Cellphone-Mate, Inc.

REVISED TEST REPORT TO 97491-18A

Consumer Booster with WiFi
Model: Fusion 7

Tested To The Following Standard:

FCC Part 20.21

Report No.: 97491-18B

Date of issue: March 27, 2019

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

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.

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Cellphone-Mate, Inc.
48346 Milmont Drive
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Representative: Dennis Findley
Customer Reference Number: SC20150828

REPORT PREPARED BY:

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CKC Laboratories, Inc.
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Project Number: 97491

DATE OF EQUIPMENT RECEIPT: October 12, 2015
DATE(S) OF TESTING: October 12-14, 2015
March 6, 2019

Revision History

Original: Testing of Consumer Booster with WiFi, Model: Fusion 7 to FCC Part 20.21.
Addendum A: To add updated graphs and tables to sections 7.9 per customer provided new parameters.
Revision B: To replace section 7.4 with corrected test data.

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 Emissions	5.03.11
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
7.8 a) - l)	Uplink inactivity	20.21(e)(8)(i)(I)	Uplink Inactivity	NA	Pass

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		
7.9.1 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	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[1] = A different standard applies; see applicable test report.
NA[2] = 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
Testing was performed prior to February 12, 2016 however the test procedures and requirement of 935210 D03 Signal Booster Measurements v03 and 935210 D03 Signal Booster Measurements v04 is identical, except for an additional timing requirement. The data presented in this test report includes the additional timing requirement which was addressed in the test lab. KDB 852800, therefore meets the requirement of 935210 D03 Signal Booster Measurements v04, February 12, 2016.

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 with WiFi	Cellphone-Mate, Inc	Fusion 7	01
AC/DC Power Adapter	Cellphone-Mate, Inc	GFP451DA-1238-1	1411-0000920

Support Equipment:

Device	Manufacturer	Model #	S/N
None			

Configuration 4

Equipment Tested:

Device	Manufacturer	Model #	S/N
Consumer Booster with WiFi	Cellphone-Mate, Inc.	Fusion 7	01
AC/DC Adapter	Sony	PCGA-AC16V	1477749530023127
HDTV Antenna	Cellphone-Mate, Inc.	SC305H	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
Laptop	Sony	PCG-6C2L	CXSM507BRD01-D480
AC/DC Power Adapter	Cellphone-Mate, Inc.	GFP451DA-1238-1	1411-0000920
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 #:	**97491**	Date:	10/12/2015
Test Type:	**Conducted Emissions**	Time:	08:51:56
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed CMRS Wideband Consumer Booster with a Wi-Fi Router and TV amplifier installed. The CMRS DL signal and the Wi-Fi Signal are combined at the diplexer and transmit via the indoor antenna.
The Consumer booster UL and DL power and gain parameters are initially measured with Wi-Fi transmitting at mid channel using sequentially 802.11b, g, n20 and n40 signal. Since no significant change in measured power was observed, all other parameters are obtained with Wi-Fi transmitting at Mid channel, 802.11b.
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

All adjustable settings on the test sample are set at max gain.
Test environment conditions: Temperature: 20.6°C, Relative Humidity: 42%, Pressure: 101.5kPa

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

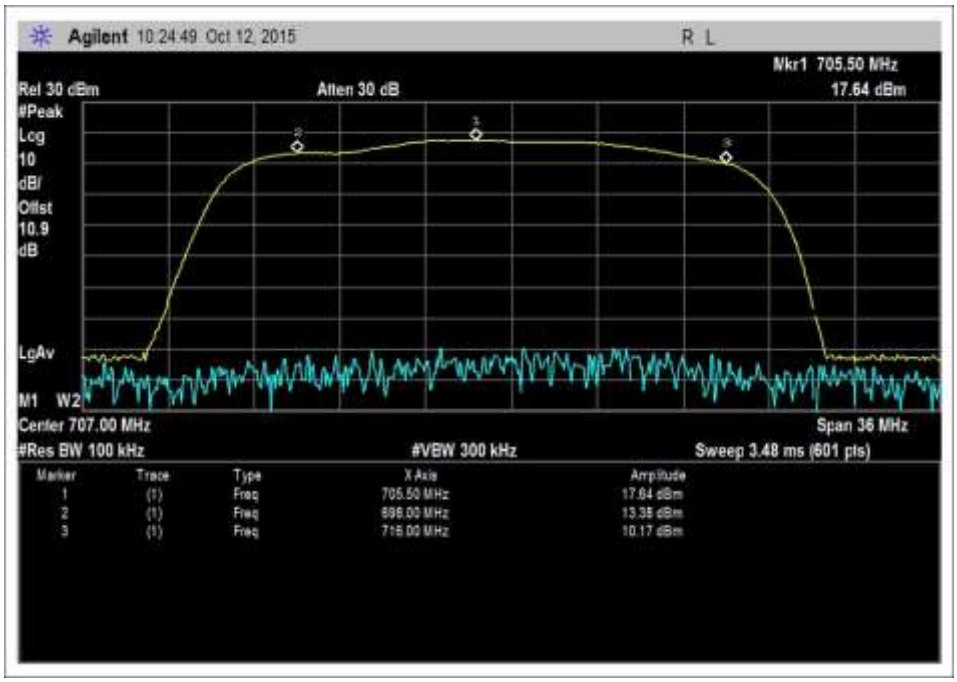
Test Equipment:

