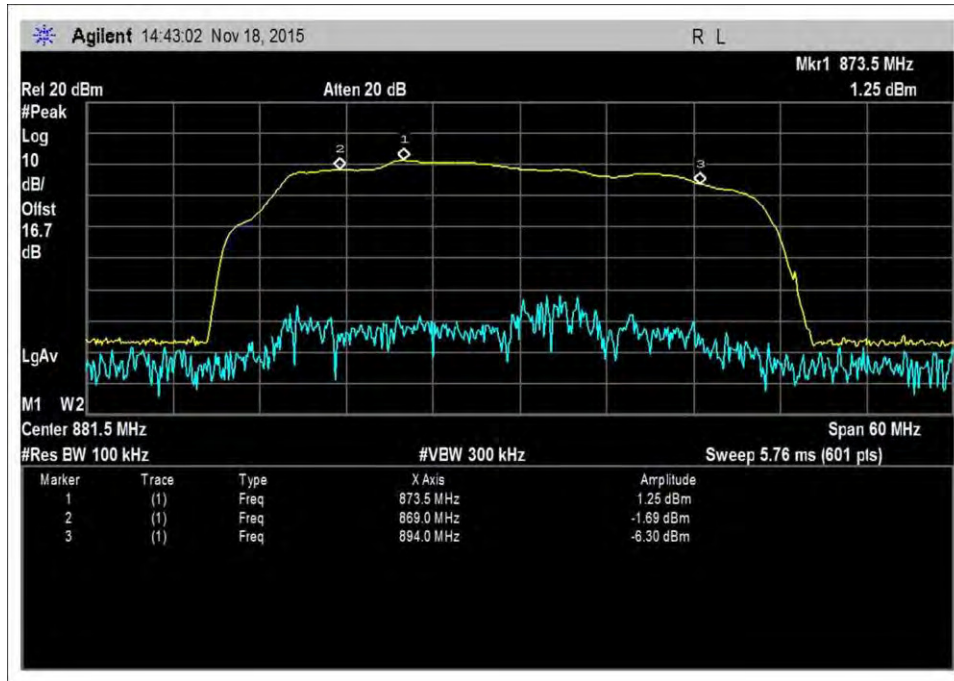
7.1_band verify_DL_746-757MHz



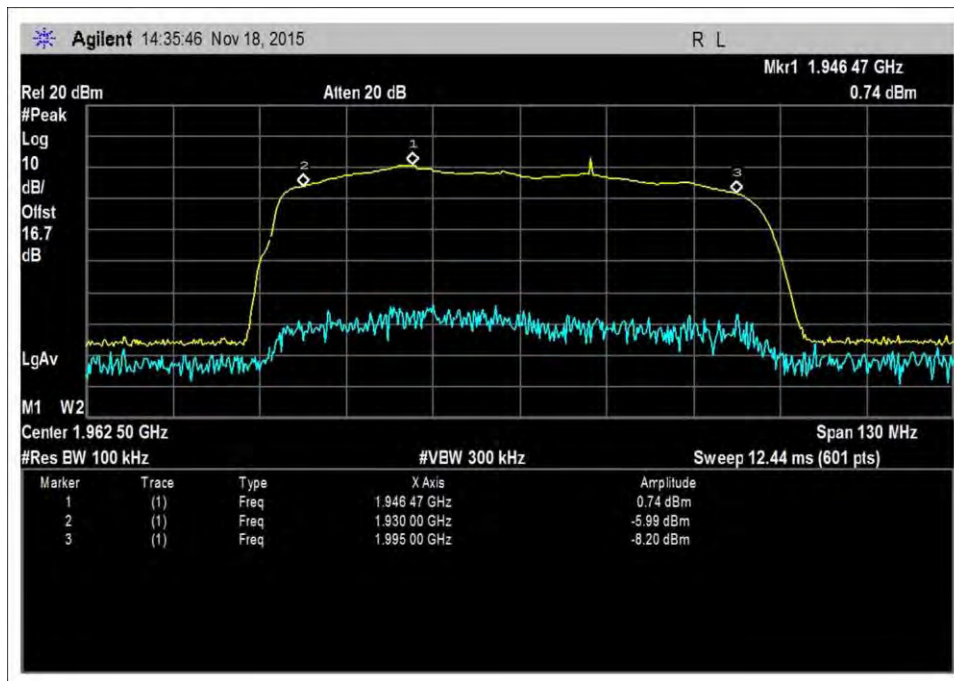
7.1_band verify_DL_746-757MHz_Zoom



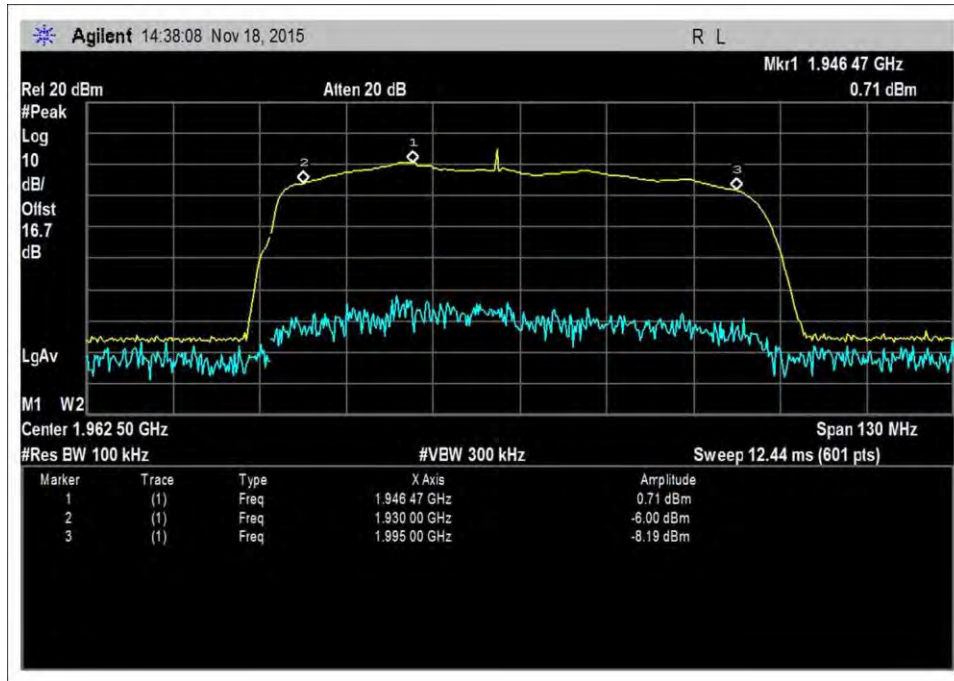
7.1_band verify_DL_869-894MHz



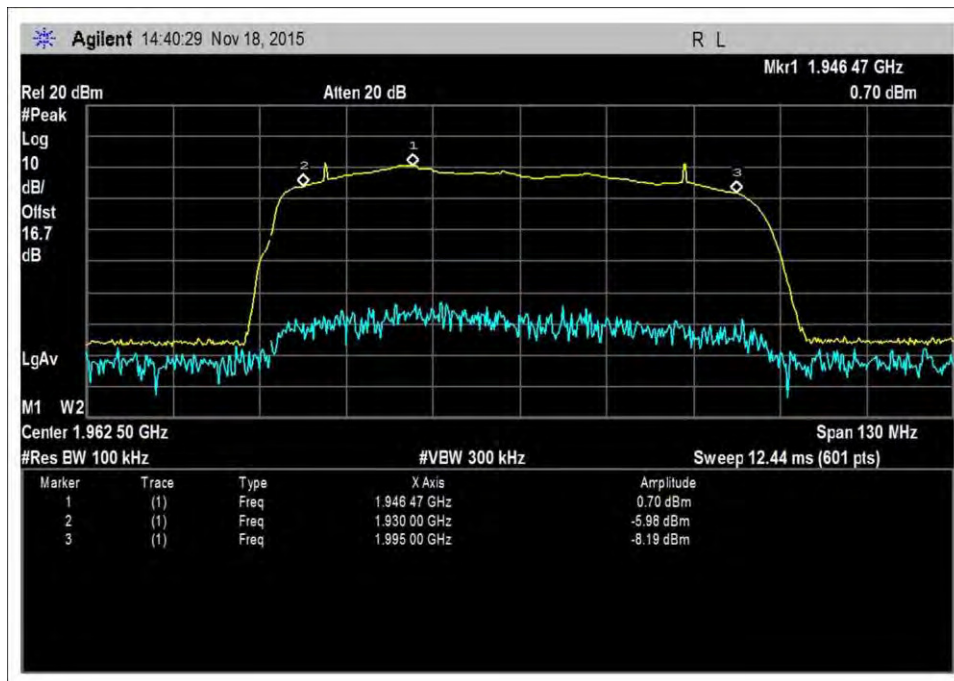
7.1_band verify_DL_869-894MHz_Zoom



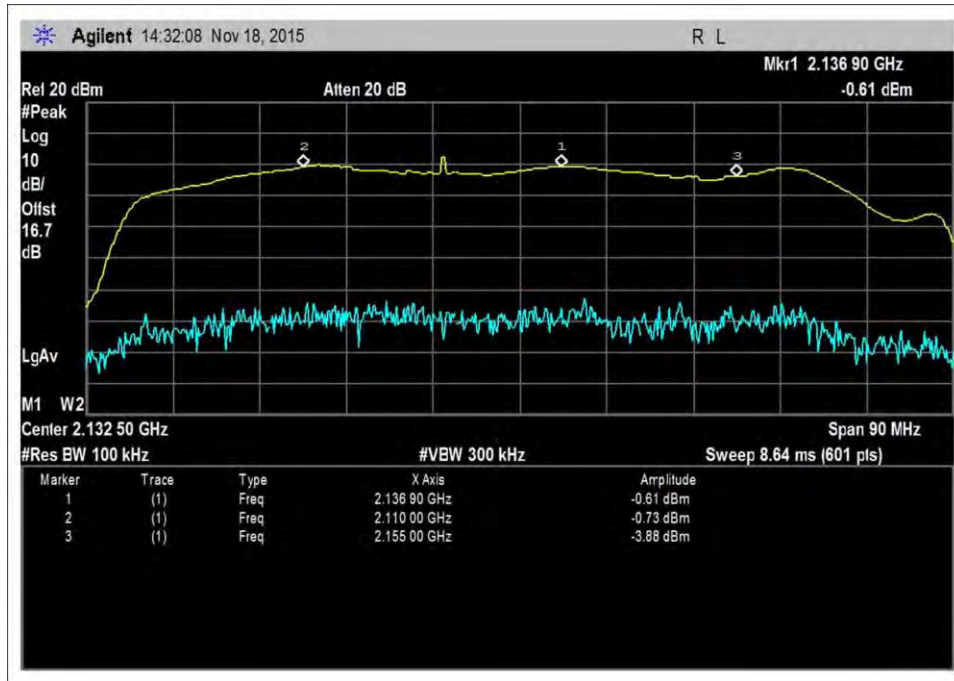
7.1_band verify_DL_1930-1995MHz_1



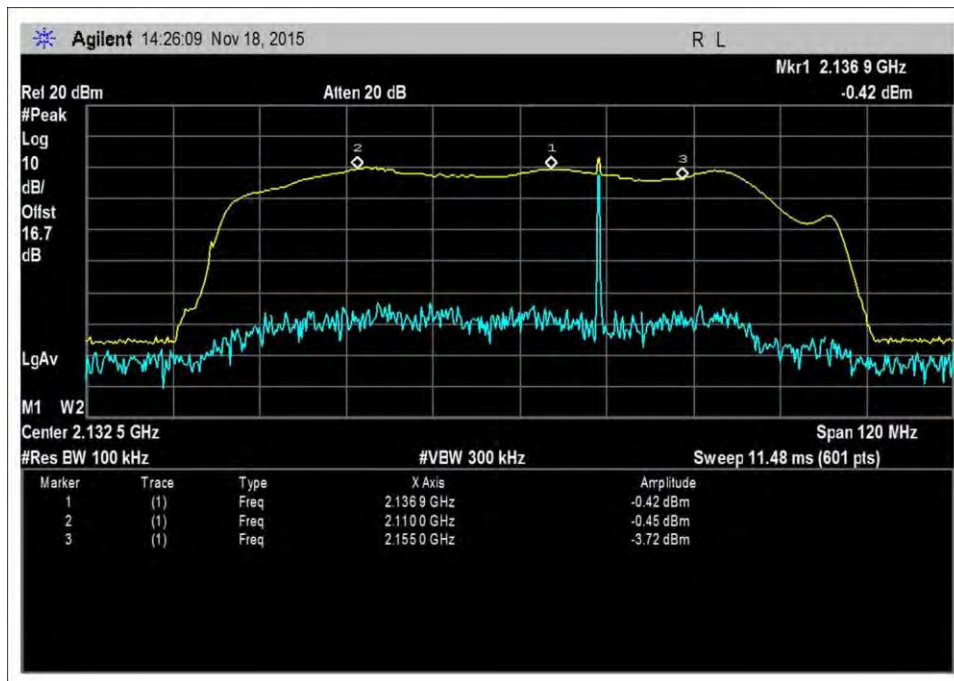
7.1_band verify_DL_1930-1995MHz_2



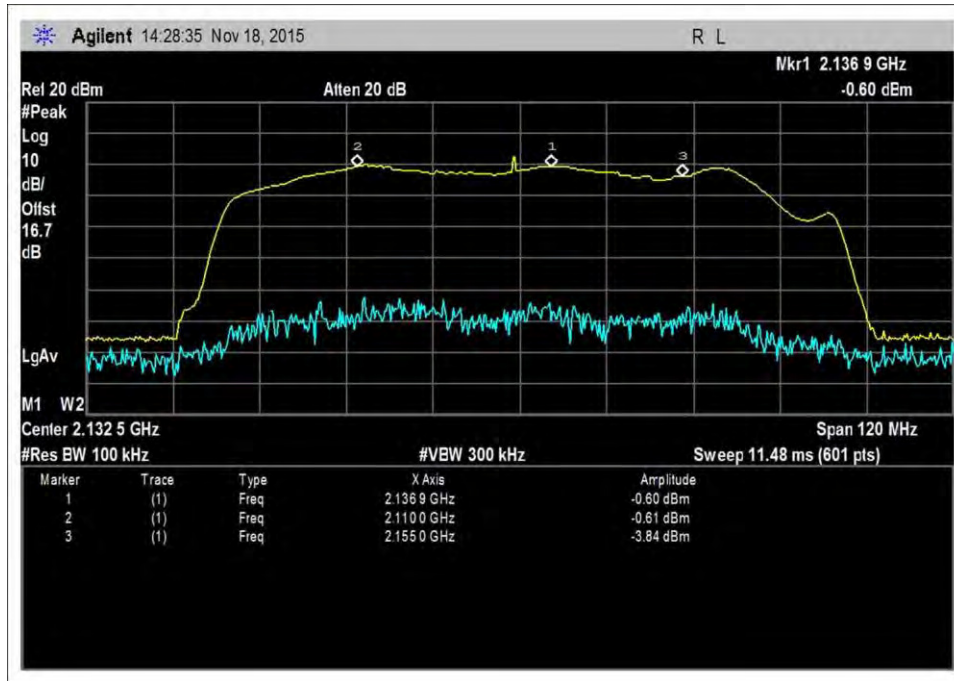
7.1_band verify_DL_1930-1995MHz_3



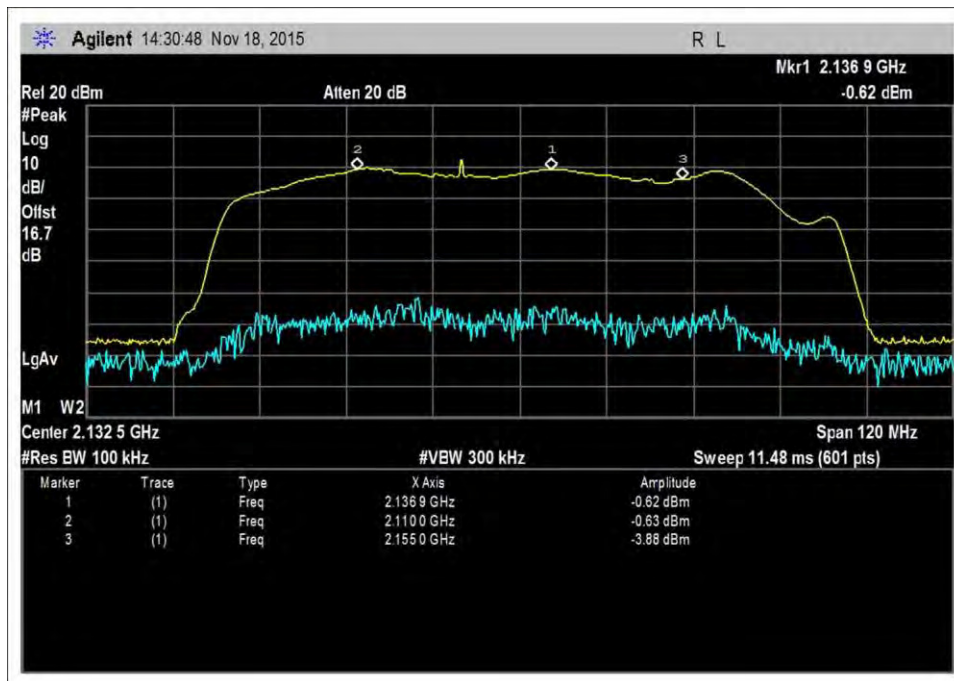
7.1_band verify_DL_2110-2155MHz



7.1_band verify_DL_2110-2155MHz_Zoom 1



7.1_band verify_DL_2110-2155MHz_Zoom 2



7.1_band verify_DL_2110-2155MHz_Zoom 3

7.2 Maximum Power

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**
 Work Order #: **97776** Date: 11/18/2015
 Test Type: **Conducted Emissions** Time: 15:09:23
 Tested By: Daniel Bertran Sequence#: 1
 Software: EMITest 5.02.00

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed Wideband Consumer Booster.
 The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.

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 environment conditions:
 Temperature: 22.8°C, Relative Humidity: 42%, Atmospheric Pressure: 102.4 kPa

Test procedure:
 The test was performed in accordance with section 7.2 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v03 Dated June 5, 2015
 Firmware: V2.0

The booster is to be deployed with antenna kit with the following characteristic:

Antenna Kitting Information							
Component	Prod No. Description	Gain/Loss					Notes
		LTE-A	LTE-V	800MHz	1900MHz	1700MHz\2100MHz	
Outdoor Antenna*	SC500W	4dBi	4dBi	6dBi	7dBi	7dBi\8.5dBi	
Indoor Cable*	SC-RG6 -50 50Feet	3.32dB	3.32dB	3.75dB	6.42dB	6.22dB\6.68dB	50 Feet or longer
Indoor Antenna*	SC249W	7dBi	7dBi	7dBi	10dBi	10dBi\10dBi	
	SC312W	2.5dBi	2.5dBi	3dBi	5dBi	4dBi\5dBi	
* All equivalent antennas and cables are suitable for use with the EZ-4G booster.							

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
	AN03470	Spectrum Analyzer	E4440A	12/2/2013	12/2/2015
	ANP06467	Attenuator	PE7014-10	5/13/2015	5/13/2017
	ANP06239	Attenuator	54A-10	7/9/2014	7/9/2016

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)	Pulse GSM Output (dBm)	Gain (dB)	Input (dBm)	4.1 MHz AWGN Output (dBm)	Gain (dB)
UL1710-1755	-44.5	21.8	66.3	-46.3	20.4	66.7
UL1850-1915	-37.6	21.2	58.8	-38.1	20.1	58.2
UL824-894	-41.2	20.0	61.2	-41.8	19.9	61.7
UL 698-716	-38.2	20.2	58.4	-39.4	19.6	59.0
UL776-787	-40.3	20.4	60.7	-39.8	20.7	60.5
DL2110-2155	-52.3	10.2	62.5	-58.6	2.7	61.3
DL1930-1995	-56.1	9.7	65.8	-62.1	2.5	64.6
DL869-894	-52.7	10.1	62.8	-57.5	3.7	61.2
DL:728-746	-51.9	7.3	59.2	-55.4	3.4	58.8
DL 746-757	-51.2	7.5	58.7	-55.9	2.3	58.2

Pulse GSM					Conducted	Conducted and EIRP
Frequency (MHz)	Output Power (dBm)	Ant Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit Min (dBm)	Limit Max (dBm)
UL1710-1755	21.8	7	0*	28.8	17	30
UL1850-1915	21.2	7	0*	28.2	17	30
UL824-894	20.0	6	0*	26.0	17	30
UL 698-716	20.2	4	0*	24.2	17	30
UL776-787	20.4	4	0*	24.4	17	30
DL2110-2155	10.2	10	6.68	13.5	NA	17
DL1930-1995	9.7	10	6.42	13.3	NA	17
DL869-894	10.1	7	3.75	13.3	NA	17
DL:728-746	7.3	7	3.32	11.0	NA	17
DL 746-757	7.5	7	3.32	11.1	NA	17

0*: 0 dB loss. Antenna is connected directly to the port of the EUT.

4.1MHz AWGN					Conducted	Conducted and EIRP
Frequency (MHz)	Output Power (dBm)	Ant Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit Min (dBm)	Limit Max (dBm)
UL1710-1755	20.4	7	0*	27.4	17	30
UL1850-1915	20.1	7	0*	27.1	17	30
UL824-894	19.9	6	0*	25.9	17	30
UL 698-716	19.6	4	0*	23.6	17	30
UL776-787	20.7	4	0*	24.7	17	30
DL2110-2155	2.7	10	6.68	6.0	na	17
DL1930-1995	2.5	10	6.42	6.1	na	17
DL869-894	3.7	7	3.75	7.0	na	17
DL:728-746	3.4	7	3.32	7.1	na	17
DL 746-757	2.3	7	3.32	5.9	na	17

0*: 0 dB loss. Antenna is connected directly to the port of the EUT.

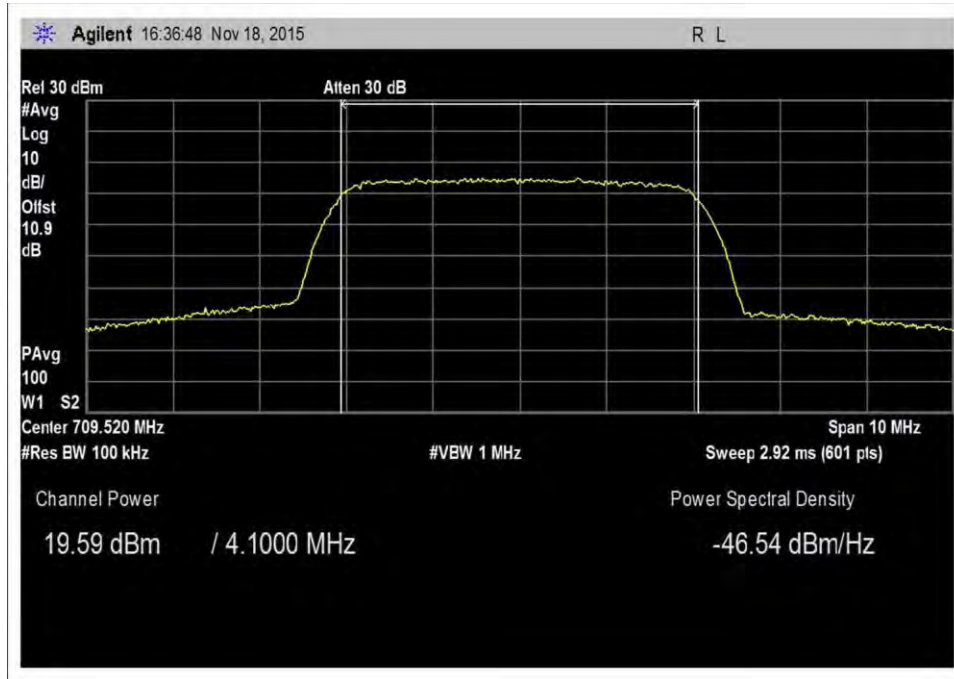
Section 5.5 power

Frequency (MHz)	Pulse GSM			4.1 MHz AWGN		
	Input (dBm)	Output (dBm)	Gain (dB)	Input (dBm)	Output (dBm)	Gain (dB)
UL1710-1755	-34.5	21.8	56.3	-36.1	19.4	55.5
UL1850-1915	-28.0	21.2	49.2	-28.8	20.4	49.2
UL824-894	-31.9	20.3	52.2	-31.6	19.2	50.8
UL 698-716	-29.4	20.1	49.5	-29.6	19.0	48.6
UL776-787	-31.3	19.8	51.1	-29.5	21.0	50.5
DL2110-2155	-43.1	9.6	52.7	-50.1	2.4	52.5
DL1930-1995	-43.6	9.2	52.8	-50.5	2.5	53.0
DL869-894	-43.2	10.0	53.2	-49.6	3.6	53.2
DL:728-746	-43.2	7.1	50.3	-48.7	1.8	50.5
DL 746-757	-43.2	7.4	50.6	-48.4	2.5	50.9

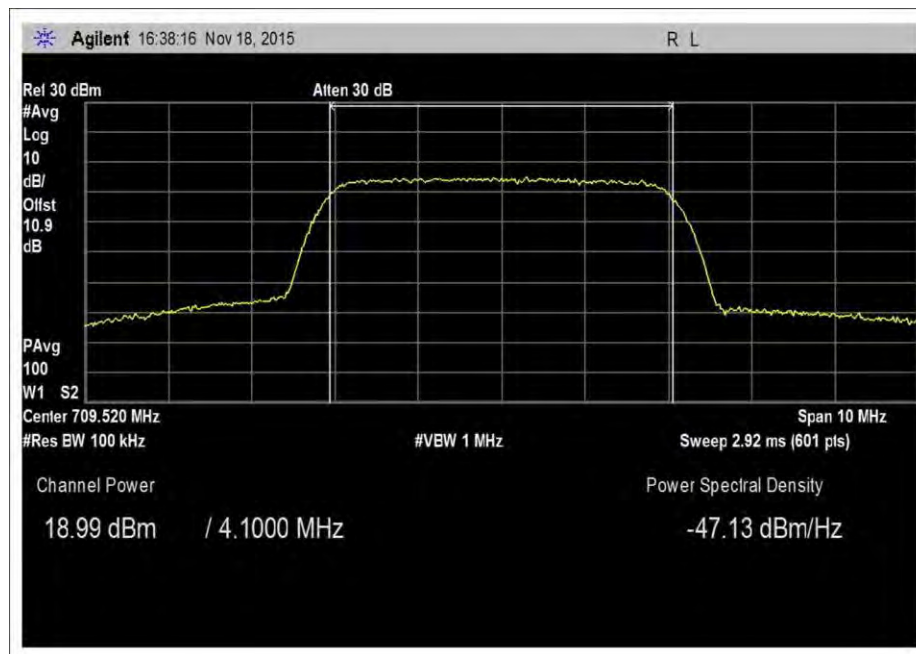
Note: The booster went into Transmitter off mode at Max input power of +0dBm (UL) and -20dBm (DL). Results presented on the above table are at 1 dB below the Transmit off RF input level. This table is for reference only.

Plots

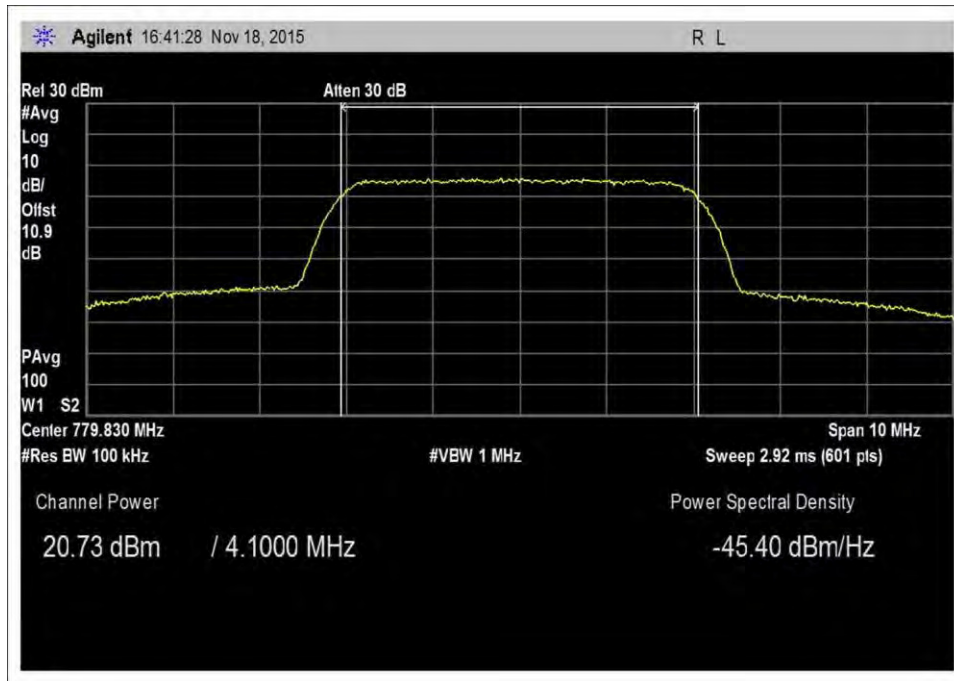
AWGN



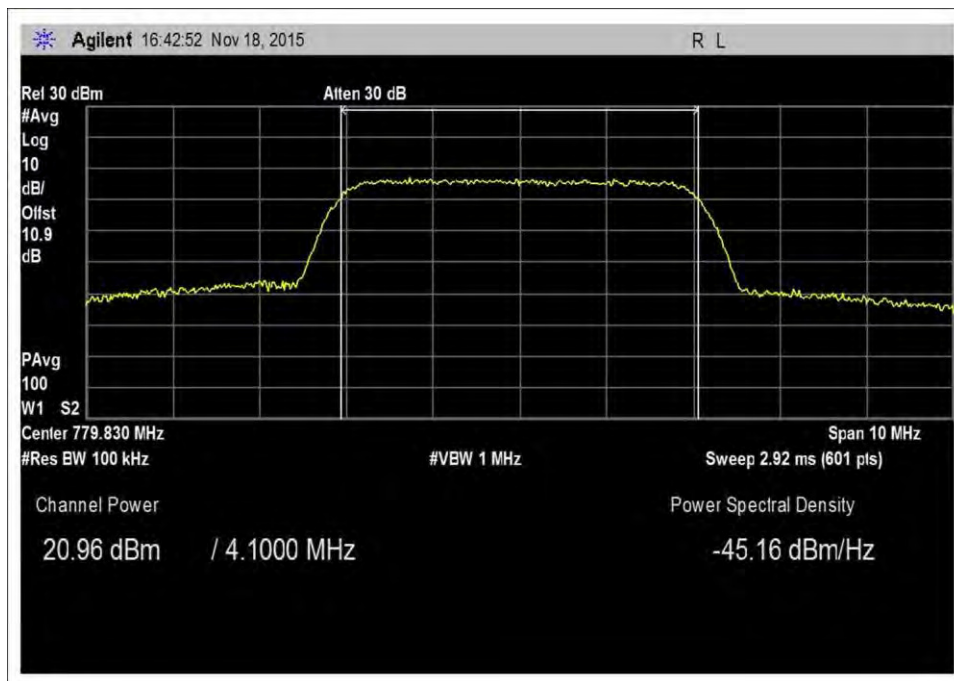
7.2_Power_UL_698-716_AWGN



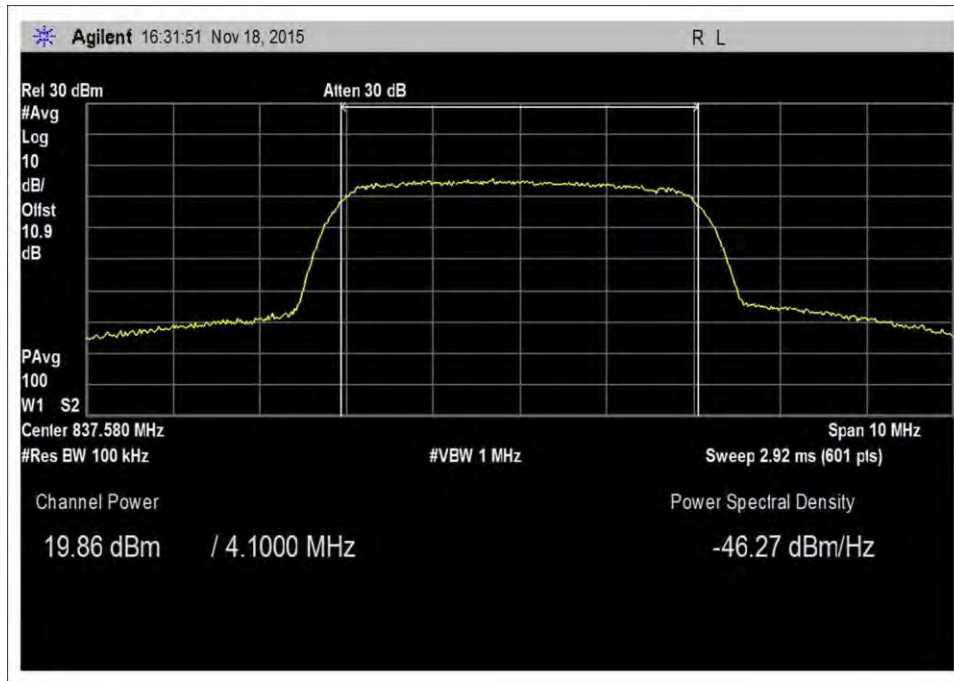
7.2_Power_UL_698-716_AWGN-Max



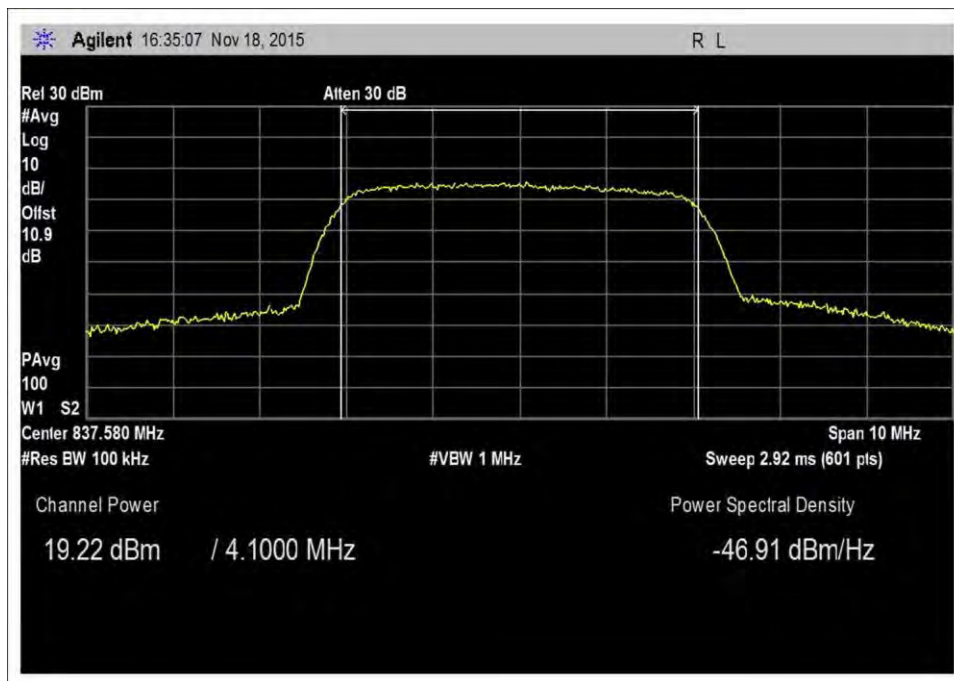
7.2_Power_UL_776-787_AWGN



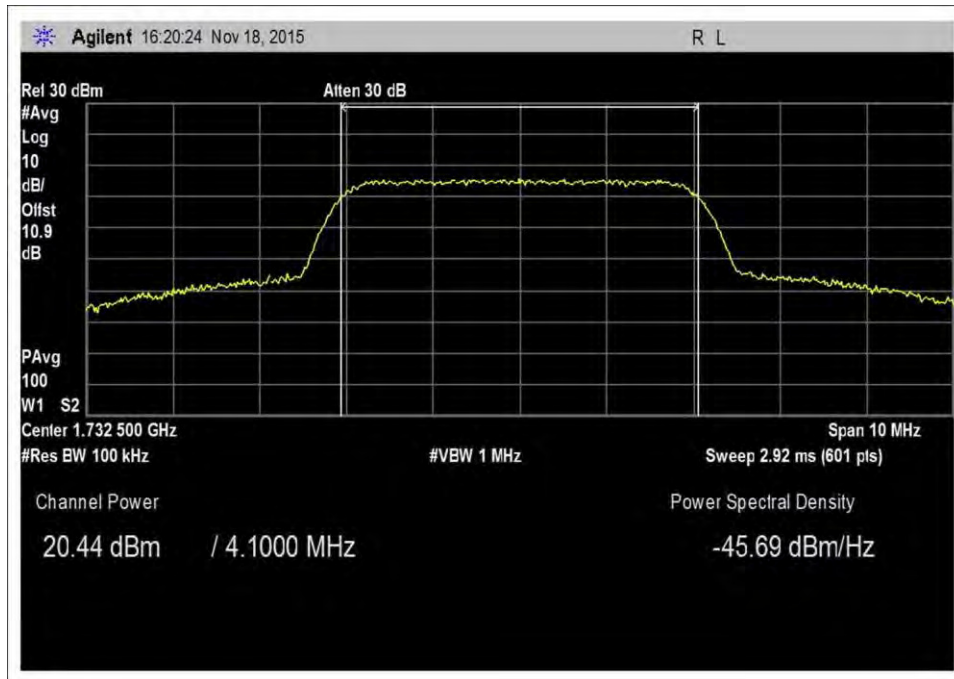
7.2_Power_UL_776-787_AWGN-Max



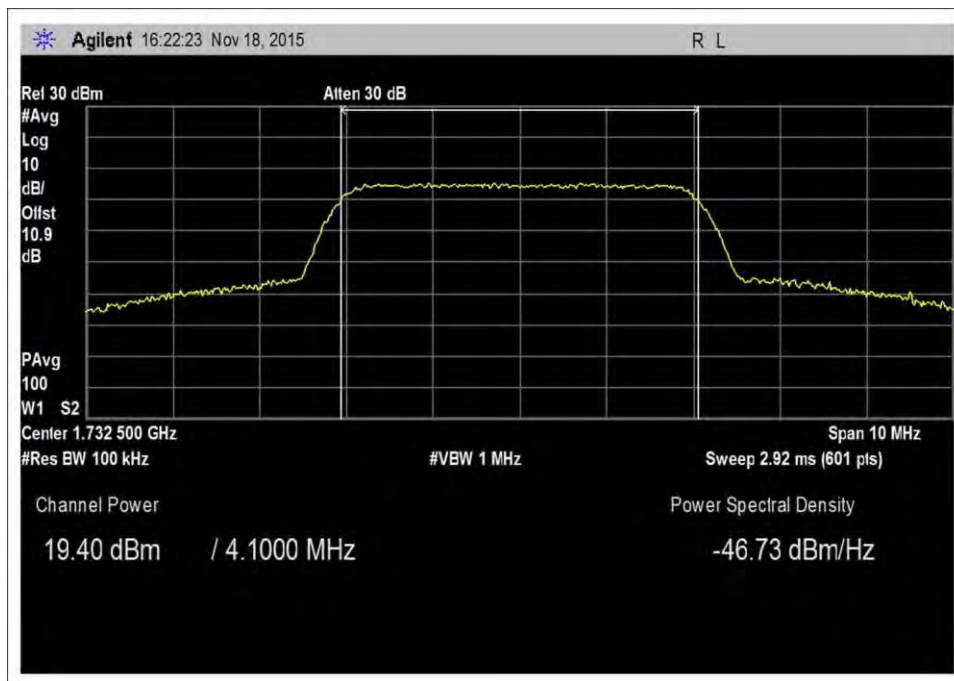
7.2_Power_UL_824-849_AWGN



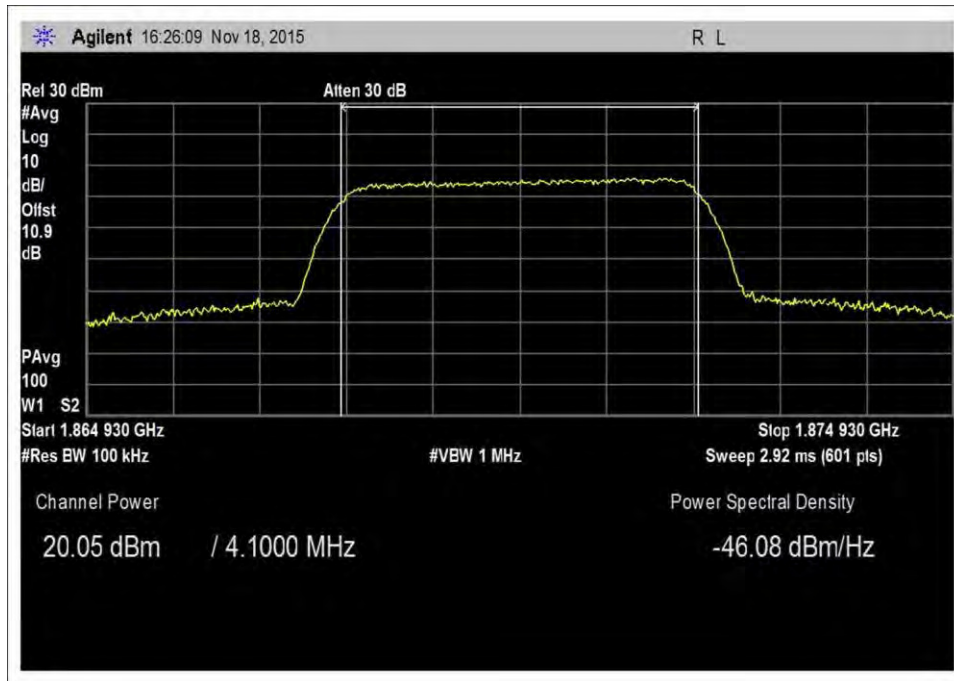
7.2_Power_UL_824-849_AWGN-Max



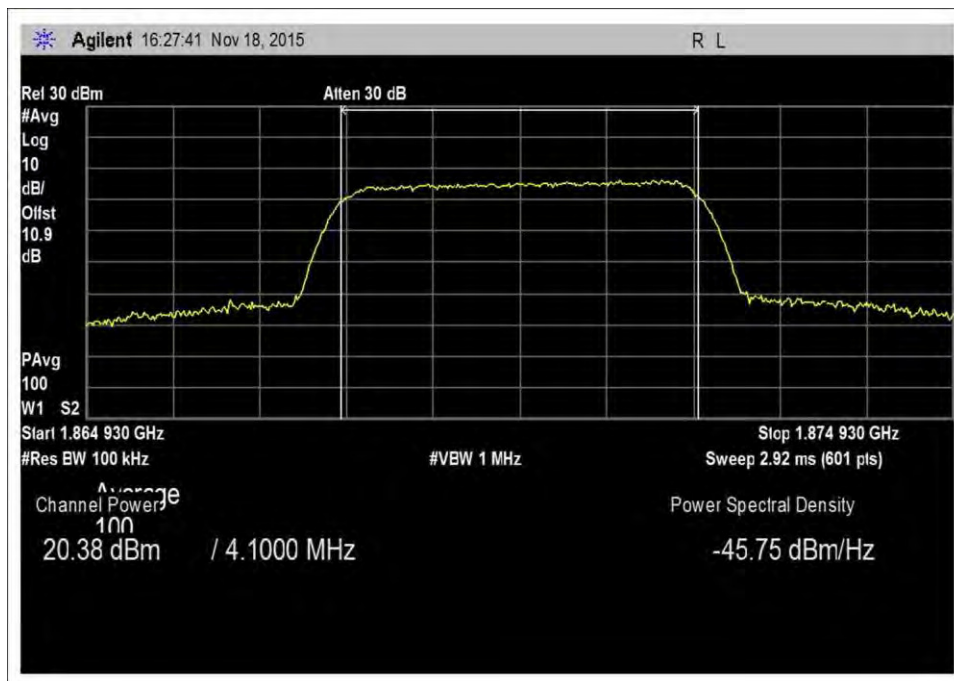
7.2_Power_UL_1710-1755_AWGN



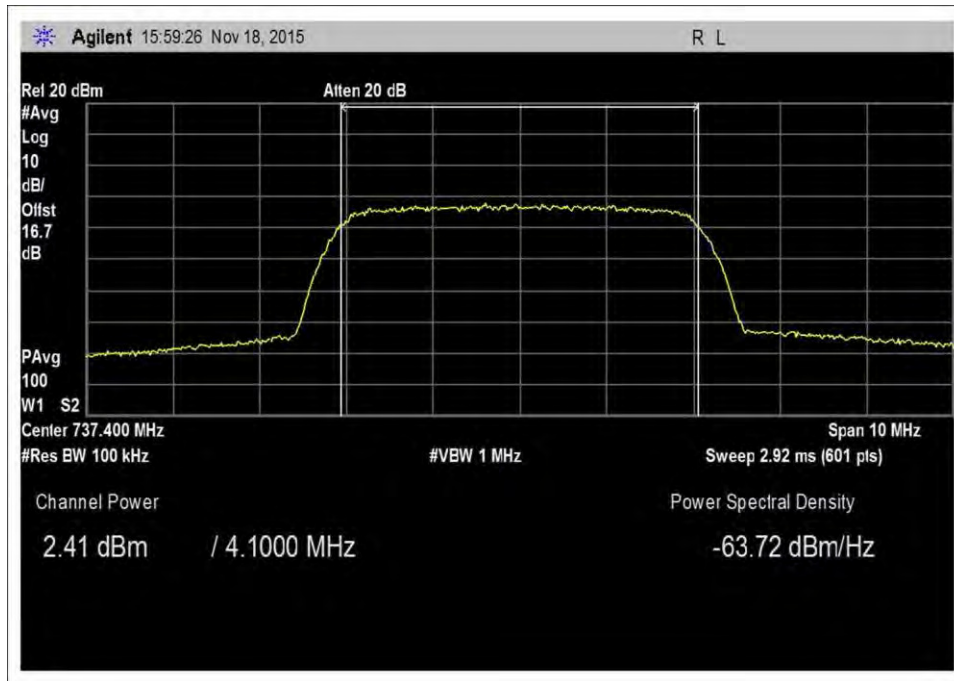
7.2_Power_UL_1710-1755_AWGN-Max



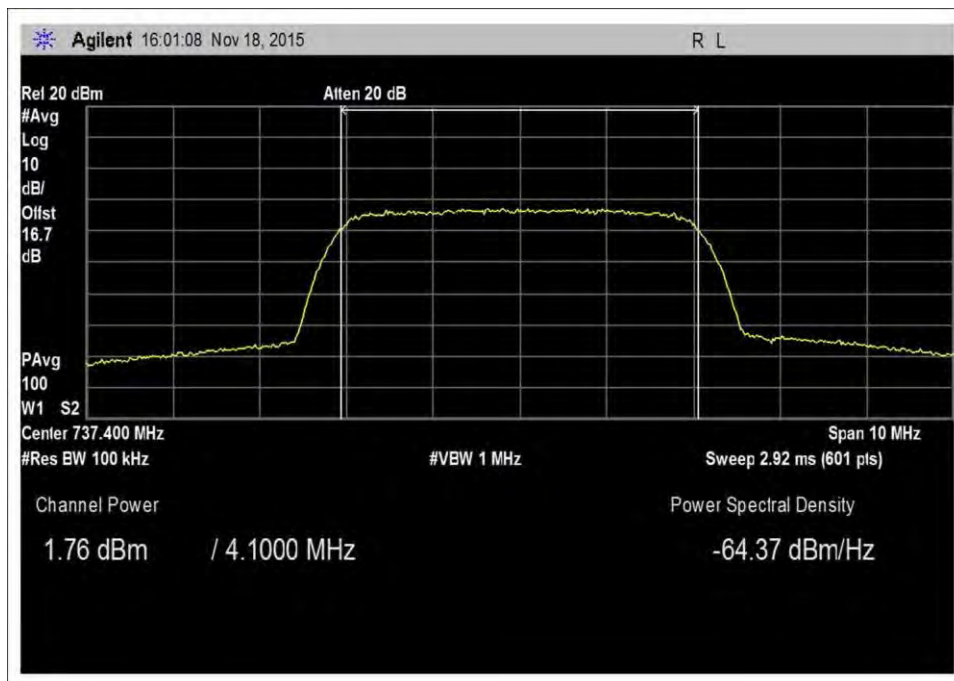
7.2_Power_UL_1850-1915_AWGN



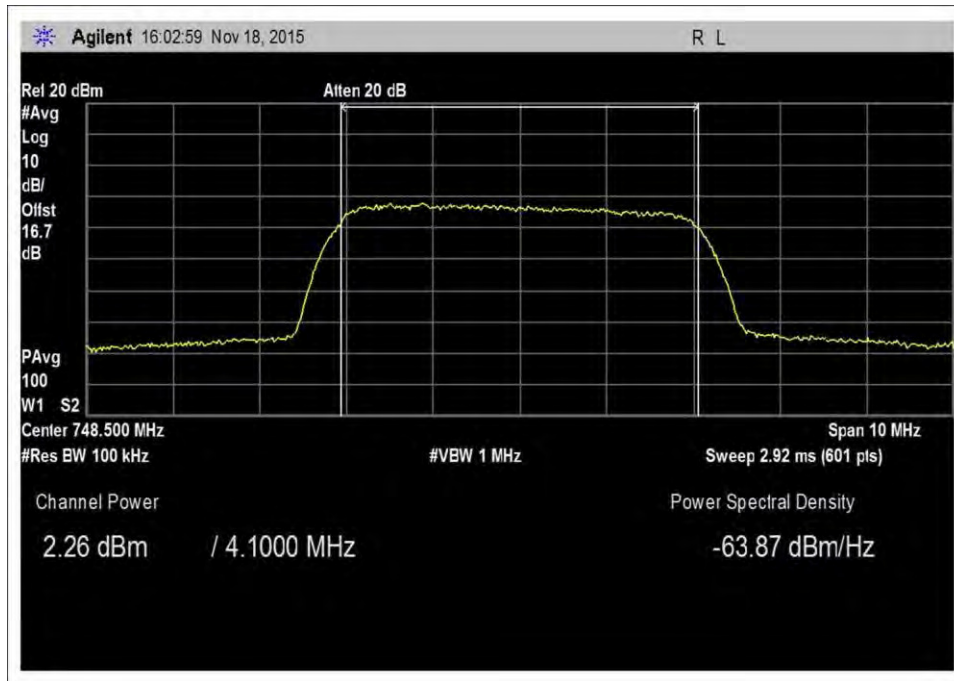
7.2_Power_UL_1850-1915_AWGN-Max



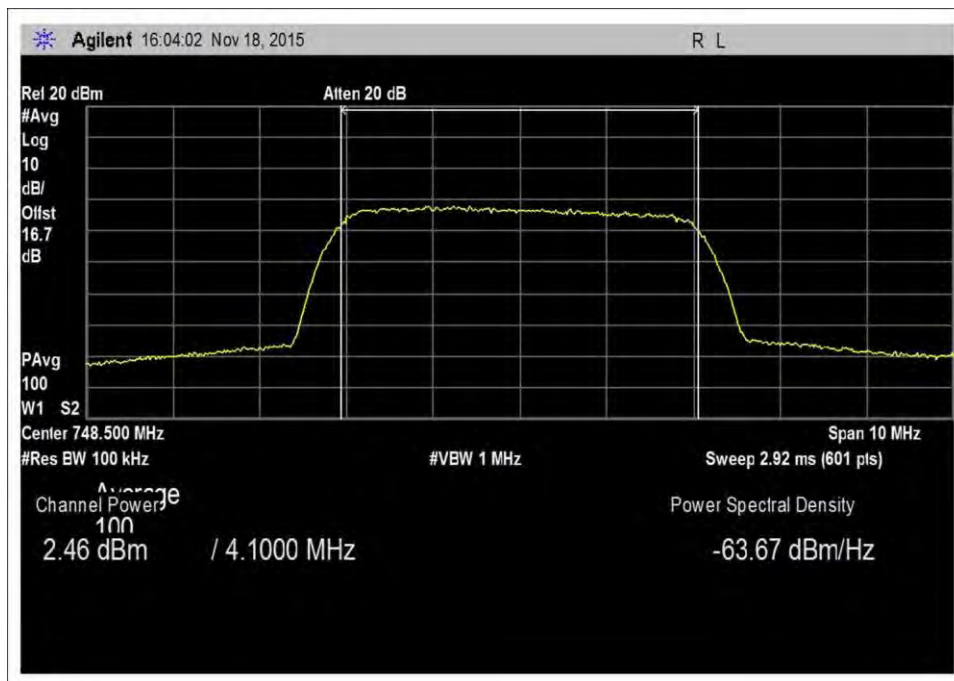
7.2_Power_DL_728-746_AWGN



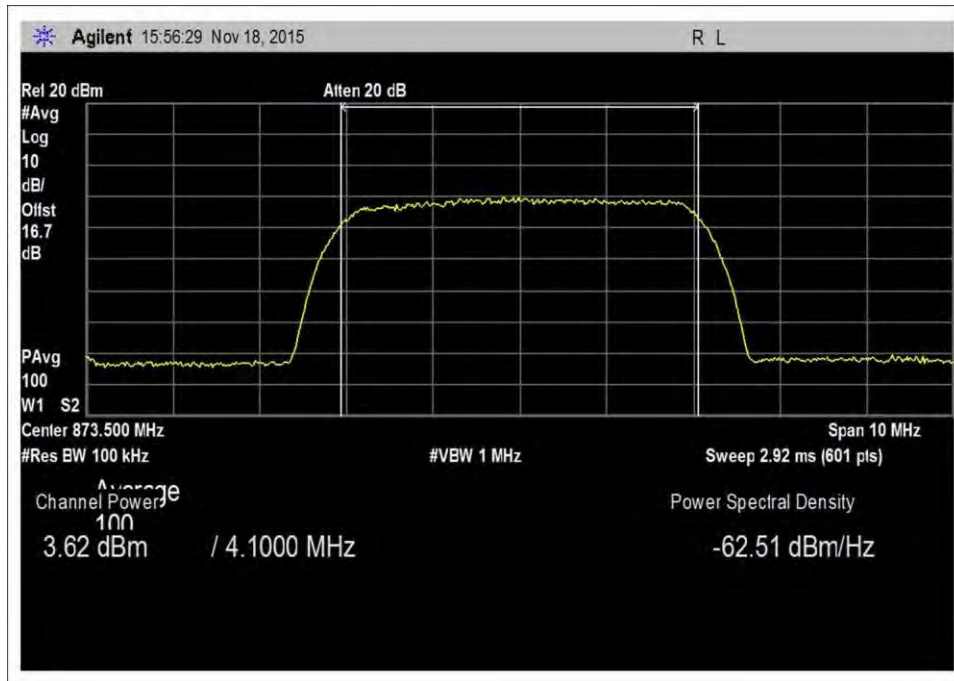
7.2_Power_DL_728-746_AWGN-Max



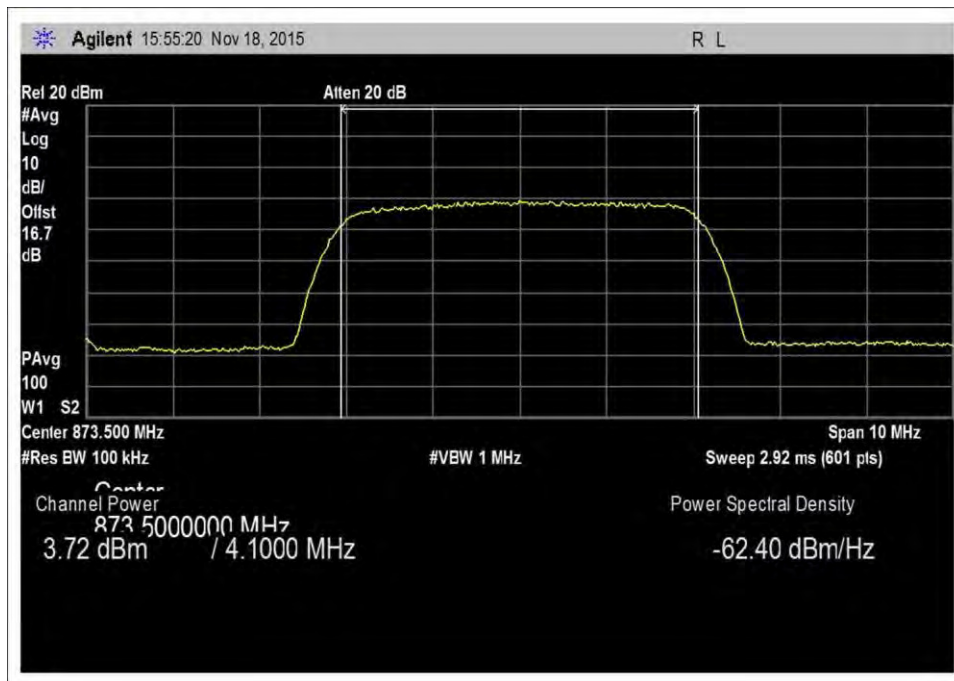
7.2_Power_DL_746-757_AWGN



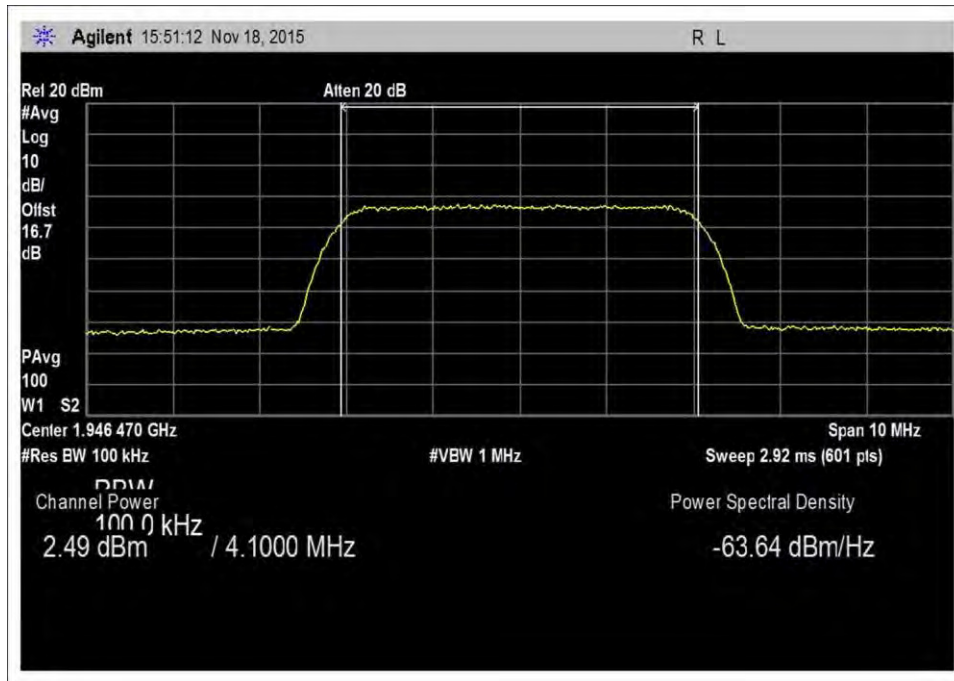
7.2_Power_DL_746-757_AWGN-Max



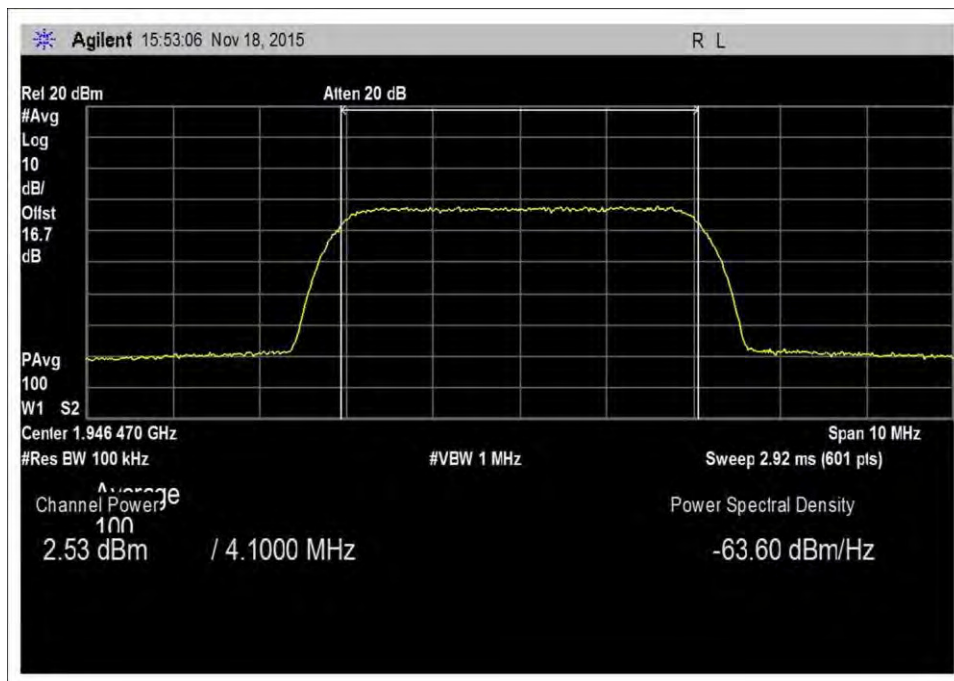
7.2_Power_DL_869-894__AWGN-Max



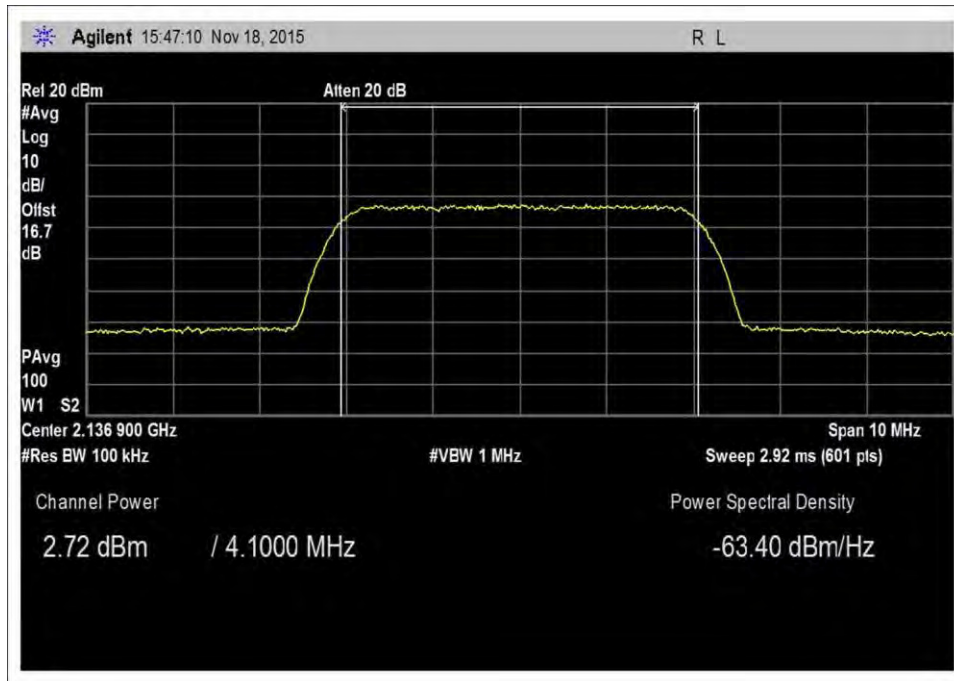
7.2_Power_DL_869-894_AWGN



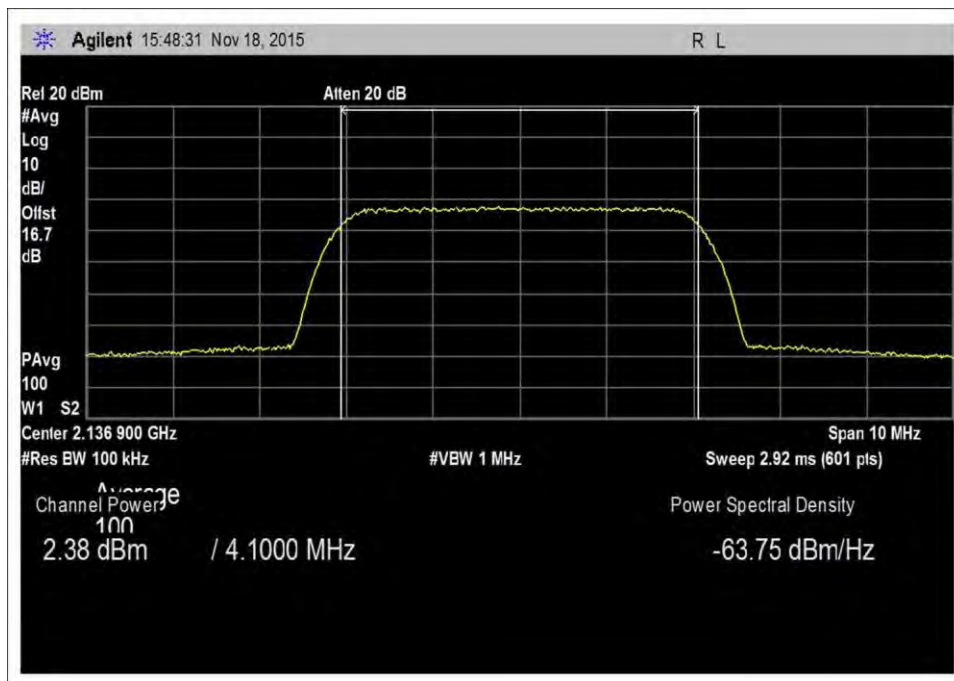
7.2_Power_DL_1930-1995_AWGN



7.2_Power_DL_1930-1995_AWGN-Max

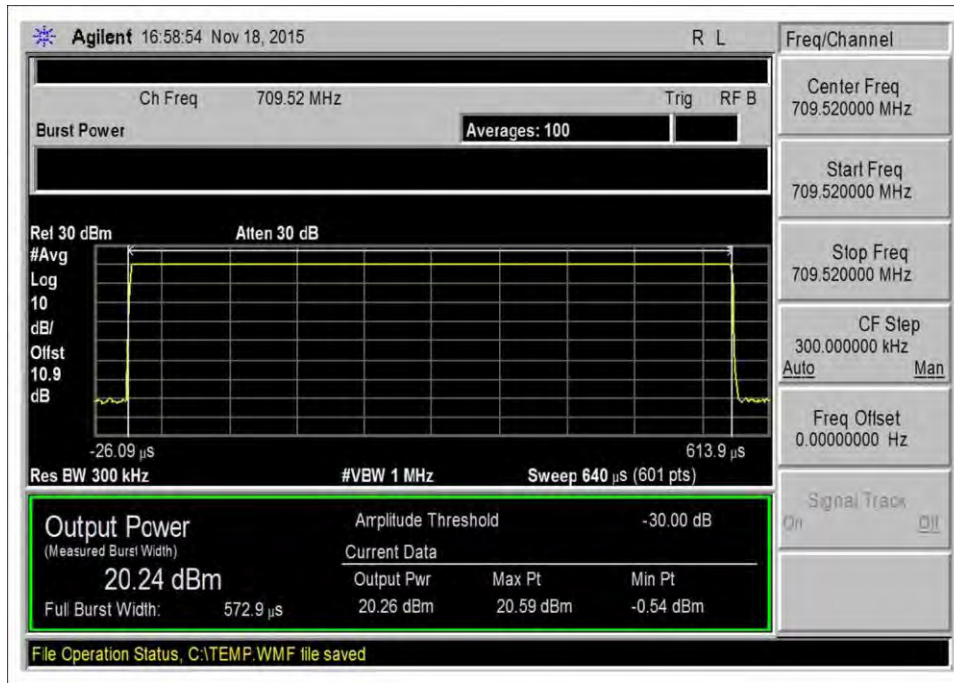


7.2_Power_DL_2110-2155_AWGN

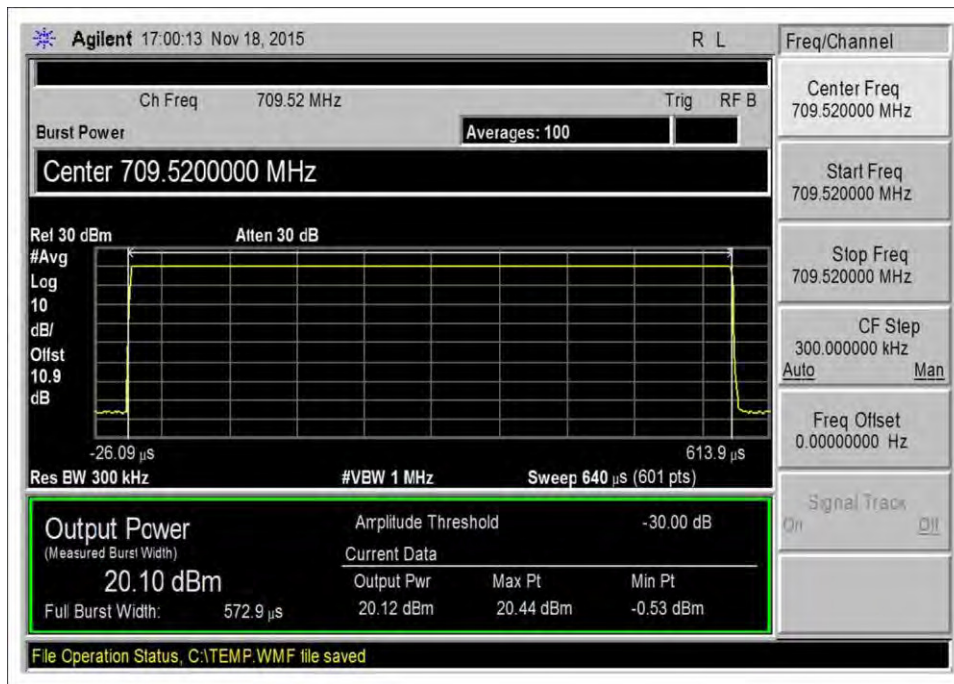


7.2_Power_DL_2110-2155_AWGN-Max

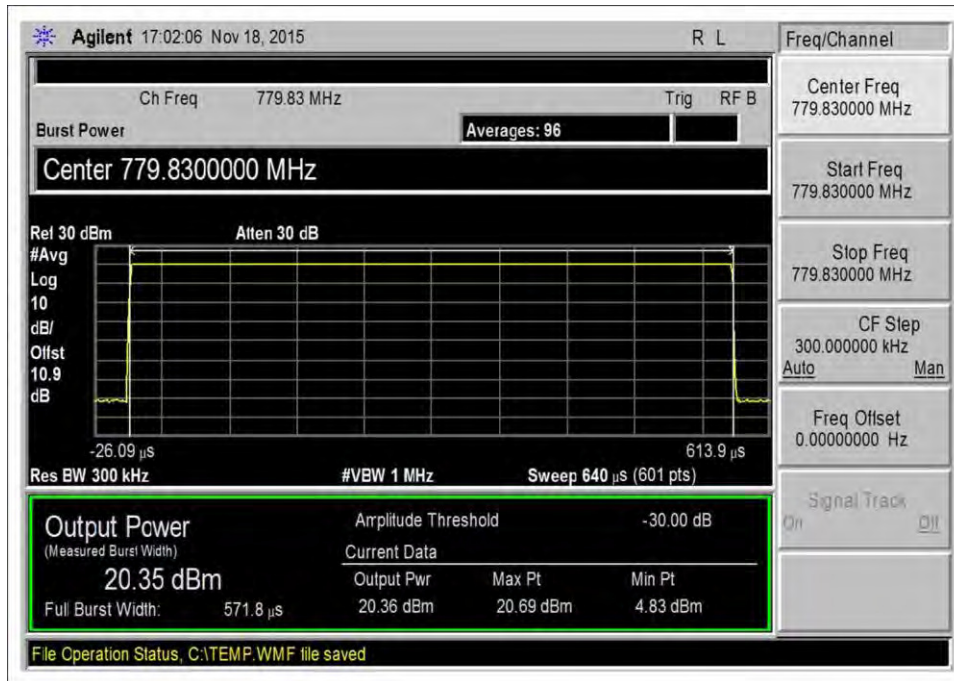
GSM



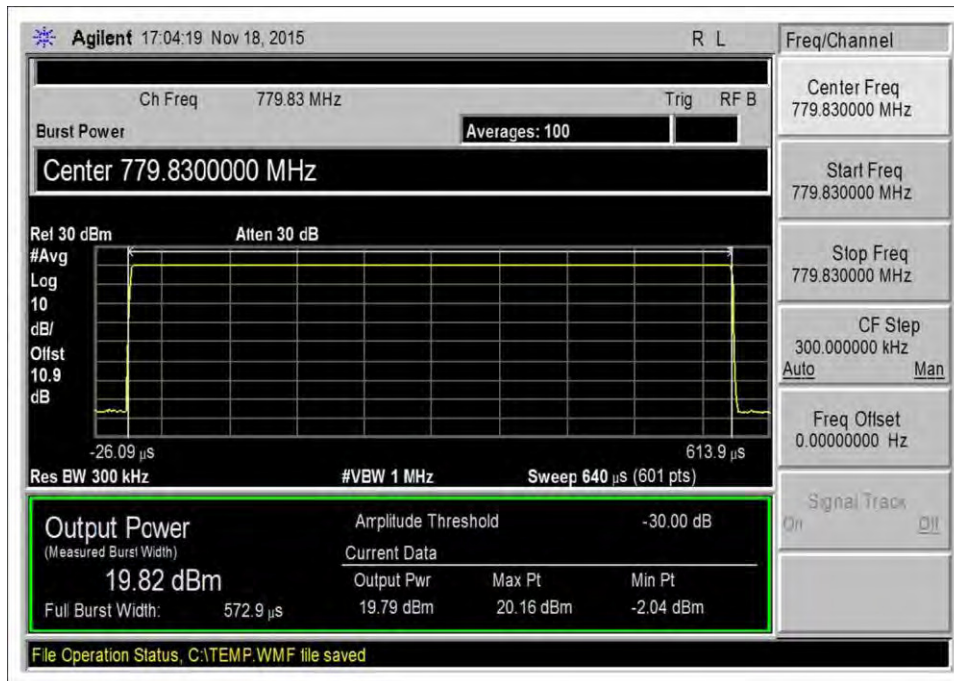
7.2_Power_UL_698-716_GSM



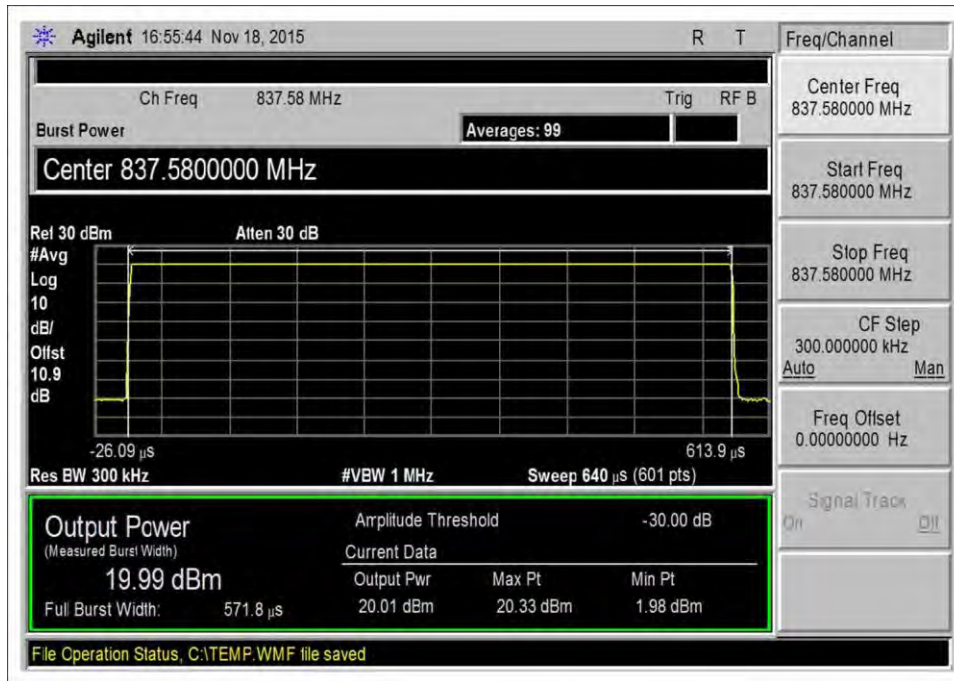
7.2_Power_UL_698-716_GSM-Max



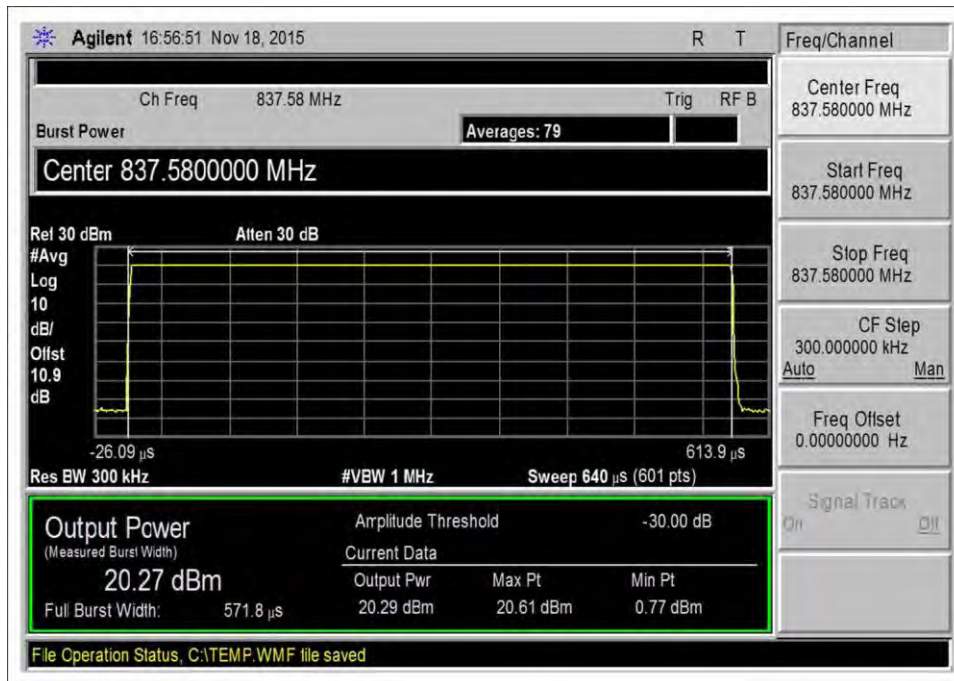
7.2_Power_UL_776-787_GSM



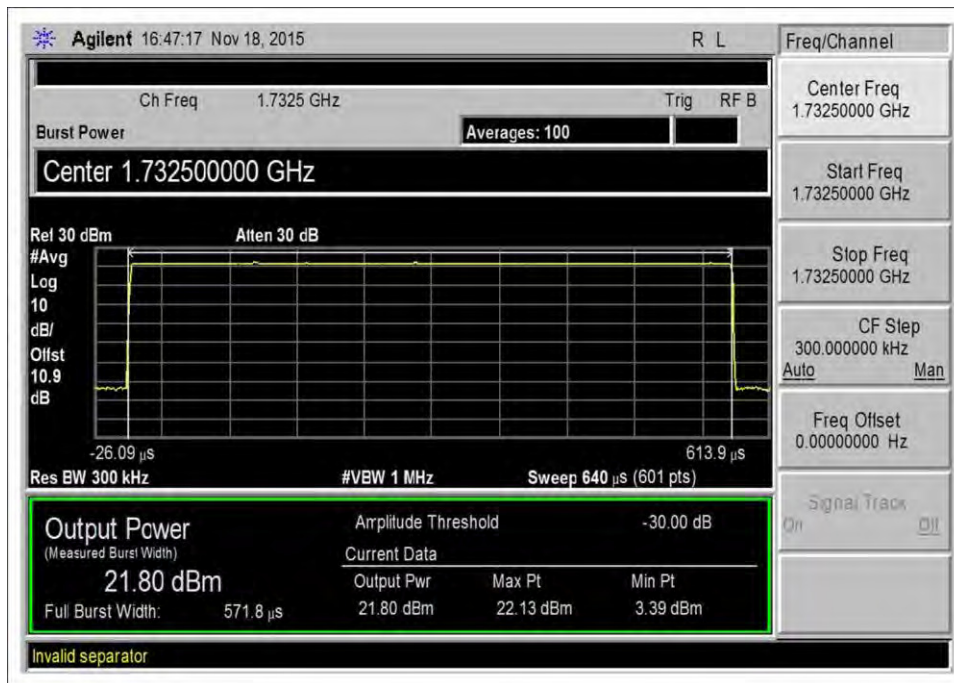
7.2_Power_UL_776-787_GSM-Max



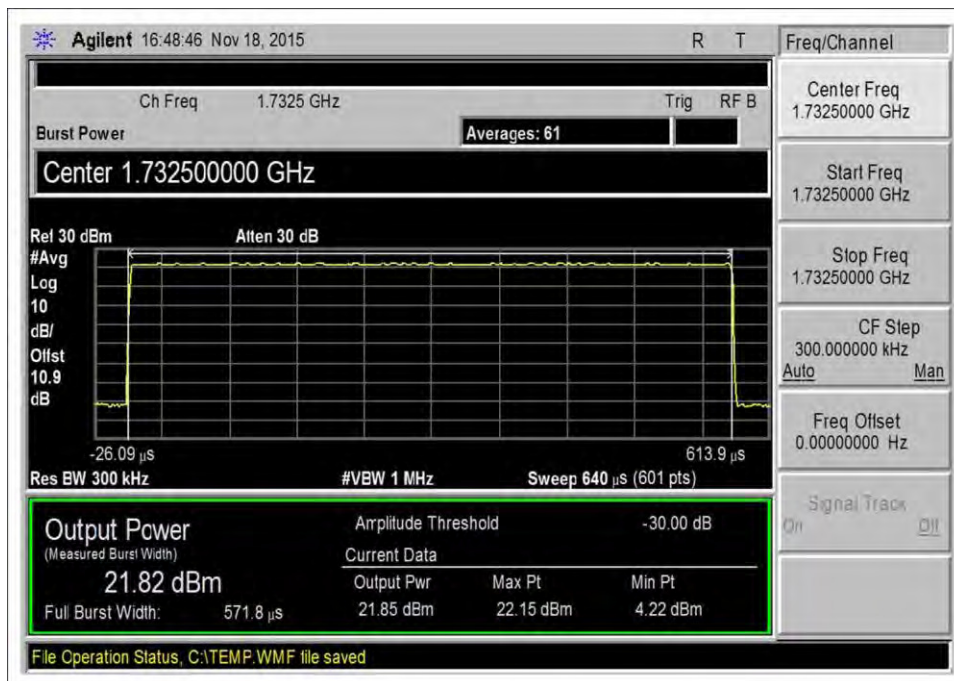
7.2_Power_UL_824-849_GSM



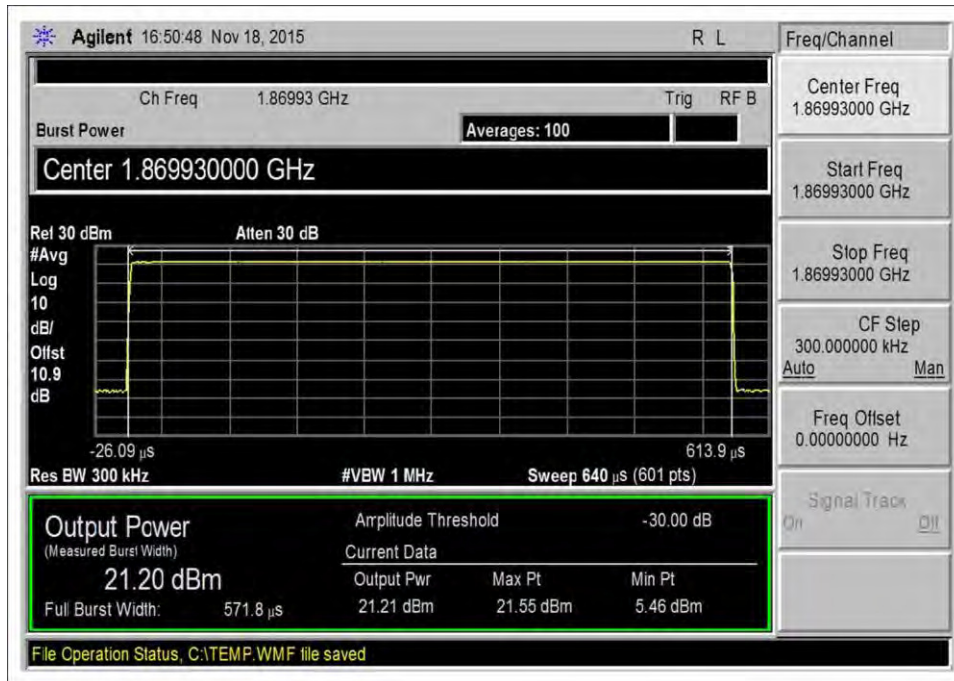
7.2_Power_UL_824-849_GSM-Max



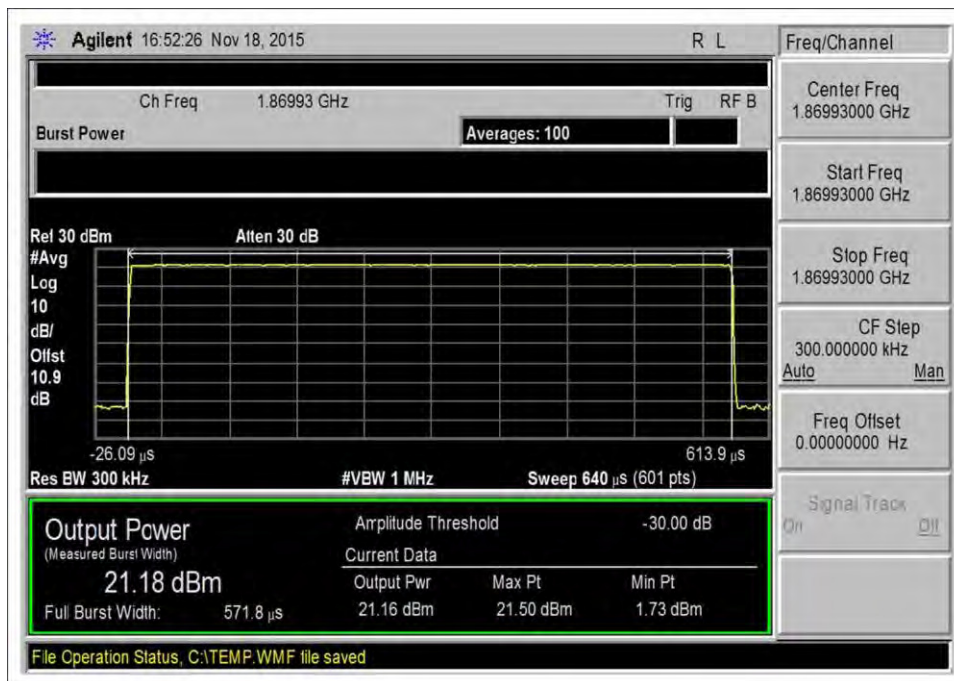
7.2_Power_UL_1710-1755_GSM



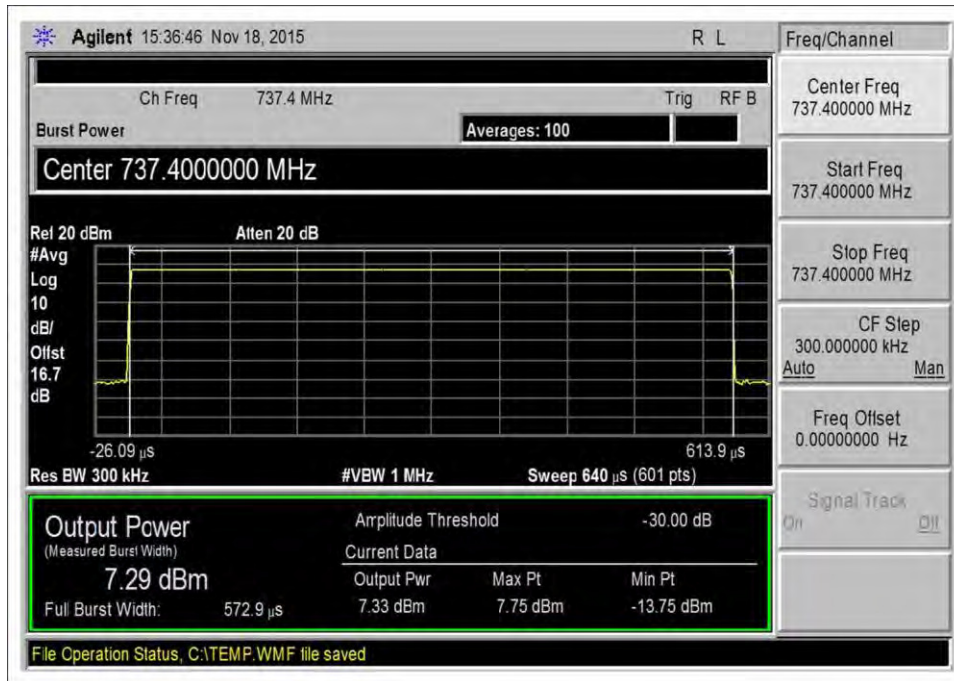
7.2_Power_UL_1710-1755_GSM-Max



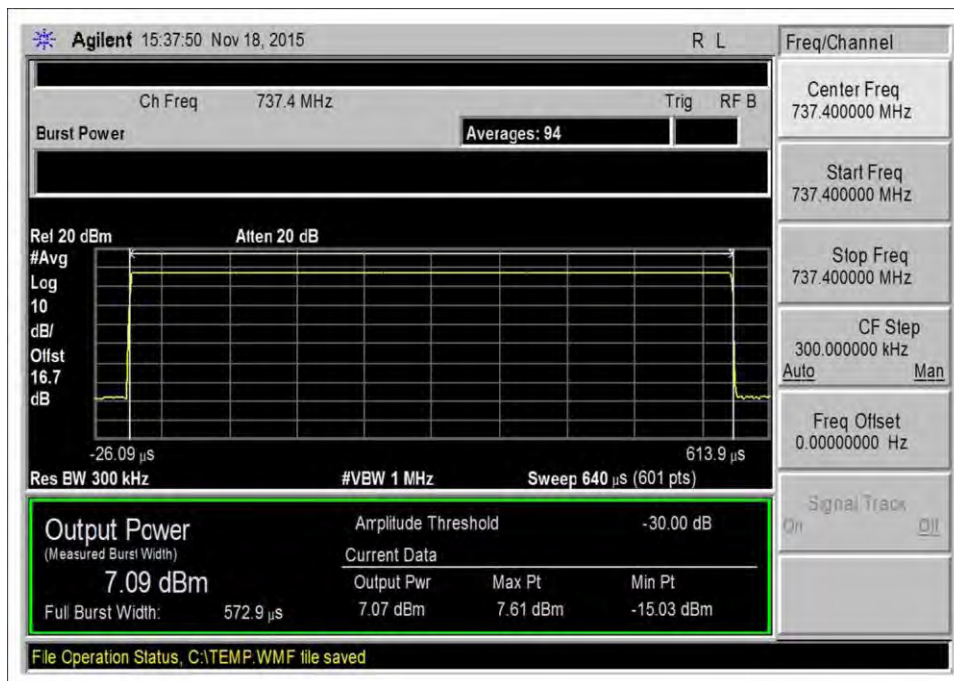
7.2_Power_UL_1850-1915_GSM



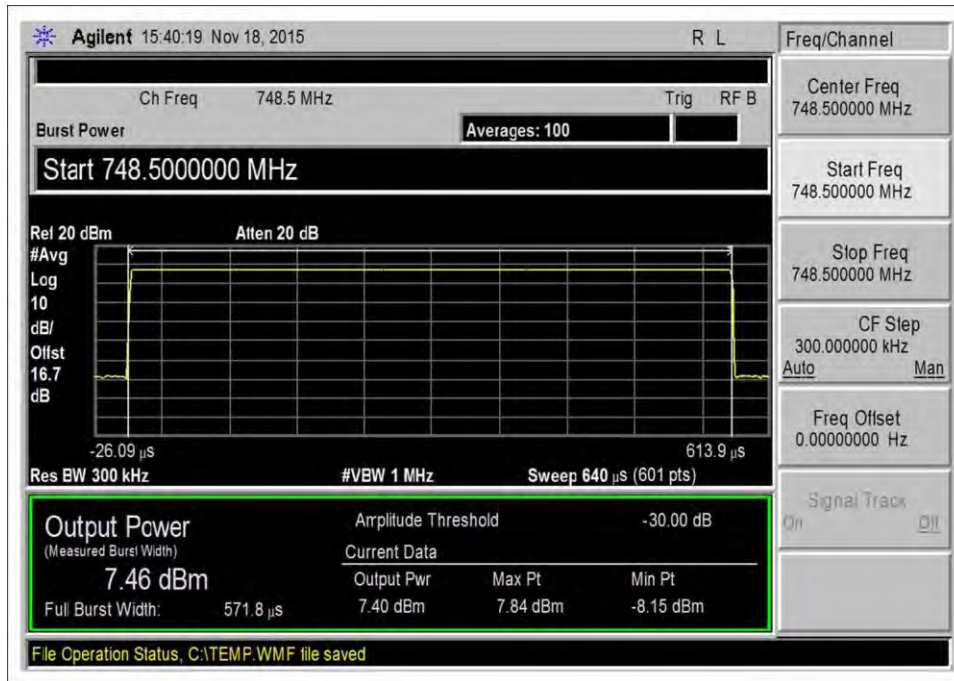
7.2_Power_UL_1850-1915_GSM-Max



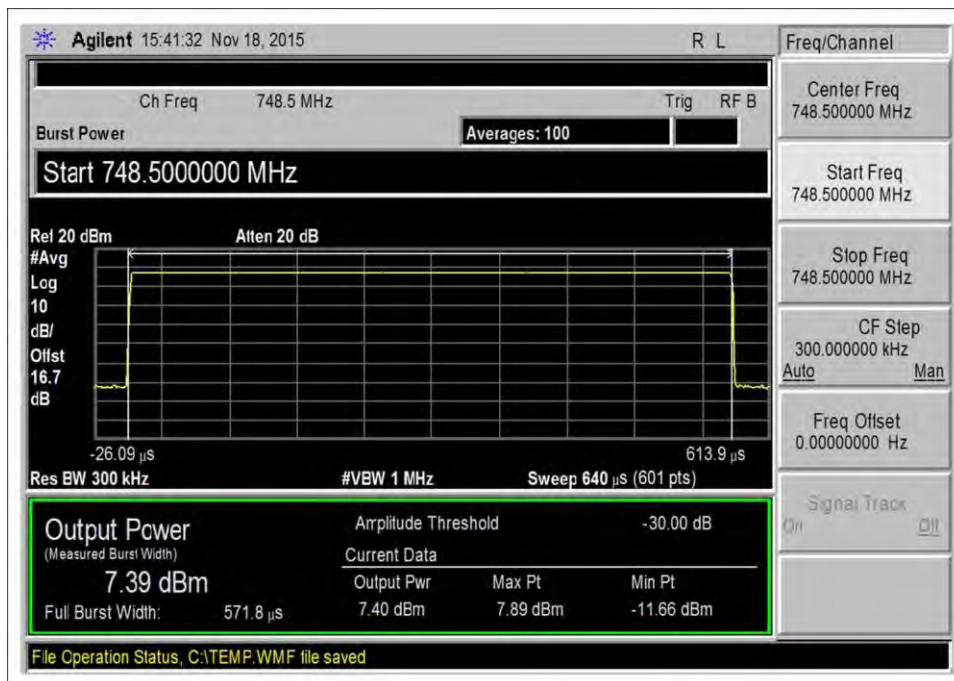
7.2_Power_DL_728-746_GSM



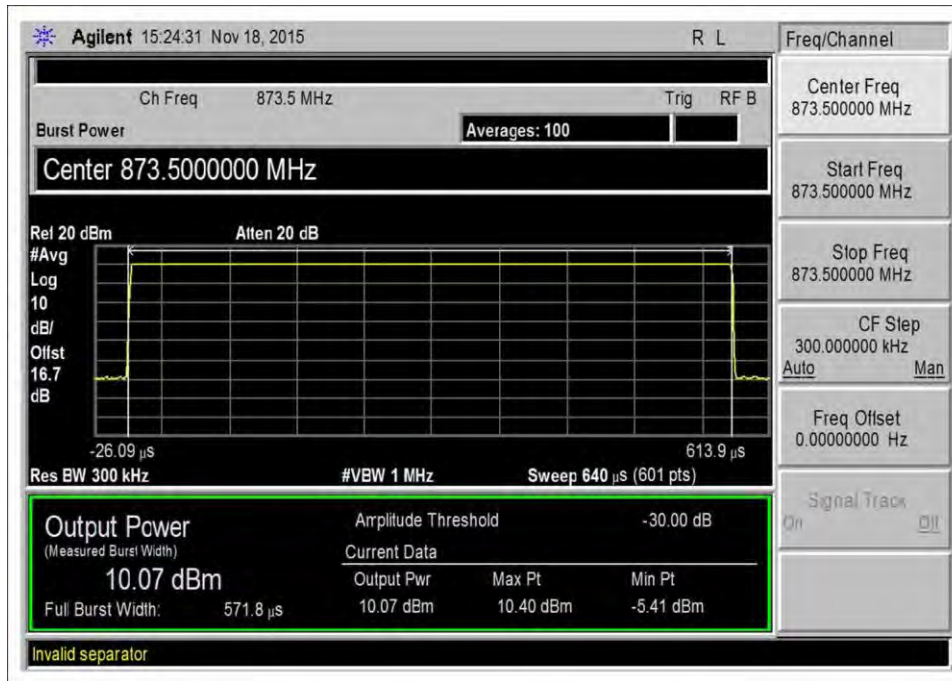
7.2_Power_DL_728-746_GSM-Max



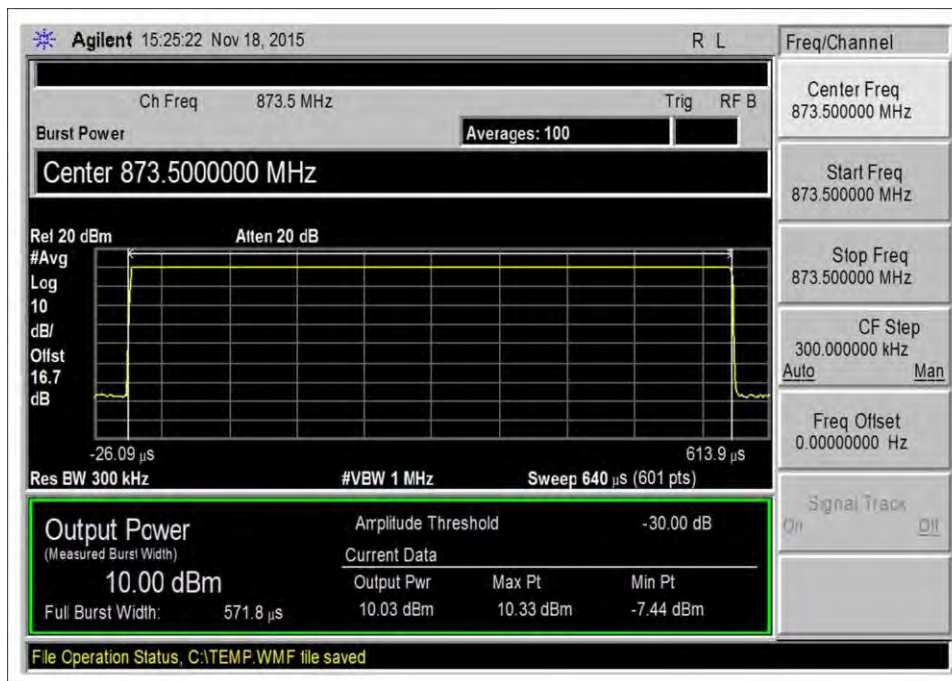
7.2_Power_DL_746-757_GSM



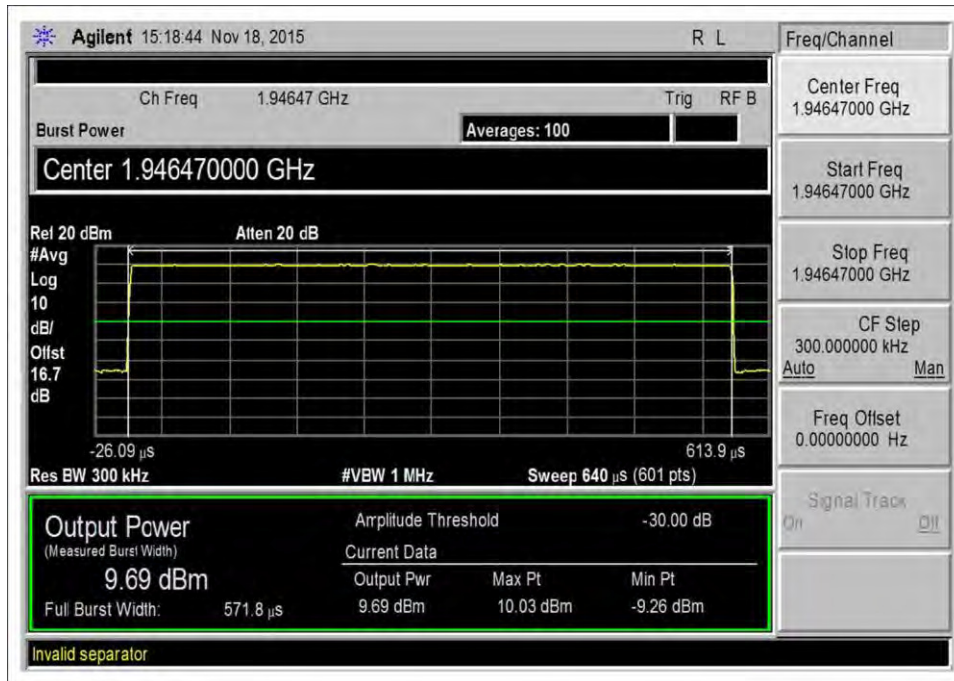
7.2_Power_DL_746-757_GSM-Max



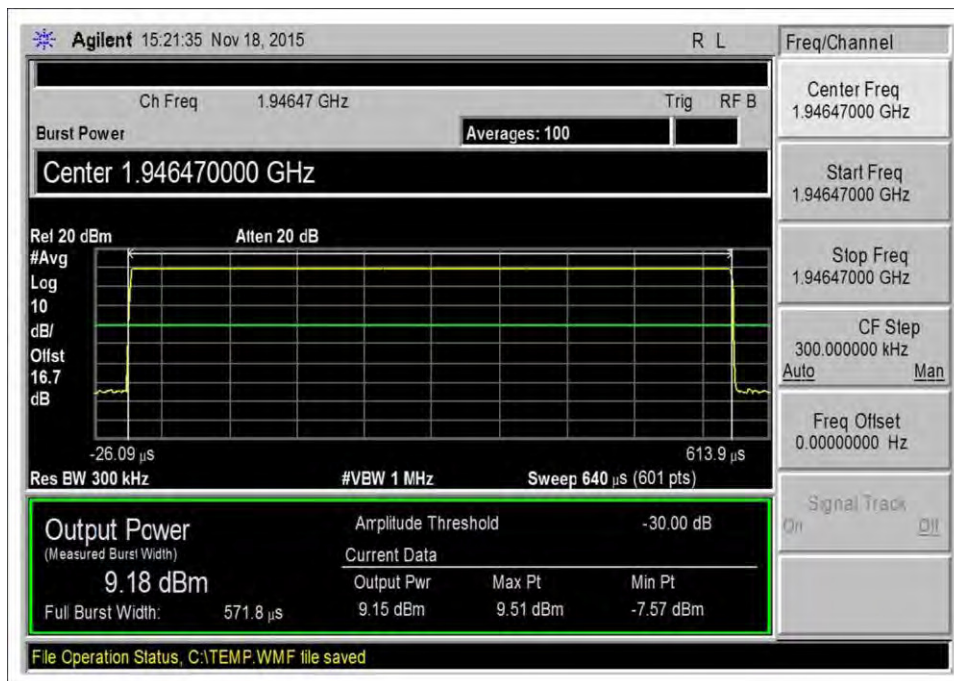
7.2_Power_DL_869-894_GSM



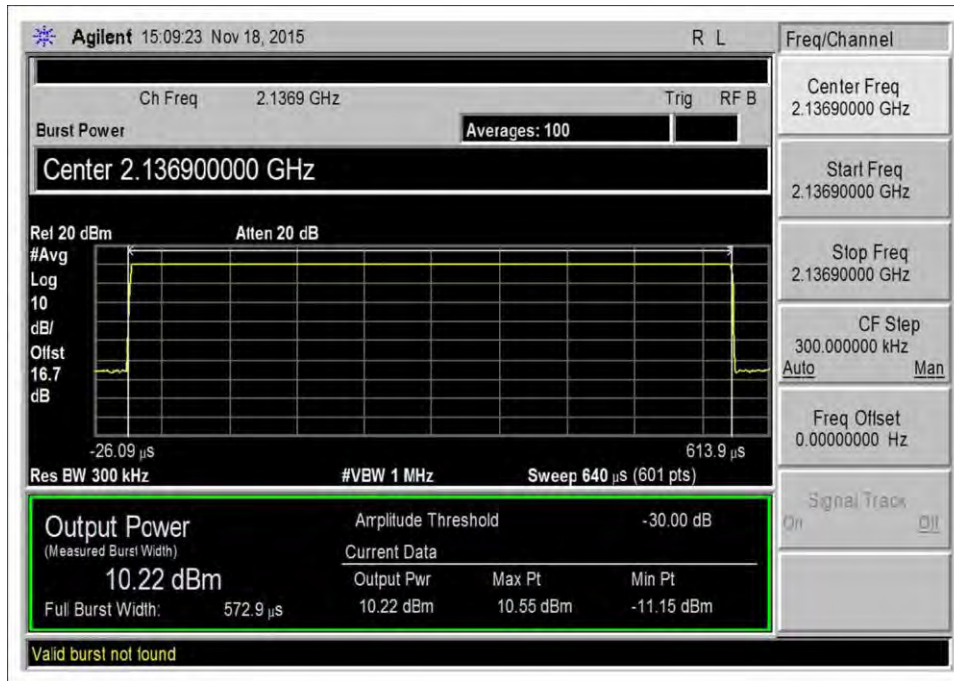
7.2_Power_DL_869-894_GSM-Max



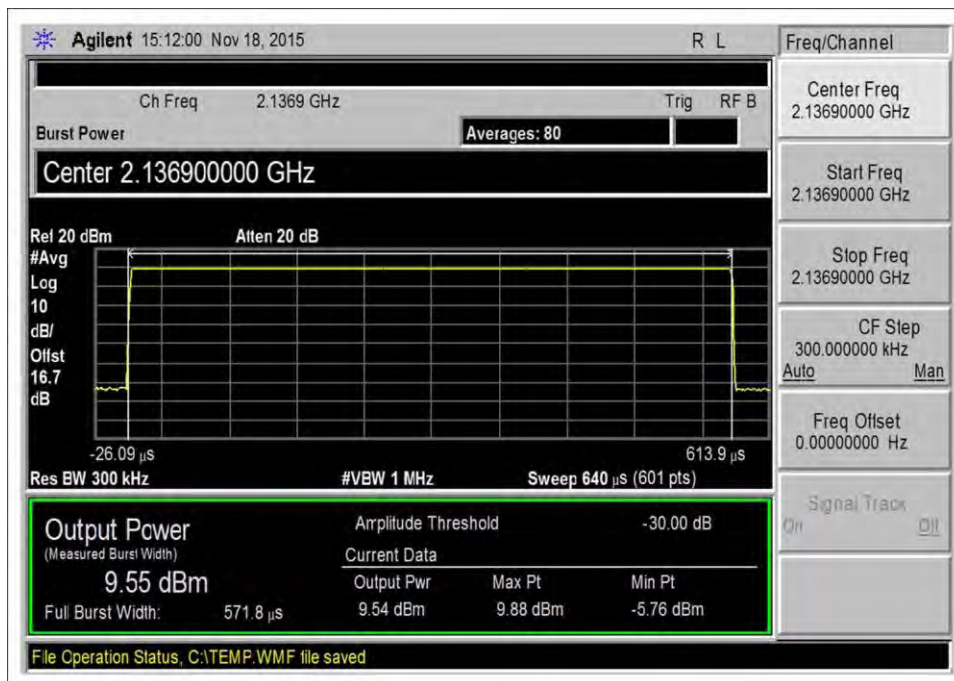
7.2_Power_DL_1930-1995_GSM



7.2_Power_DL_1930-1995_GSM-Max



7.2_Power_DL_2110-2155_GSM



7.2_Power_DL_2110-2155_GSM-Max

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: **7.3 Maximum Booster Gain**
 Work Order #: **97776** Date: 11/18/2015
 Test Type: **Conducted Emissions** Time: 16:53:50
 Tested By: Daniel Bertran Sequence#: 1
 Software: EMITest 5.02.00

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed Wideband Consumer Booster.
 The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.