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

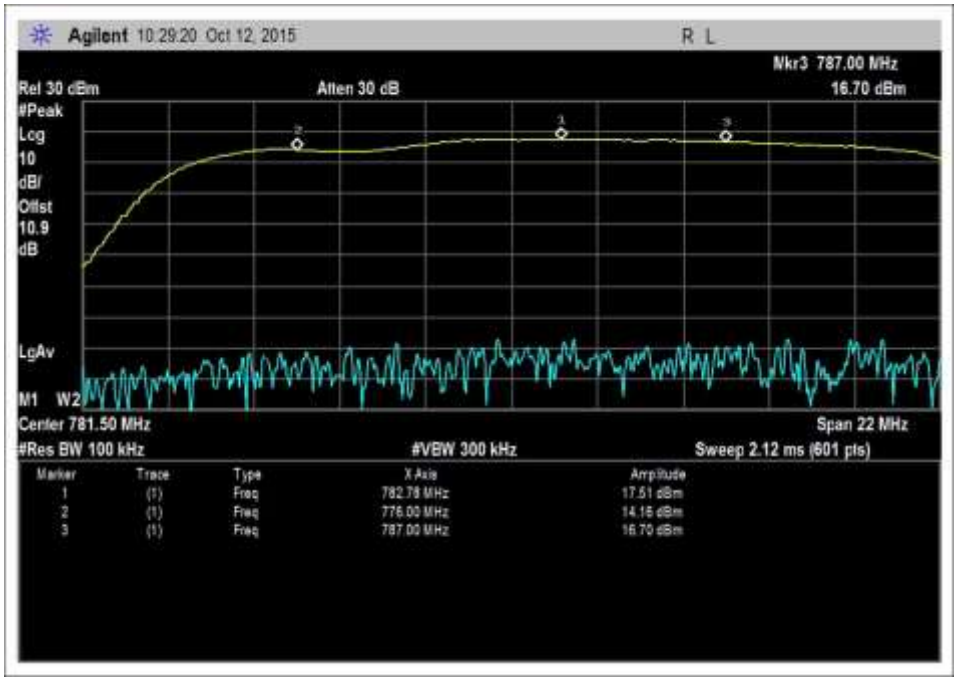
Summary of Results

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

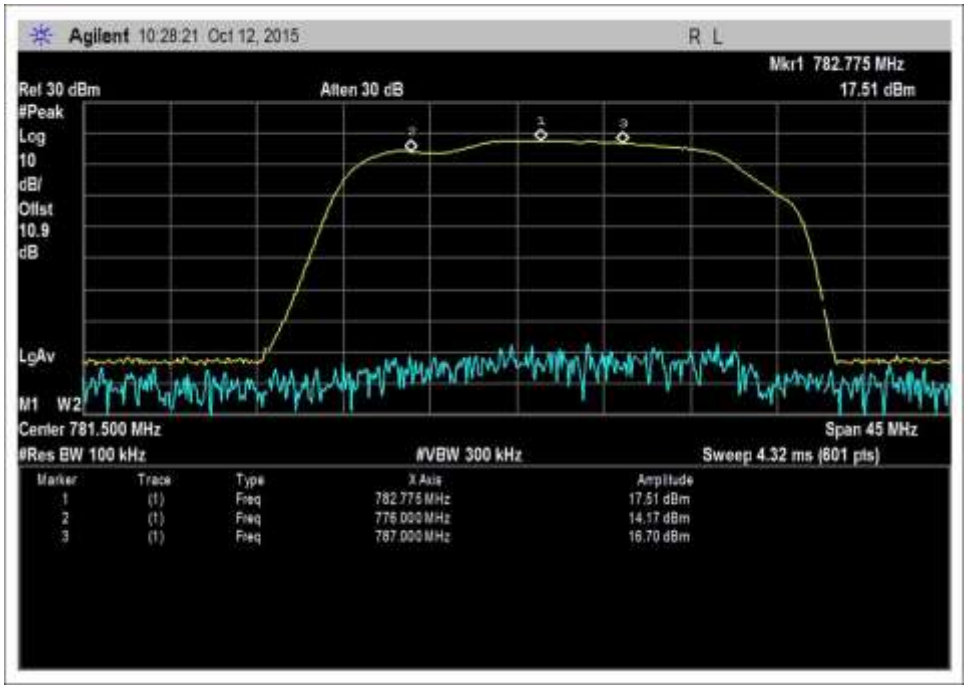
Plots



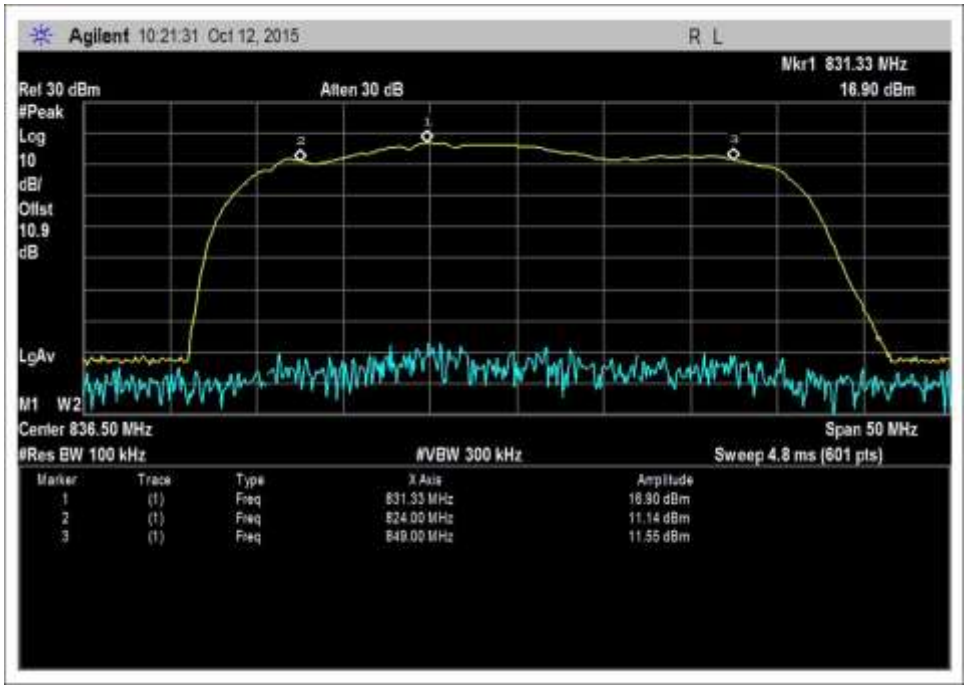
7.1_band verify_UL_698-716MHz



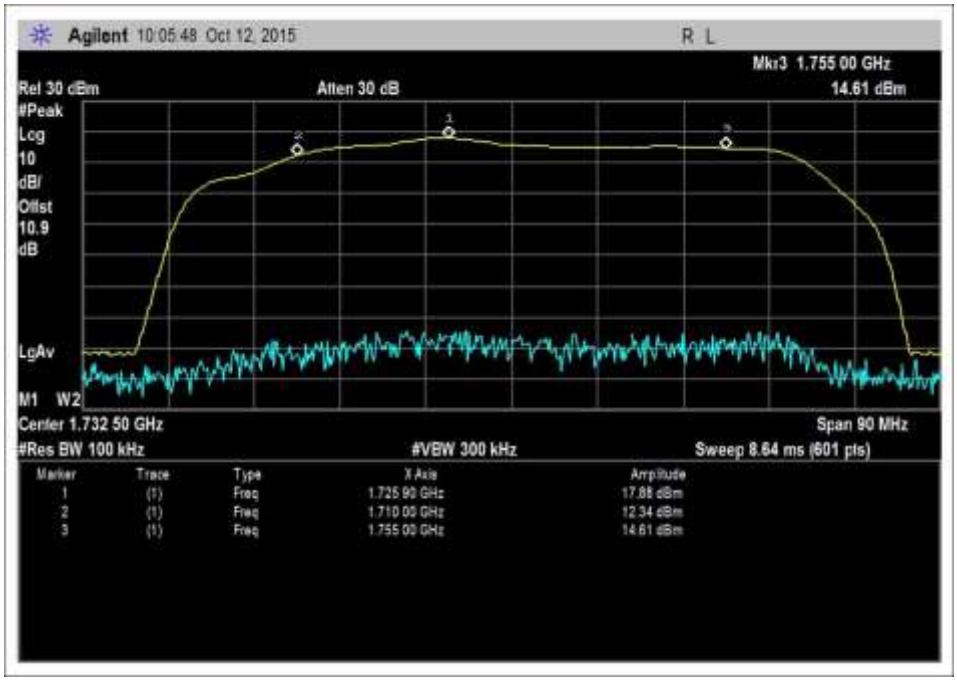
7.1_band verify_UL_776-787MHz



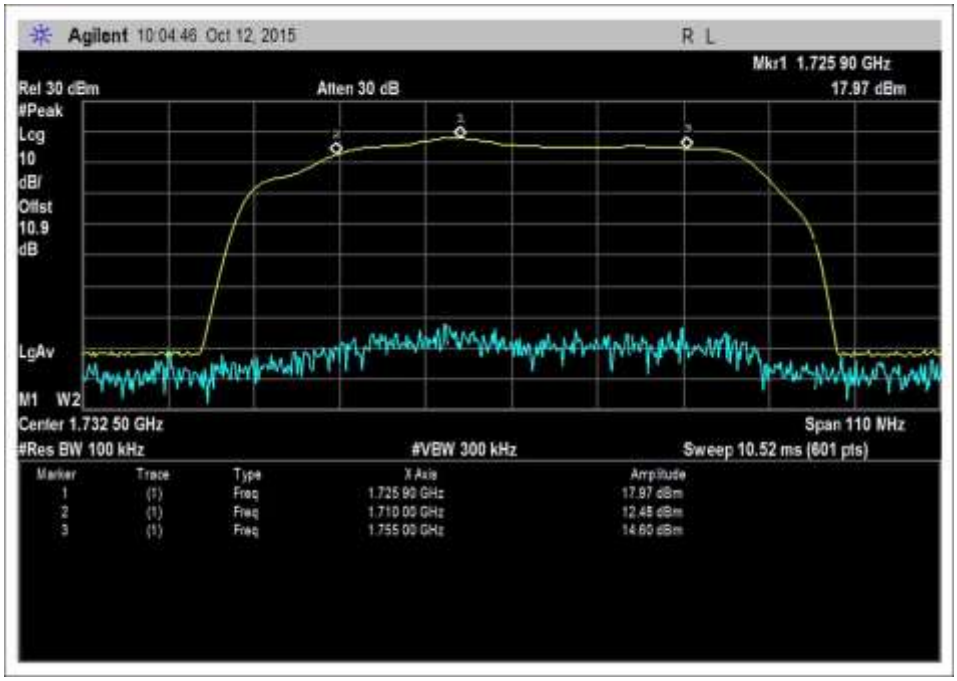
7.1_band verify_UL_776-787MHz-Zoom



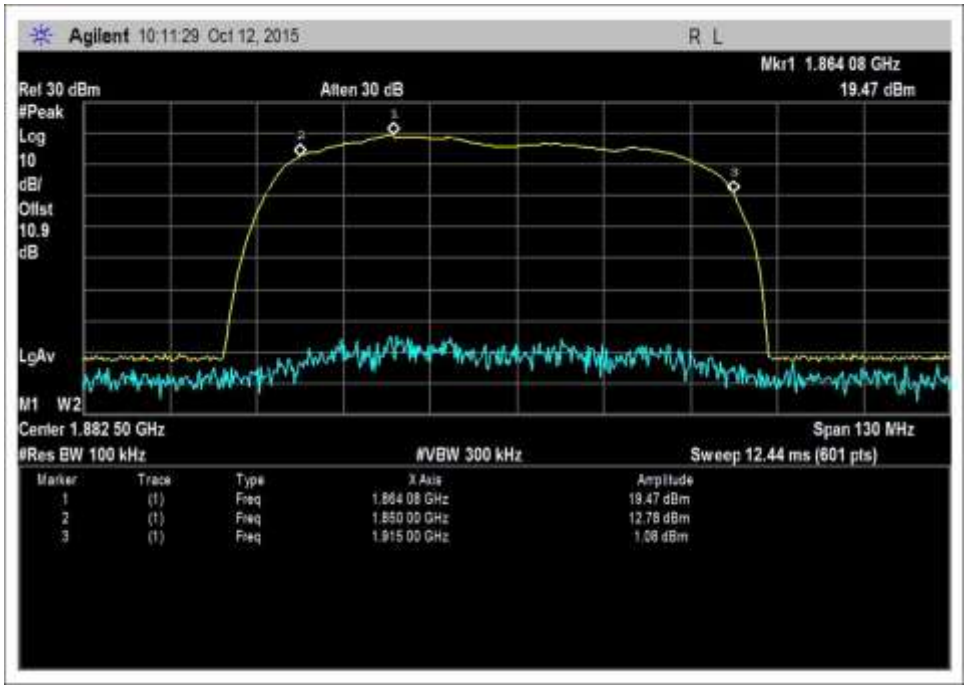
7.1_band verify_UL_824-849MHz



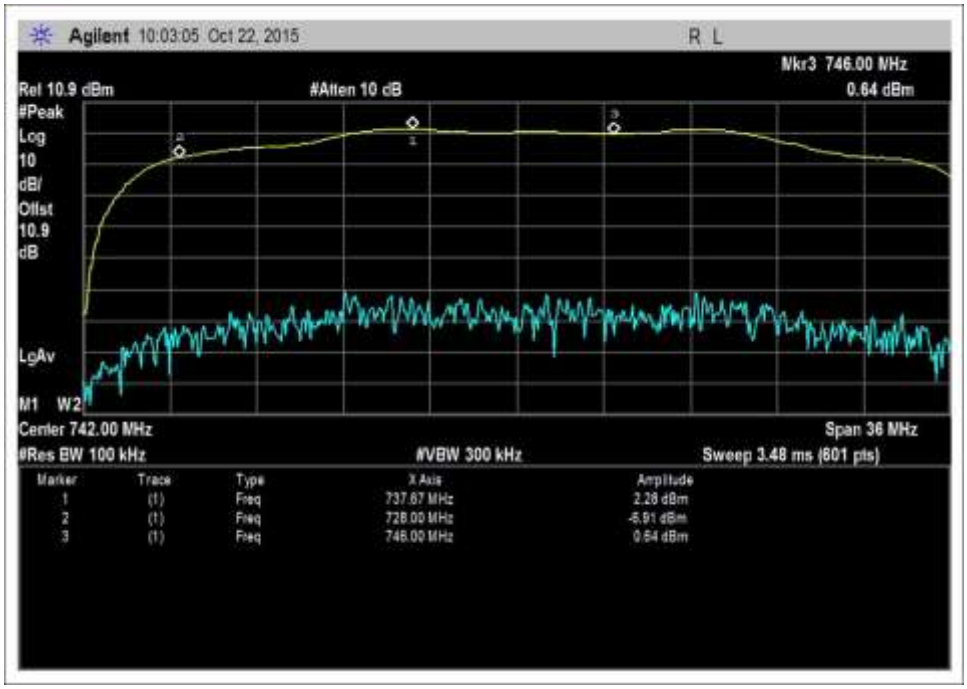
7.1_band verify_UL_1710-1755MHz



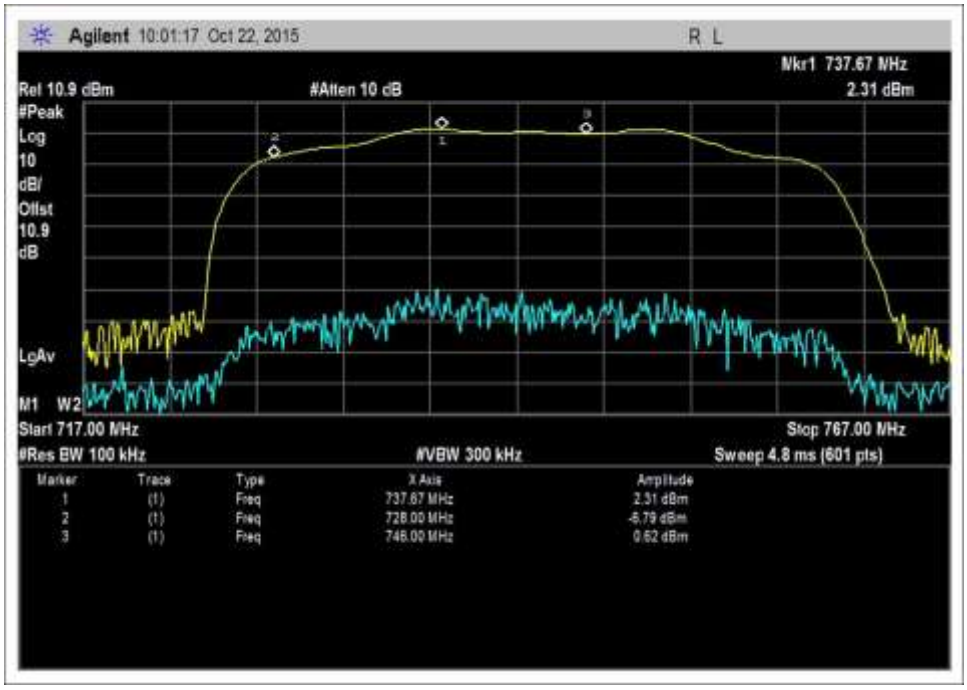
7.1_band verify_UL_1710-1755MHz-Zoom



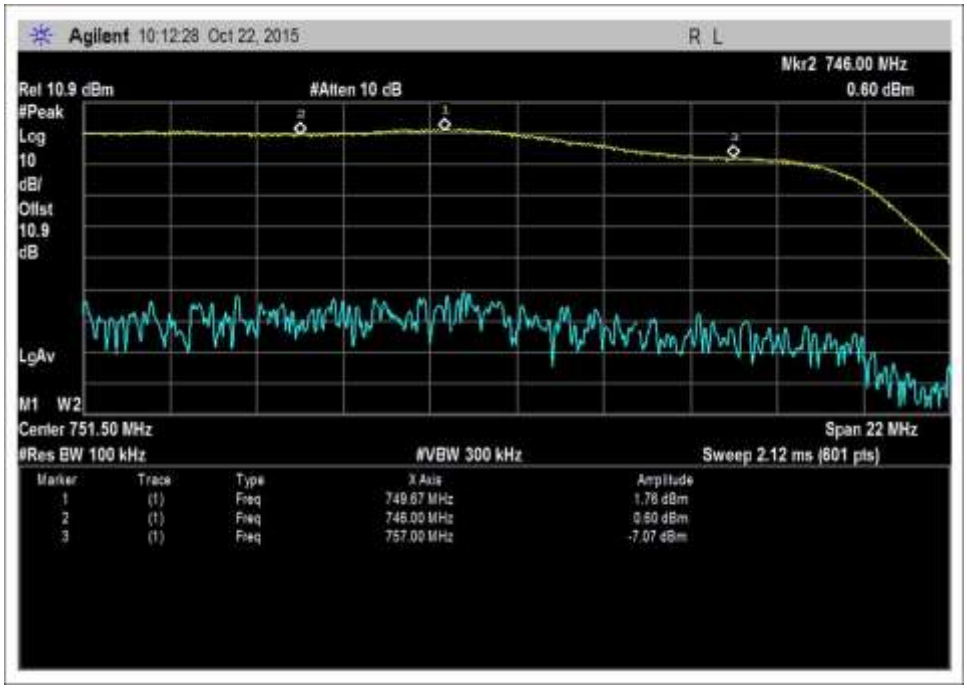
7.1_band verify_UL_1850-1915MHz



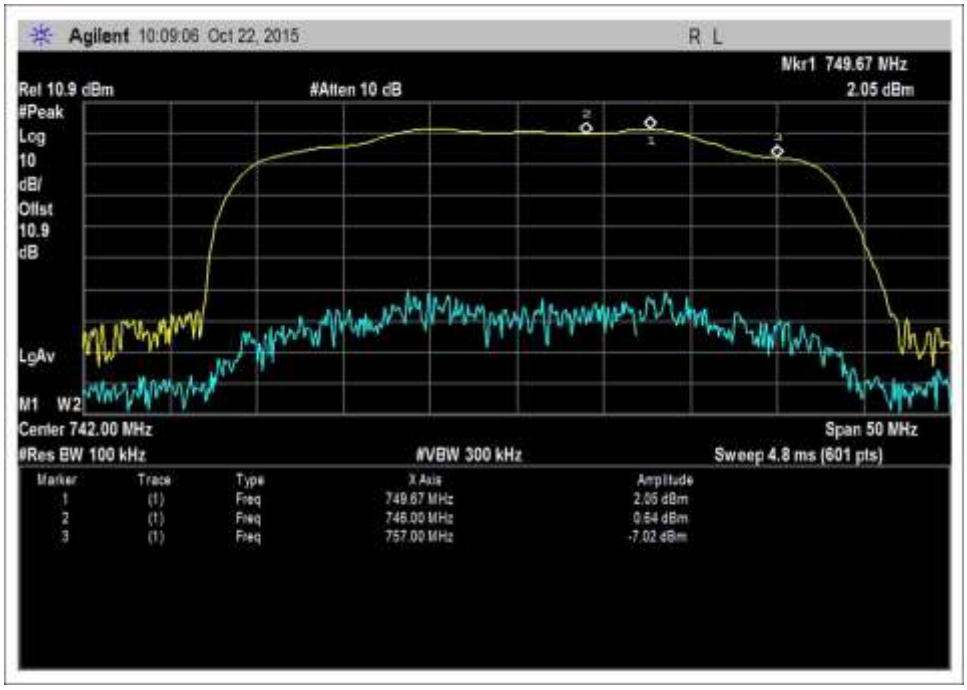
7.1_band verify_DL_728-746MHz



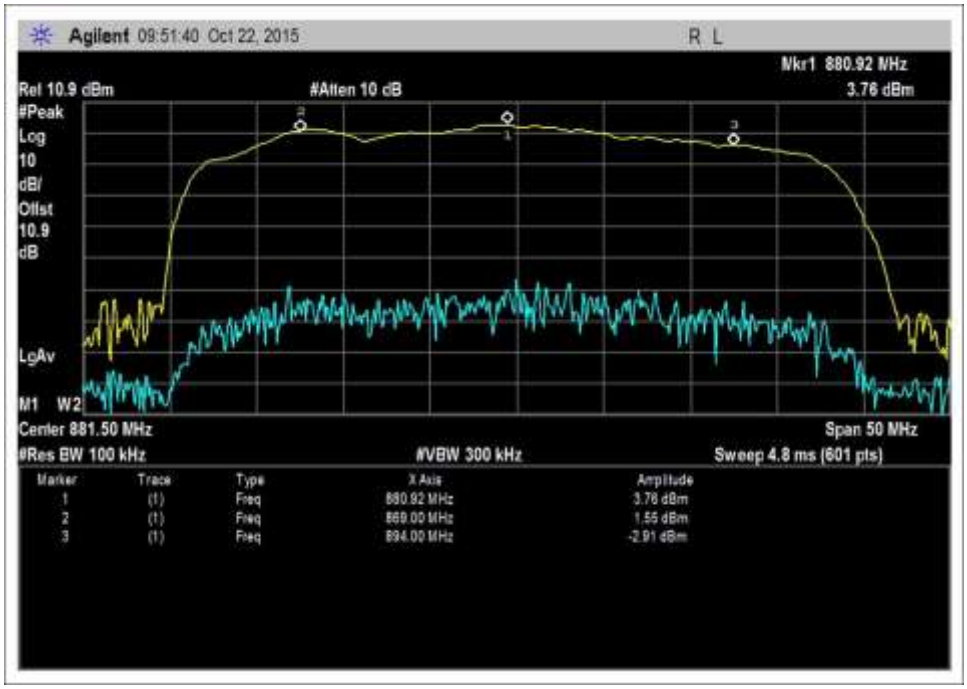
7.1_band verify_DL_728-746MHz-Zoom



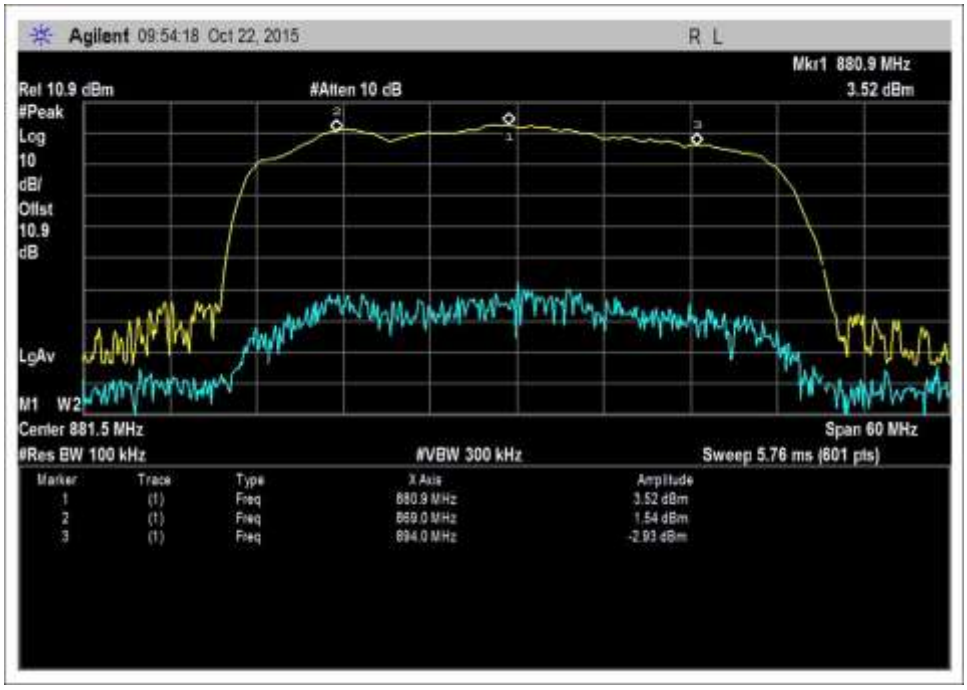
7.1_band verify_DL_746-757MHz



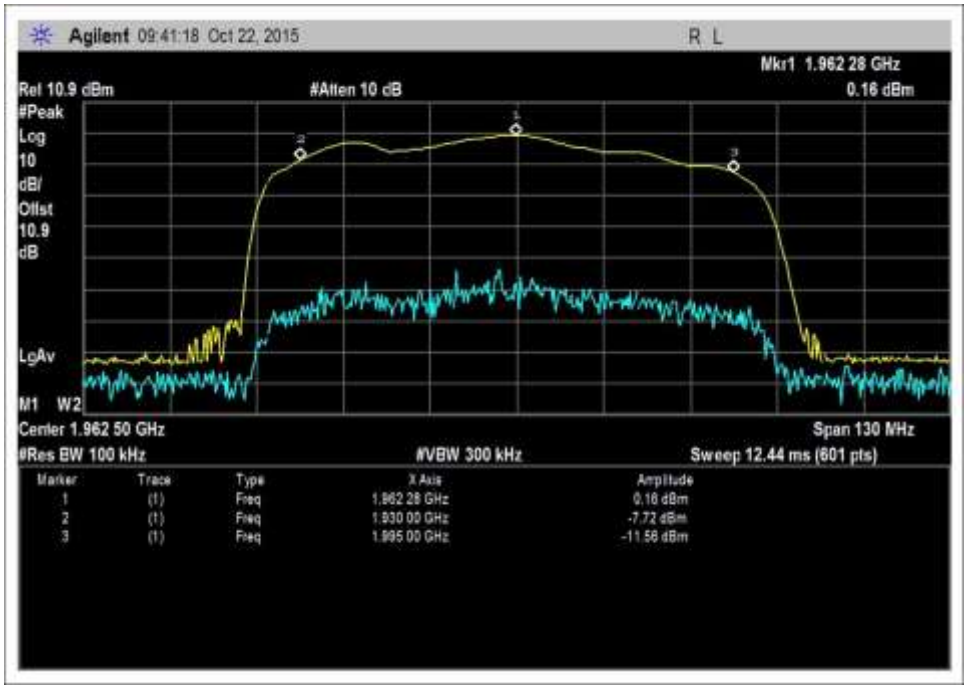
7.1_band verify_DL_746-757MHz-Zoom



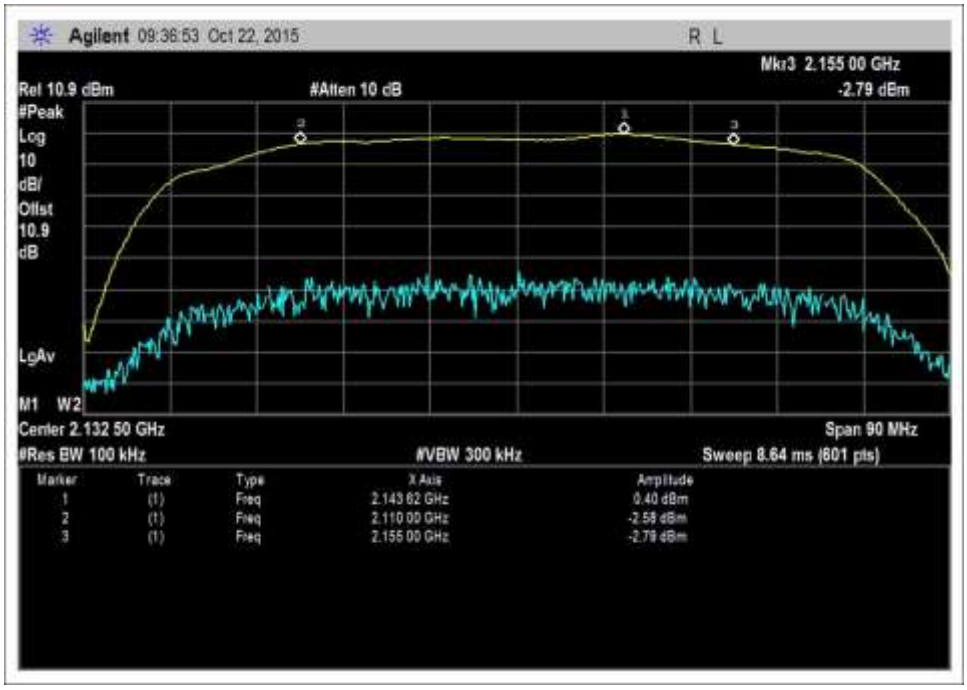
7.1_band verify_DL_869-894MHz



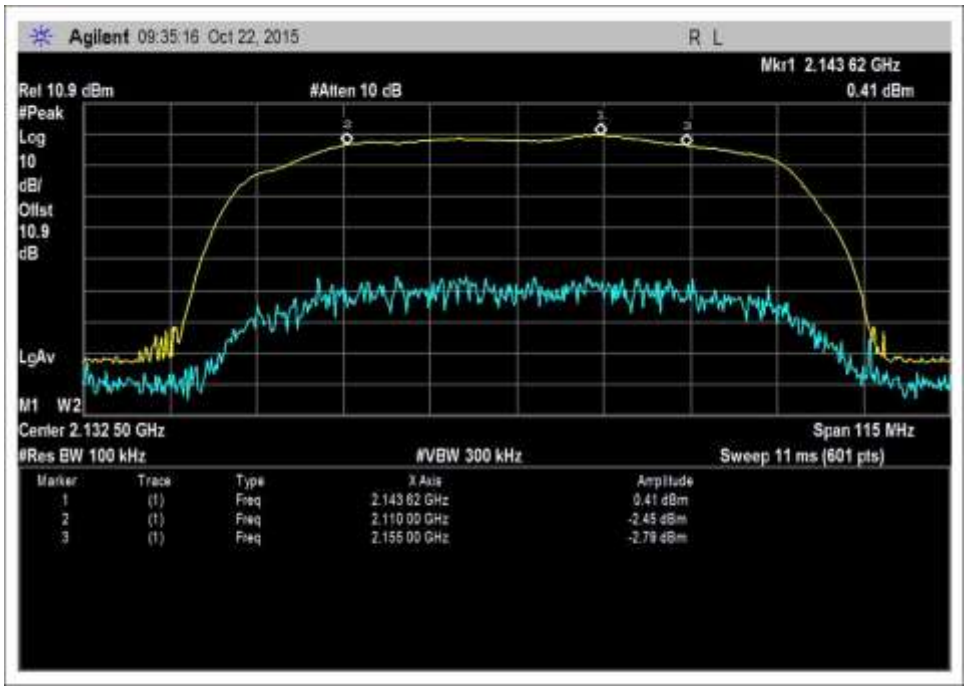
7.1_band verify_DL_869-894MHz-Zoom



7.1_band verify_DL_1930-1995MHz



7.1_band verify_DL_2110-2155MHz



7.1_band verify_DL_2110-2155MHz-Zoom

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 #:	**97491**	Date:	10/12/2015