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 environment conditions: Temperature: 22.8°C, Relative Humidity: 42% Pressure: 102.4 kPa

Test procedure:
 The test was performed in accordance with section 7.3 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v03 Dated June 5, 2015
 Firmware: V2.0

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	ANP06711	Cable	32022-29094K-29094K-132TC	11/21/2014	11/21/2016
	AN03470	Spectrum Analyzer	E4440A	12/2/2013	12/2/2015
	ANP06467	Attenuator	PE7014-10	5/13/2015	5/13/2017
	ANP06239	Attenuator	54A-10	7/9/2014	7/9/2016

Summary of Results

Pass: Summarized in the tables below.

Pre AGC				Pre AGC		
Frequency (MHz)	Input (dBm)	Pulse GSM Output (dBm)	*Gain (dB)	4.1 MHz AWGN Input (dBm)	4.1 MHz AWGN Output (dBm)	*Gain (dB)
UL1710-1755	-44.5	21.8	66.3	-46.3	20.4	66.7
UL1850-1915	-37.6	21.2	58.8	-38.1	20.1	58.2
UL824-894	-41.2	20.0	61.2	-41.8	19.9	61.7
UL 698-716	-38.2	20.2	58.4	-39.4	19.6	59.0
UL776-787	-40.3	20.4	60.7	-39.8	20.7	60.5
DL2110-2155	-52.3	10.2	62.5	-58.6	2.7	61.3
DL1930-1995	-56.1	9.7	65.8	-62.1	2.5	64.6
DL869-894	-52.7	10.1	62.8	-57.5	3.7	61.2
DL:728-746	-51.9	7.3	59.2	-55.4	3.4	58.8
DL 746-757	-51.2	7.5	58.7	-55.9	2.3	58.2

*Fixed Booster maximum gain shall not exceed 6.5 dB + 20 Log₁₀ (Frequency), where Frequency is the uplink mid-band frequency of the supported spectrum bands in MHz.

	Pulse GSM	4.1MHz AWGN	Limit (dB)
UL gain vs DL gain 1710/2110	3.8	5.4	9.0
UL gain vs DL gain 1850/1930	-7.0	-6.4	9.0
UL gain vs DL gain 824/869	-1.6	0.4	9.0
UL gain vs DL gain 776/728	-0.8	0.2	9.0
UL gain vs DL gain 776/746	2.0	2.4	9.0

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 #: **97776** Date: 11/18/2015
 Test Type: **Conducted Emissions** Time: 17:40:58
 Tested By: Daniel Bertran Sequence#: 1
 Software: EMITest 5.02.00

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed Wideband Consumer Booster.
 The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.

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 environment conditions: Temperature: 22.8°C, Relative Humidity: 42% Pressure:102.4 kPa

Test procedure:
 The test was performed in accordance with section 7.4 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v03 Dated June 5, 2015
 Firmware: V2.0

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANP03143	Cable	32022-29094K-144TC	3/18/2015	3/18/2017
	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	ANP06711	Cable	32022-29094K-29094K-132TC	11/21/2014	11/21/2016
	AN03470	Spectrum Analyzer	E4440A	12/2/2013	12/2/2015
	ANP06467	Attenuator	PE7014-10	5/13/2015	5/13/2017
	ANP06239	Attenuator	54A-10	7/9/2014	7/9/2016
	ANC00082	RF Coupler	722-10-1.500V	8/26/2015	8/26/2017
	ANC00087	Combiner	44000	01/09/2014	01/9/2016

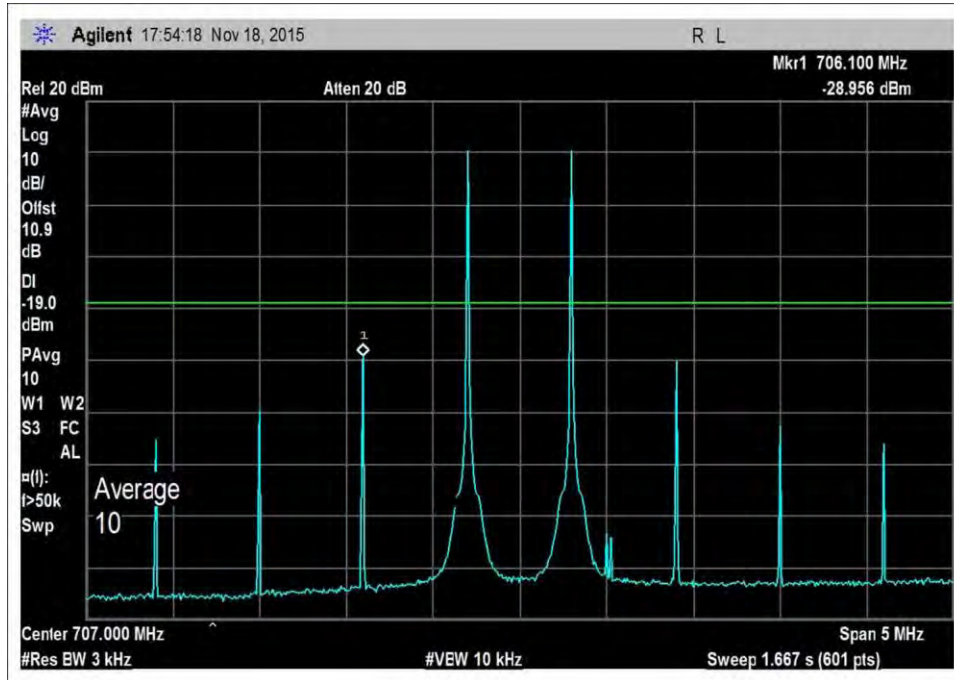
Summary of Results

Pass: All intermodulation products are measured below -19dbm limit.

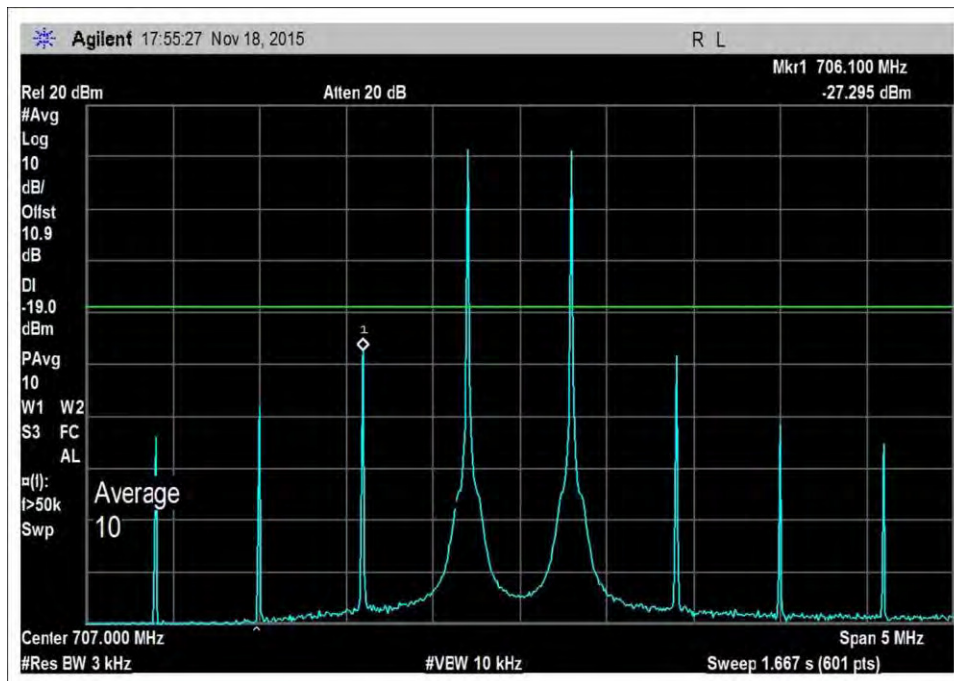
Freq (MHz)	Max Inter modulation product		Limit (dBm)
	Pre AGC (dBm)	AGC+10dB (dBm)	
UL1710-1755	-33.74	-31.02	-19.0
UL1850-1915	-30.56	-28.01	-19.0
UL824-894	-28.05	-26.31	-19.0
UL 698-716	-28.96	-27.30	-19.0
UL776-787	-28.67	-26.74	-19.0
DL2110-2155	-54.98	-55.46	-19.0
DL1930-1995	-53.90	-54.15	-19.0
DL869-894	-65.23	-68.48	-19.0
DL:728-746	-48.91	-49.05	-19.0
DL 746-757	-48.89	-47.74	-19.0

Plots

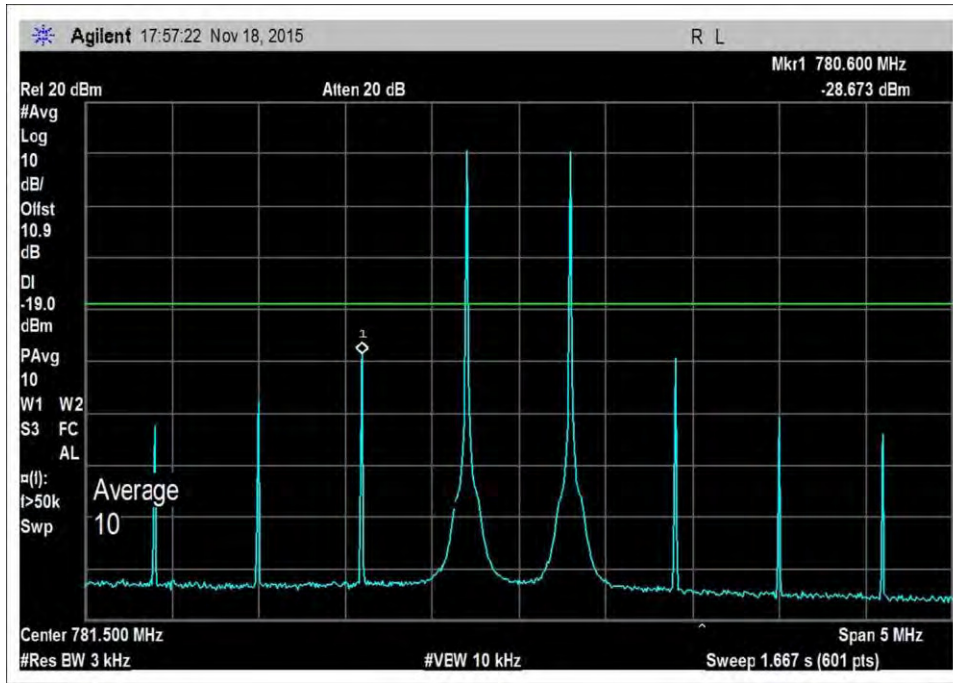
UL



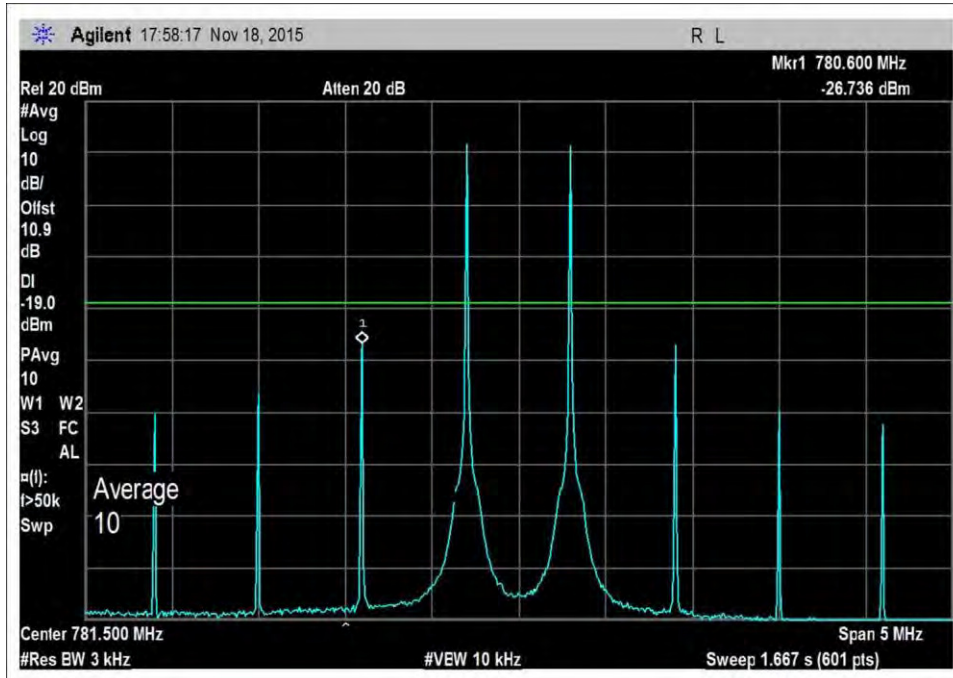
7.4_Intermod_UL_698-716MHz



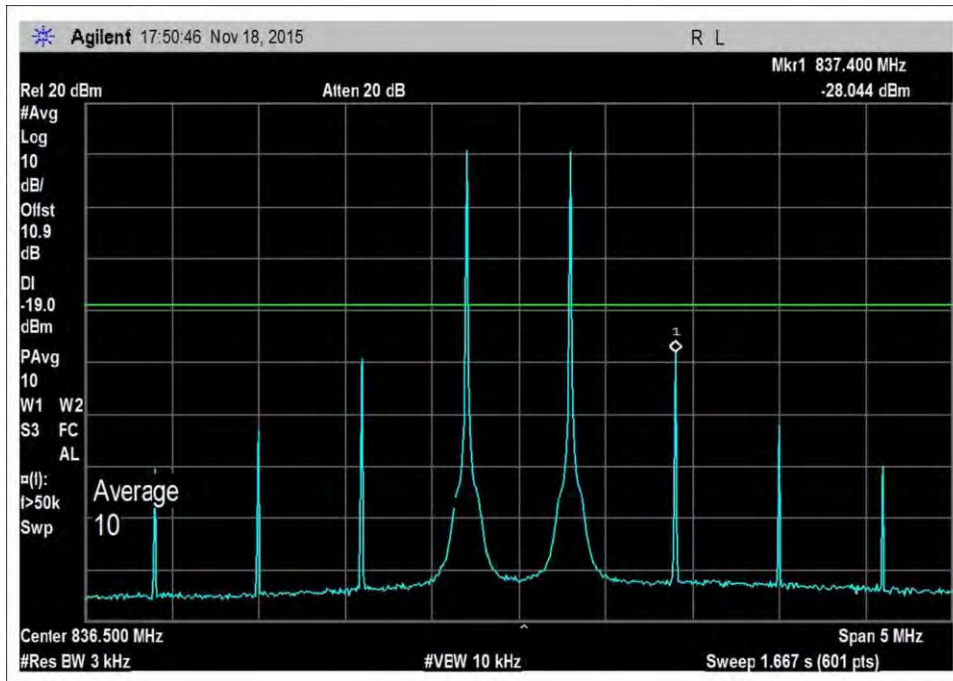
7.4_Intermod_UL_698-716MHz+10dB



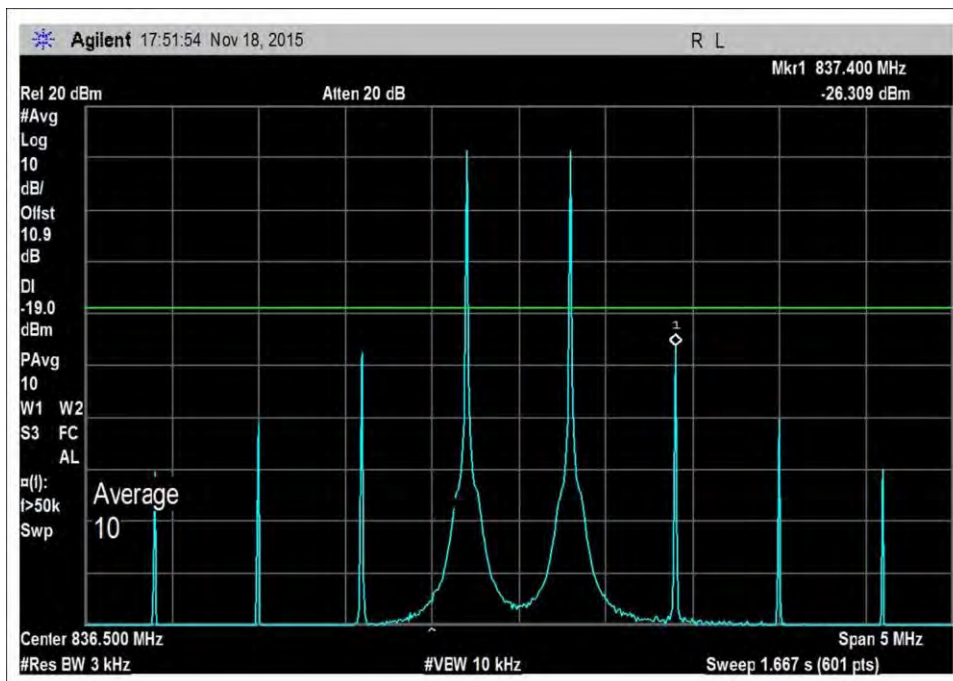
7.4_Intermod_UL_776-787MHz



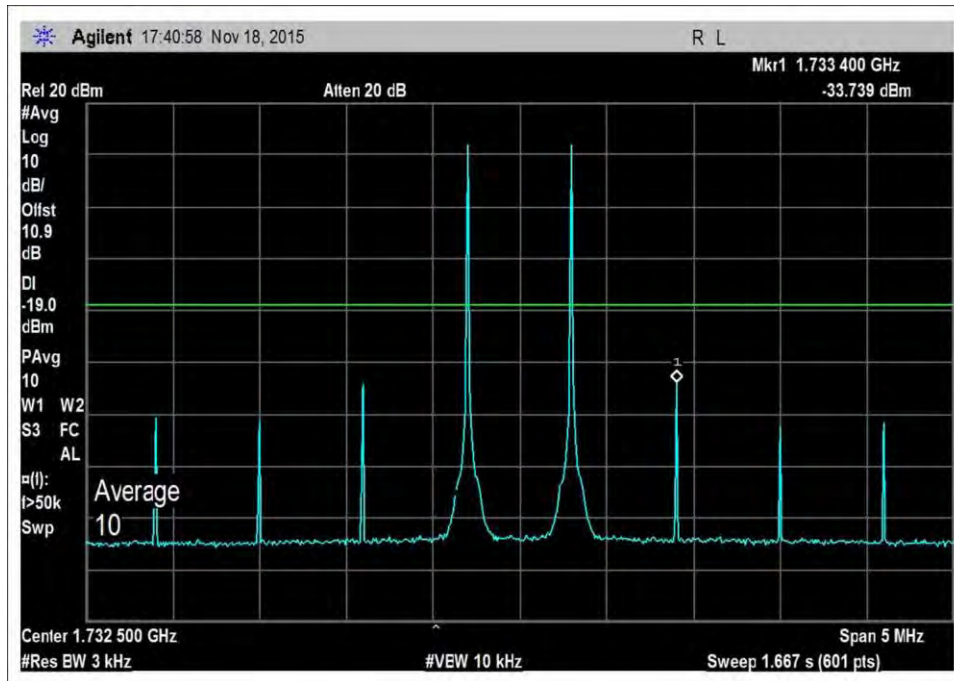
7.4_Intermod_UL_776-787MHz+10dBm



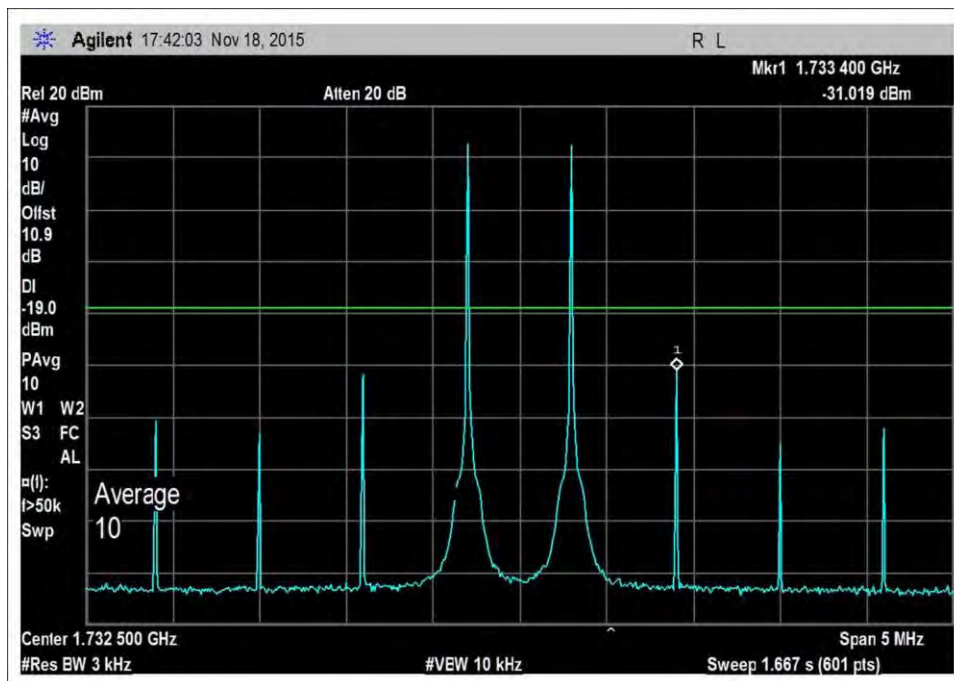
7.4_Intermod_UL_824-849MHz



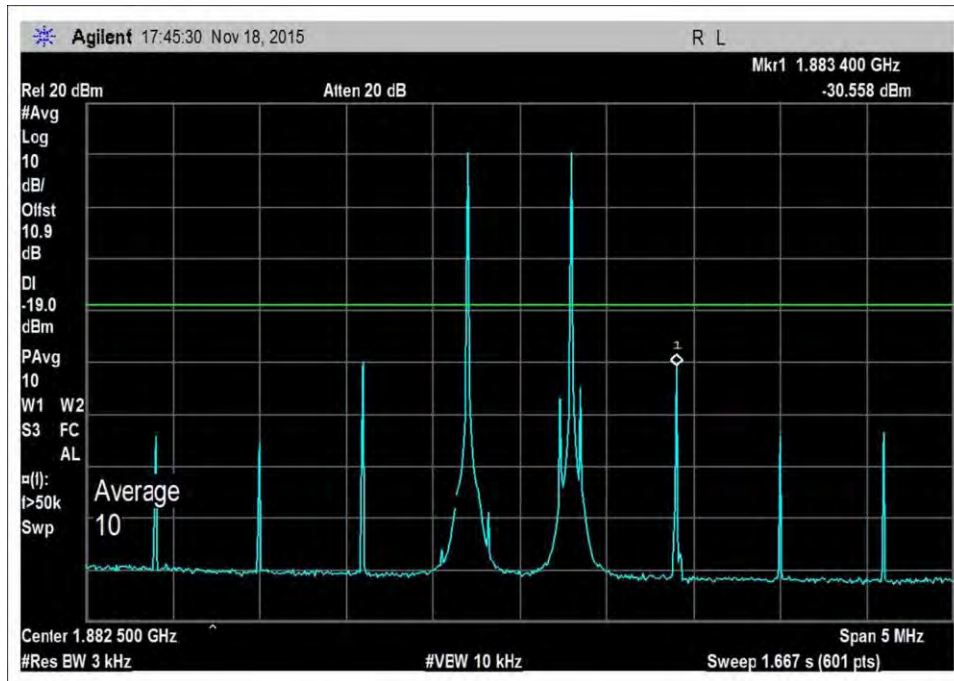
7.4_Intermod_UL_824-849MHz+10dB



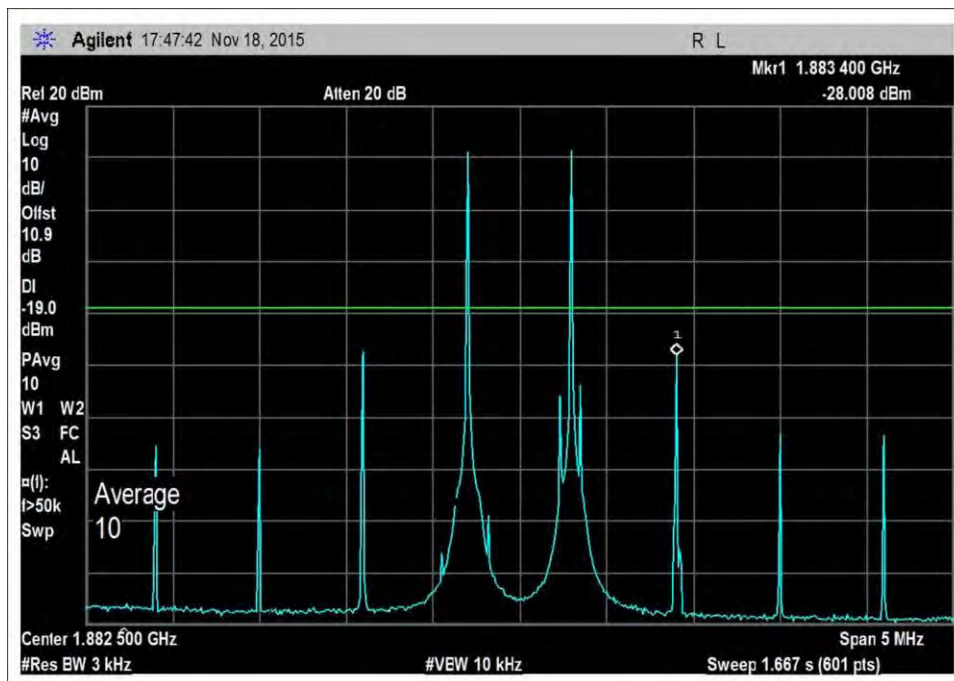
7.4_Intermod_UL_1710-1755MHz



7.4_Intermod_UL_1710-1755MHz+10dB

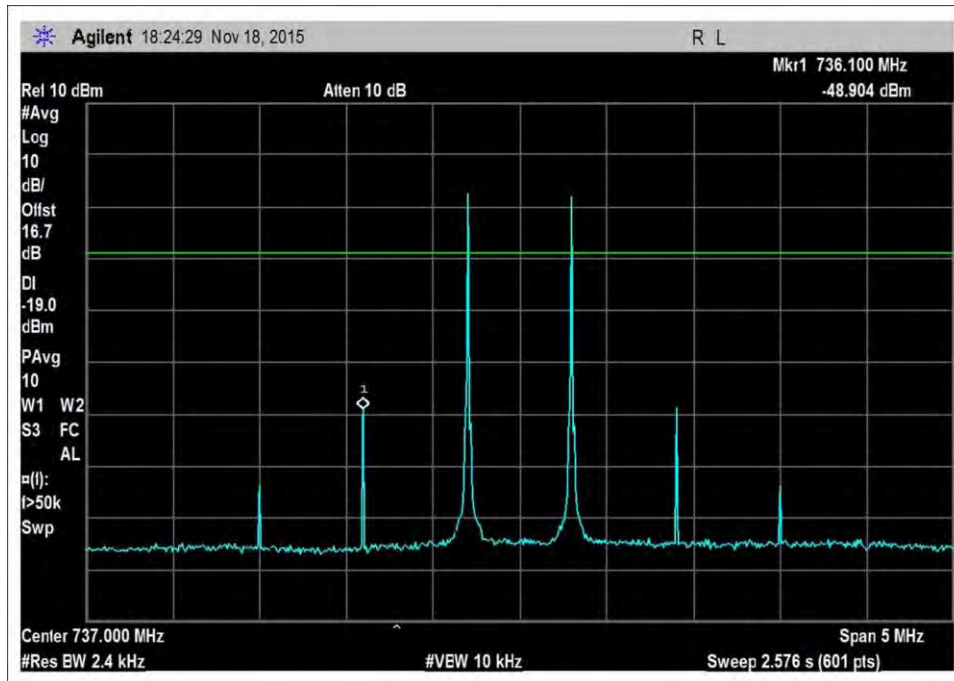


7.4_Intermod_UL_1850-1915MHz

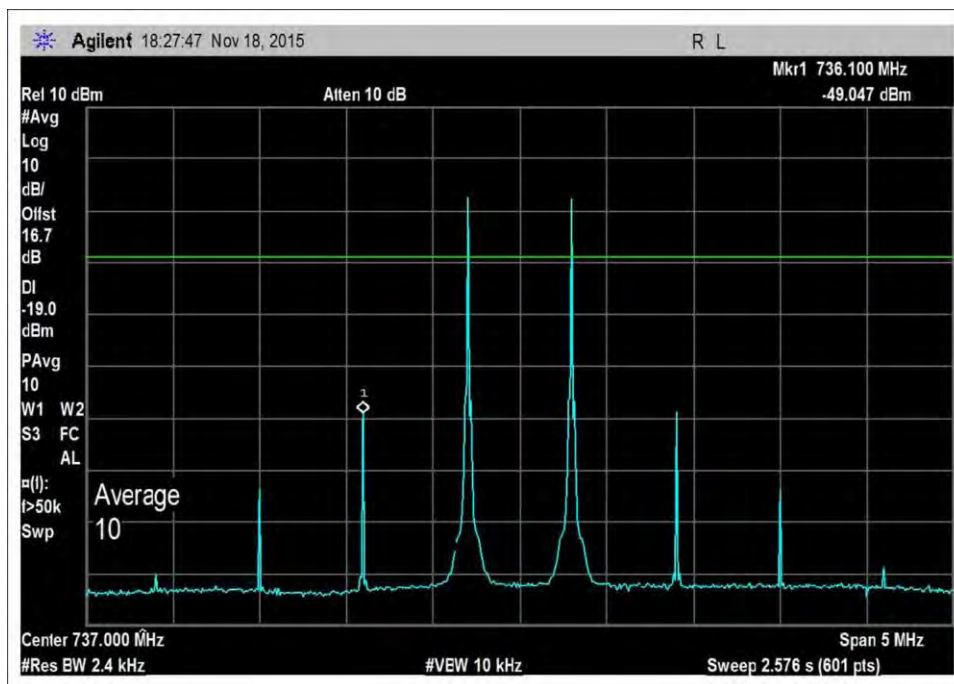


7.4_Intermod_UL_1850-1915MHz+10dB

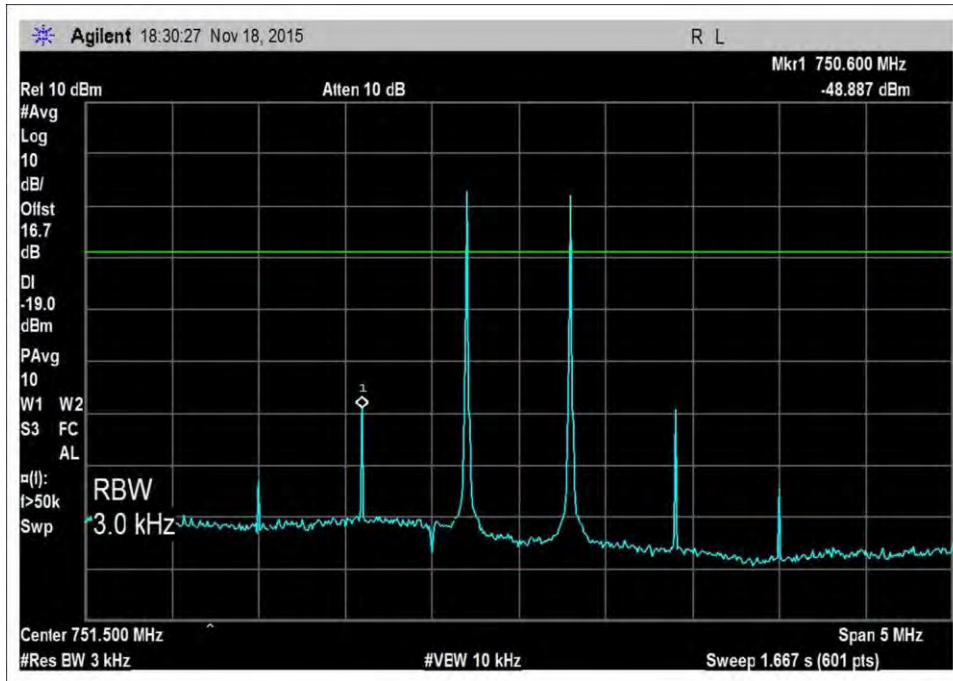
DL



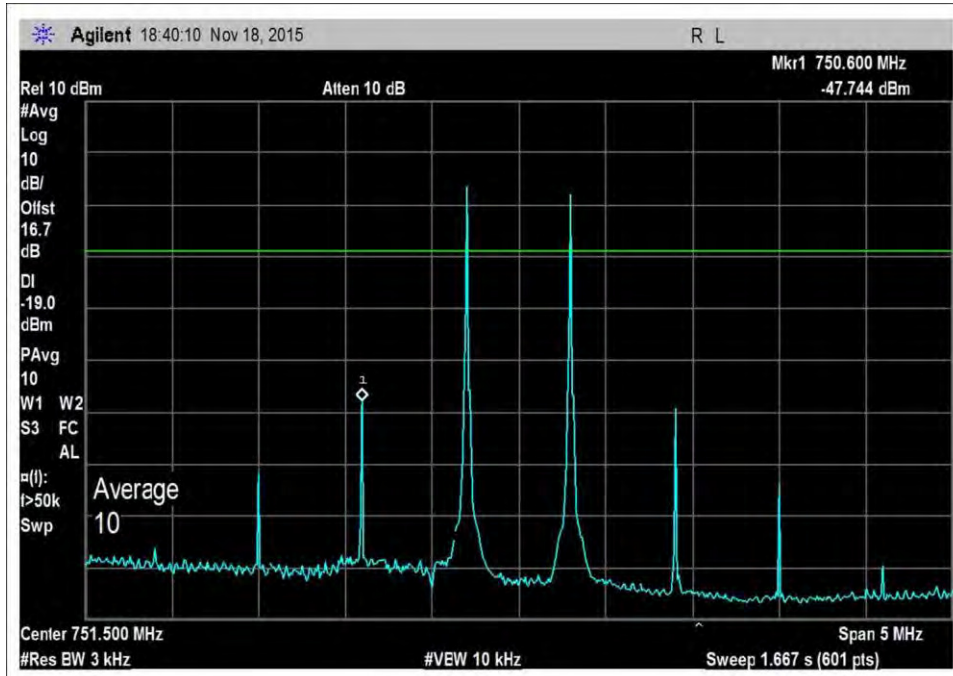
7.4_Intermod_DL_728-746MHz



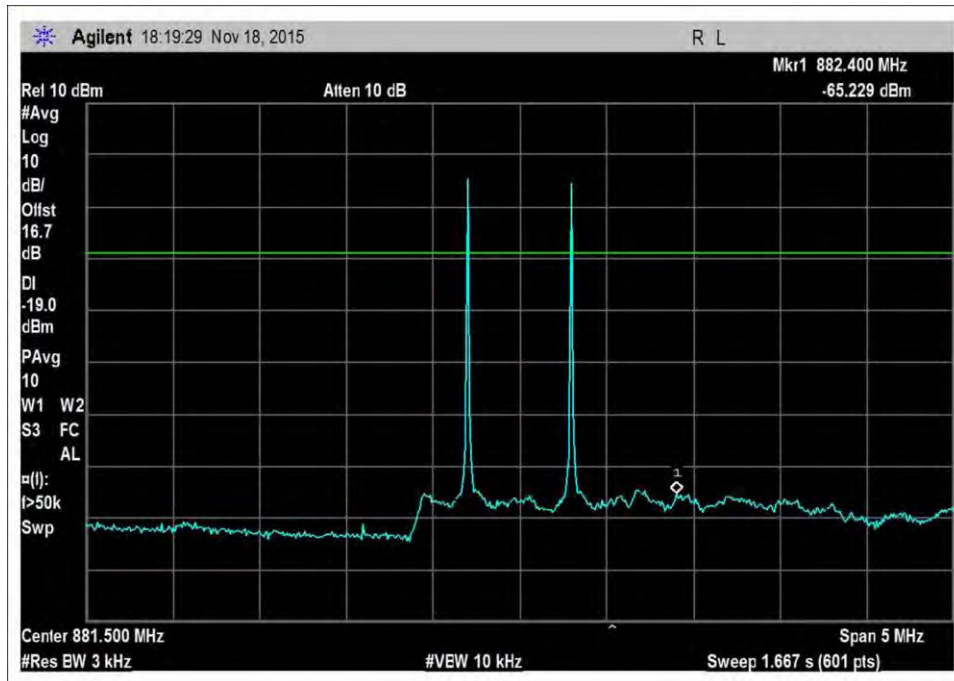
7.4_Intermod_DL_728-746MHz+10dB



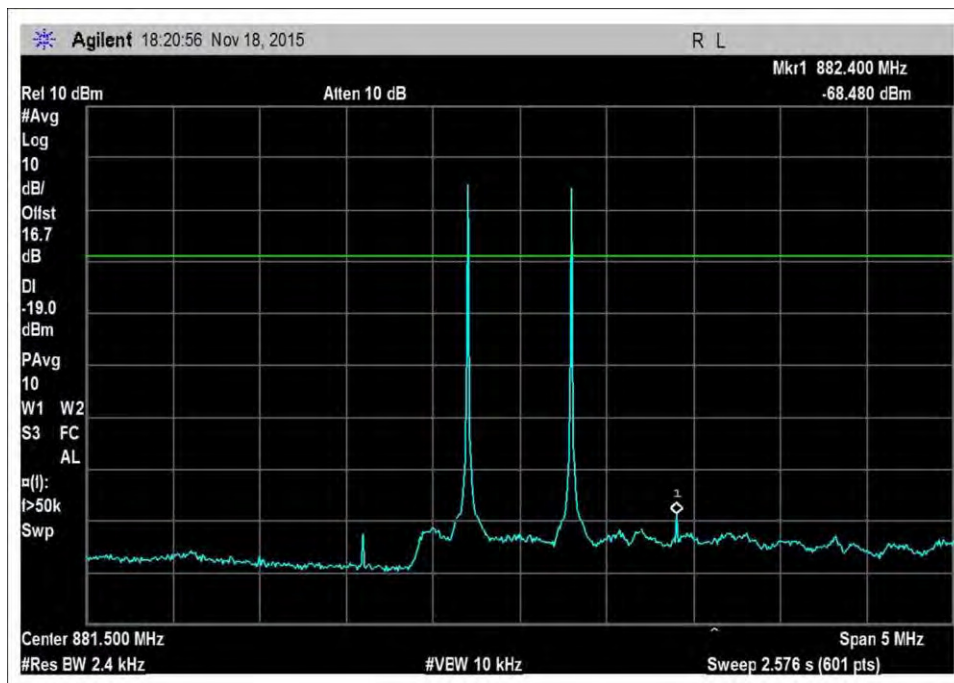
7.4_Intermod_DL_746-757MHz



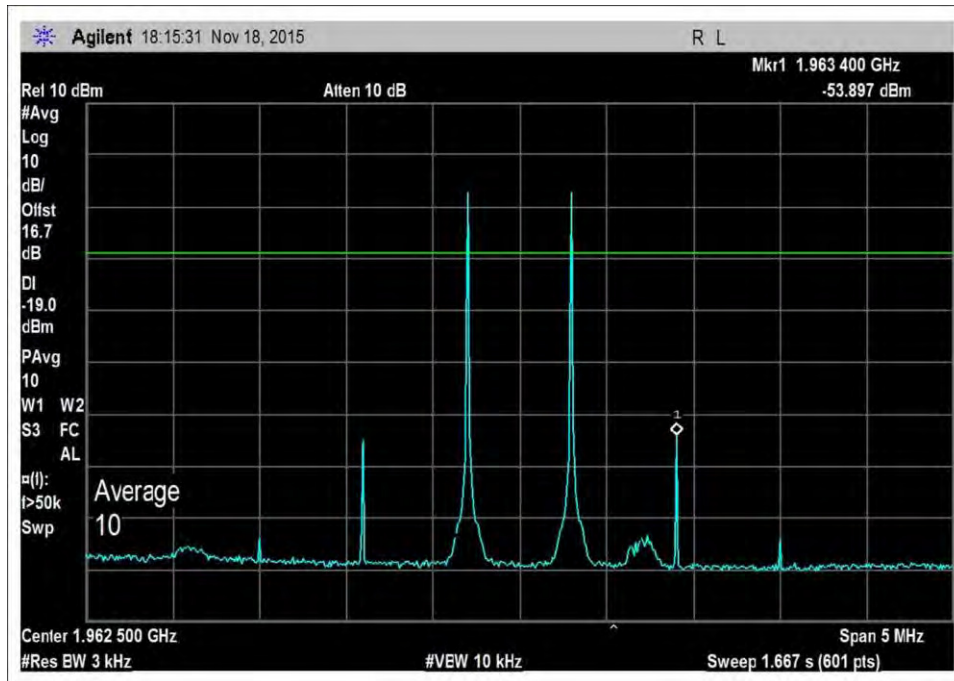
7.4_Intermod_DL_746-757MHz+10dB



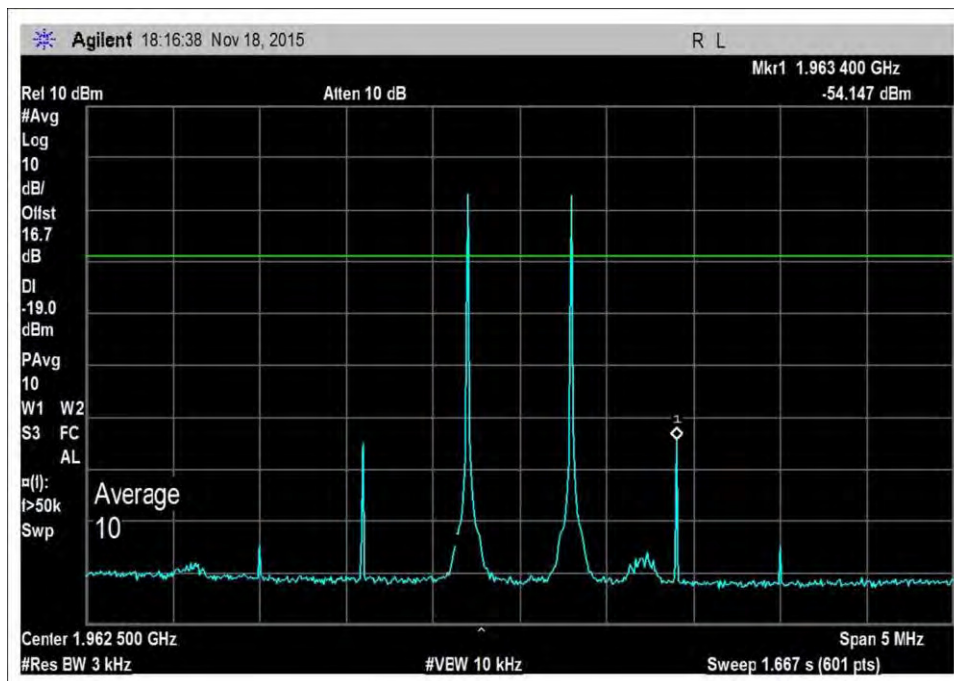
7.4_Intermod_DL_869-894MHz



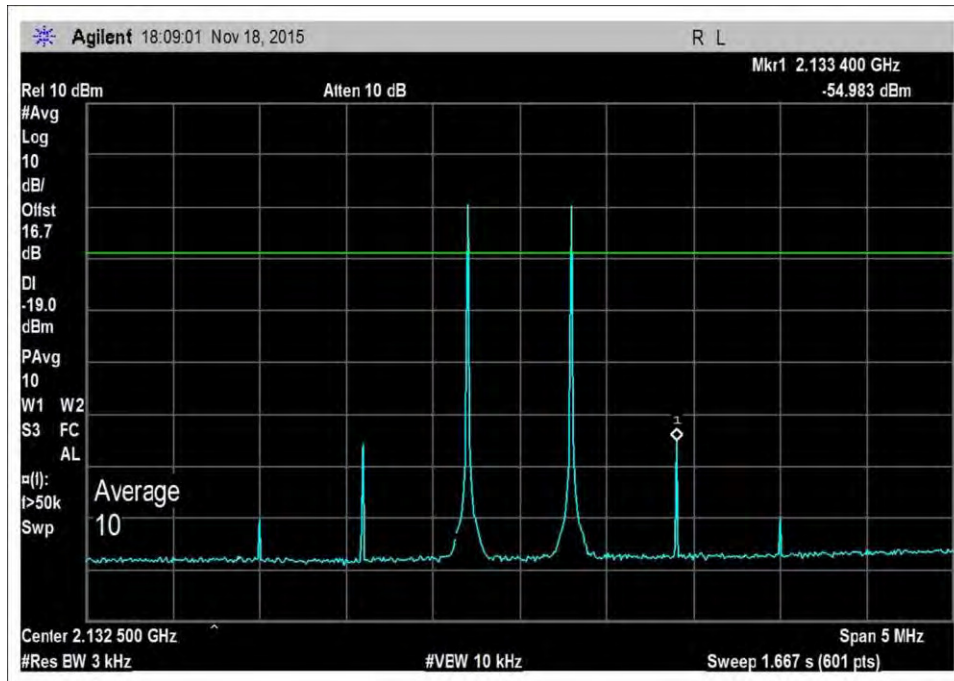
7.4_Intermod_DL_869-894MHz+10dB



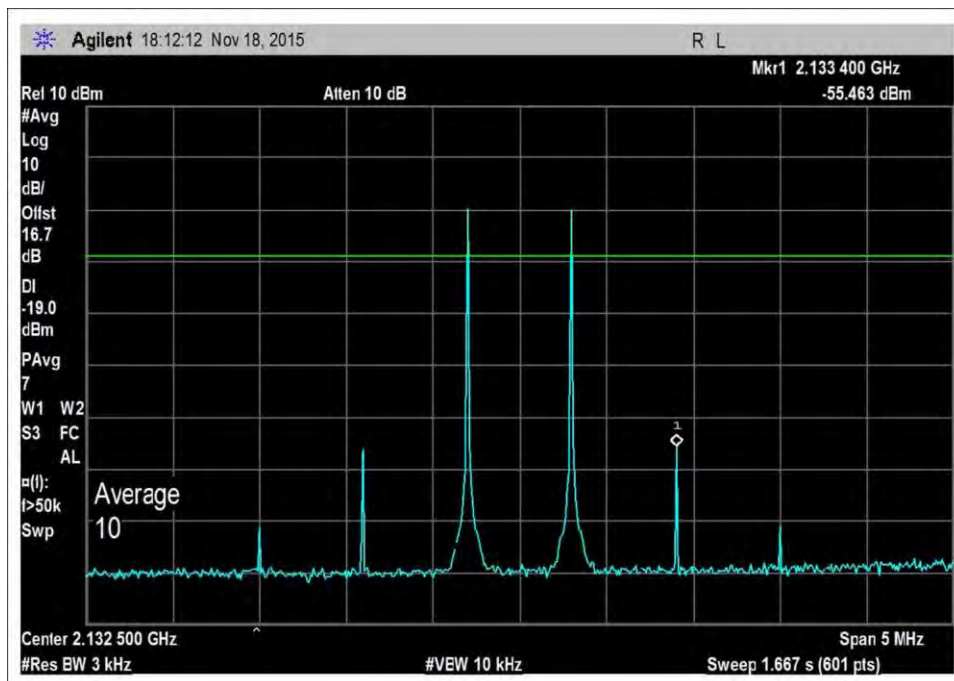
7.4_Intermod_DL_1930-1995MHz



7.4_Intermod_DL_1930-1995MHz+10dB



7.4_Intermod_DL_2110-2155MHz



7.4_Intermod_DL_2110-2155MHz+10dB

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 #: **97776** Date: 11/19/2015
 Test Type: **Conducted Emissions** Time: 08:36:59
 Tested By: Daniel Bertran Sequence#: 1
 Software: EMITest 5.02.00

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed Wideband Consumer Booster.
 The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.

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 environment conditions: Temperature: 23°C, Relative Humidity: 40% Pressure: 102.4 kPa

Test procedure:
 The test was performed in accordance with section 7.5 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v03 Dated June 5, 2015
 Firmware: V2.0

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 fixed wideband consumer signal booster: +0 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
	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	AN03470	Spectrum Analyzer	E4440A	12/2/2013	12/2/2015
	ANP06467	Attenuator	PE7014-10	5/13/2015	5/13/2017
	ANP06239	Attenuator	54A-10	7/9/2014	7/9/2016

Summary of Results

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

GSM

Low

Freq MHz	Out of Band Emission		Limit dBm
	Pre AGC dBm	Max input +0dBm	
UL1710-1755	-29.56	-27.29	-19.0
UL1850-1915	-28.78	-28.46	-19.0
UL824-894	-29.86	-28.81	-19.0
UL 698-716	-29.77	-27.04	-19.0
UL776-787	-28.03	-23.91	-19.0
		-20dBm	
DL2110-2155	< -39.00	< -39.00	-19.0
DL1930-1995	< -39.00	< -39.00	-19.0
DL869-894	-23.21	-21.85	-19.0
DL:728-746	-25.59	-25.52	-19.0
DL 746-757	-22.49	-23.30	-19.0

High

Freq MHz	Out of Band Emission		Limit dBm
	Pre AGC dBm	Max input +0dBm	
UL1710-1755	-28.26	-28.21	-19.0
UL1850-1915	-22.24	-30.03	-19.0
UL824-894	-31.14	-29.03	-19.0
UL 698-716	-31.02	-27.47	-19.0
UL776-787	-27.42	-26.20	-19.0
		-20dBm	
DL2110-2155	< -39.00	< -39.00	-19.0
DL1930-1995	< -39.00	< -39.00	-19.0
DL869-894	-24.70	-24.95	-19.0
DL:728-746	-23.34	-22.38	-19.0
DL 746-757	-24.32	-25.25	-19.0

CDMA

Low

Freq	Out of Band Emission		Limit
	Pre AGC	Max input	
MHz	dBm	+0dBm	dBm
UL1710-1755	-37.77	-36.79	-19.0
UL1850-1915	-34.94	-34.26	-19.0
UL824-894	< -39.00	-36.72	-19.0
UL 698-716	< -39.00	-35.25	-19.0
UL776-787	< -39.00	-22.18	-19.0
		-20dBm	
DL2110-2155	< -39.00	< -39.00	-19.0
DL1930-1995	< -39.00	< -39.00	-19.0
DL869-894	< -39.00	< -39.00	-19.0
DL:728-746	< -39.00	< -39.00	-19.0
DL 746-757	< -39.00	< -39.00	-19.0

High

Freq	Out of Band Emission		Limit
	Pre AGC	Max input	
MHz	dBm	+0dBm	dBm
UL1710-1755	-37.01	-39.04	-19.0
UL1850-1915	-36.27	-34.30	-19.0
UL824-894	-36.75	-35.00	-19.0
UL 698-716	< -39.00	< -39.00	-19.0
UL776-787	< -39.00	-30.22	-19.0
		-20dBm	
DL2110-2155	< -39.00	< -39.00	-19.0
DL1930-1995	< -39.00	< -39.00	-19.0
DL869-894	< -39.00	< -39.00	-19.0
DL:728-746	< -39.00	< -39.00	-19.0
DL 746-757	< -39.00	< -39.00	-19.0

LTE

Low

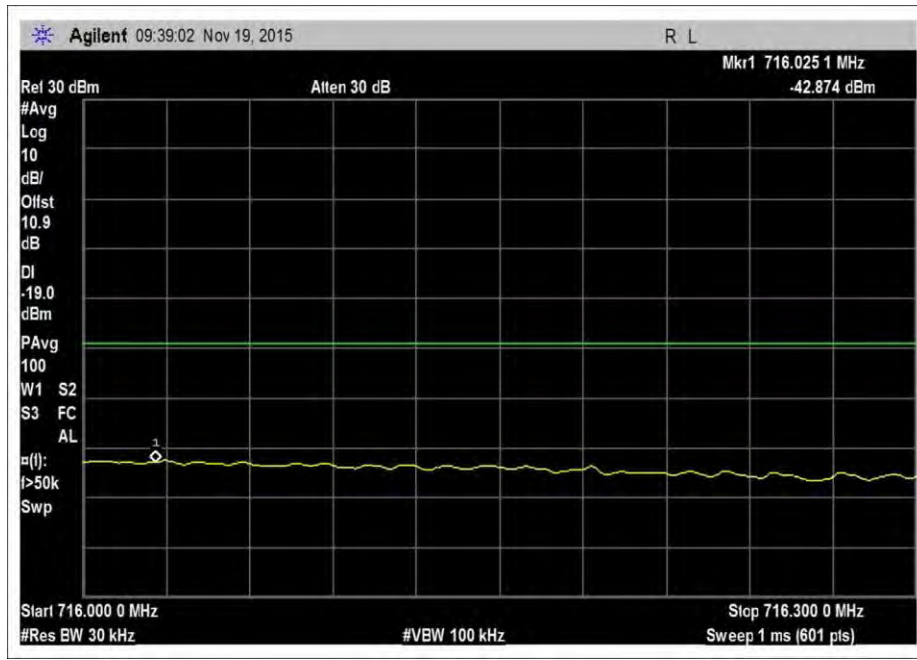
Freq	Out of Band Emission		Limit
	Pre AGC	Max input	
MHz	dBm	+0dBm	dBm
UL1710-1755	-36.39	-34.37	-19.0
UL1850-1915	-33.74	-33.46	-19.0
UL824-894	-31.36	-28.42	-19.0
UL 698-716	-37.24	-36.18	-19.0
UL776-787	-37.51	-28.22	-19.0
		-20dBm	
DL2110-2155	< -39.00	< -39.00	-19.0
DL1930-1995	< -39.00	< -39.00	-19.0
DL869-894	< -39.00	< -39.00	-19.0
DL:728-746	< -39.00	< -39.00	-19.0
DL 746-757	< -39.00	< -39.00	-19.0

High

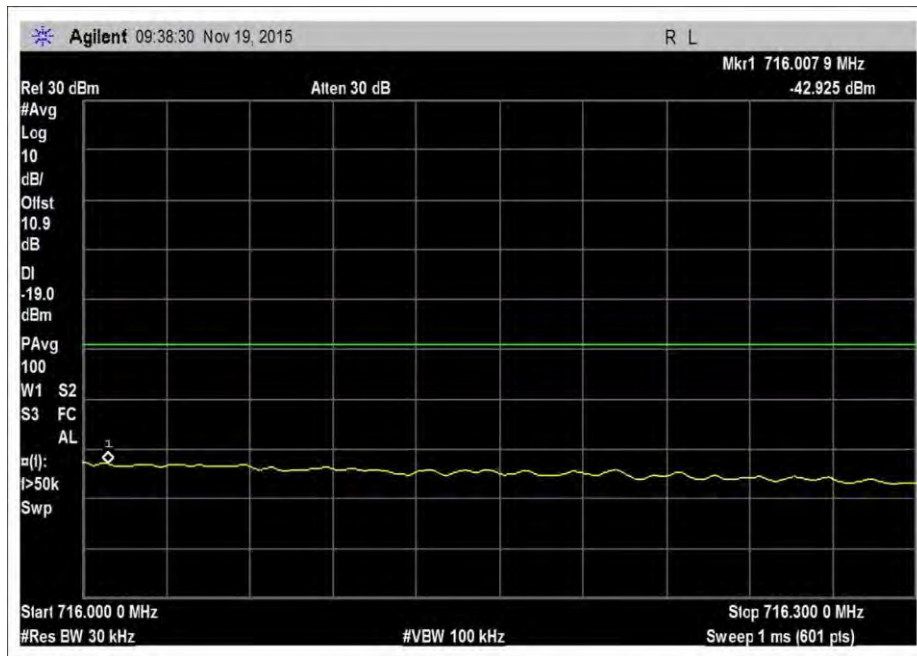
Freq	Out of Band Emission		Limit
	Pre AGC	Max input	
MHz	dBm	+0dBm	dBm
UL1710-1755	-33.48	-33.38	-19.0
UL1850-1915	-40.26	-33.85	-19.0
UL824-894	-31.22	-27.32	-19.0
UL 698-716	-38.74	-38.54	-19.0
UL776-787	-36.41	-32.16	-19.0
		-20dBm	
DL2110-2155	< -39.00	< -39.00	-19.0
DL1930-1995	< -39.00	< -39.00	-19.0
DL869-894	< -39.00	< -39.00	-19.0
DL:728-746	< -39.00	< -39.00	-19.0
DL 746-757	< -39.00	< -39.00	-19.0

Plots

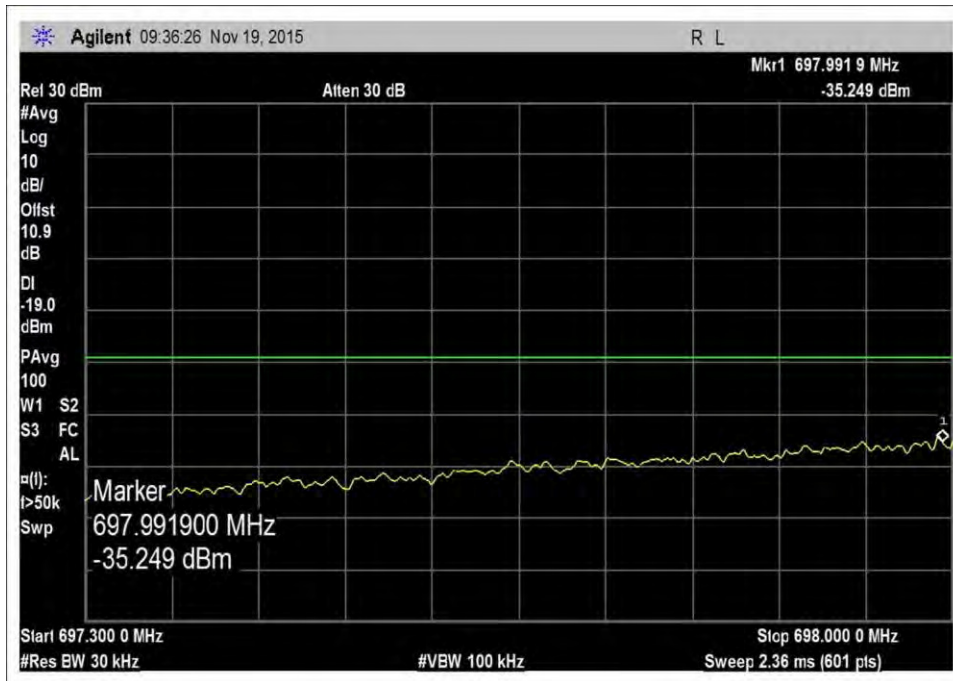
CDMA



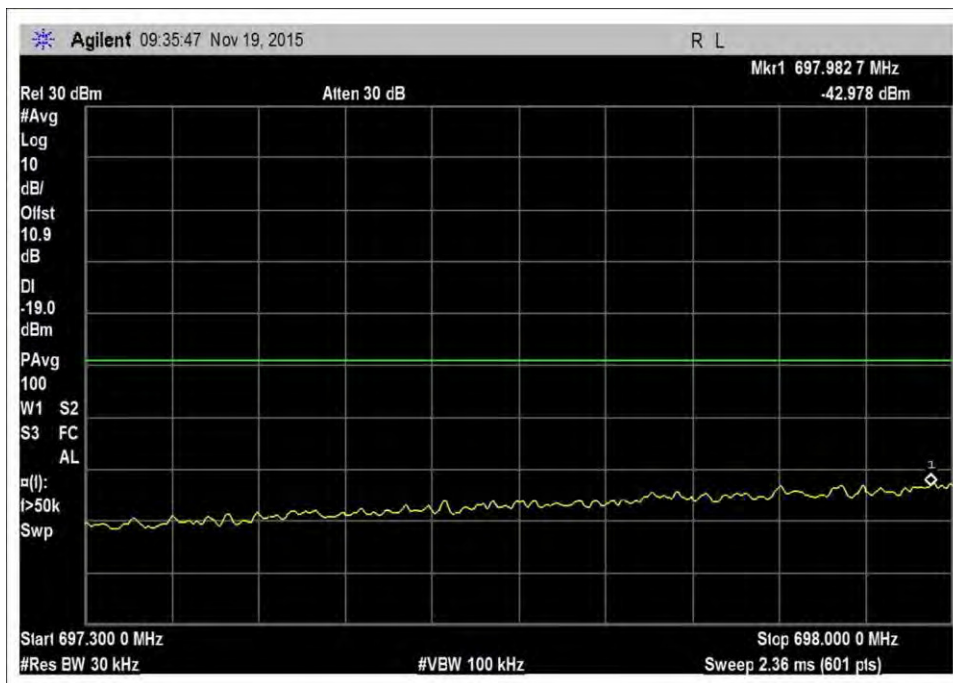
7.5_OBE_UL_698-716MHz_H_Max



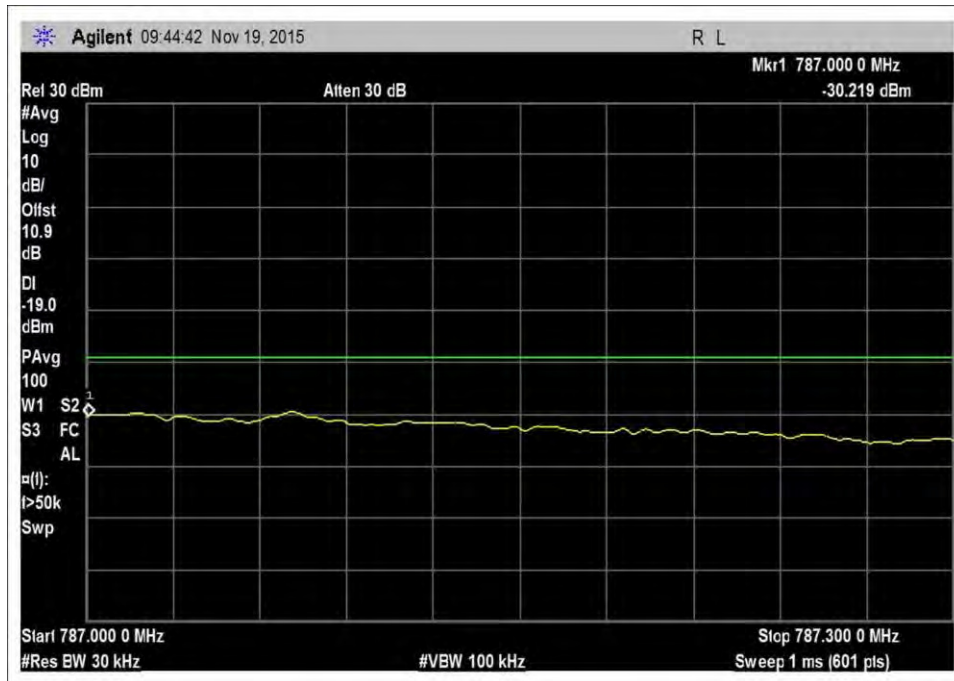
7.5_OBE_UL_698-716MHz_H_PreAGC



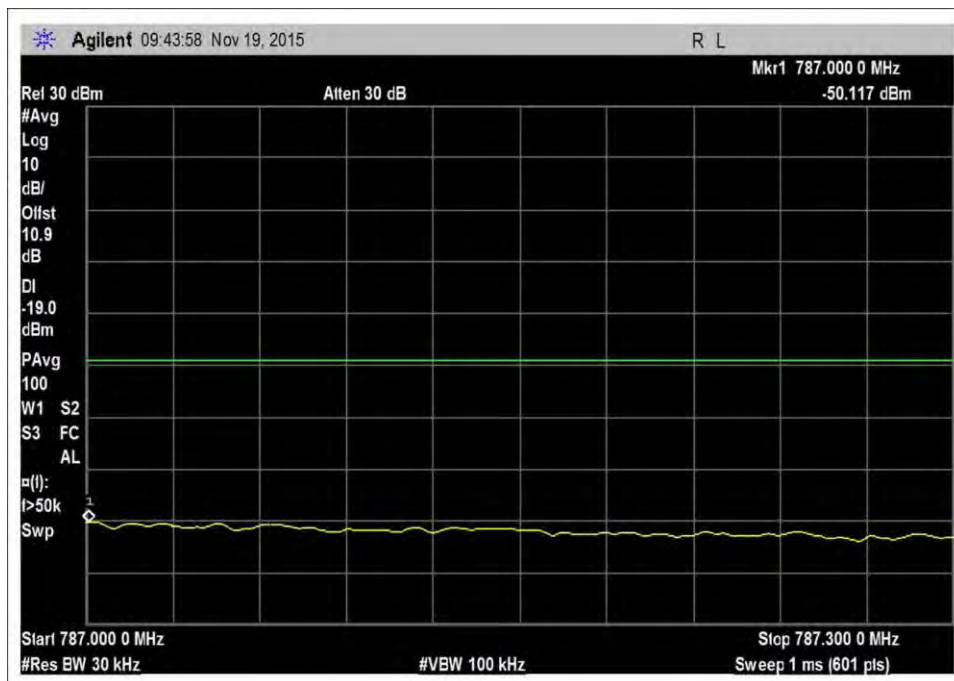
7.5_OBE_UL_698-716MHz_L_Max



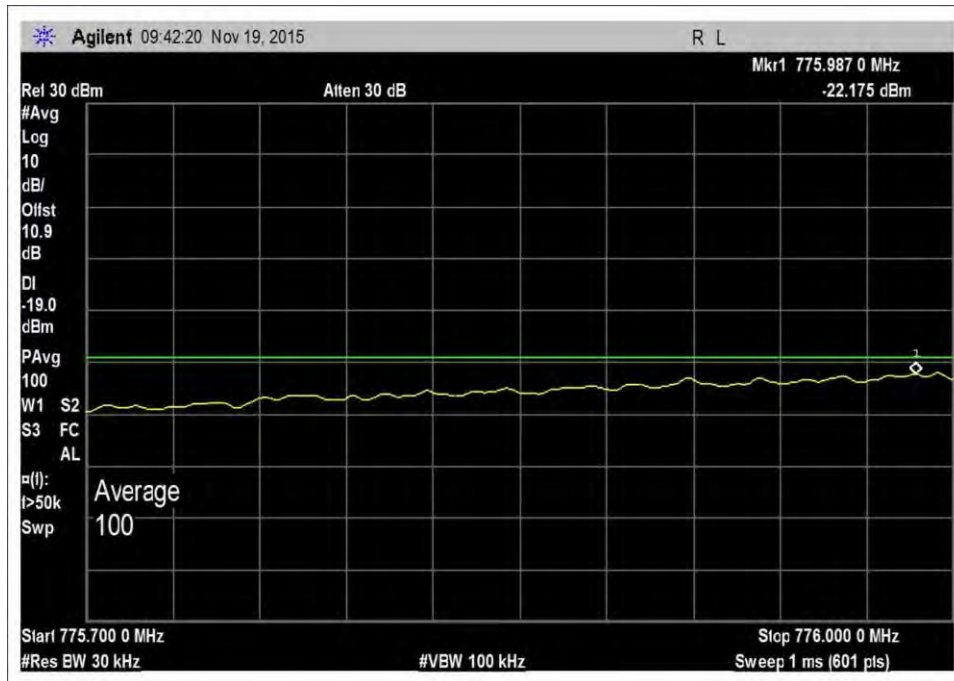
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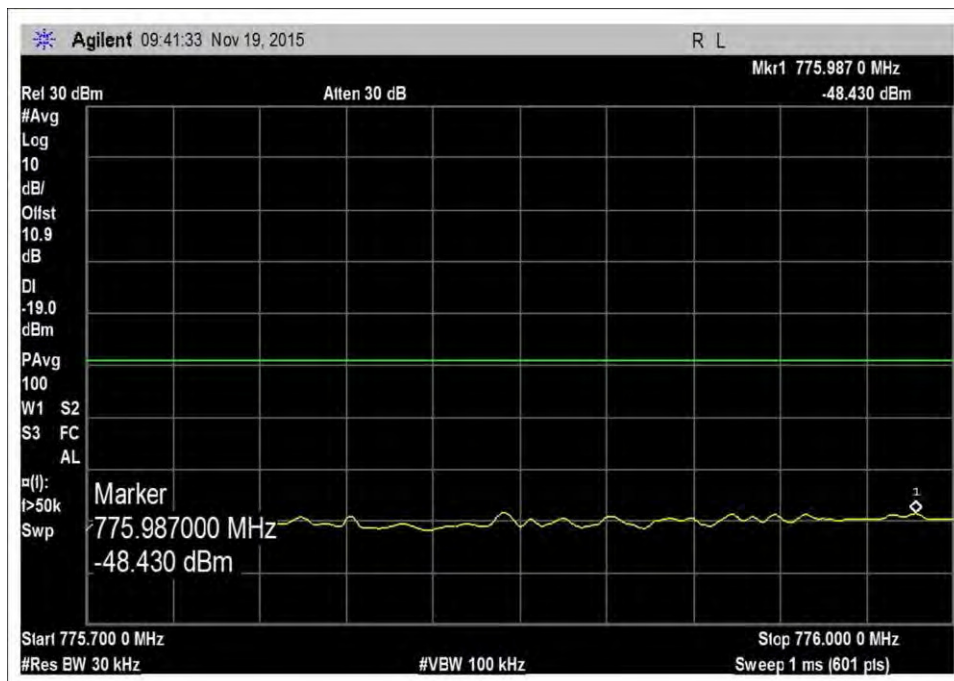
7.5_OBE_UL_776-787MHz_H_Max