Test Type:	**Conducted Emissions**	Time:	10:57:50
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed CMRS Wideband Consumer Booster with a Wi-Fi Router and TV amplifier installed. The CMRS DL signal and the Wi-Fi Signal are combined at the diplexer and transmit via the indoor antenna.
The Consumer booster UL and DL power and gain parameters are initially measured with Wi-Fi transmitting at mid channel using sequentially 802.11b, g, n20 and n40 signal. Since no significant change in measured power was observed, all other parameters are obtained with Wi-Fi transmitting at Mid channel, 802.11b.

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

All adjustable settings on the test sample are set at max gain.

Test environment conditions: Temperature: 20.6°C, Relative Humidity: 42%, Pressure: 101.5kPa

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
		HDTV	LTE-A	LTE-V	800MHz	1900MHz	1700MHz\2100MHz	2400MHz	
Outdoor Antenna	SC288W		3dBi	3dBi	3dBi	4dBi	4dBi\4dBi	4dBi	With N connector
	SC230W		10dBi	10dBi	10dBi	10dBi	10dBi\10dBi	11dBi	With N connector
Outdoor Cable	SC240-40FN 40Feet		3.52dB	3.52dB	3.98dB	6.52dB	6.12dB\6.92dB	7.32dB	With N connector
	SC400-30NN 30Feet		2.05dB	2.05dB	2.12dB	2.83dB	2.68dB\2.98dB	3.1dB	With N connector
Indoor Cable	SC400-75NN 75Feet		4.22dB	4.22dB	4.41dB	6.17dB	5.8dB\6.54dB	6.85 dB	With RP-TNC connector
Indoor Antenna	SC222W		3dBi	3dBi	3dBi	6dBi	6dBi\6dBi	6dBi	With RP-TNC connector
	SC248W		7dBi	7dBi	7dBi	10dBi	10dBi\10dBi	10dBi	With RP-TNC connector
HDTV Out Antenna	SC305H	3dBi	/	/	/	/	/	/	With F connector
	SC306H	3dBi	/	/	/	/	/	/	With F connector

Test Equipment:

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: Summarized in the table below, measured EIRP, Gain and UL/DL gain ratio are within limits.

	Pre AGC			Pre AGC		
	Pulse GSM			4.1 MHz AWGN		
Frequency (MHz)	Input (dBm)	Output (dBm)	Gain (dB)	Input (dBm)	Output (dBm)	Gain (dB)
UL1710-1755	-45.5	18.3	63.8	-48.1	18.1	66.2
UL1850-1915	-45.3	18.6	63.9	-45.0	18.3	63.3
UL824-894	-40.6	17.8	58.4	-40.5	18.0	58.5
UL 698-716	-41.0	18.5	59.5	-40.9	18.1	59.0
UL776-787	-40.6	20.1	60.7	-40.2	19.4	59.6
DL2110-2155	-59.0	6.2	65.2	-62.7	2.7	65.4
DL1930-1995	-59.7	5.0	64.7	-63.0	2.7	65.7
DL869-894	-49.6	8.4	58.0	-53.8	5.2	59.0
DL:728-746	-50.5	8.4	58.9	-52.8	5.1	57.9
DL 746-757	-50.0	7.8	57.8	-54.7	3.2	57.9

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	18.3	10	2.68	25.6	17	30
UL1850-1915	18.6	10	2.83	25.7	17	30
UL824-894	17.8	10	2.12	25.7	17	30
UL 698-716	18.5	10	2.05	26.4	17	30
UL776-787	20.1	10	2.05	28.0	17	30
DL2110-2155	6.2	10	3.76	12.4	NA	17
DL1930-1995	5.0	10	3.56	11.4	NA	17
DL869-894	8.4	7	2.29	13.2	NA	17
DL:728-746	8.4	7	2.06	13.3	NA	17
DL 746-757	7.8	7	2.06	12.7	NA	17

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	18.1	10	2.68	25.4	17	30