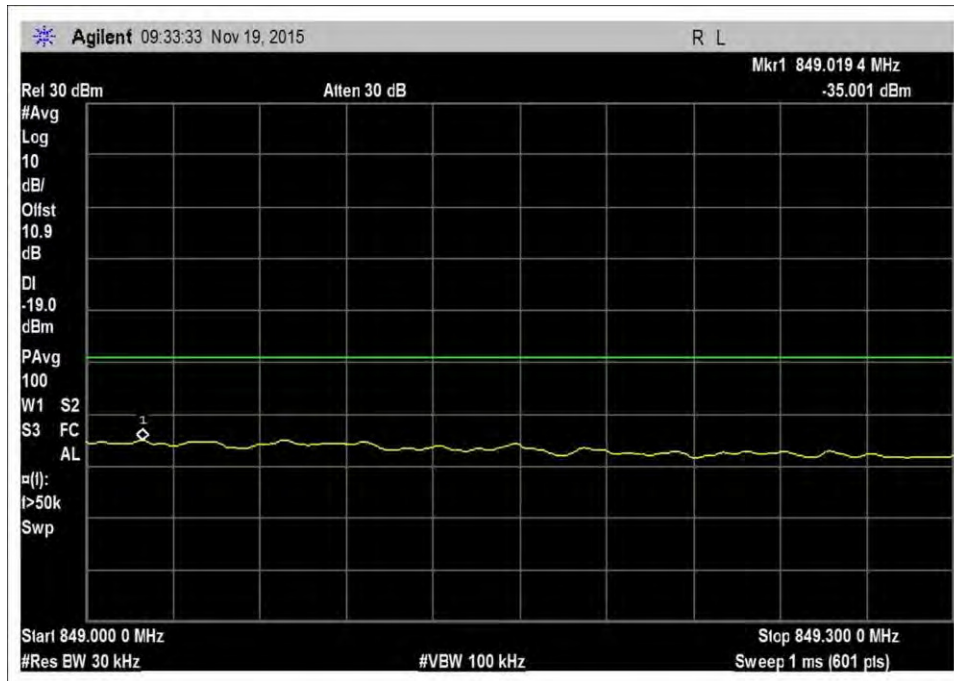
7.5_OBE_UL_776-787MHz_H_PreAGC



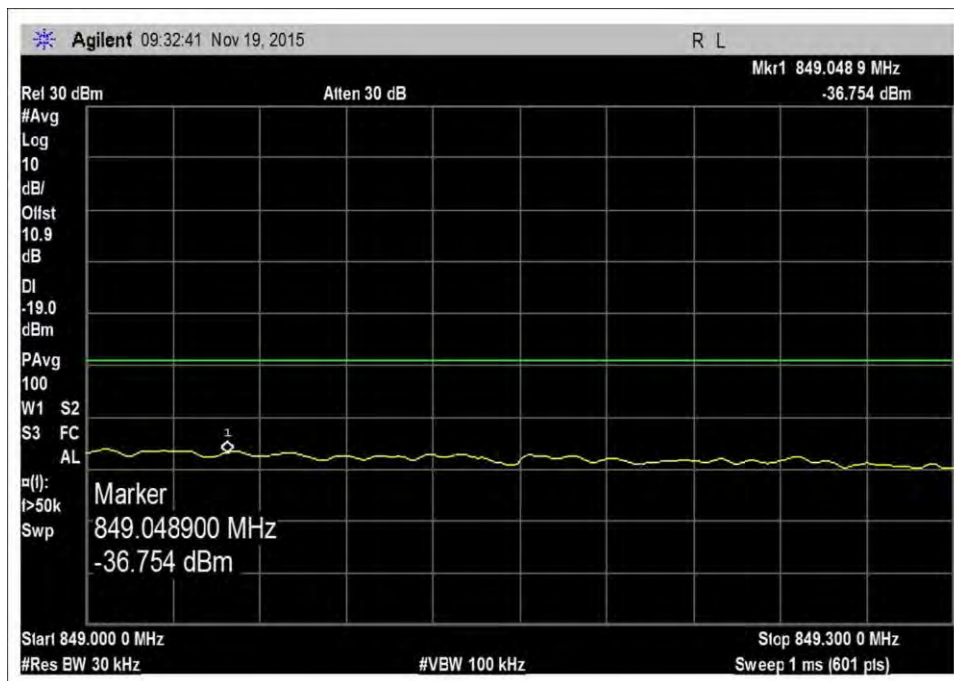
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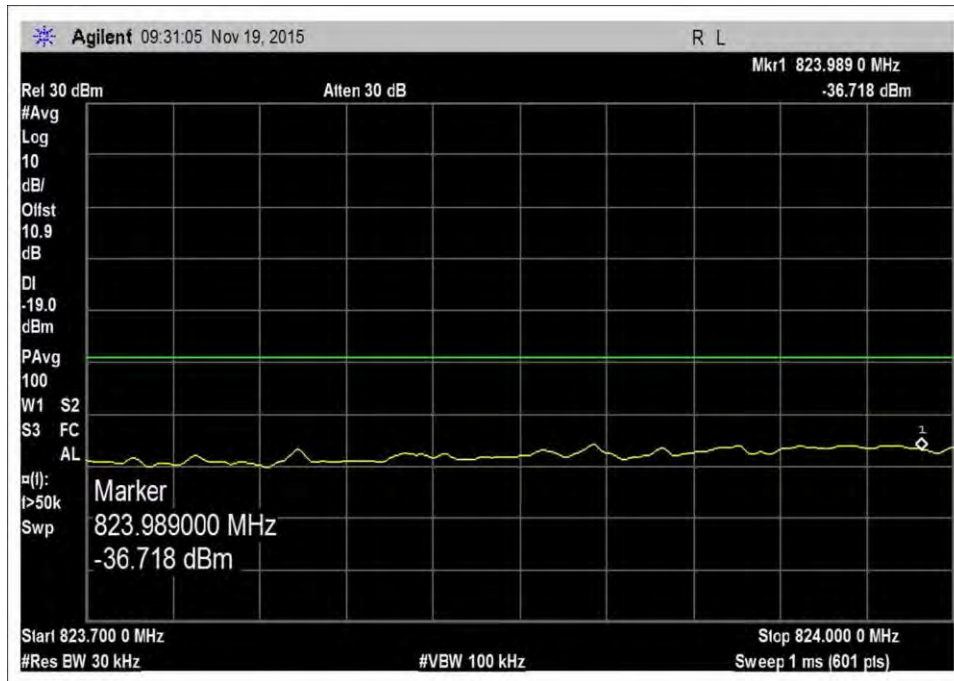
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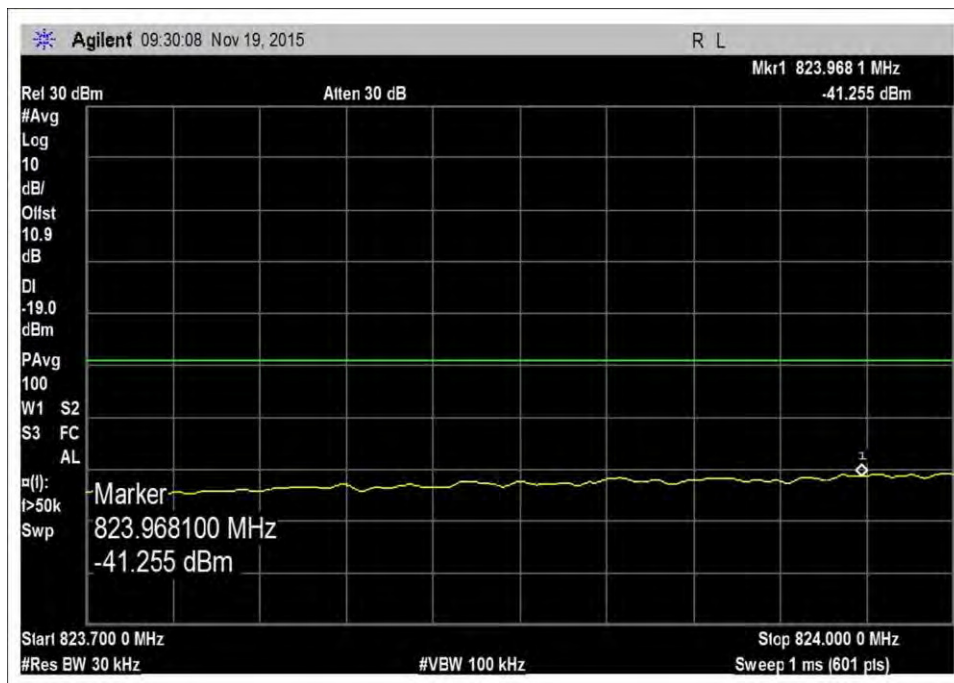
7.5_OBE_UL_824-849MHz_H_Max



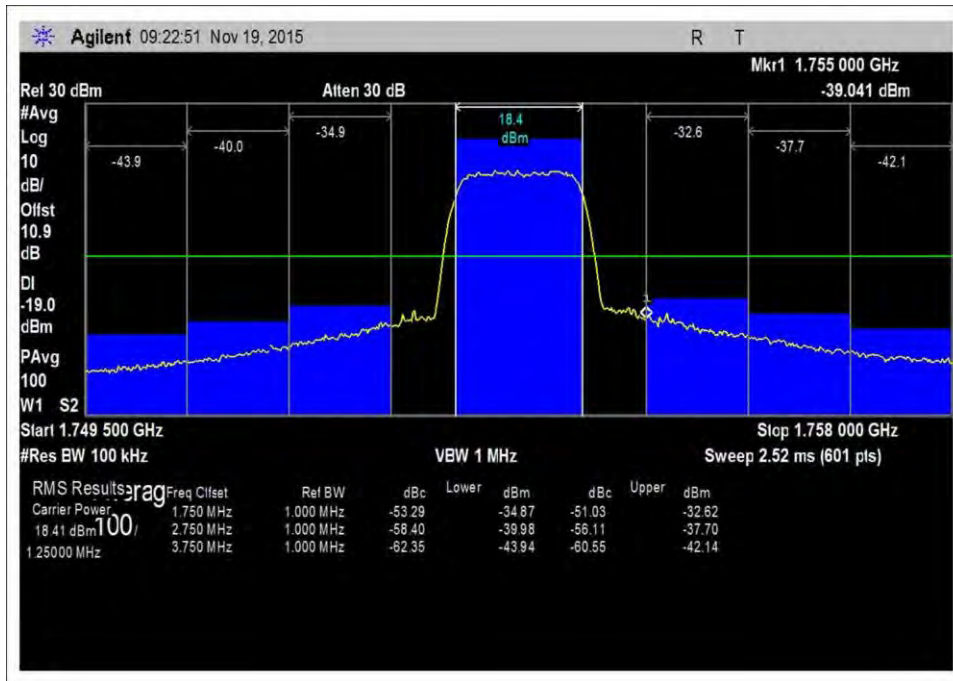
7.5_OBE_UL_824-849MHz_H_PreAGC



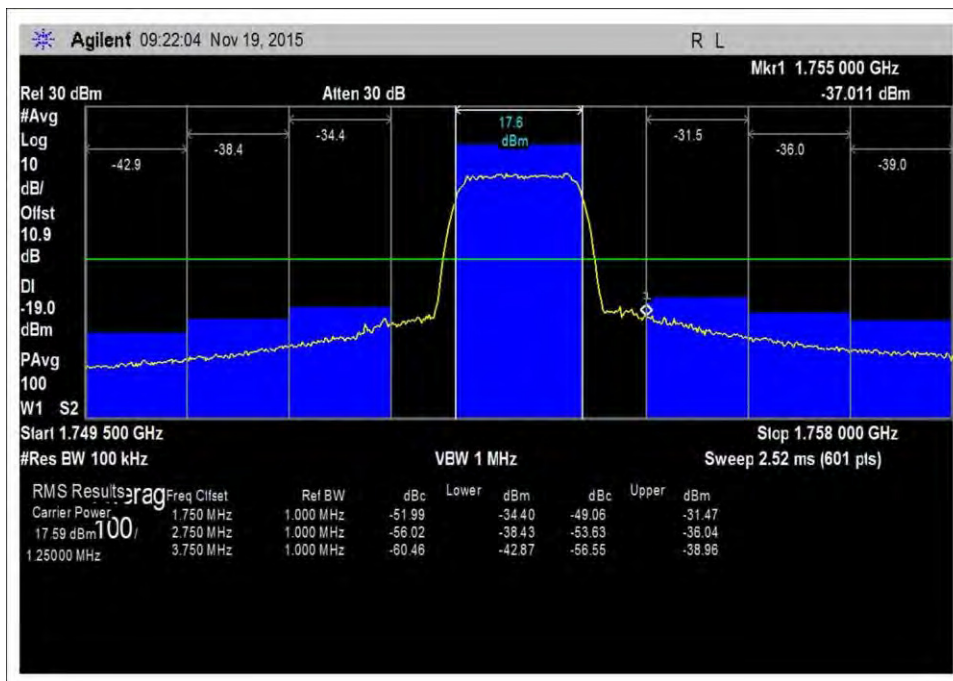
7.5_OBE_UL_824-849MHz_L_Max



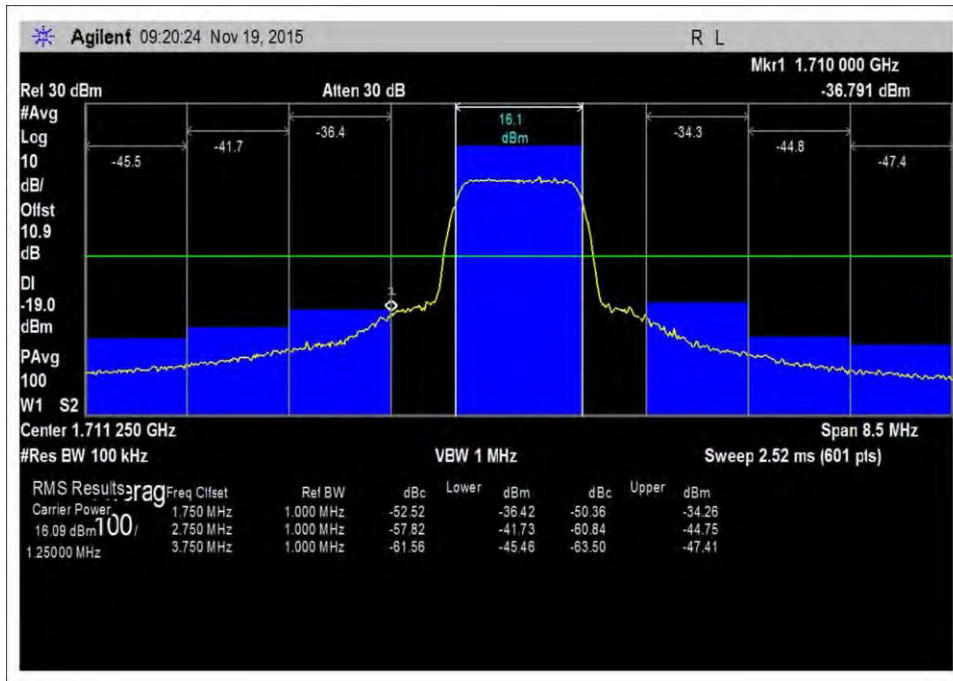
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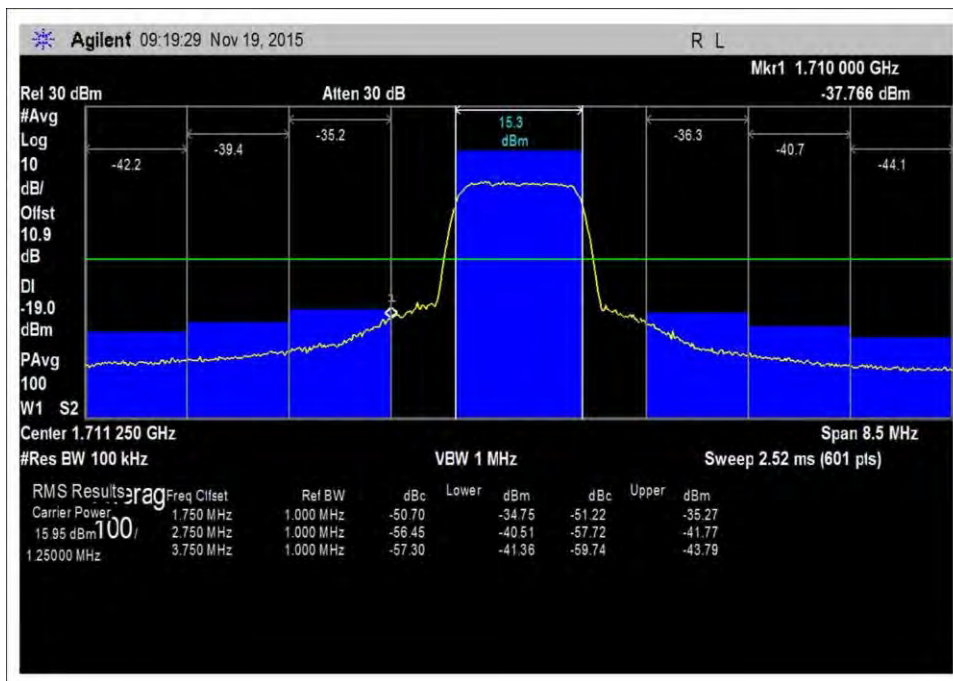
7.5_OBE_UL_1710-1755MHz_H_Max



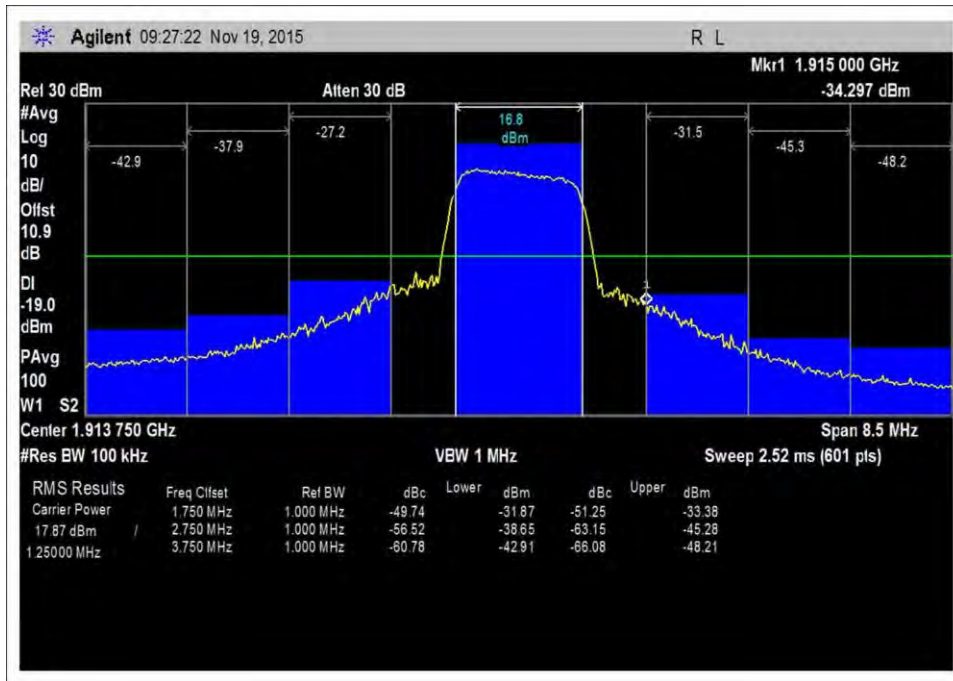
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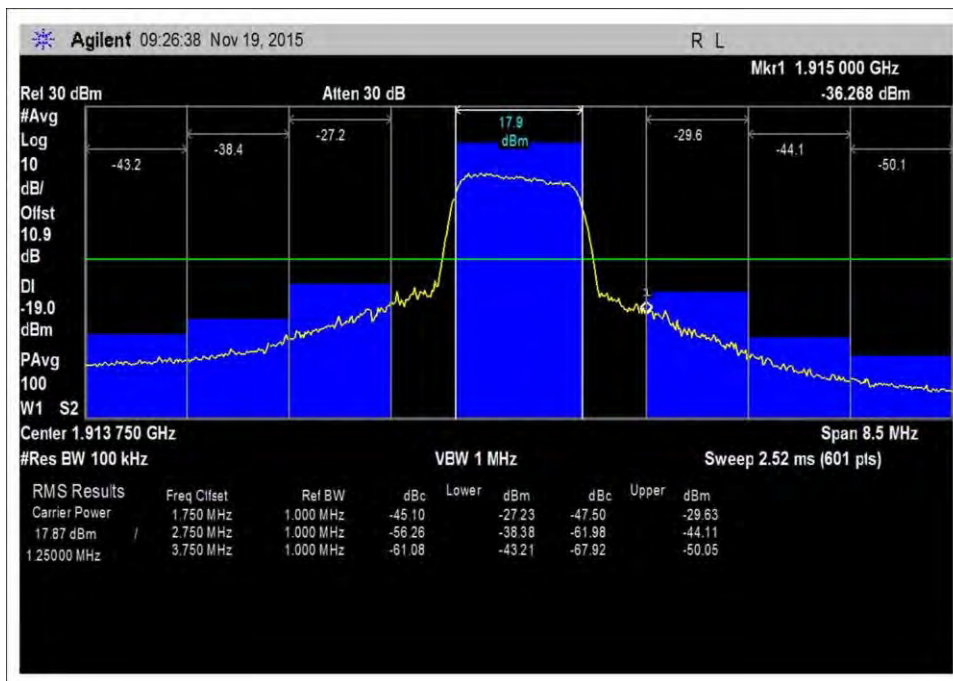
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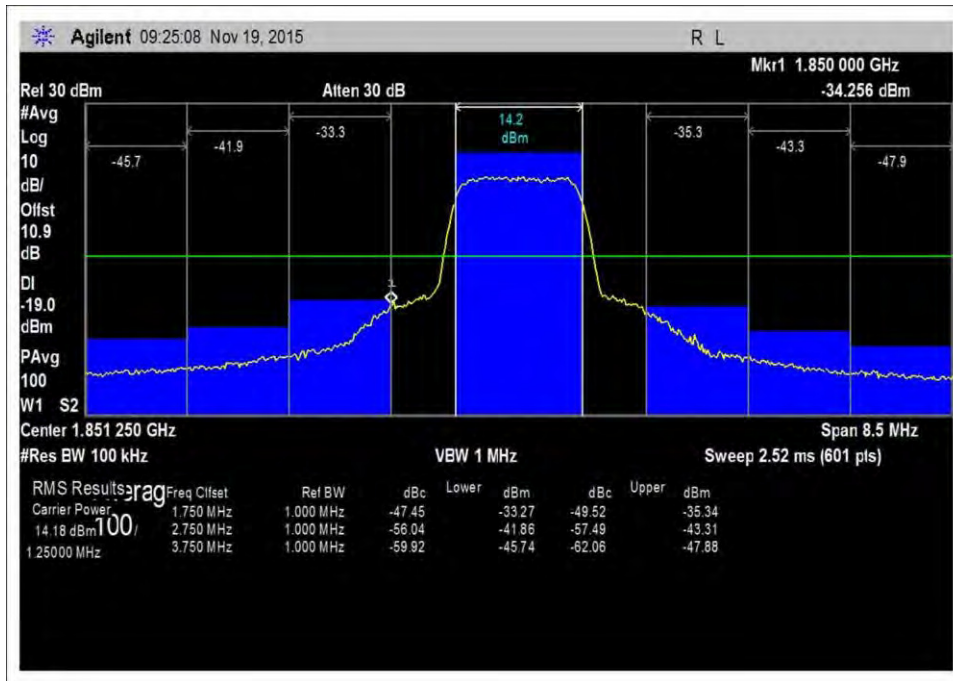
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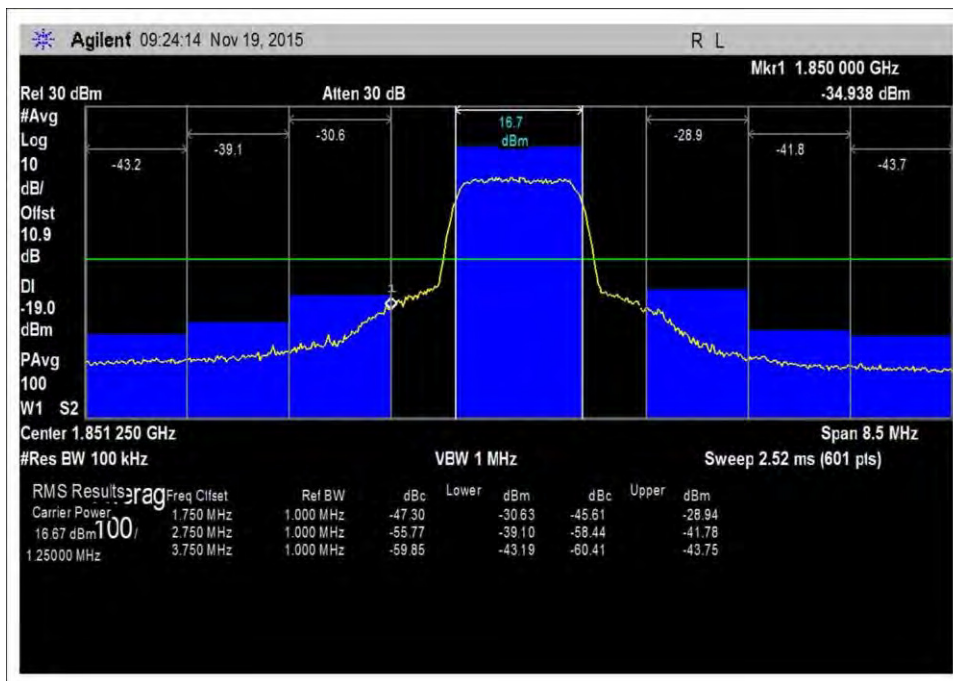
7.5_OBE_UL_1850-1915MHz_H_Max



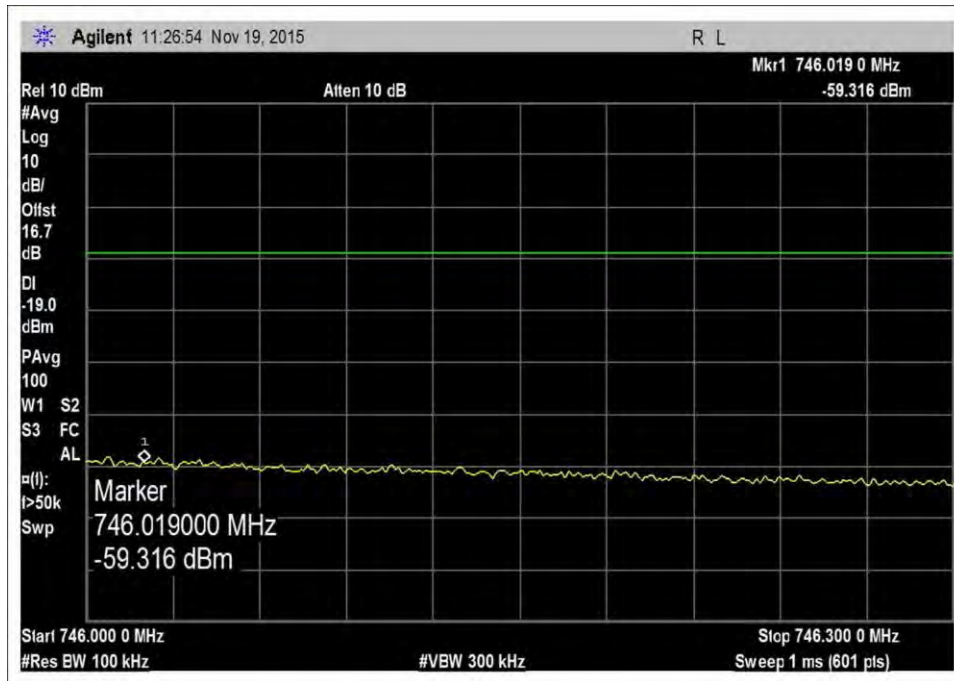
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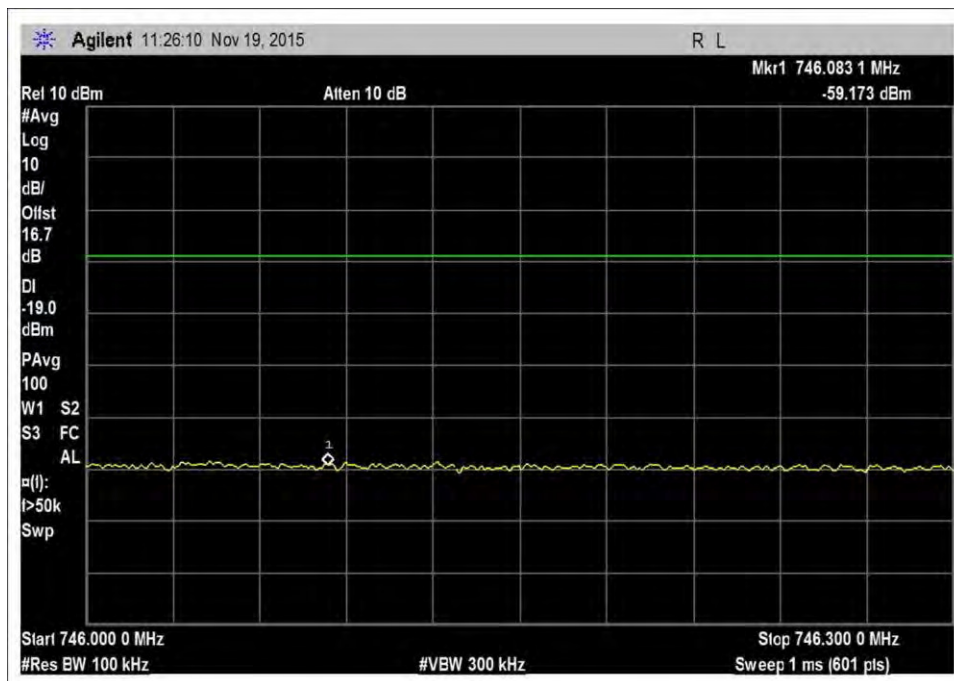
7.5_OBE_UL_1850-1915MHz_L_Max



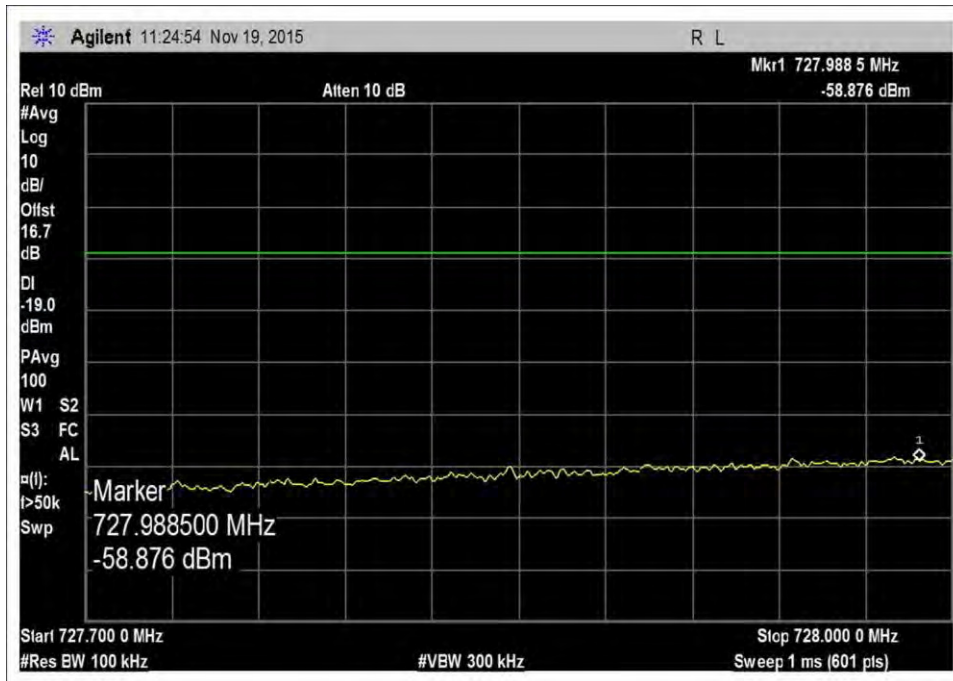
7.5_OBE_UL_1850-1915MHz_L_PreAGC



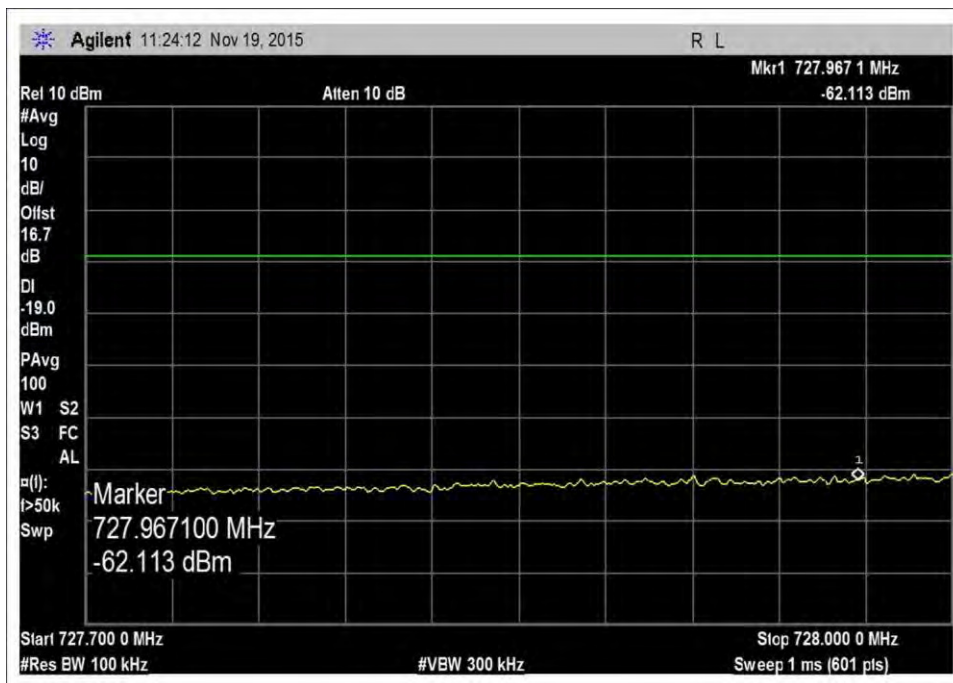
7.5_OBE_DL_728-746MHz_H_Max



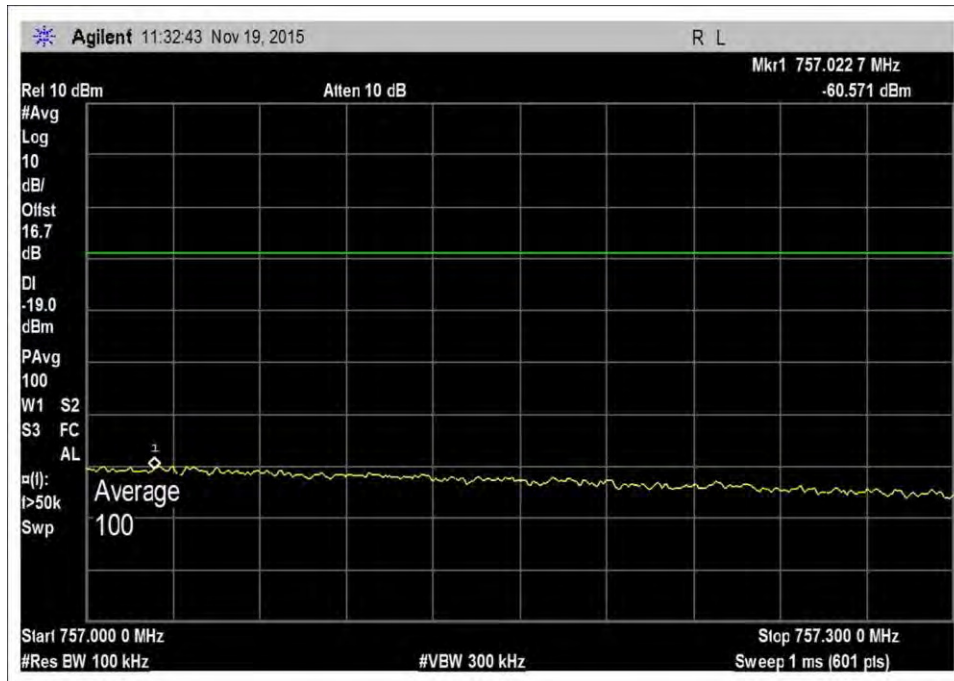
7.5_OBE_DL_728-746MHz_H_PreAGC



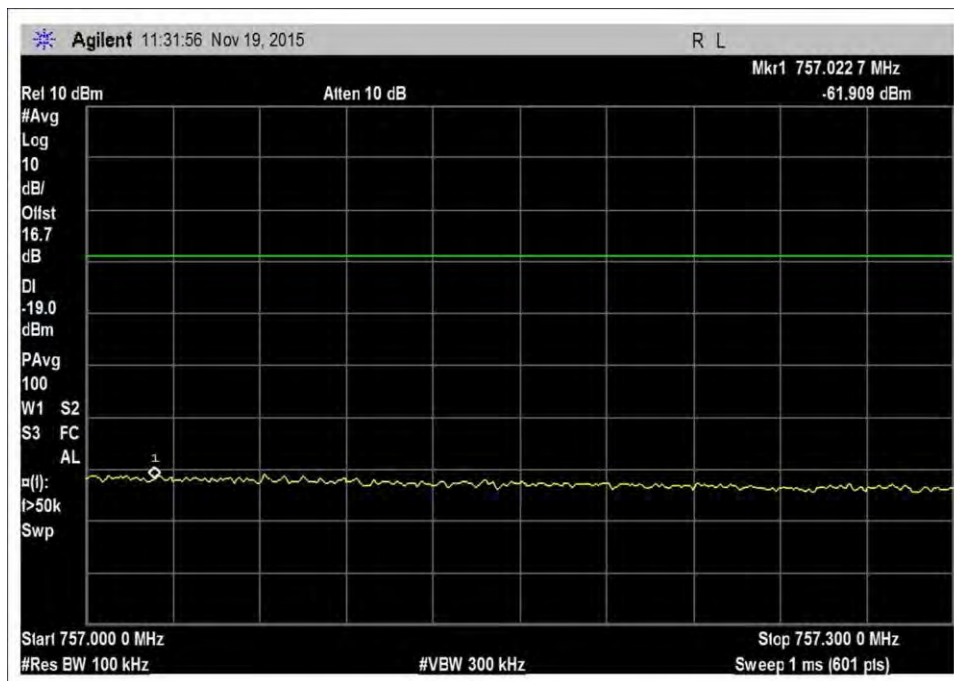
7.5_OBE_DL_728-746MHz_L_Max



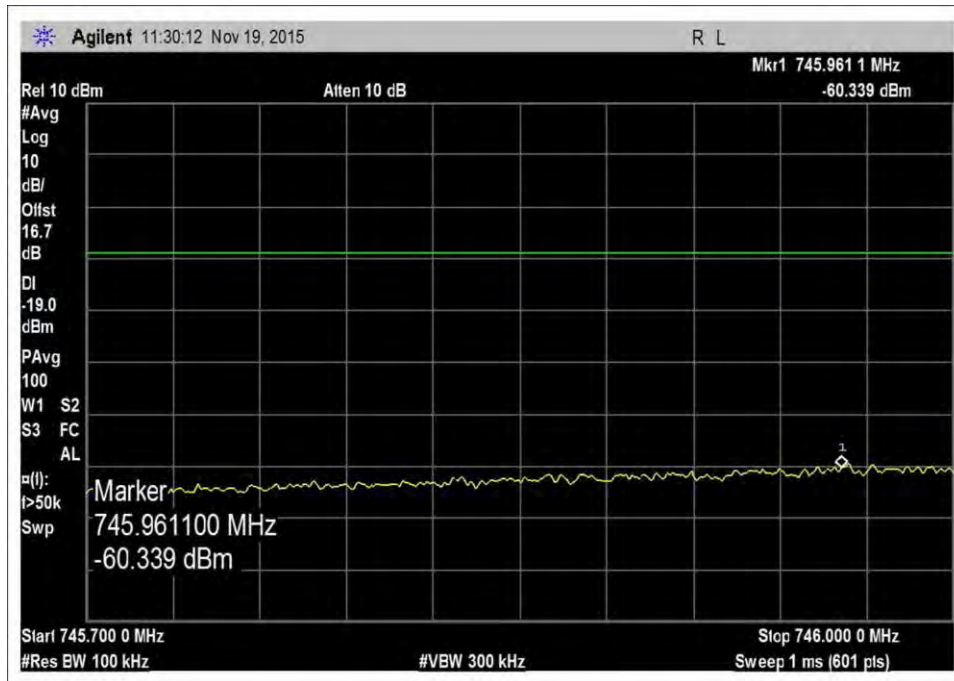
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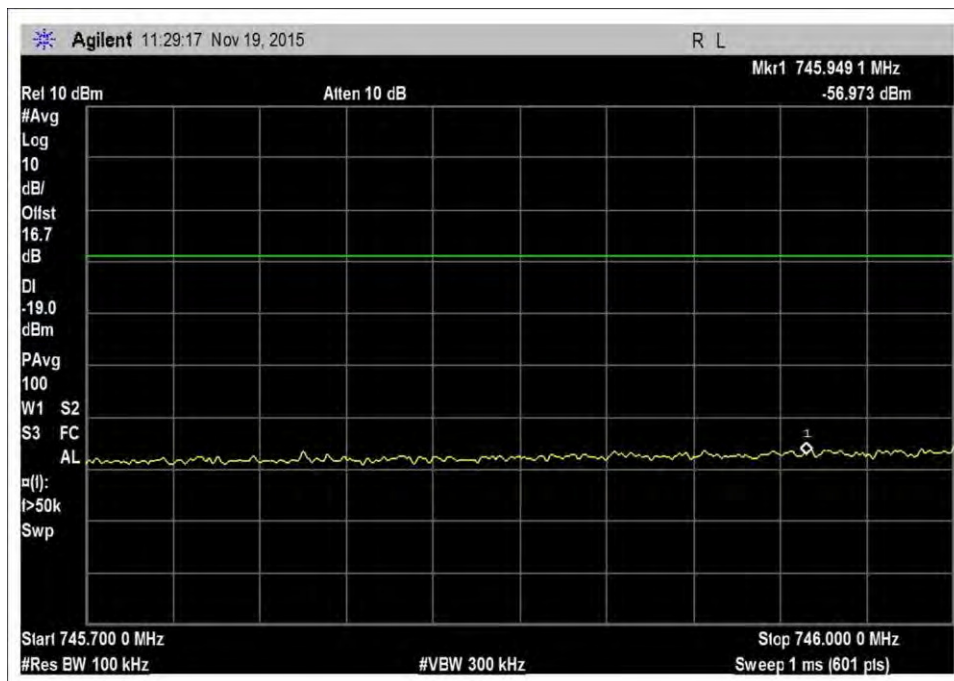
7.5_OBE_DL_746-757MHz_H_Max



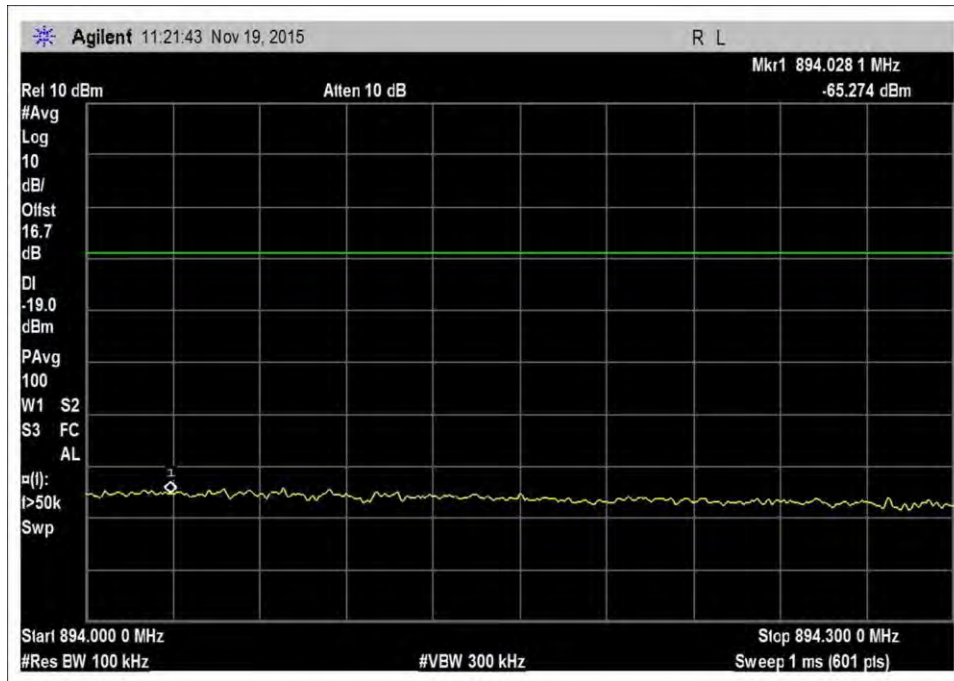
7.5_OBE_DL_746-757MHz_H_PreAGC



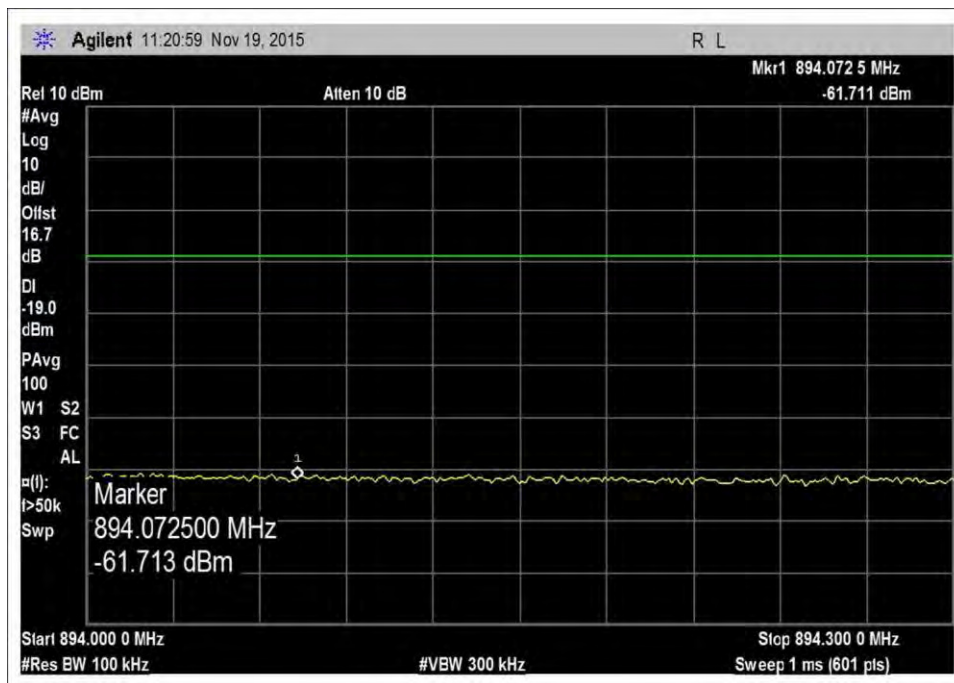
7.5_OBE_DL_746-757MHz_L_Max



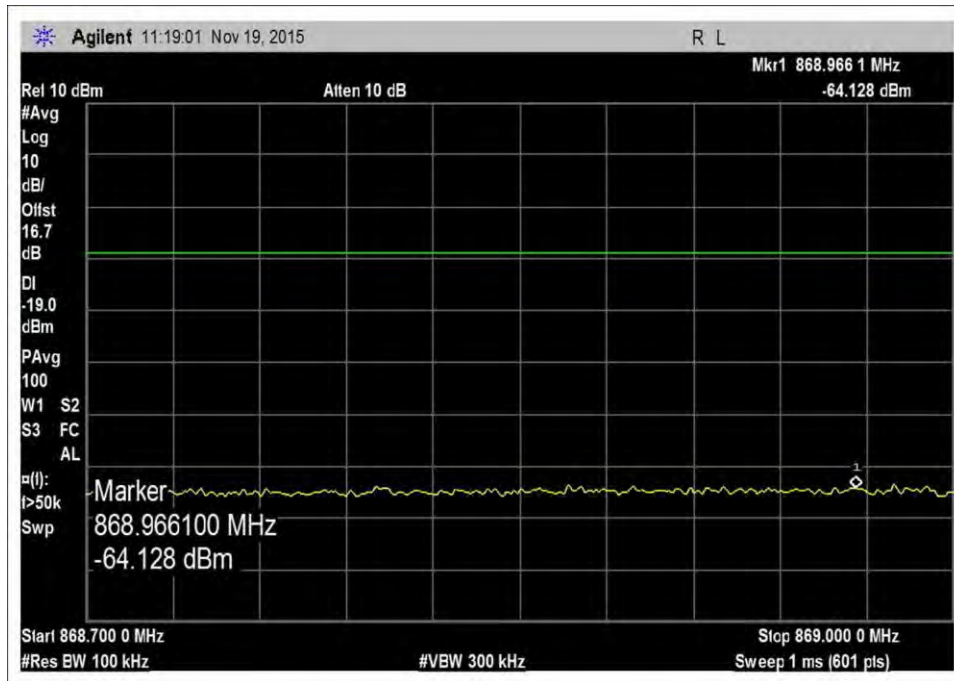
7.5_OBE_DL_746-757MHz_L_PreAGC



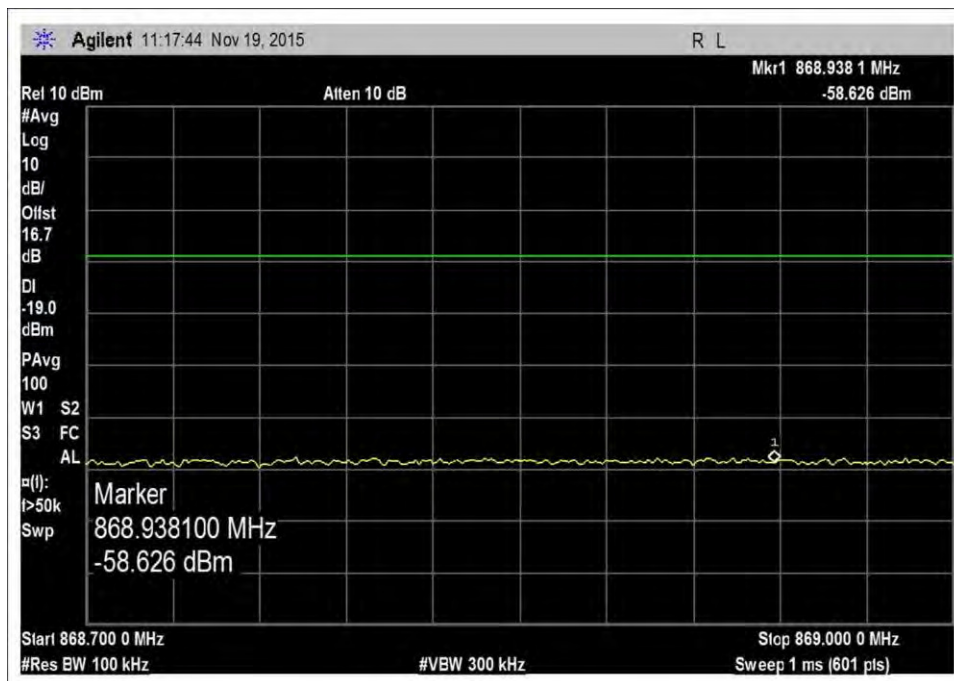
7.5_OBE_DL_869-894MHz_H_Max



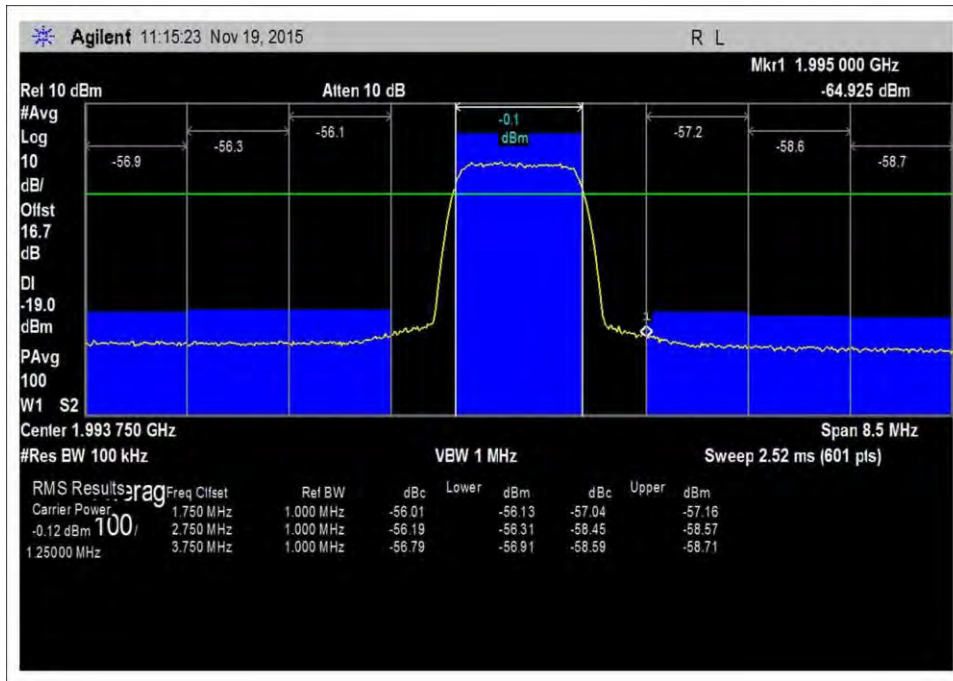
7.5_OBE_DL_869-894MHz_H_PreAGC



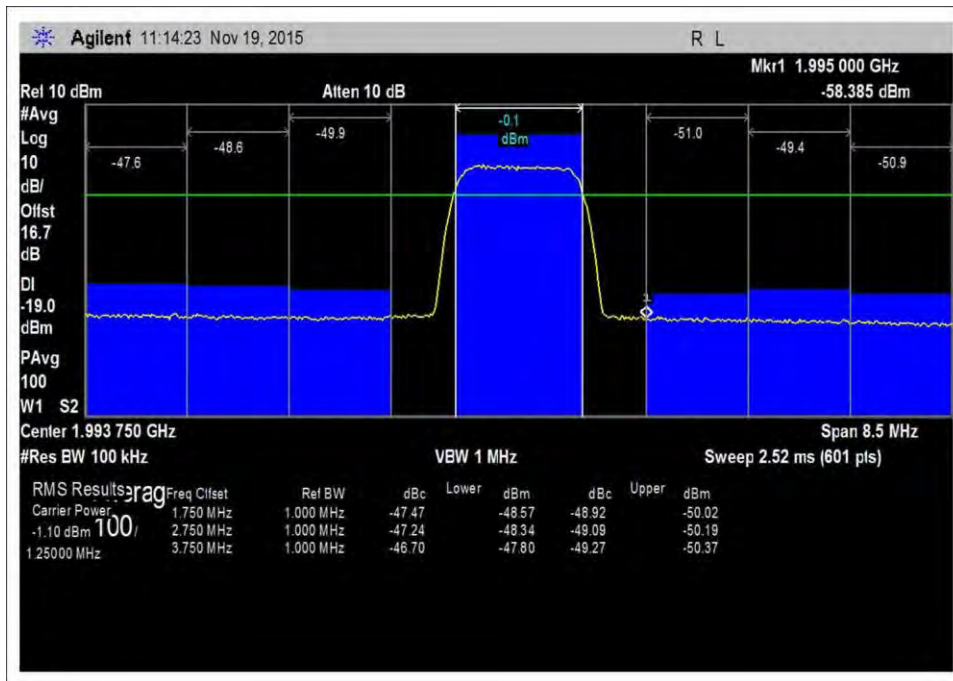
7.5_OBE_DL_869-894MHz_L_Max



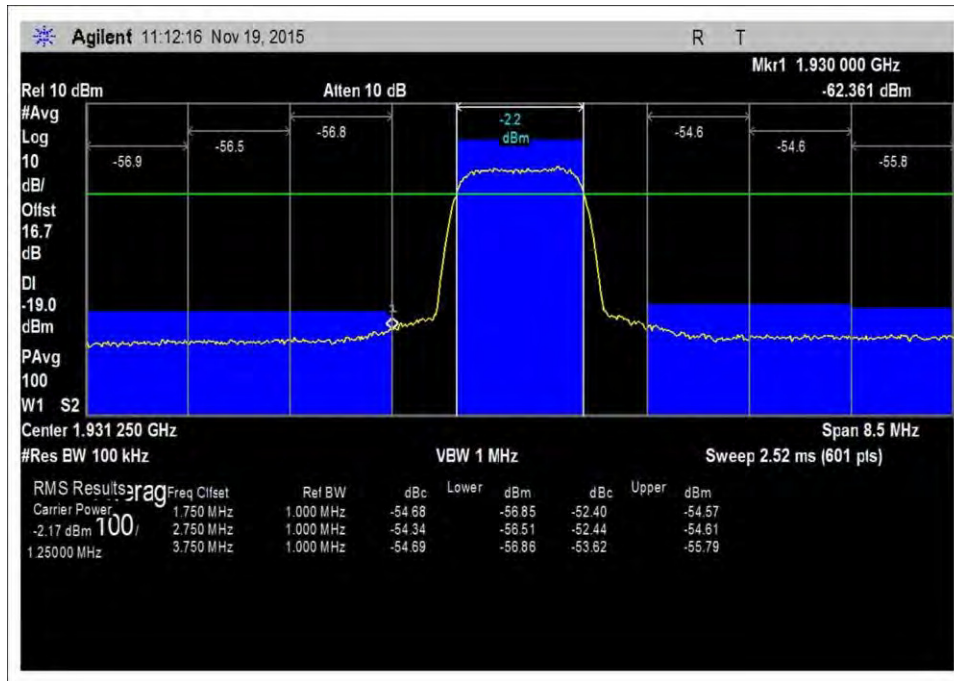
7.5_OBE_DL_869-894MHz_L_PreAGC



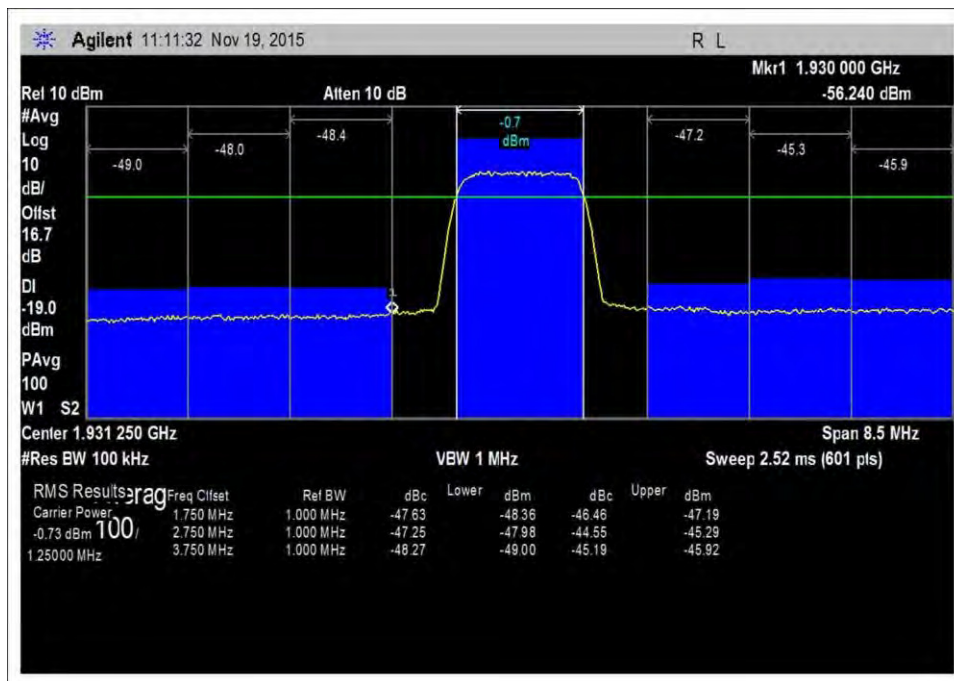
7.5_OBE_DL_1930-1995MHz_H_Max



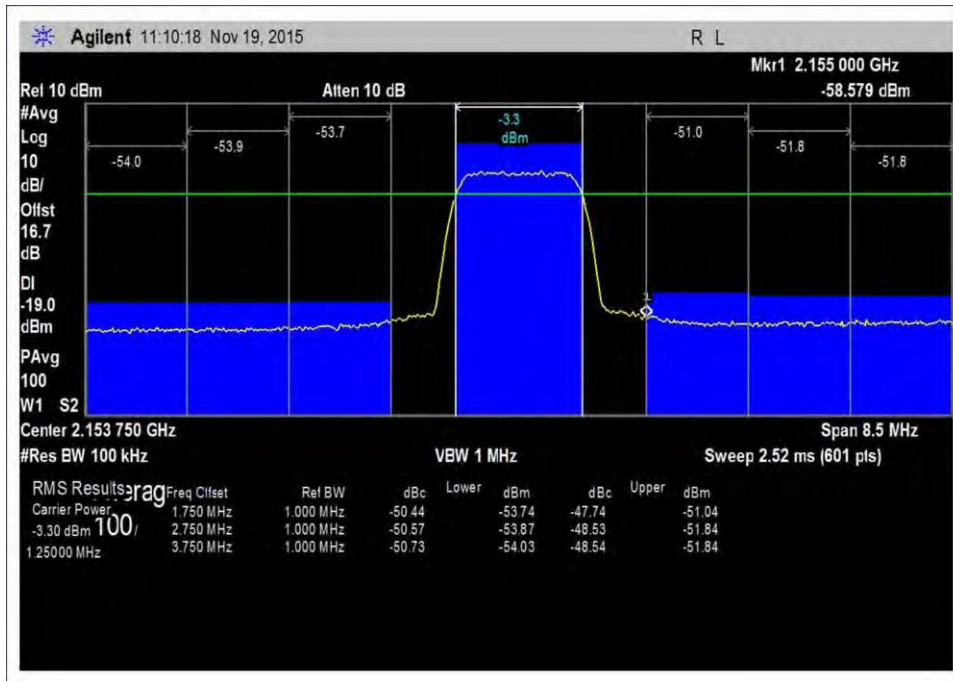
7.5_OBE_DL_1930-1995MHz_H_PreAGC



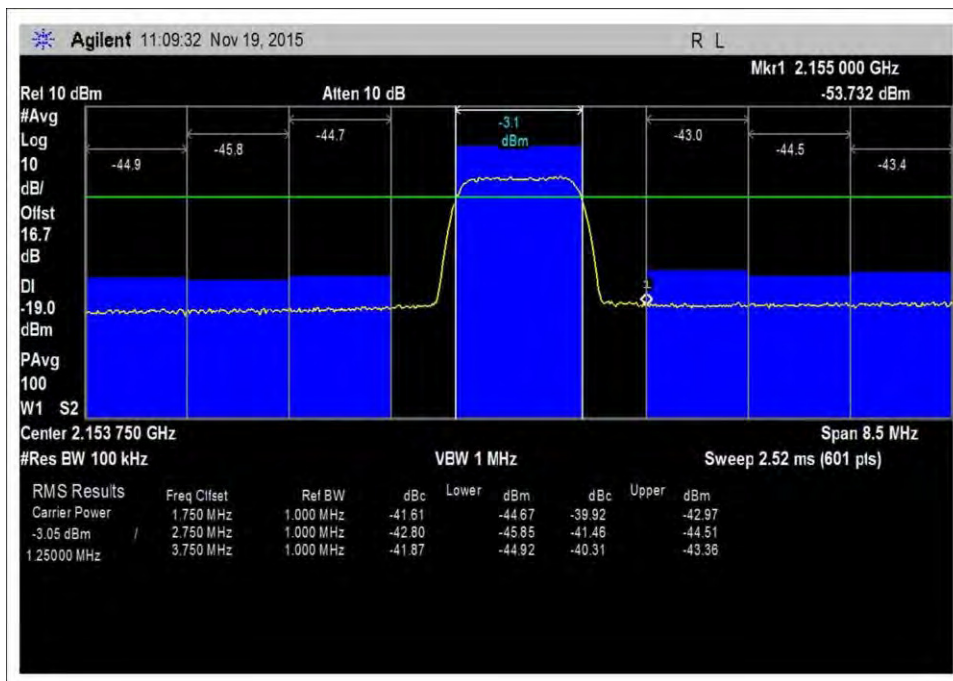
7.5_OBE_DL_1930-1995MHz_L_Max



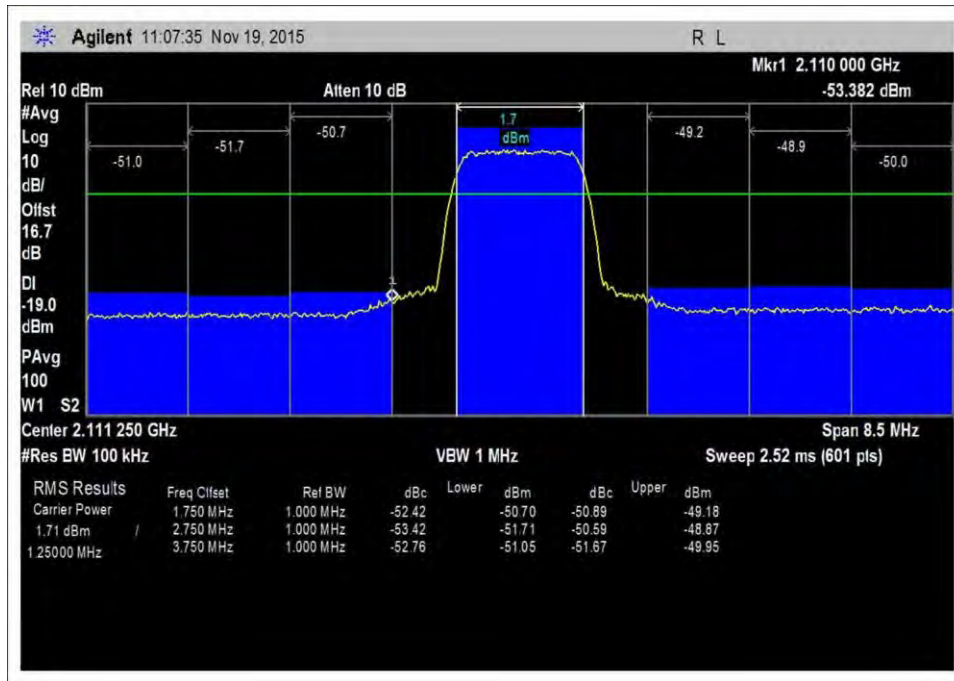
7.5_OBE_DL_1930-1995MHz_L_PreAGC



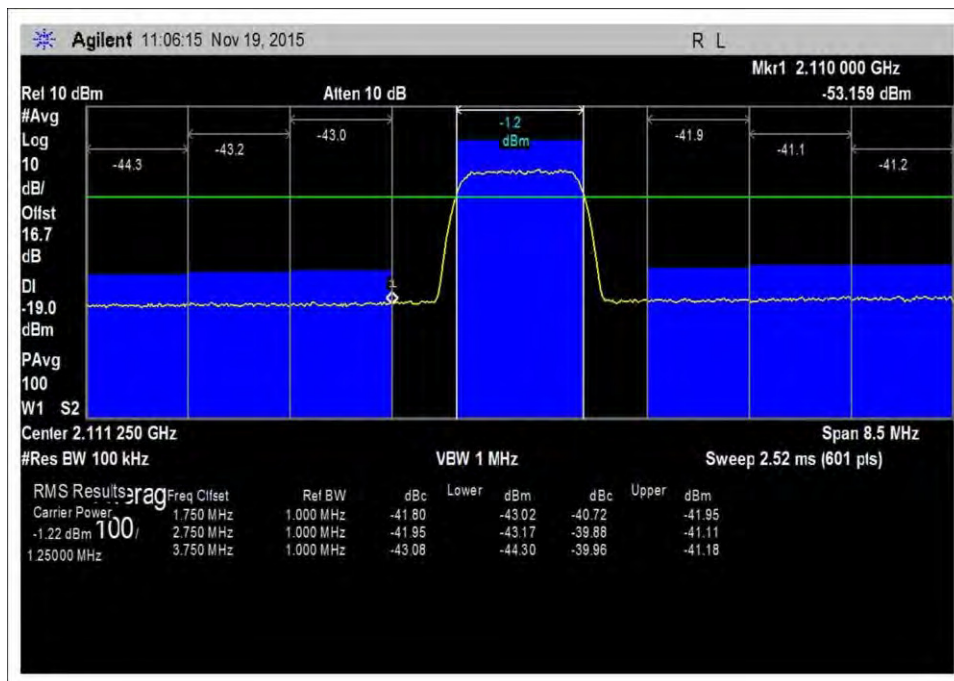
7.5_OBE_DL_2110-2155MHz_H_Max



7.5_OBE_DL_2110-2155MHz_H_PreAGC

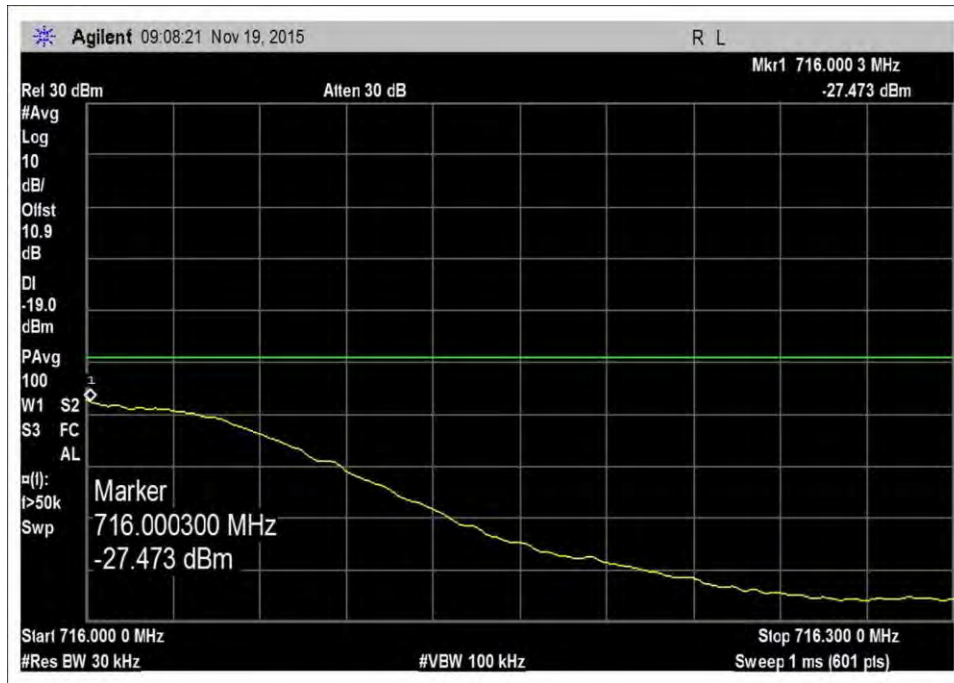


7.5_OBE_DL_2110-2155MHz_L_Max

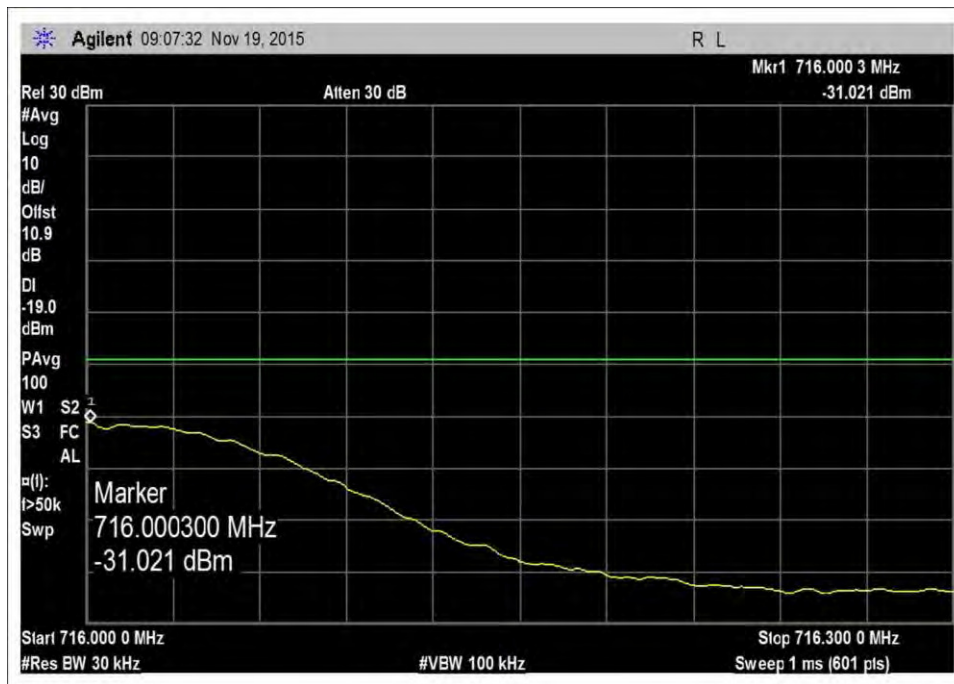


7.5_OBE_DL_2110-2155MHz_L_PreAGC

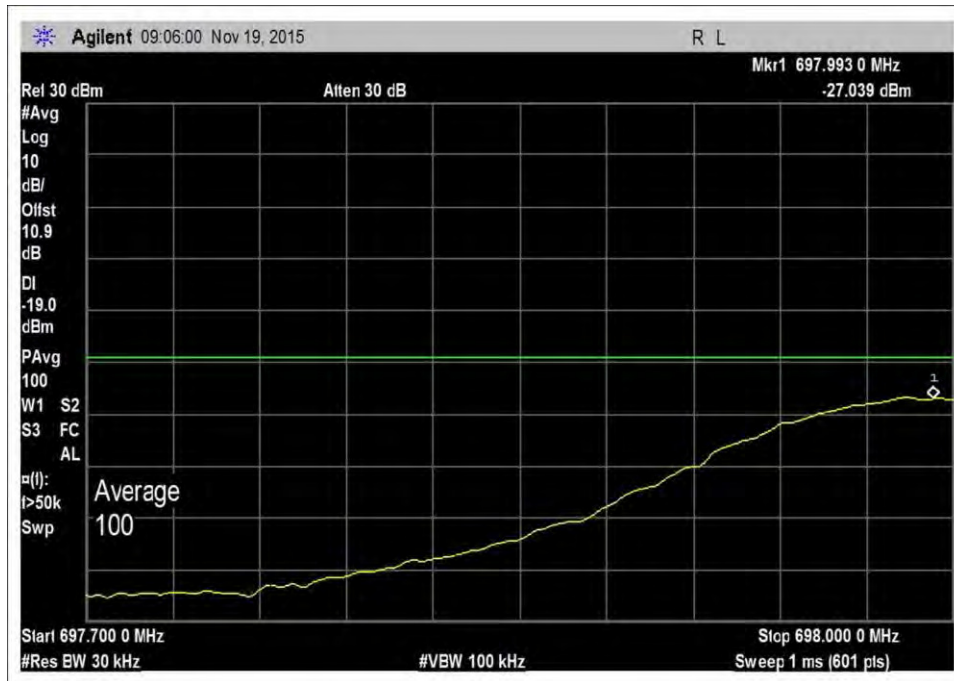
GSM



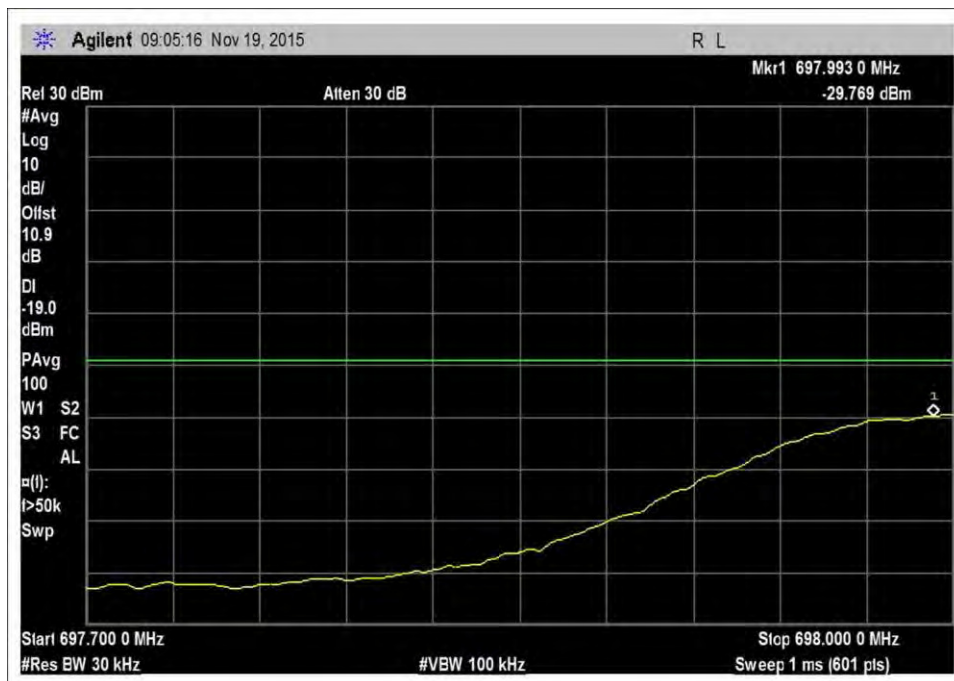
7.5_OBE_UL_698-716MHz_H_Max



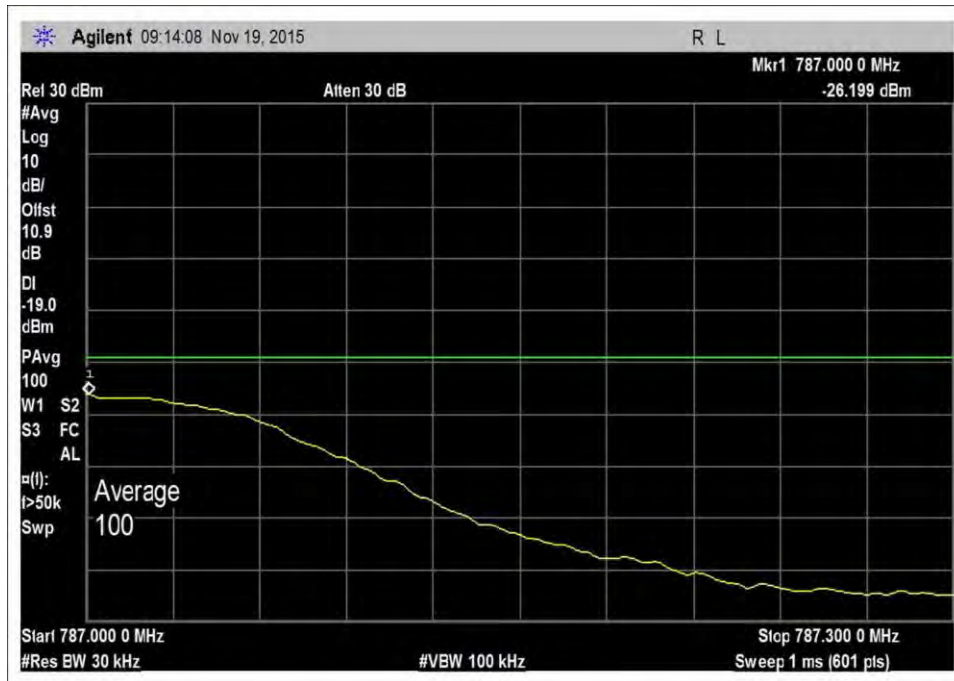
7.5_OBE_UL_698-716MHz_H_PreAGC



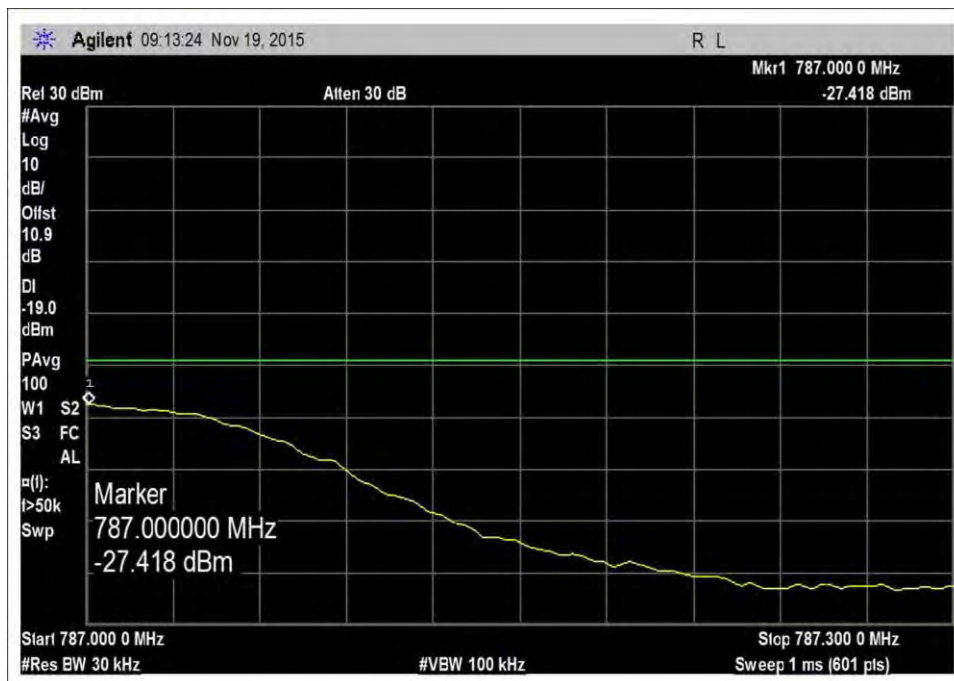
7.5_OBE_UL_698-716MHz_L_Max



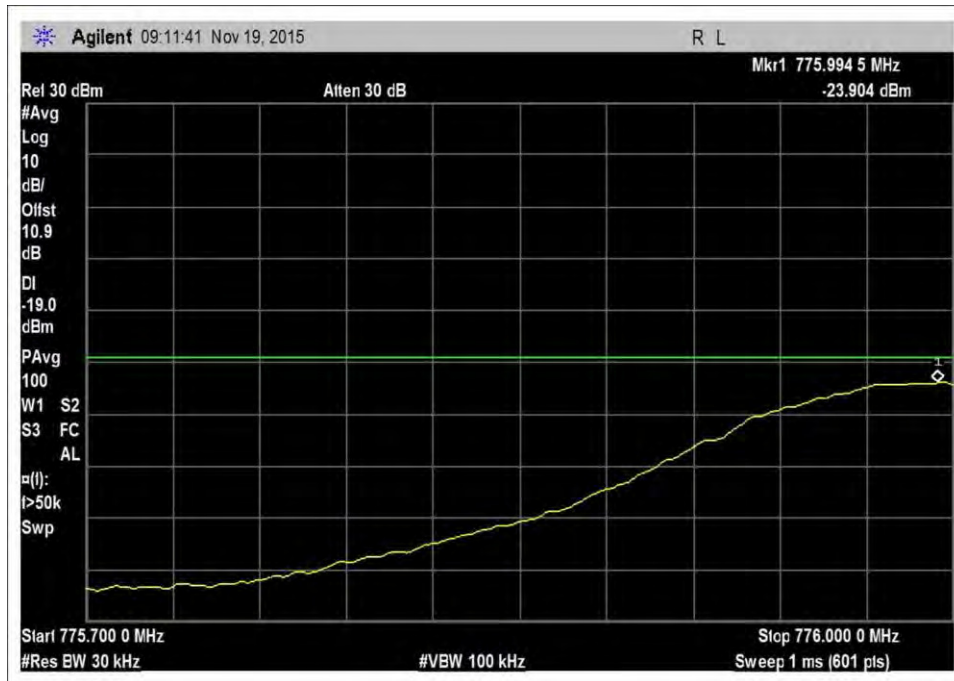
7.5_OBE_UL_698-716MHz_L_PreAGC



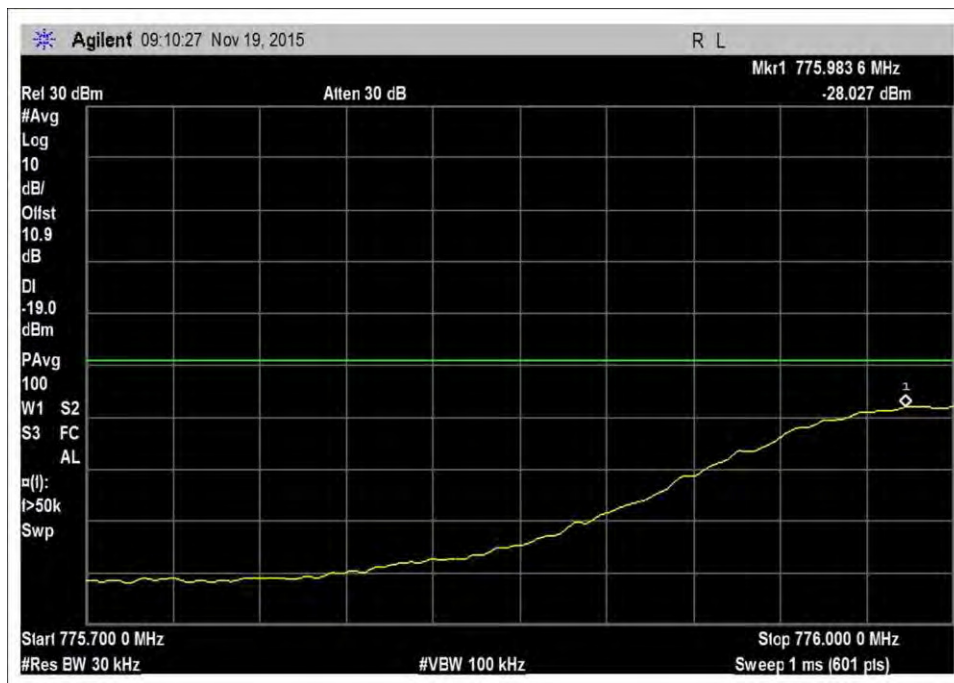
7.5_OBE_UL_776-787MHz_H_Max



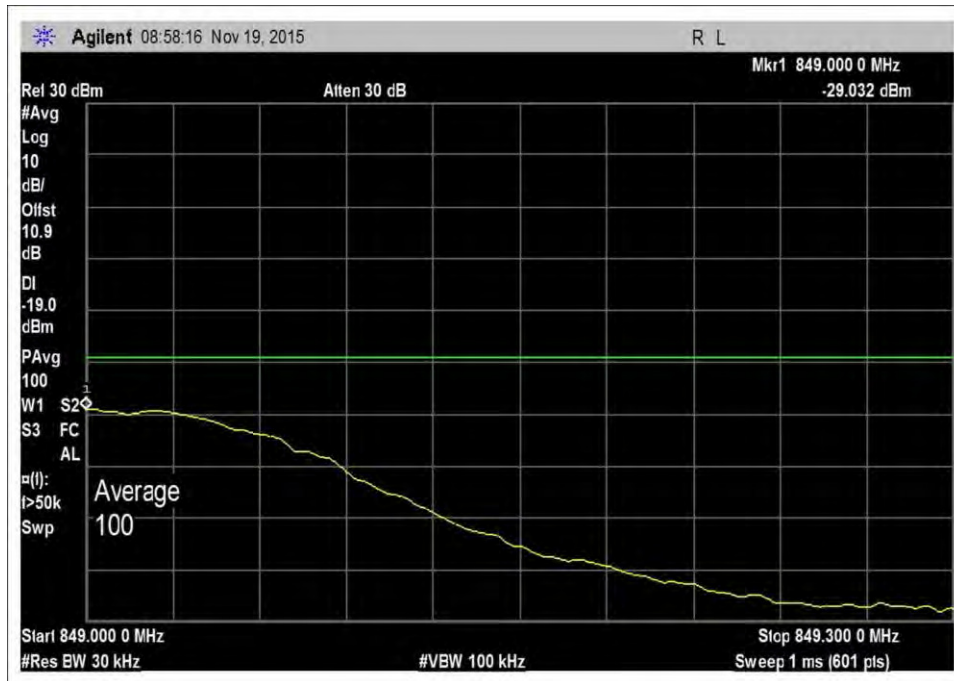
7.5_OBE_UL_776-787MHz_H_PreAGC



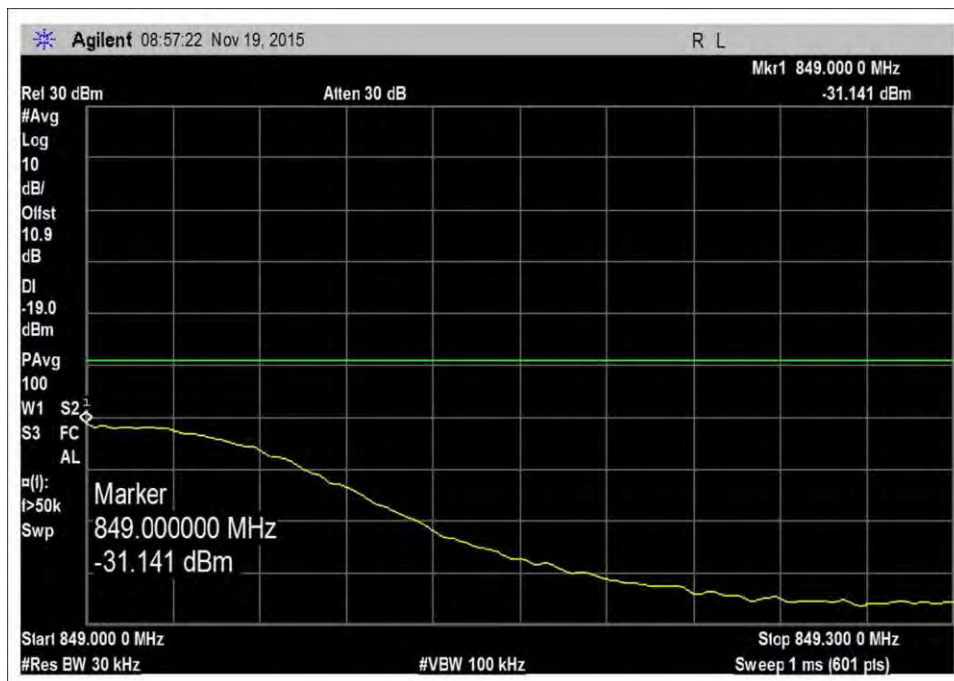
7.5_OBE_UL_776-787MHz_L_Max