UL1850-1915	18.3	10	2.83	25.5	17	30
UL824-894	18.0	10	2.12	25.9	17	30
UL 698-716	18.1	10	2.05	26.1	17	30
UL776-787	19.4	10	2.05	27.4	17	30
DL2110-2155	2.7	10	3.76	8.9	NA	17
DL1930-1995	2.7	10	3.56	9.1	NA	17
DL869-894	5.2	7	2.29	9.9	NA	17
DL:728-746	5.1	7	2.06	10.1	NA	17
DL 746-757	3.2	7	2.06	8.1	NA	17

Section 5.5 power						
		Pulse GSM			4.1 MHz AWGN	
Frequency (MHz)	Input (dBm)	Output (dBm)	Gain (dB)	Input (dBm)	Output (dBm)	Gain (dB)
UL1710-1755	-32.5	18.4	50.9	-33.0	18.3	51.3
UL1850-1915	-31.1	17.9	49.0	-30.6	19.0	49.6
UL824-894	-25.8	17.9	43.7	-24.8	18.6	43.4
UL 698-716	-26.2	18.7	44.9	-26.8	18.8	45.6
UL776-787	-25.7	20.2	45.9	-26.2	19.4	45.6
DL2110-2155	-51.4	6.3	57.7	-53.2	3.6	56.8
DL1930-1995	-50.6	5.3	55.9	-53.6	2.1	55.7
DL869-894	-46.1	9.1	55.2	-49.9	5.3	55.2
DL:728-746	-46.2	8.8	55.0	-49.8	5.0	54.8
DL 746-757	-47.0	7.9	54.9	-50.5	3.7	54.2

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 it is for reference only.

Power/Gain Verification with Booster ON and OFF

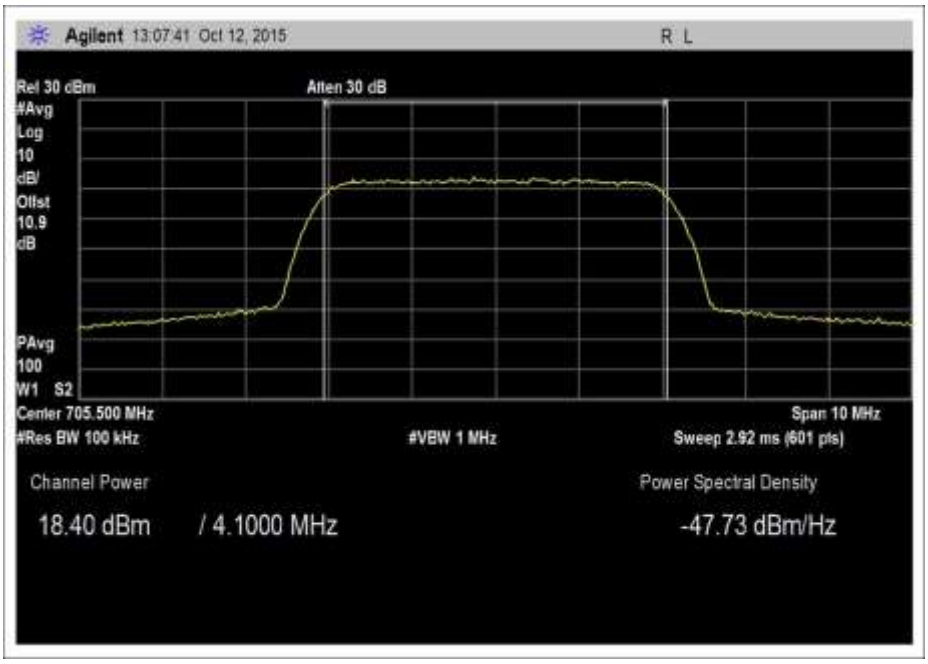
The Consumer Booster UL and DL power and gain parameters are initially measured with Wi-Fi transmitting at mid channel using sequentially 802.11b, g, n20 and n40 signal. Since no significant change in measured power was observed, all other parameters are obtained with WiFi transmitting at Mid channel, 802.11b.
Results shown further below were obtained for report 97491-16.

DL 2132.5	b			g			N20			N40		
AWGN	Off	On	Diff	Off	On	Diff	Off	On	Diff	Off	On	Diff
Low	21.47	21.34	-0.13	19.22	19.28	0.06	17.51	17.5	-0.01	15.83	15.77	-0.06
Mid	21.31	21.08	-0.23	19.1	19.26	0.16	17.34	17.25	-0.09	15.64	15.5	-0.14
High	20.5	19.84	-0.66	17.91	17.89	-0.02	16.31	16.03	-0.28	15.03	14.92	-0.11
DL 881.5	b			g			N20			N40		
AWGN	Off	On	Diff	Off	On	Diff	Off	On	Diff	Off	On	Diff
Low	21.47	21.39	-0.08	19.22	19.14	-0.08	17.51	17.4	-0.11	15.83	15.81	-0.02
Mid	21.31	21.02	-0.29	19.1	18.96	-0.14	17.34	17.19	-0.15	15.64	15.5	-0.14
High	20.5	19.94	-0.56	17.91	17.75	-0.16	16.31	16.05	-0.26	15.03	14.9	-0.13
DL 2132.5	b			g			N20			N40		
GSM	Off	On	Diff	Off	On	Diff	Off	On	Diff	Off	On	Diff
Low	21.47	21.36	-0.11	19.22	19.09	-0.13	17.51	17.26	-0.25	15.83	15.61	-0.22
Mid	21.31	21.09	-0.22	19.1	18.87	-0.23	17.34	17.22	-0.12	15.64	15.4	-0.24
High	20.5	19.86	-0.64	17.91	17.68	-0.23	16.31	15.95	-0.36	15.03	14.87	-0.16
DL 881.5	b			g			N20			N40		
GSM	Off	On	Diff	Off	On	Diff	Off	On	Diff	Off	On	Diff
Low	21.47	21.17	-0.3	19.22	19.01	-0.21	17.51	17.27	-0.24	15.83	15.5	-0.33
Mid	21.31	20.95	-0.36	19.1	18.84	-0.26	17.34	17.05	-0.29	15.64	15.31	-0.33
High	20.5	19.73	-0.77	17.91	17.6	-0.31	16.31	15.8	-0.51	15.03	14.75	-0.28

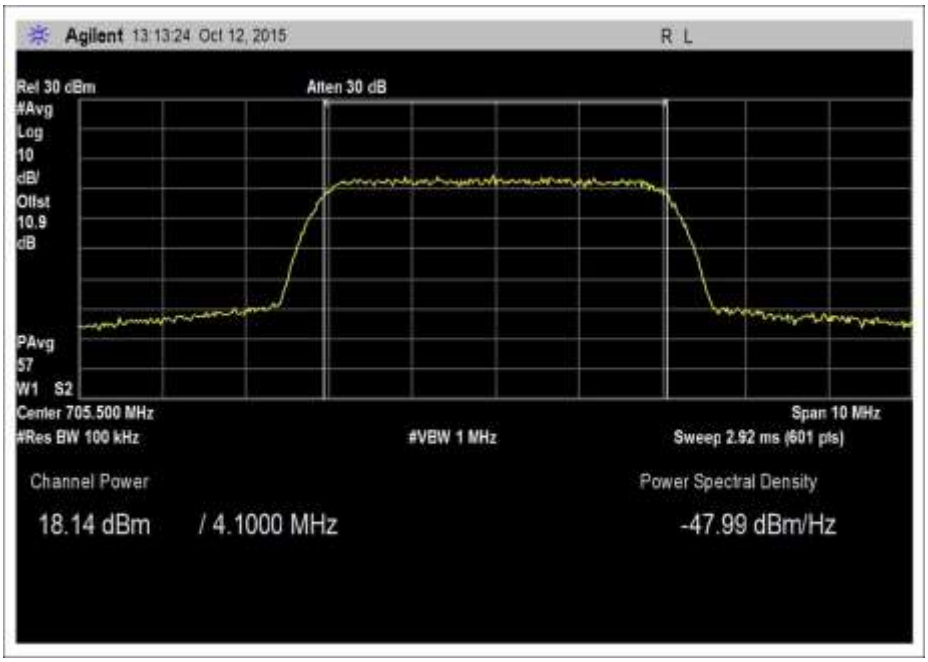
Attenuator for B Mode=32
Attenuator for G Mode=38
Attenuator for N 20MHz Mode=35
Attenuator for N 40MHz Mode=32