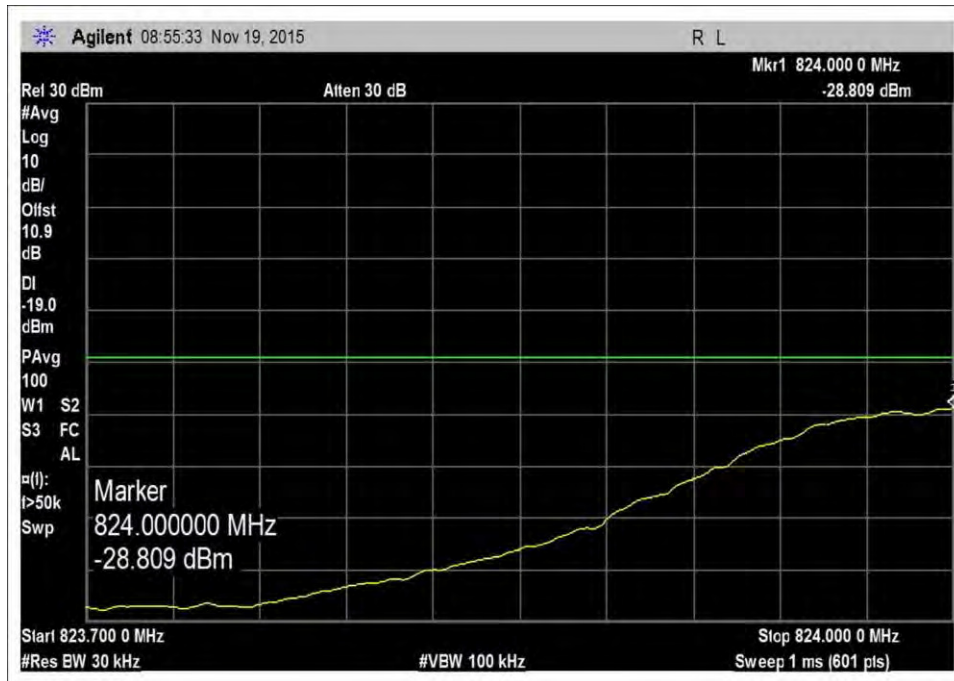
7.5_OBE_UL_776-787MHz_L_PreAGC



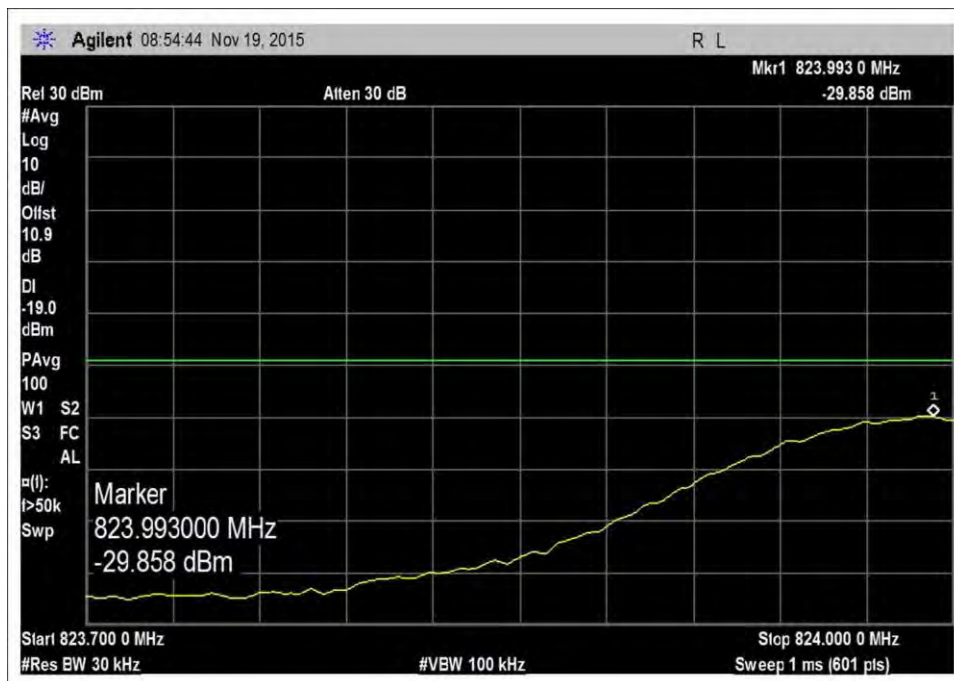
7.5_OBE_UL_824-849MHz_H_Max



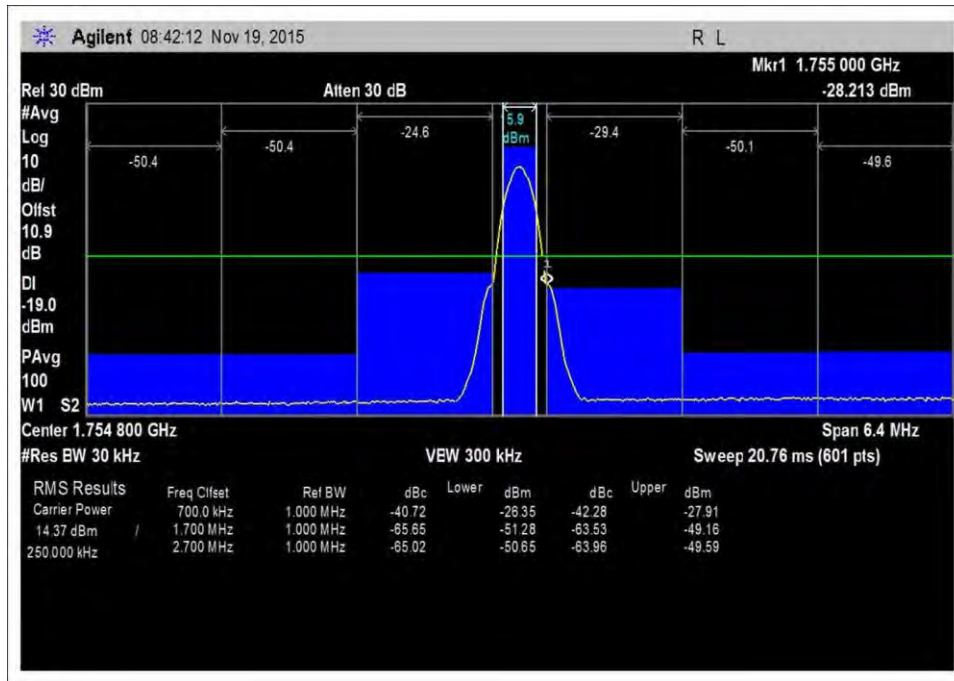
7.5_OBE_UL_824-849MHz_H_PreAGC



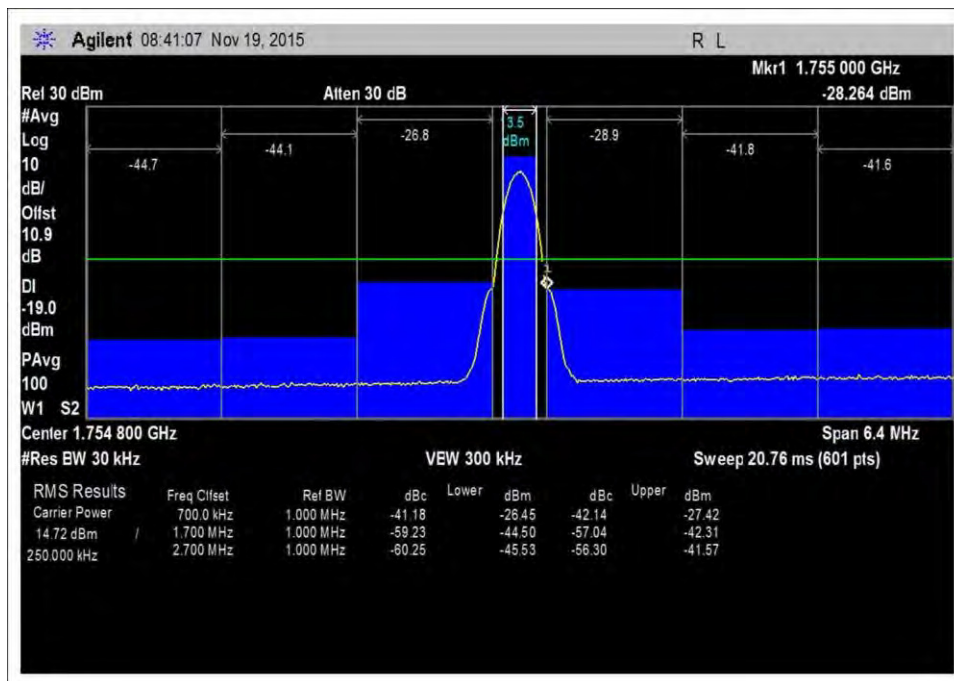
7.5_OBE_UL_824-849MHz_L_Max



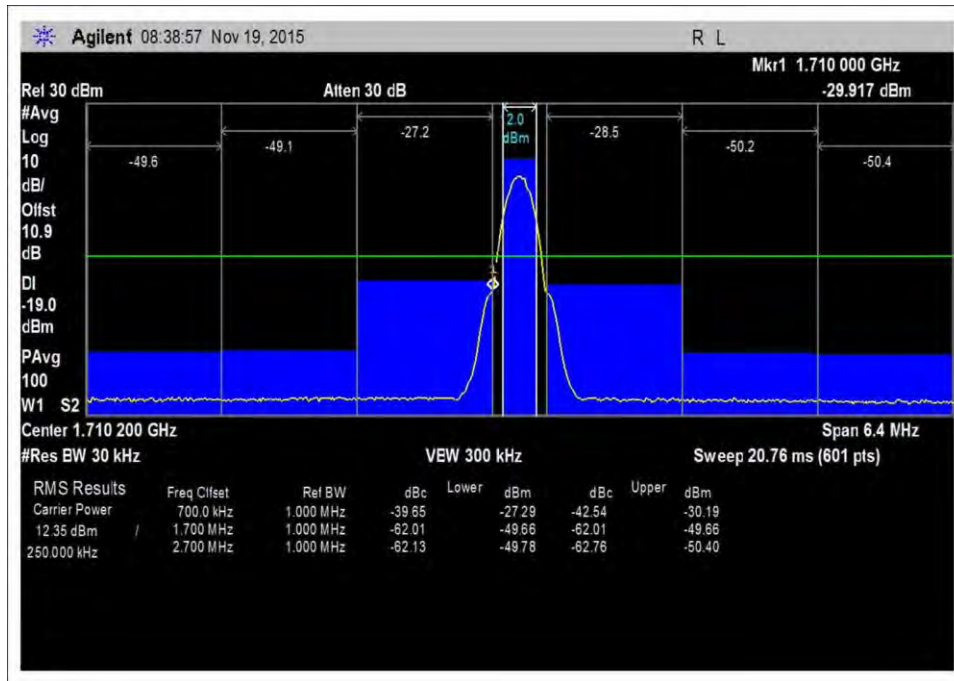
7.5_OBE_UL_824-849MHz_L_PreAGC



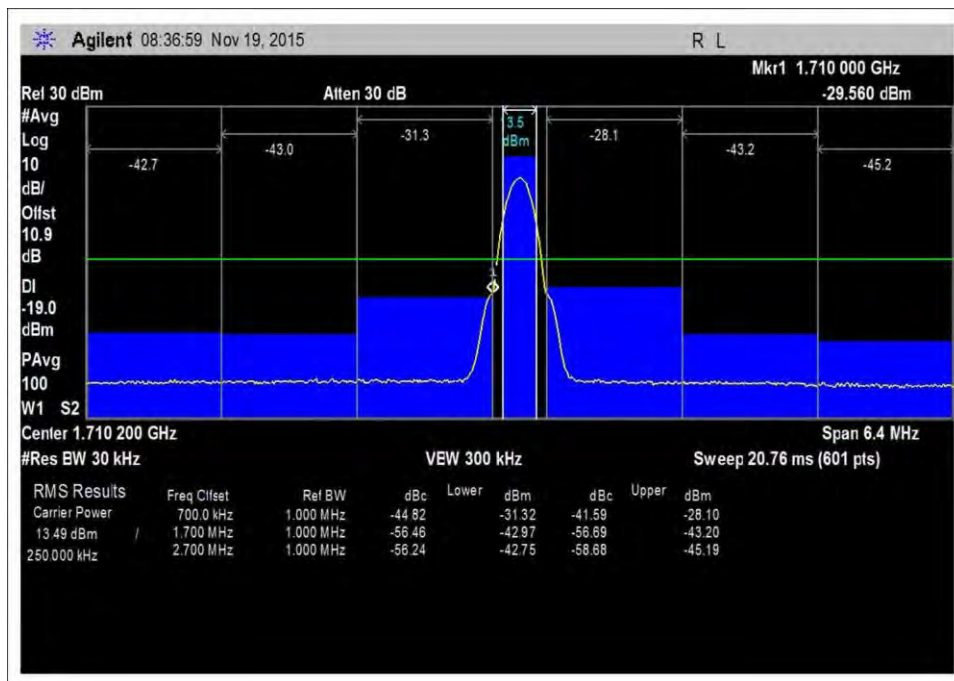
7.5_OBE_UL_1710-1755MHz_H_Max



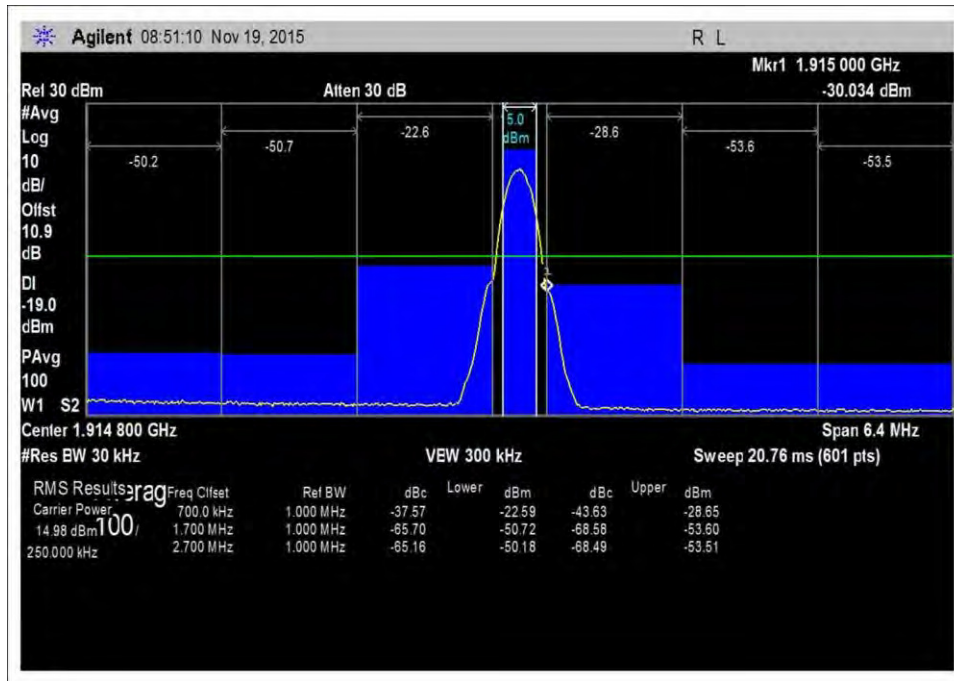
7.5_OBE_UL_1710-1755MHz_H_PreAGC



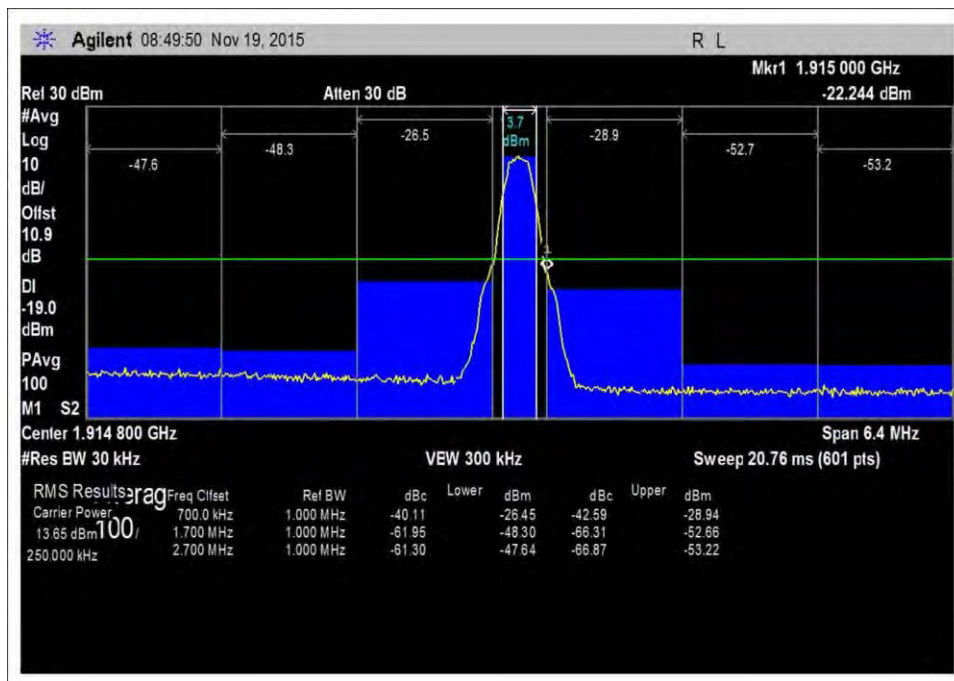
7.5_OBE_UL_1710-1755MHz_L_Max



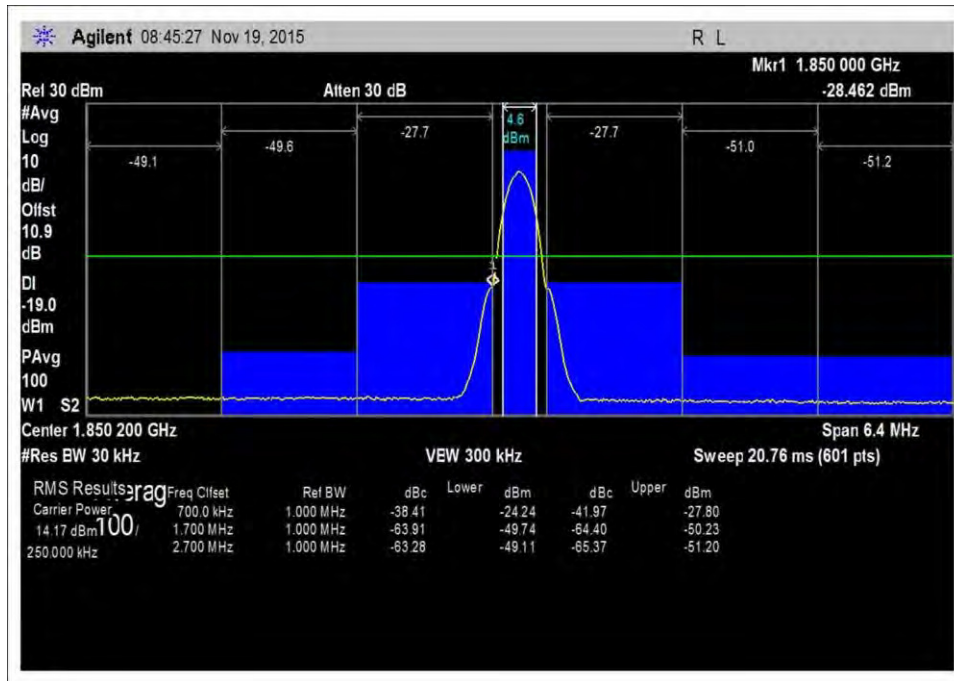
7.5_OBE_UL_1710-1755MHz_L_PreAGC



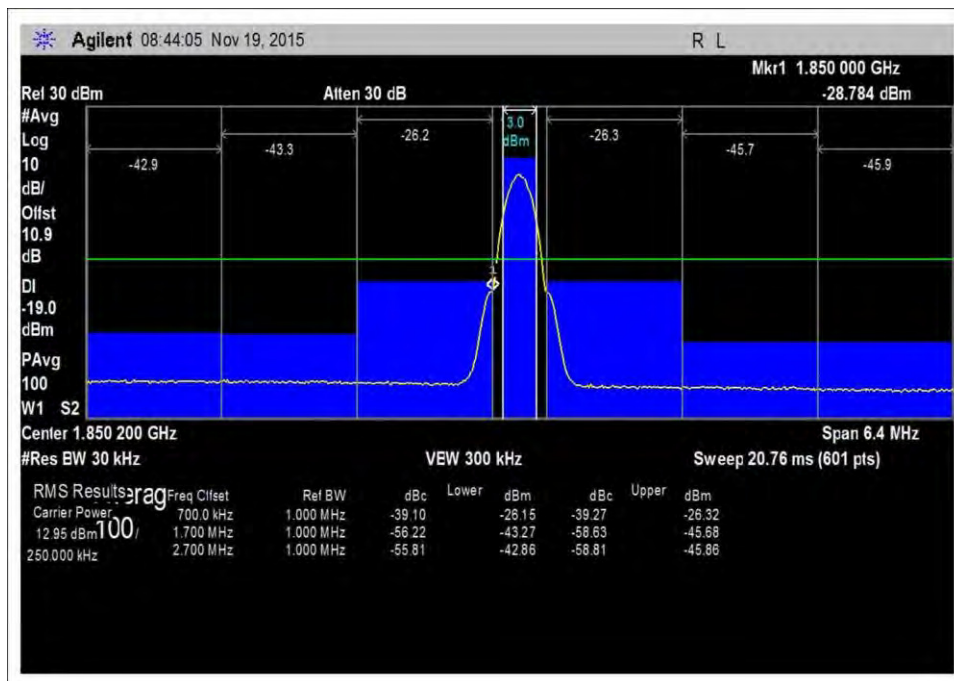
7.5_OBE_UL_1850-1915MHz_H_Max



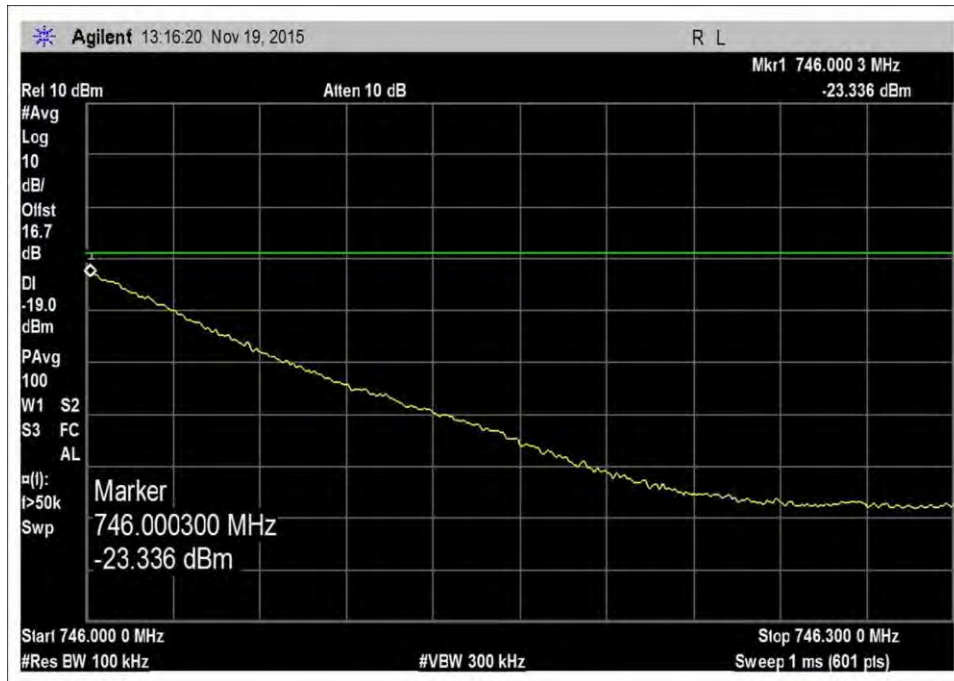
7.5_OBE_UL_1850-1915MHz_H_PreAGC



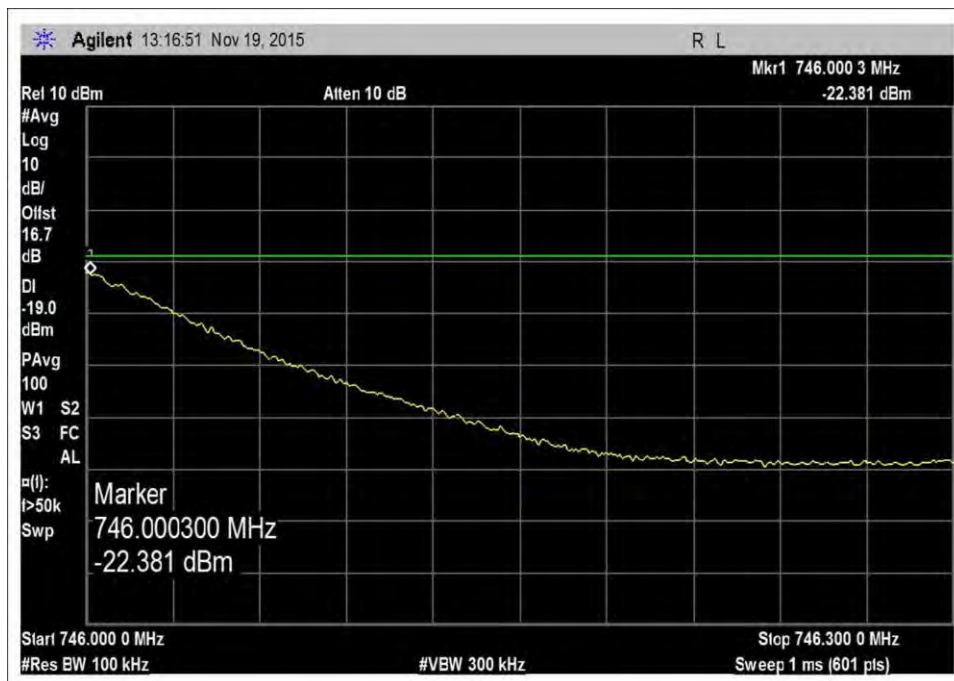
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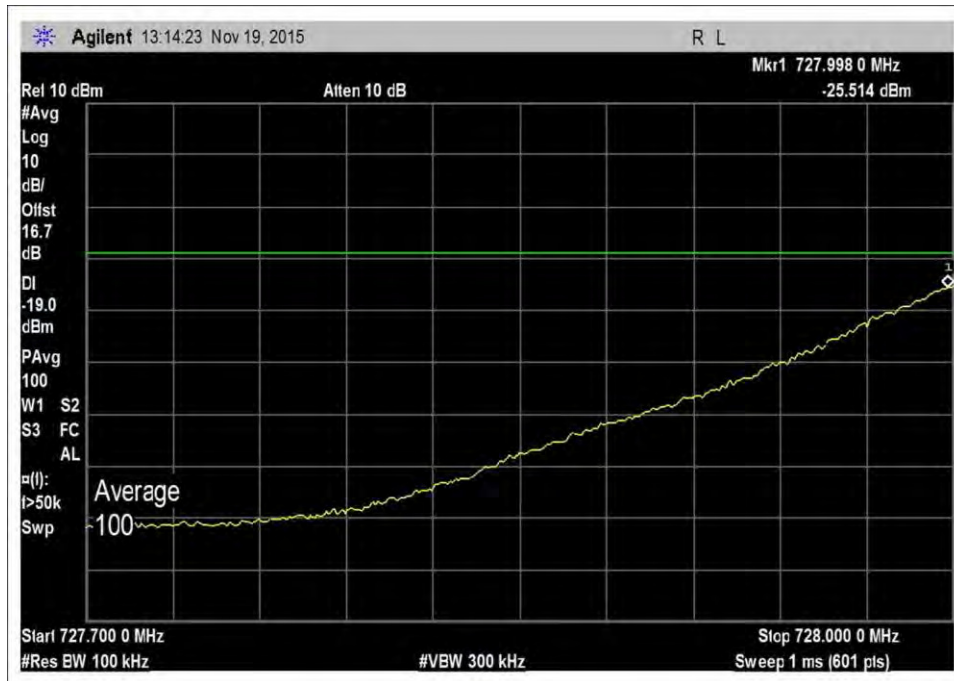
7.5_OBE_UL_1850-1915MHz_L_PreAGC



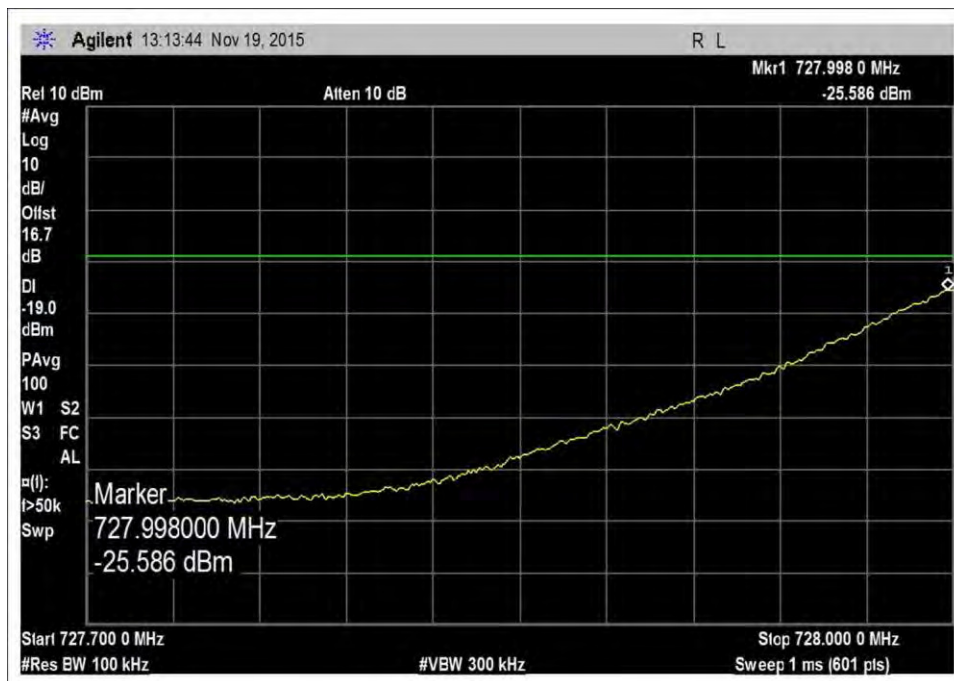
7.5_OBE_DL_728-746MHz_H_Max



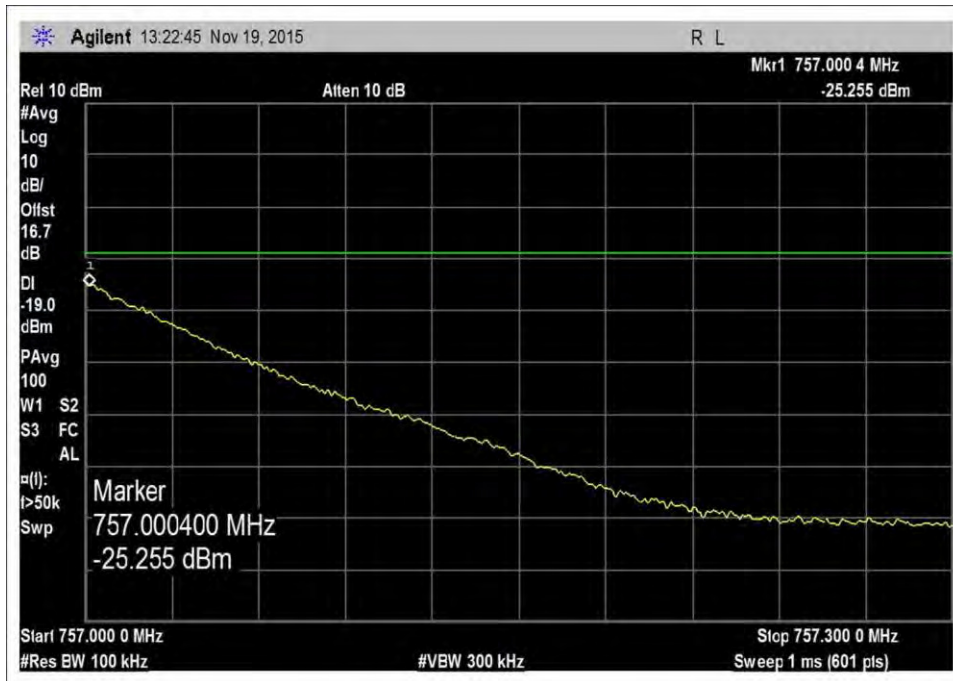
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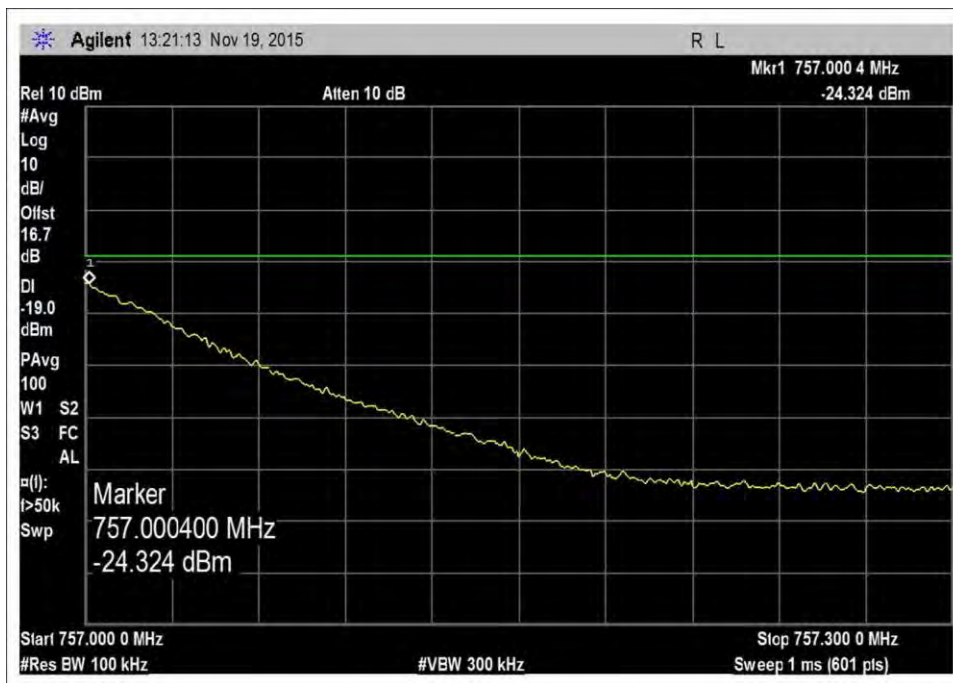
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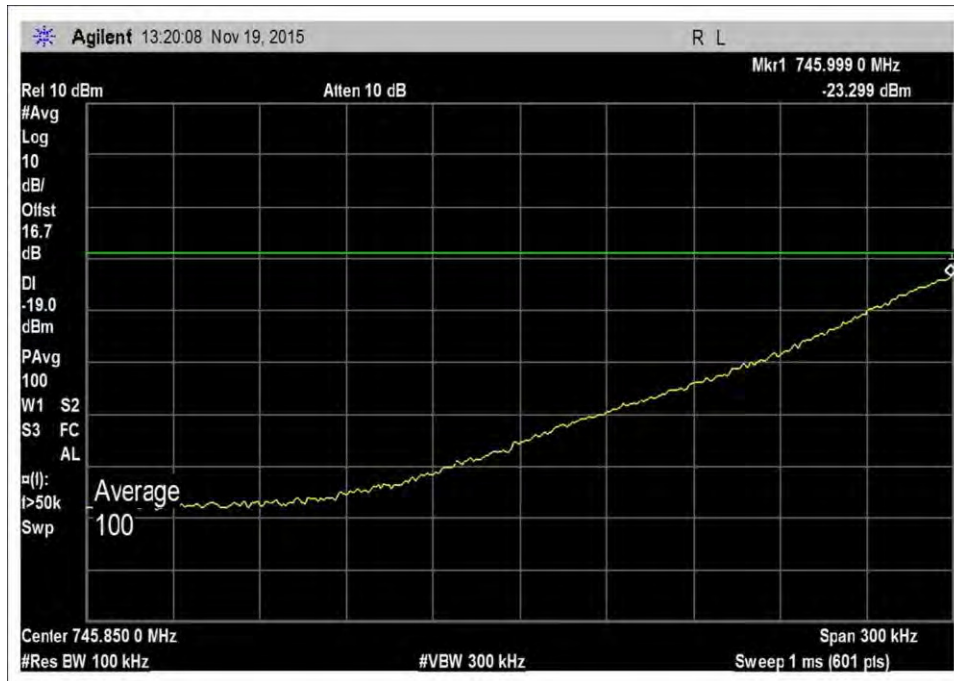
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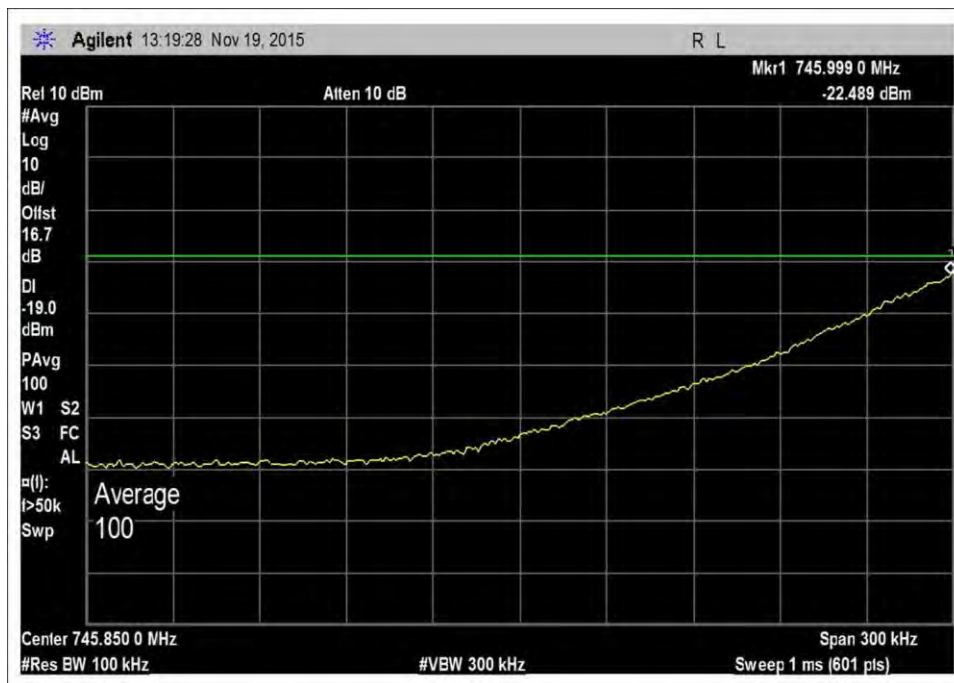
7.5_OBE_DL_746-757MHz_H_Max



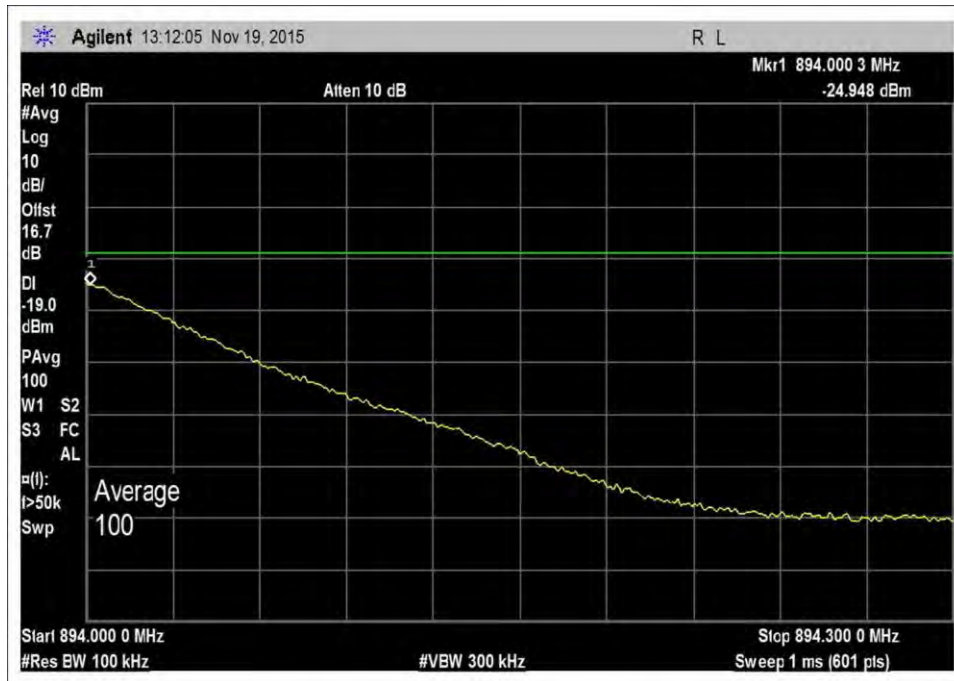
7.5_OBE_DL_746-757MHz_H_PreAGC



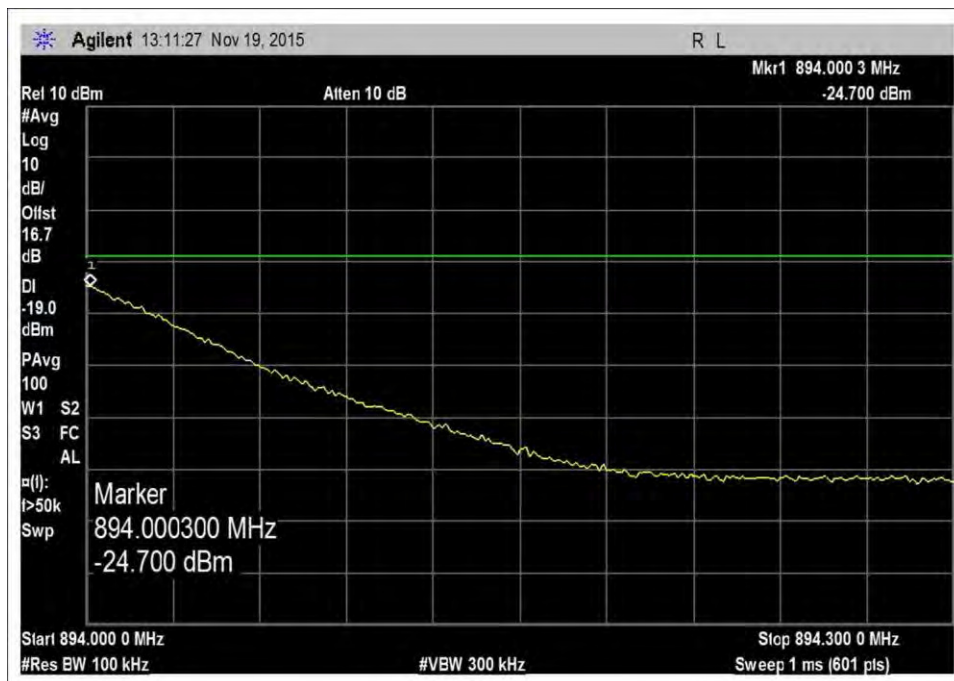
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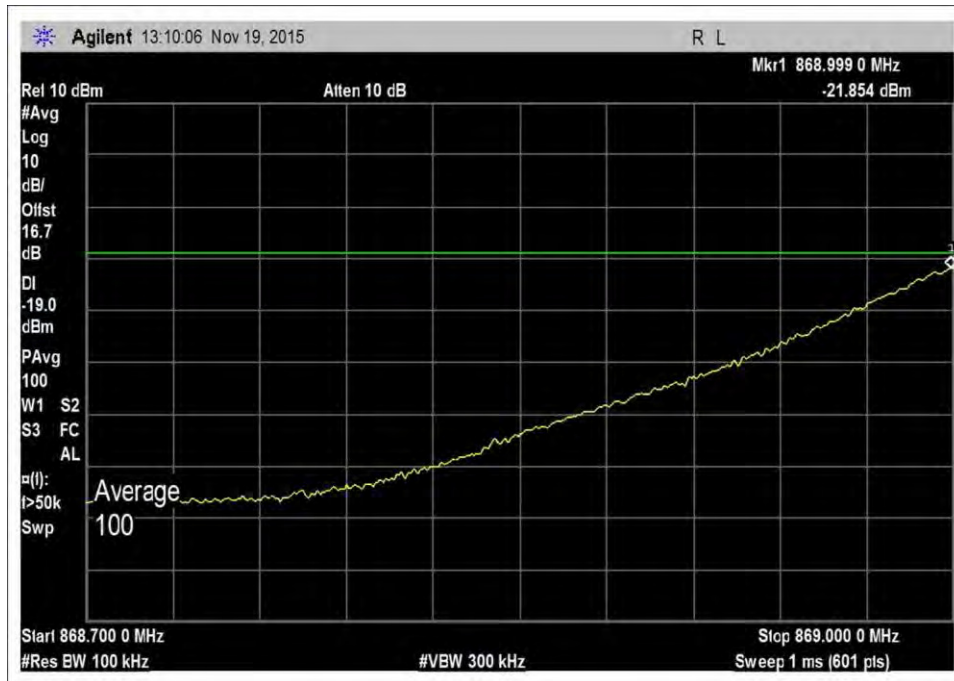
7.5_OBE_DL_746-757MHz_L_PreAGC



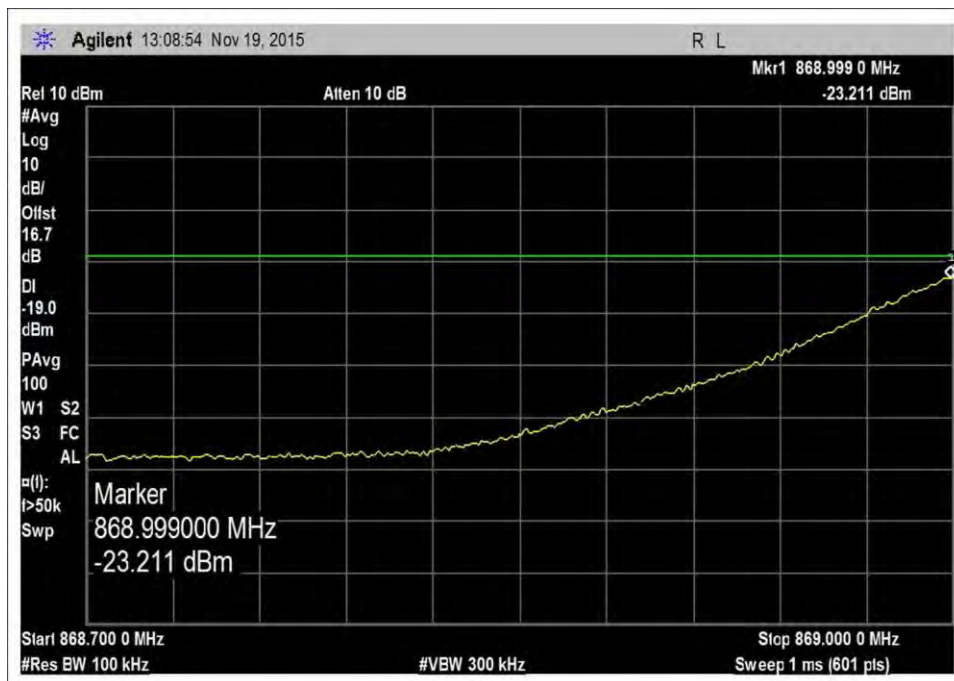
7.5_OBE_DL_869-894MHz_H_Max



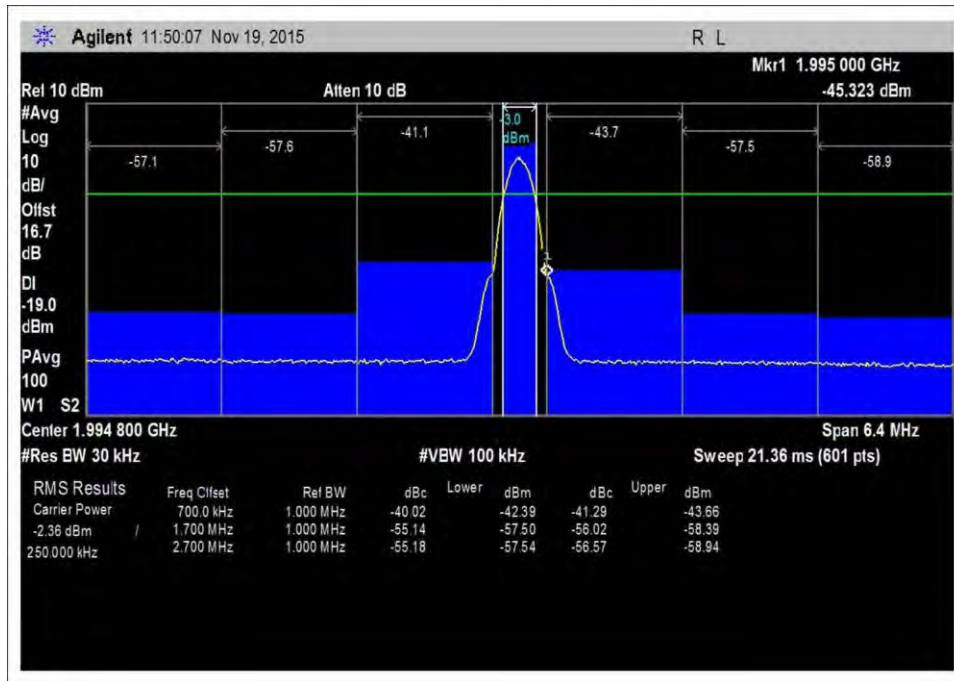
7.5_OBE_DL_869-894MHz_H_PreAGC



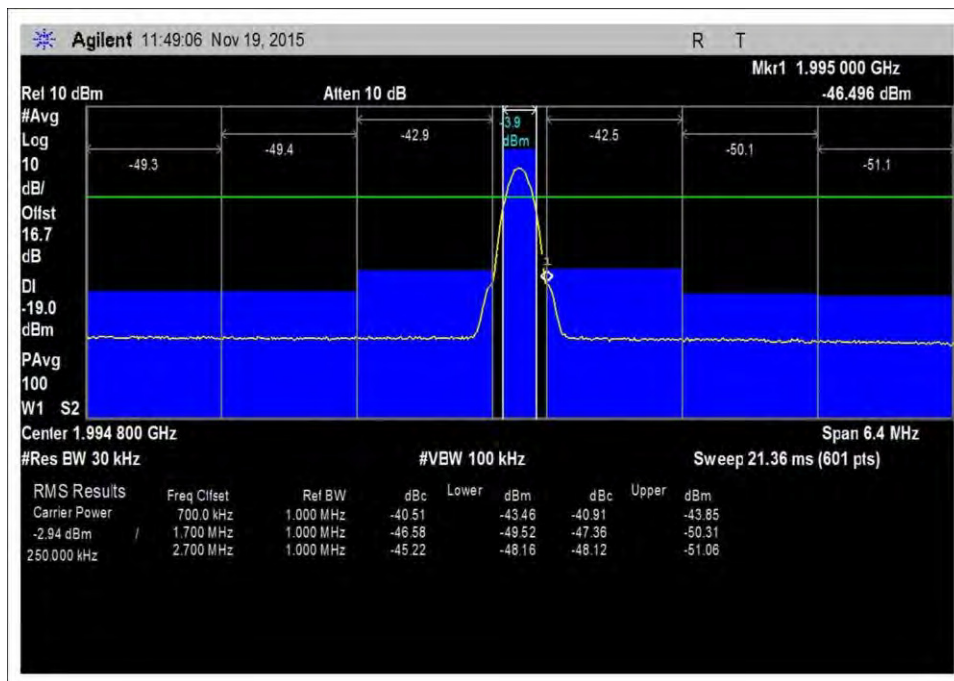
7.5_OBE_DL_869-894MHz_L_Max



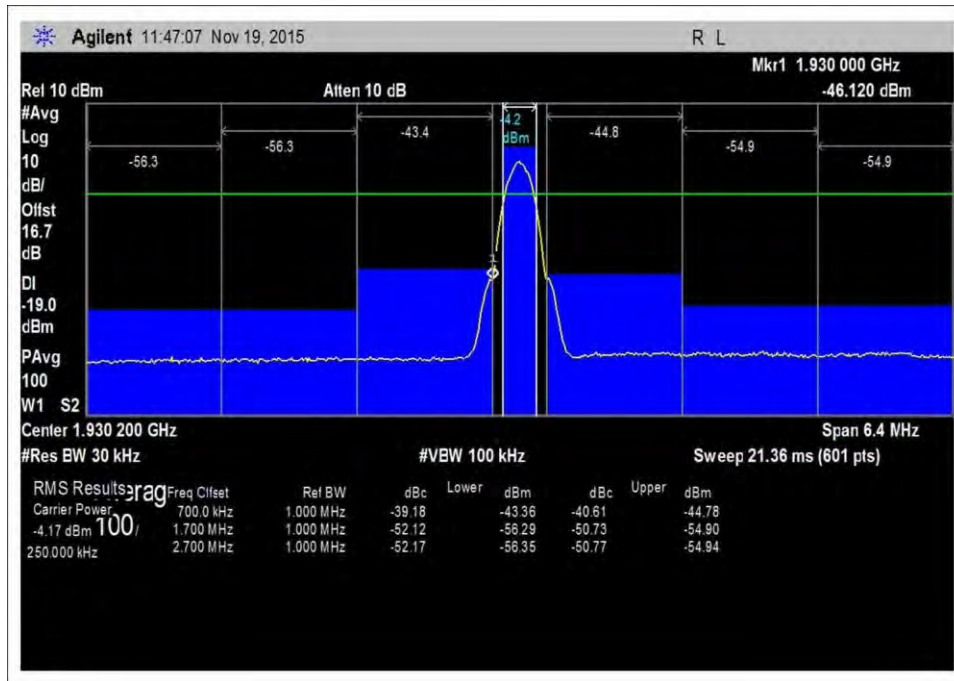
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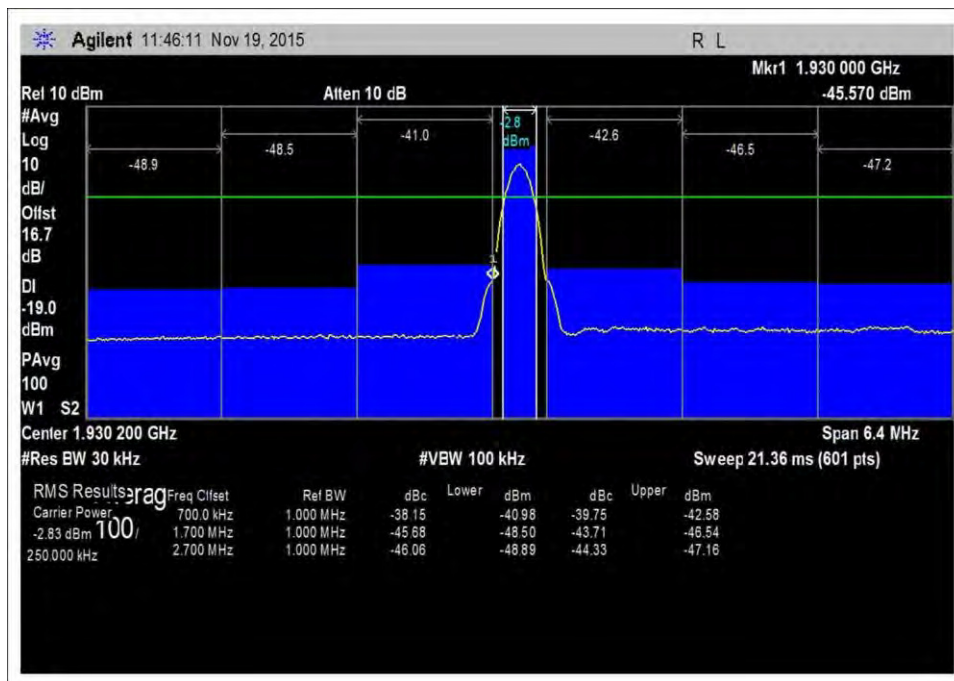
7.5_OBE_DL_1930-1995MHz_H_Max



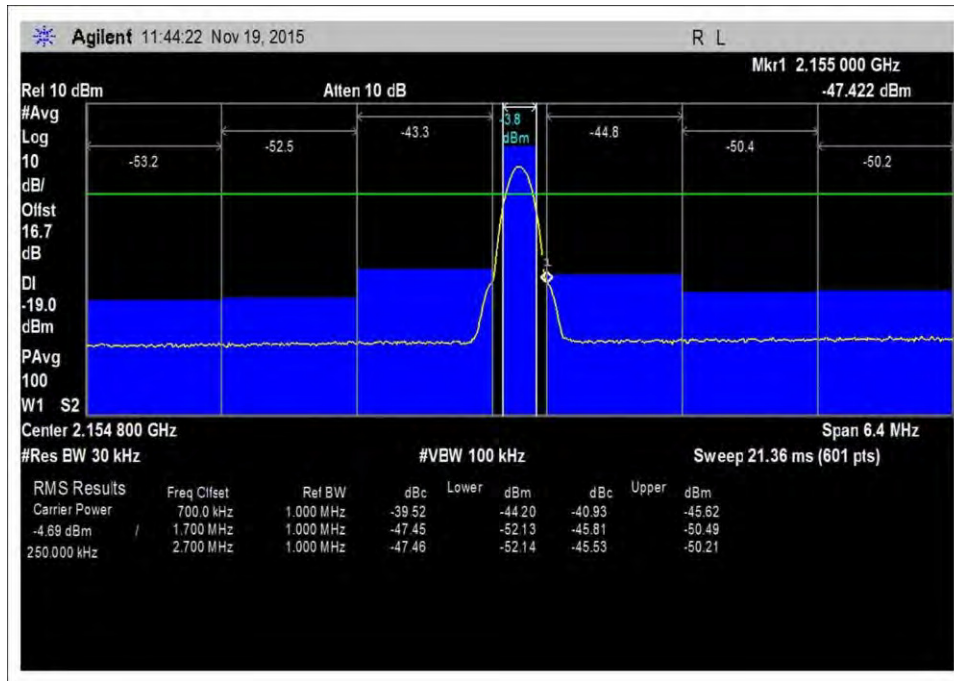
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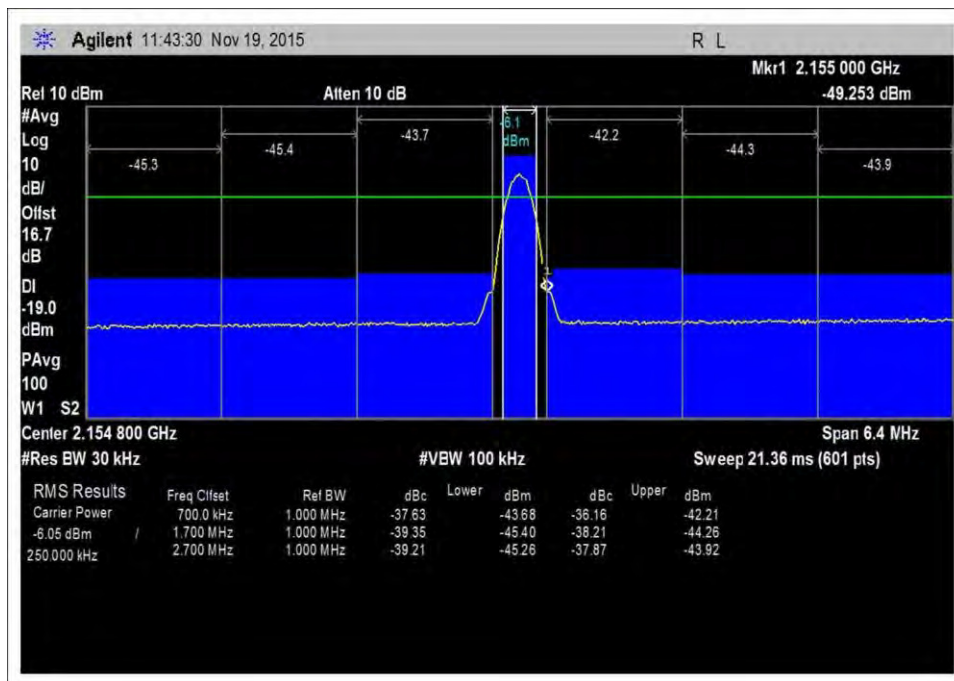
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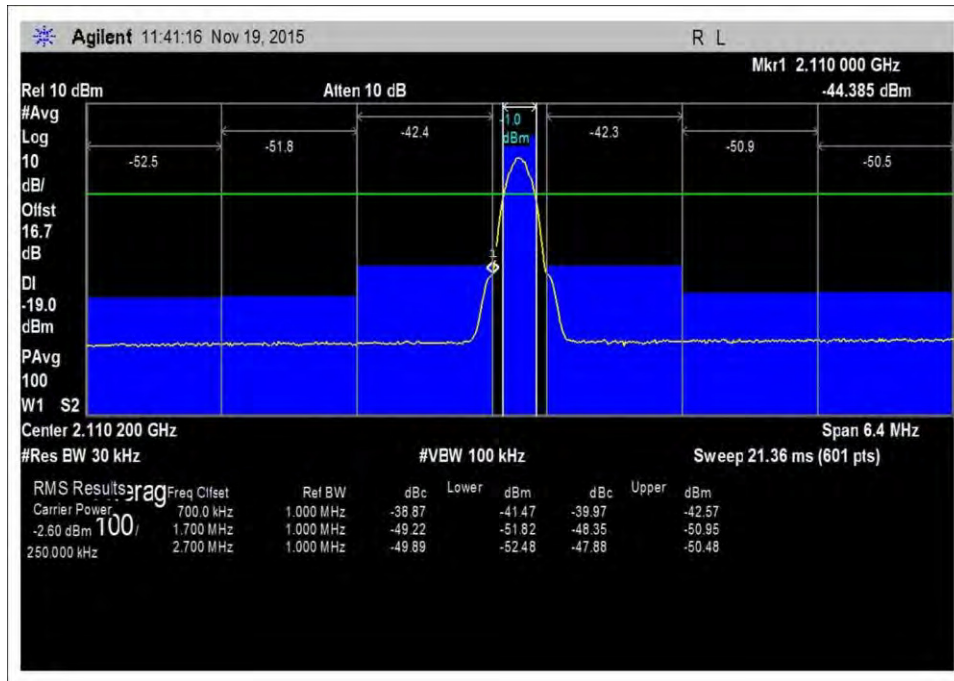
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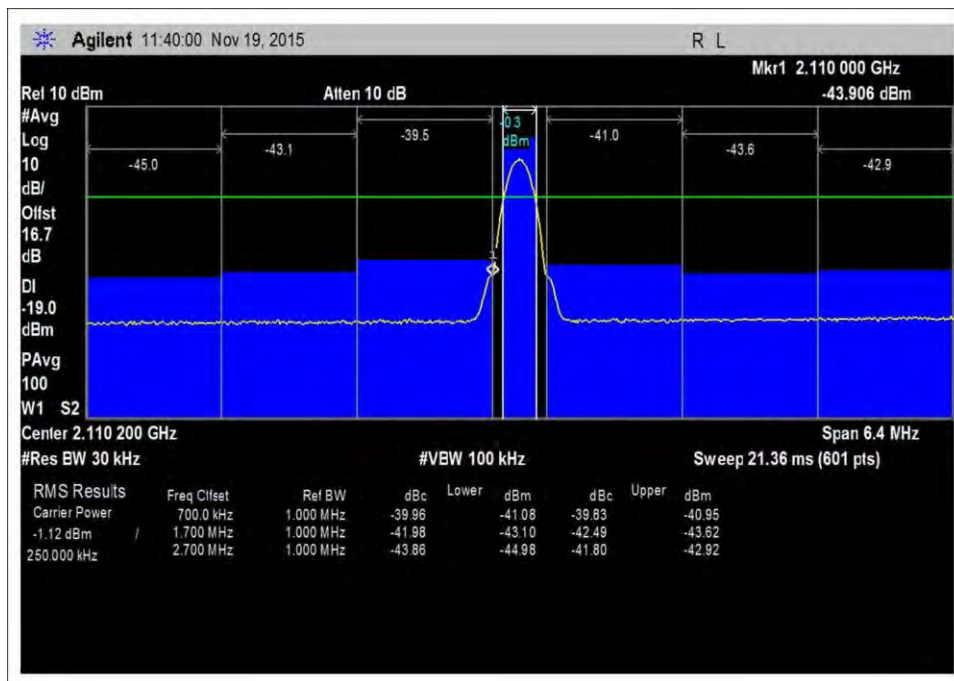
7.5_OBE_DL_2110-2155MHz_H_Max



7.5_OBE_DL_2110-2155MHz_H_PreAGC

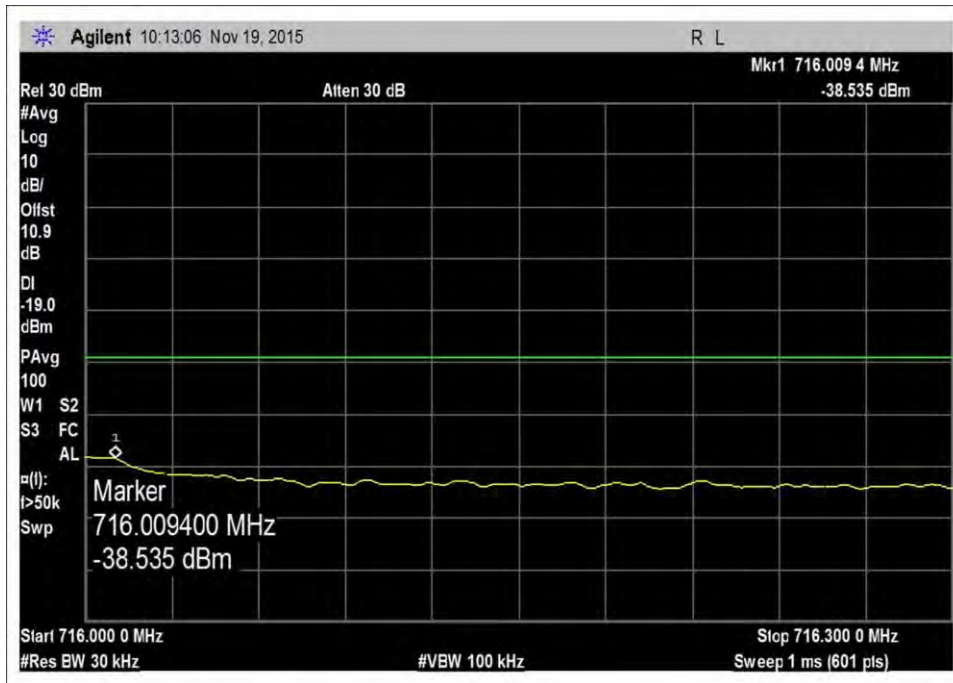


7.5_OBE_DL_2110-2155MHz_L_Max

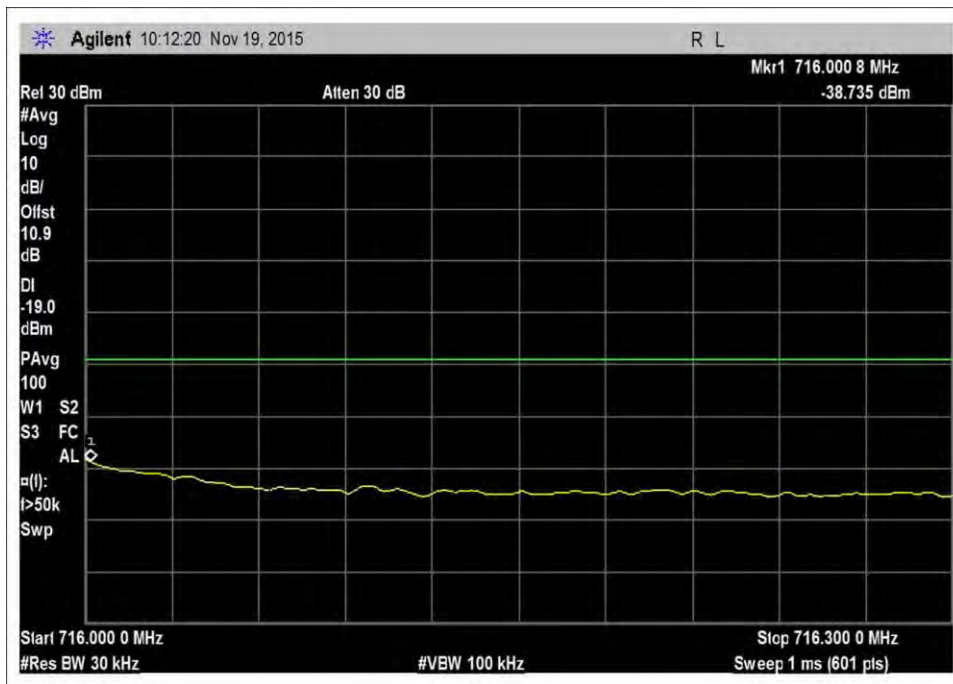


7.5_OBE_DL_2110-2155MHz_L_PreAGC

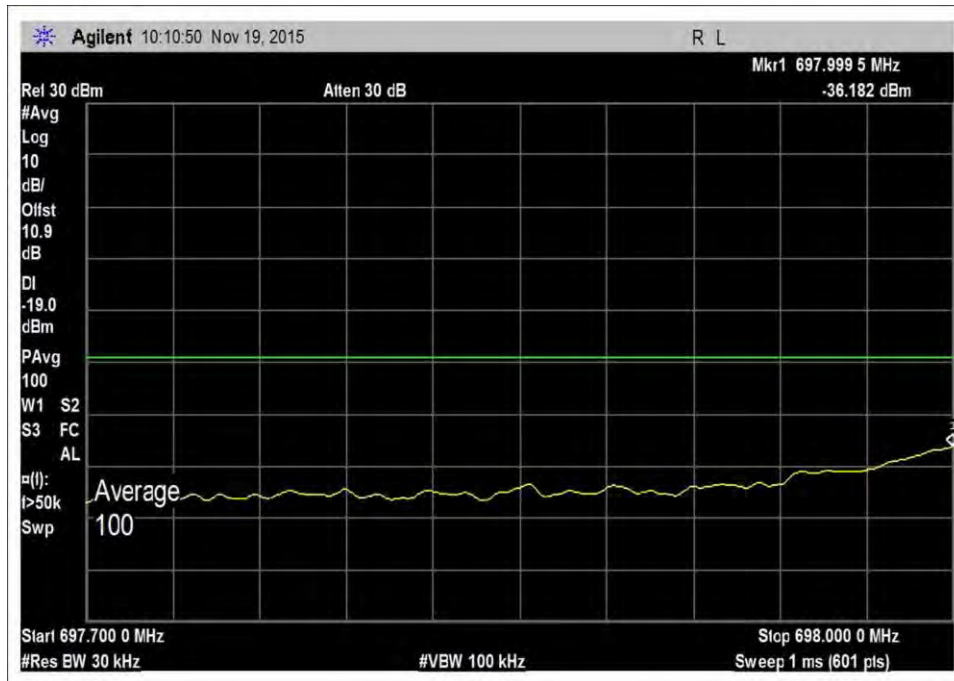
LTE



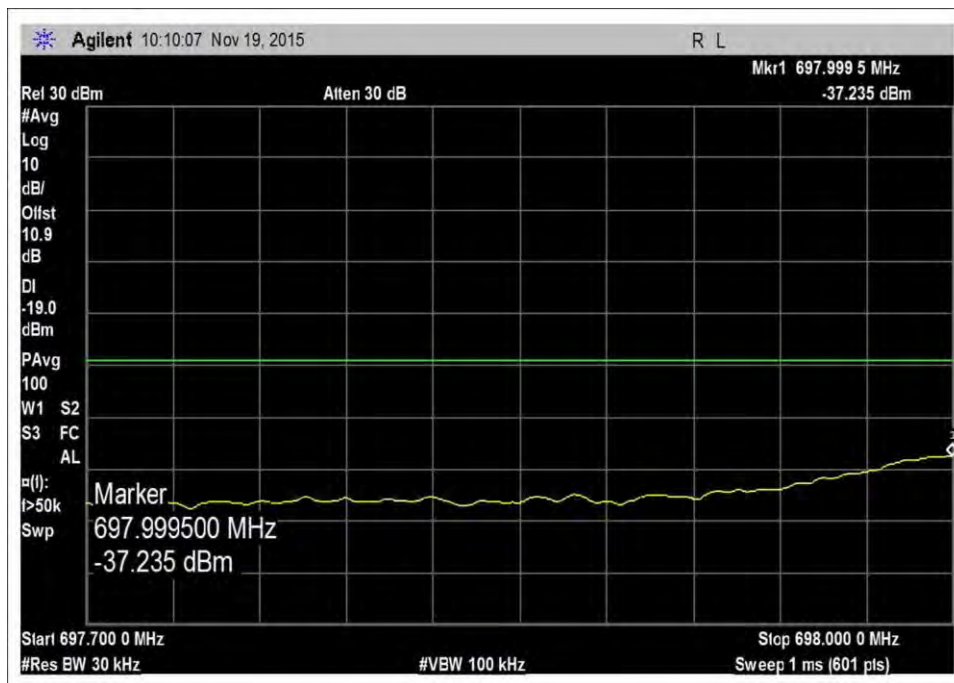
7.5_OBE_UL_698-716MHz_H_Max



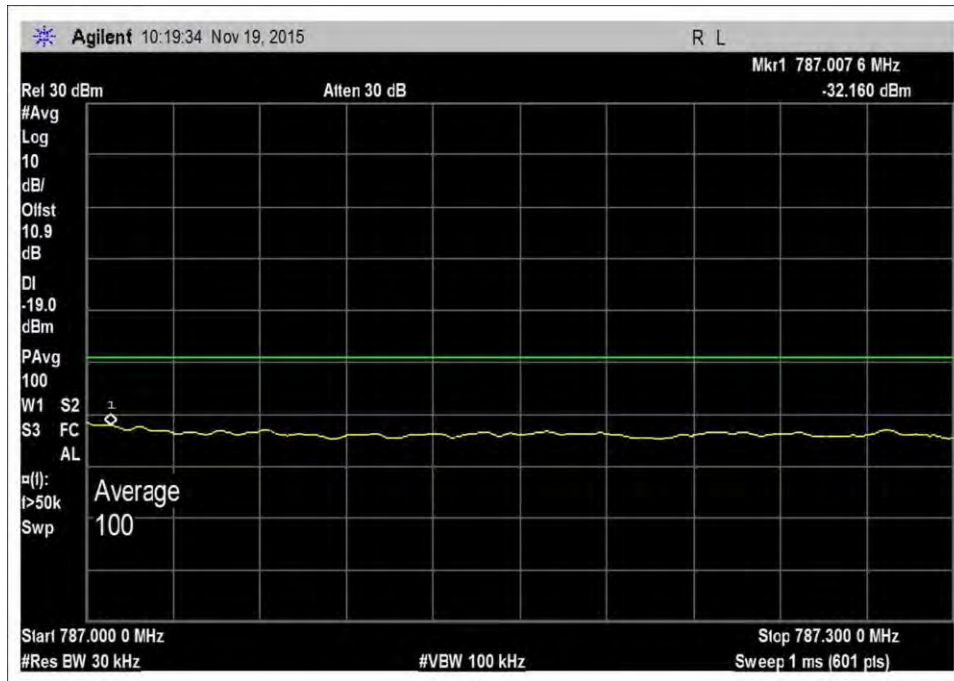
7.5_OBE_UL_698-716MHz_H_PreAGC



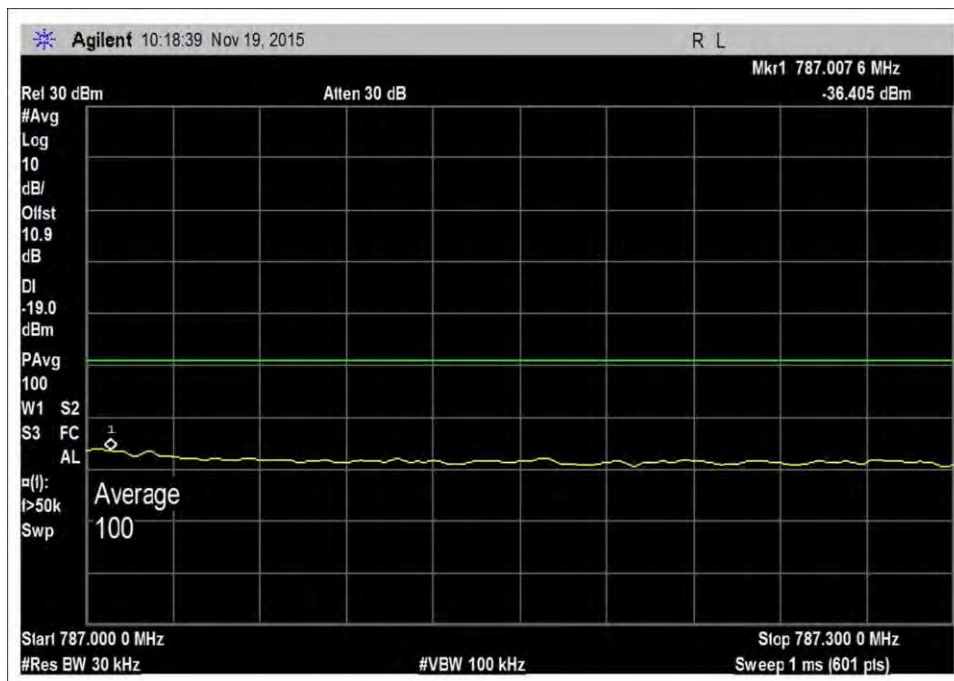
7.5_OBE_UL_698-716MHz_L_Max



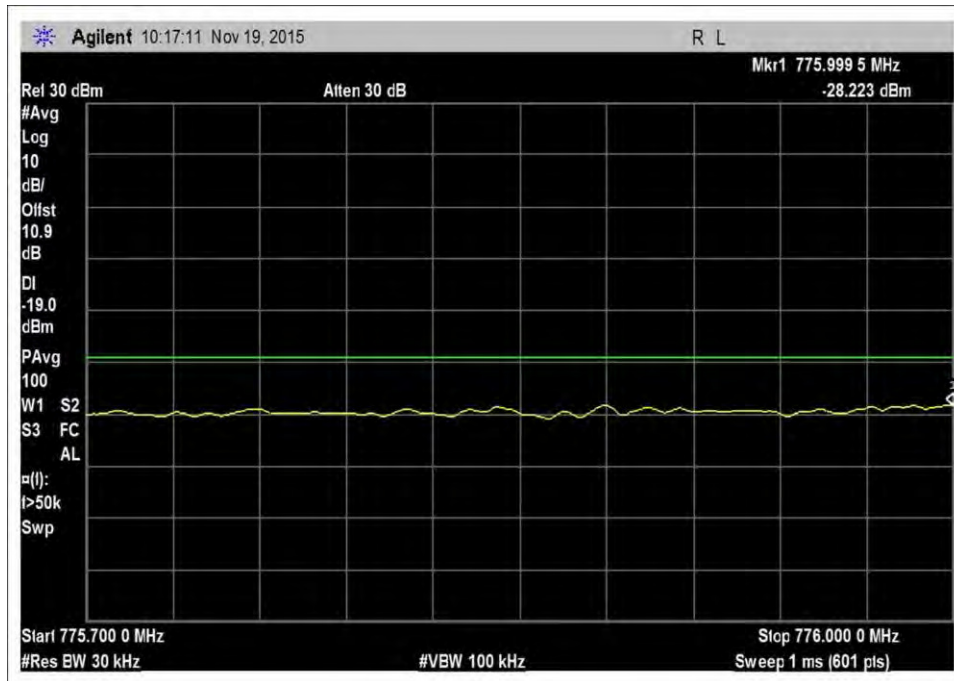
7.5_OBE_UL_698-716MHz_L_PreAGC



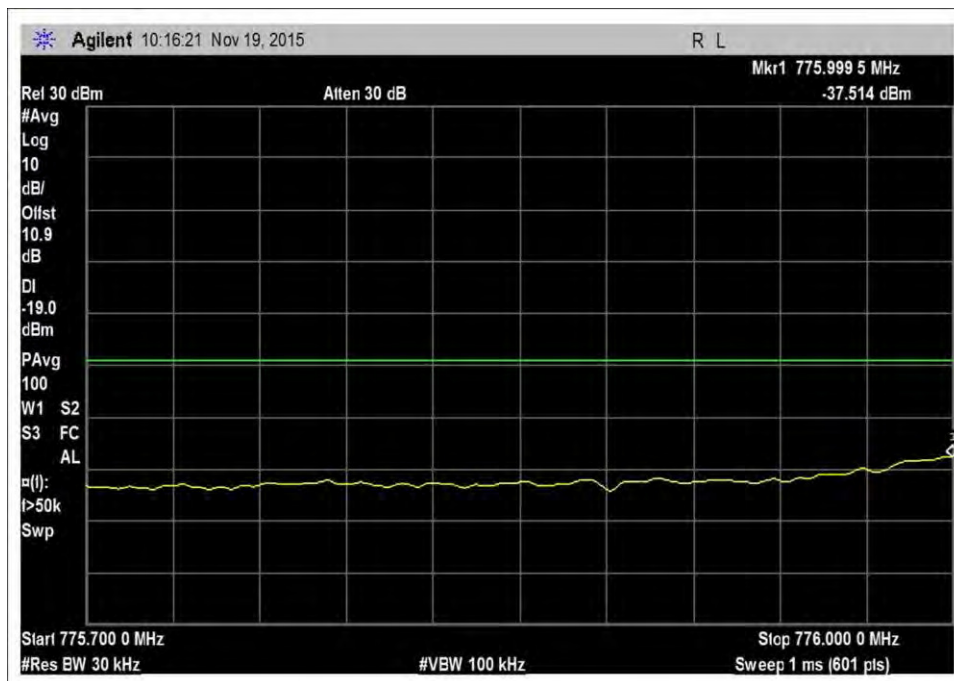
7.5_OBE_UL_776-787MHz_H_Max



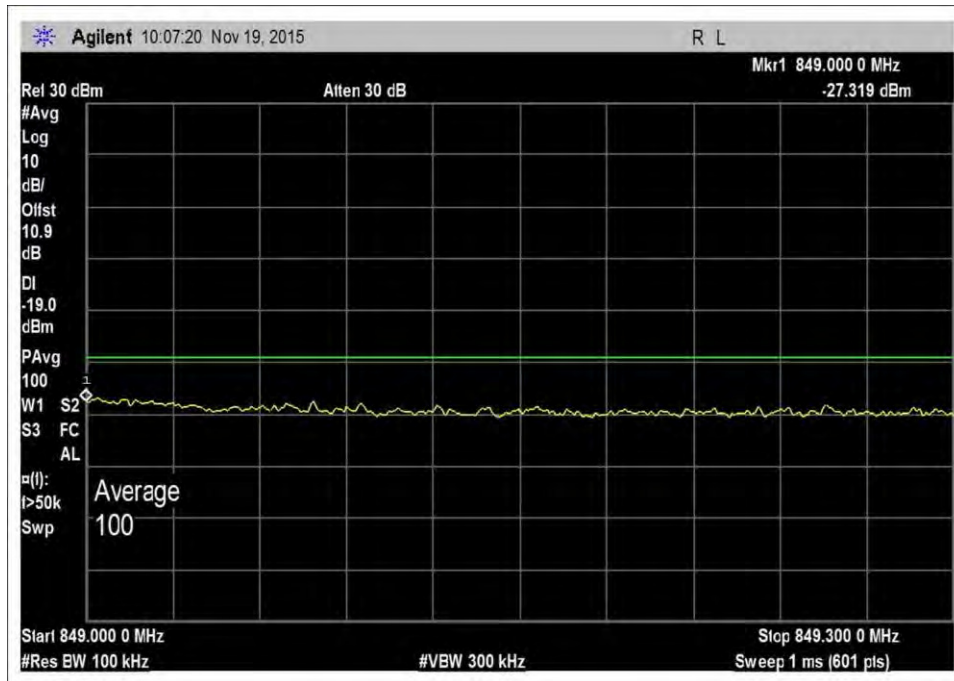
7.5_OBE_UL_776-787MHz_H_PreAGC



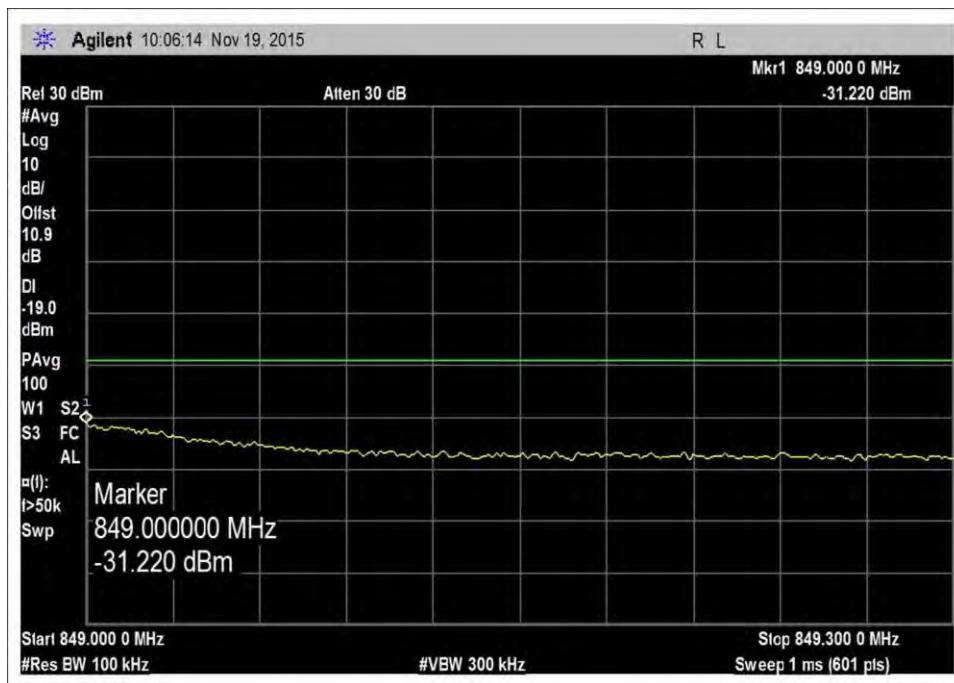
7.5_OBE_UL_776-787MHz_L_Max



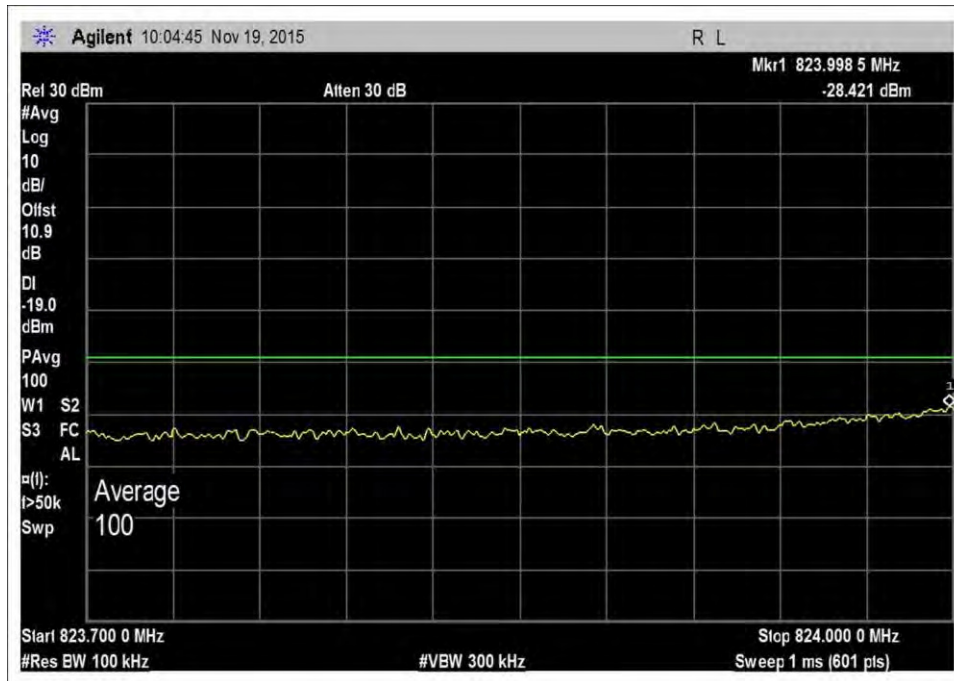
7.5_OBE_UL_776-787MHz_L_PreAGC



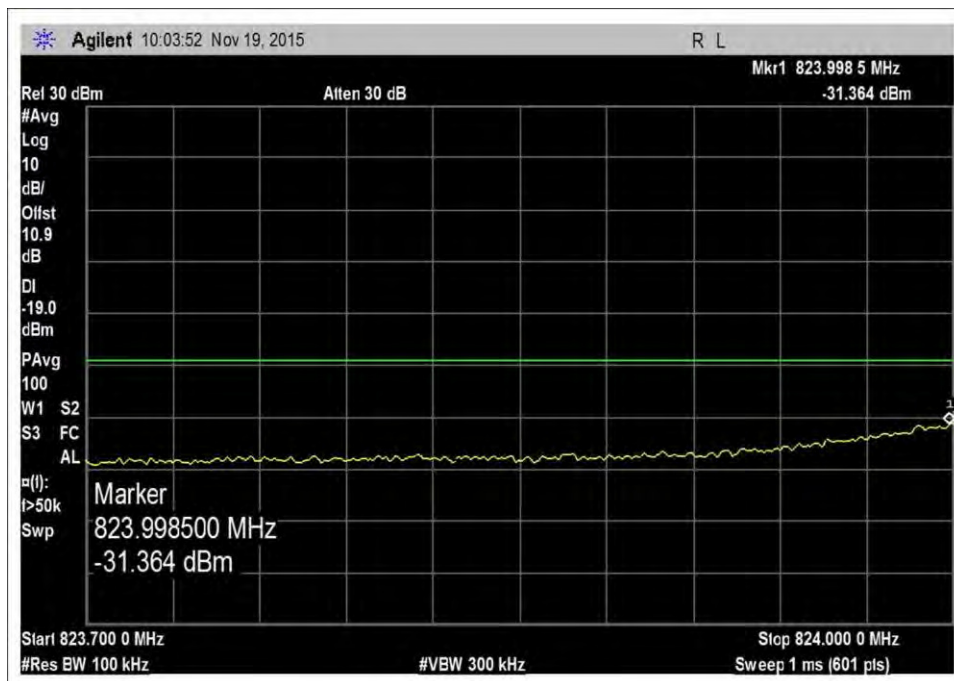
7.5_OBE_UL_824-849MHz_H_Max



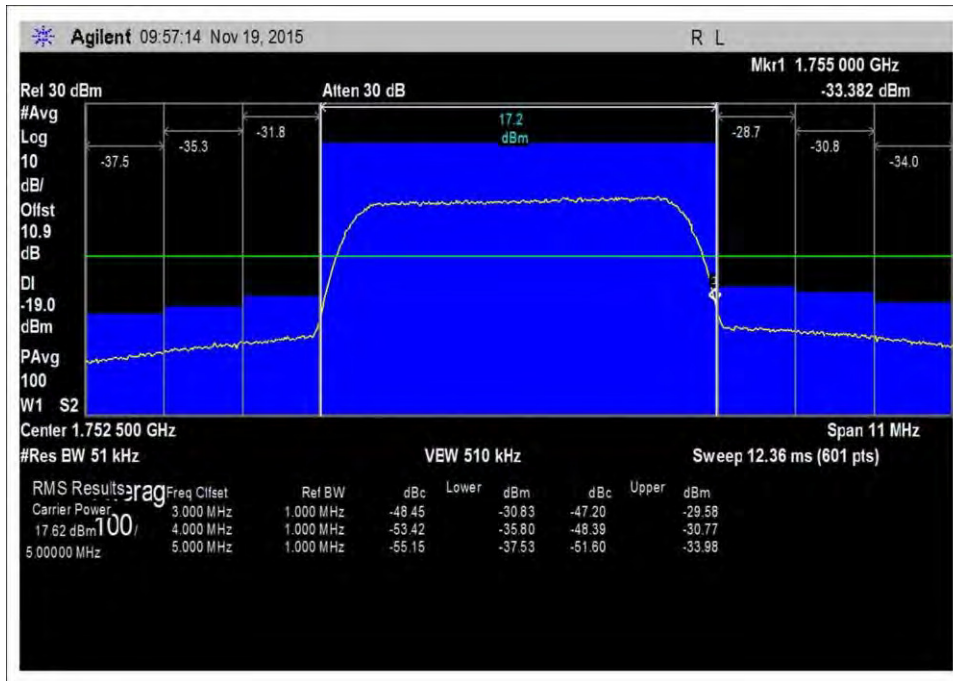
7.5_OBE_UL_824-849MHz_H_PreAGC



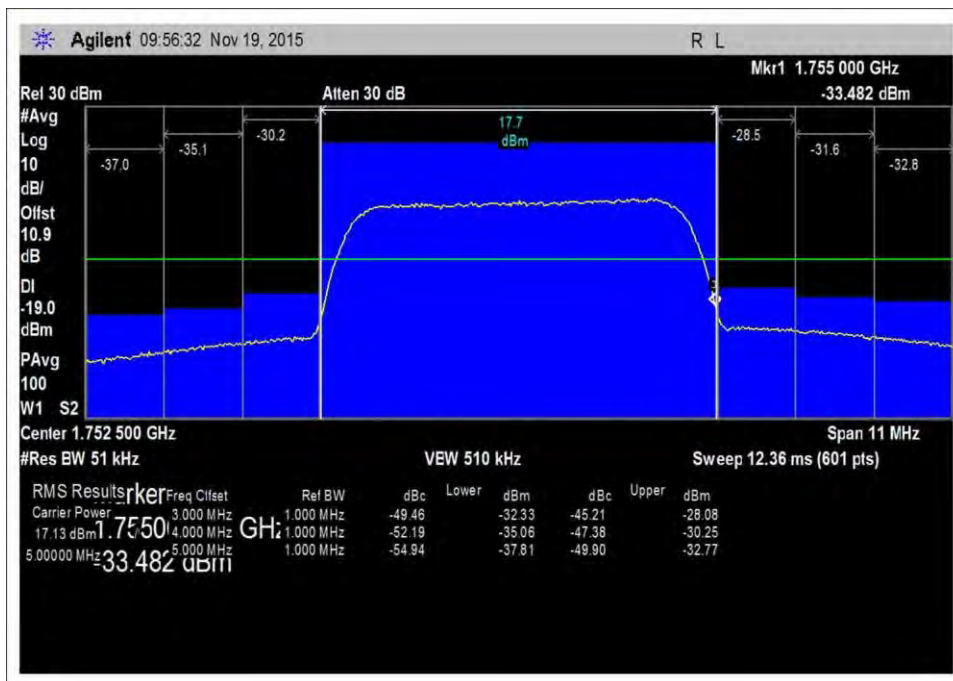
7.5_OBE_UL_824-849MHz_L_Max



7.5_OBE_UL_824-849MHz_L_PreAGC



7.5_OBE_UL_1710-1755MHz_H_Max



7.5_OBE_UL_1710-1755MHz_H_PreAGC