Plots

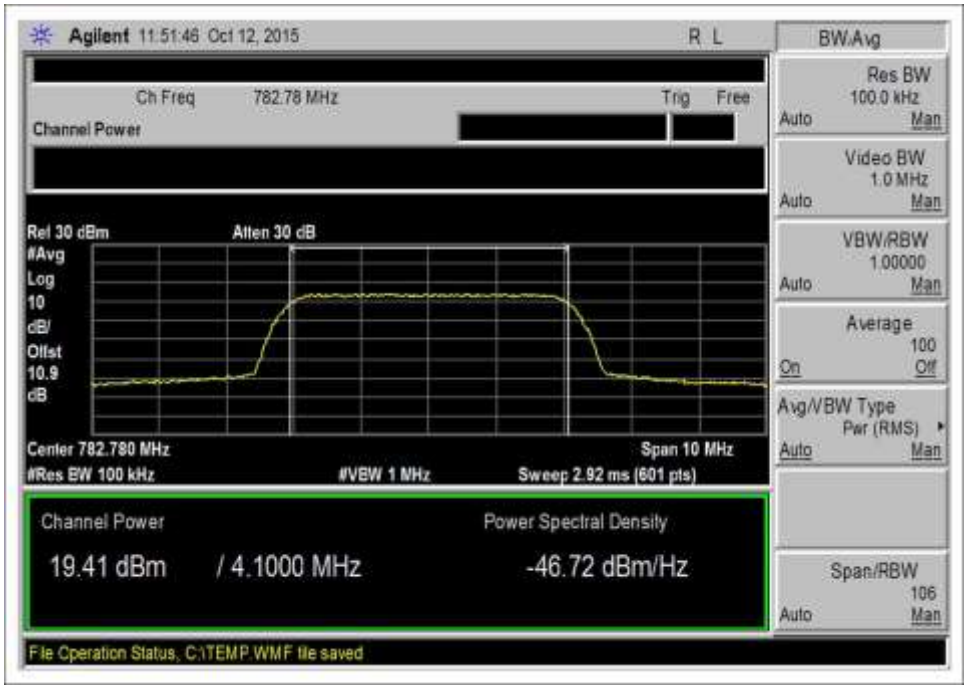
AWGN



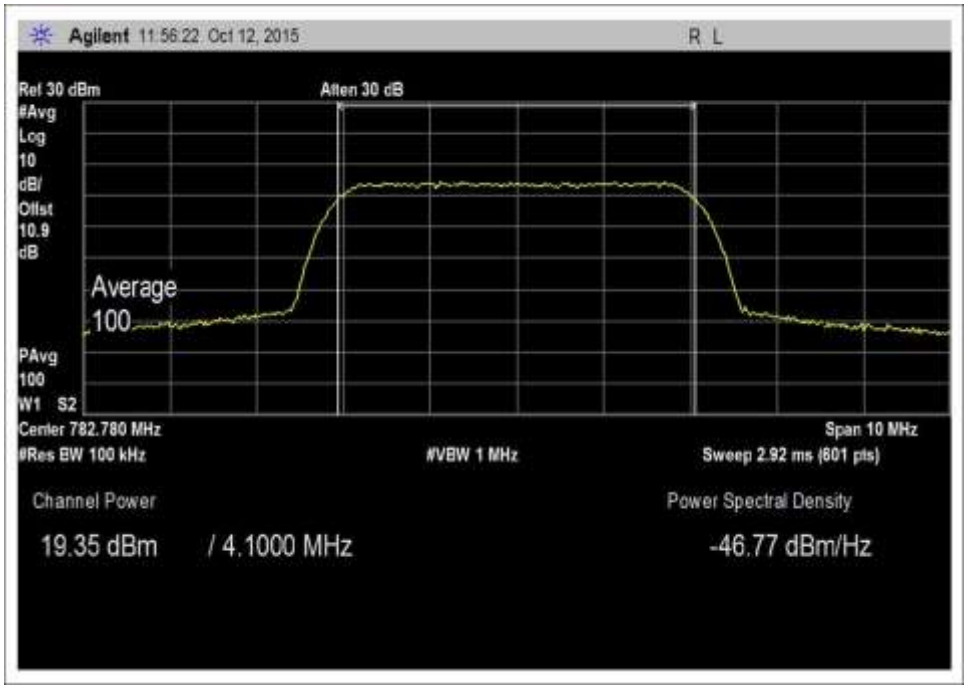
7.2_Power_UL_698-716_AWGN



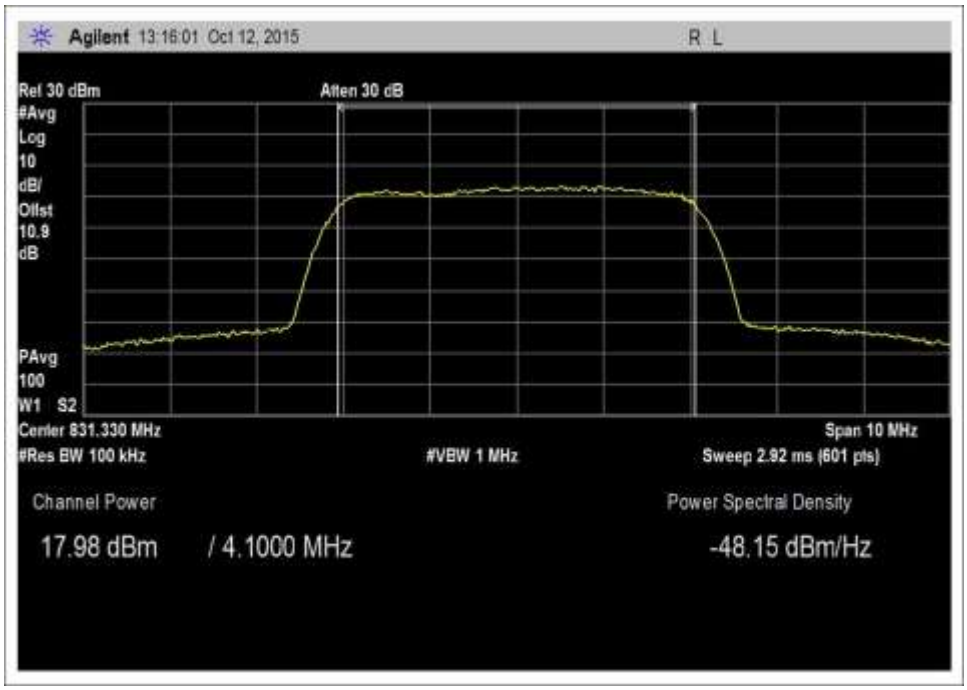
7.2_Power_UL_698-716_AWGN-Max



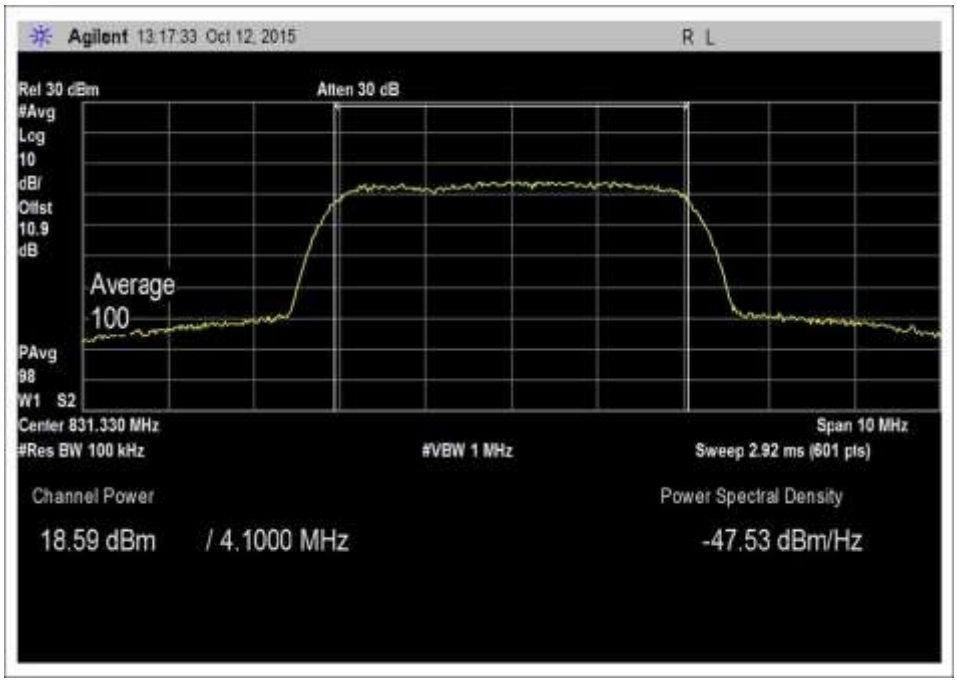
7.2_Power_UL_776-787_AWGN



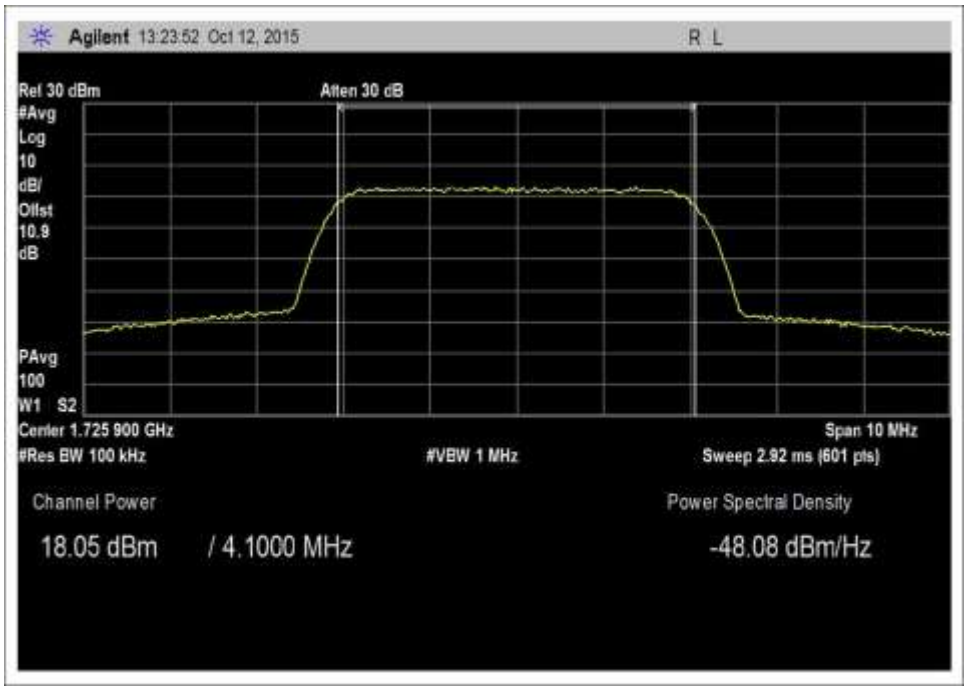
7.2_Power_UL_776-787_AWGN-Max



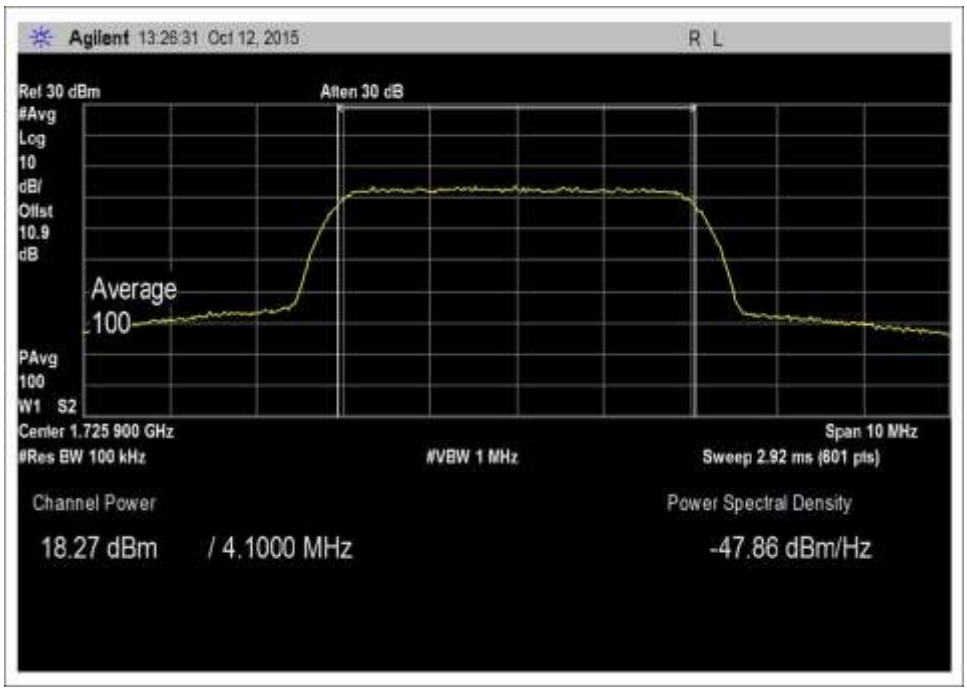
7.2_Power_UL_824-849_AWGN



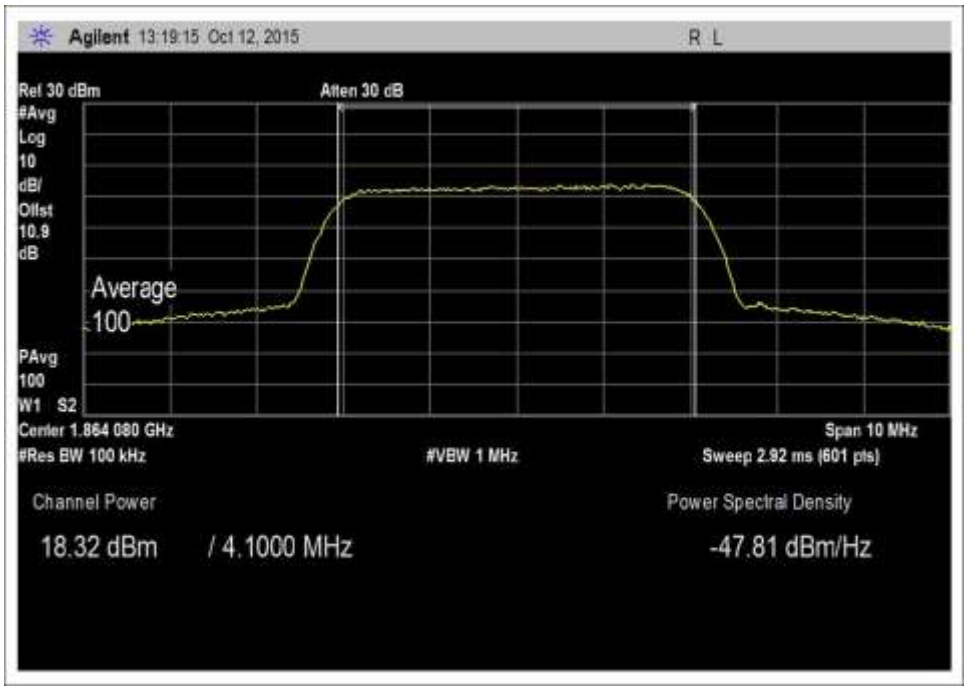
7.2_Power_UL_824-849_AWGN-Max



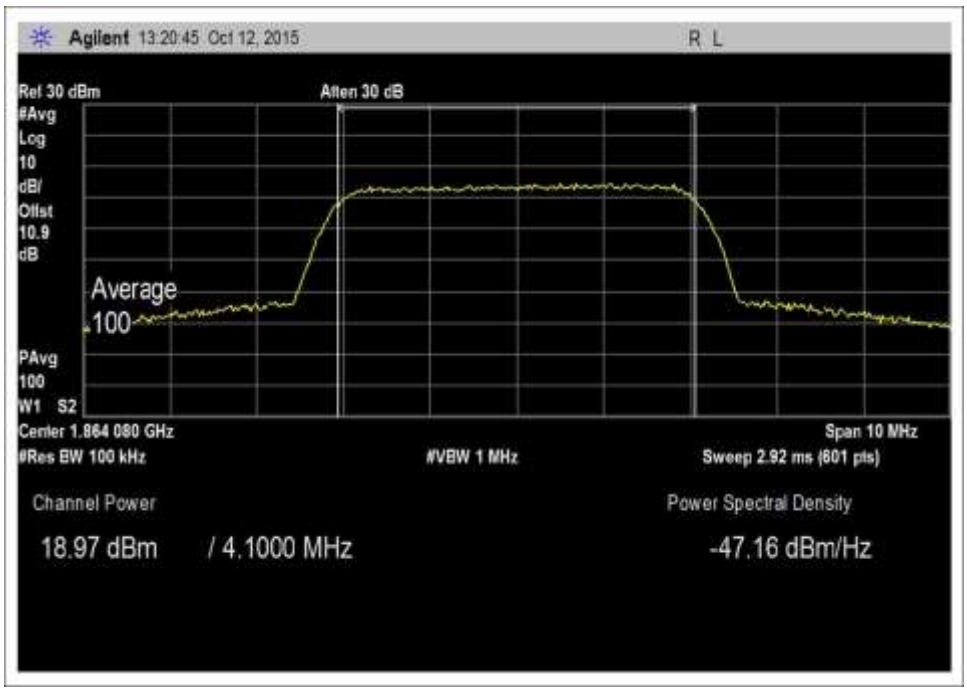
7.2_Power_UL_1710-1755_AWGN



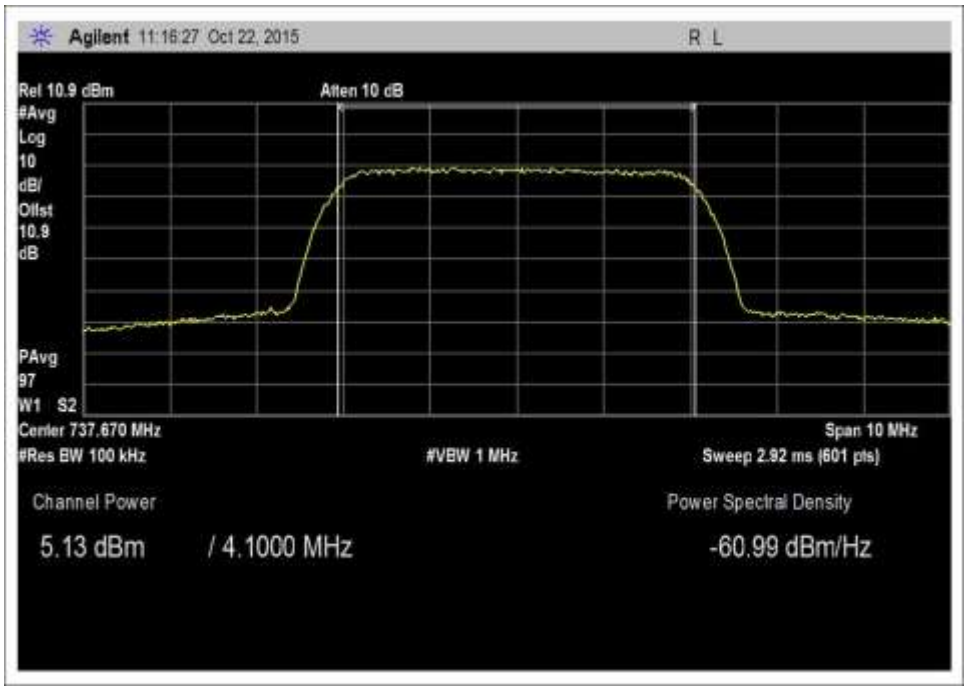
7.2_Power_UL_1710-1755_AWGN-Max



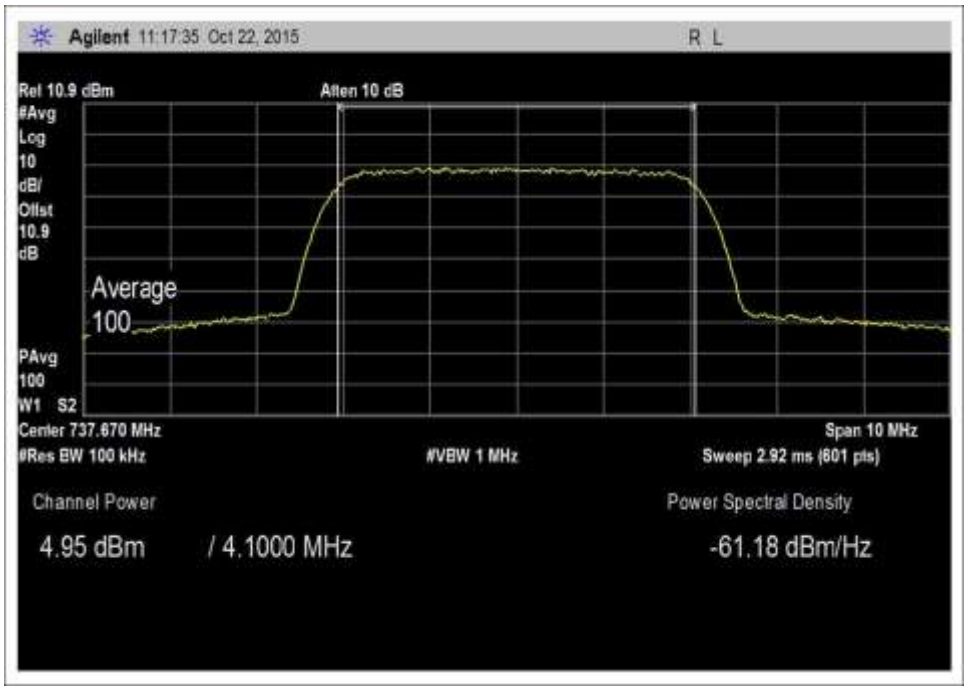
7.2_Power_UL_1850-1915_AWGN



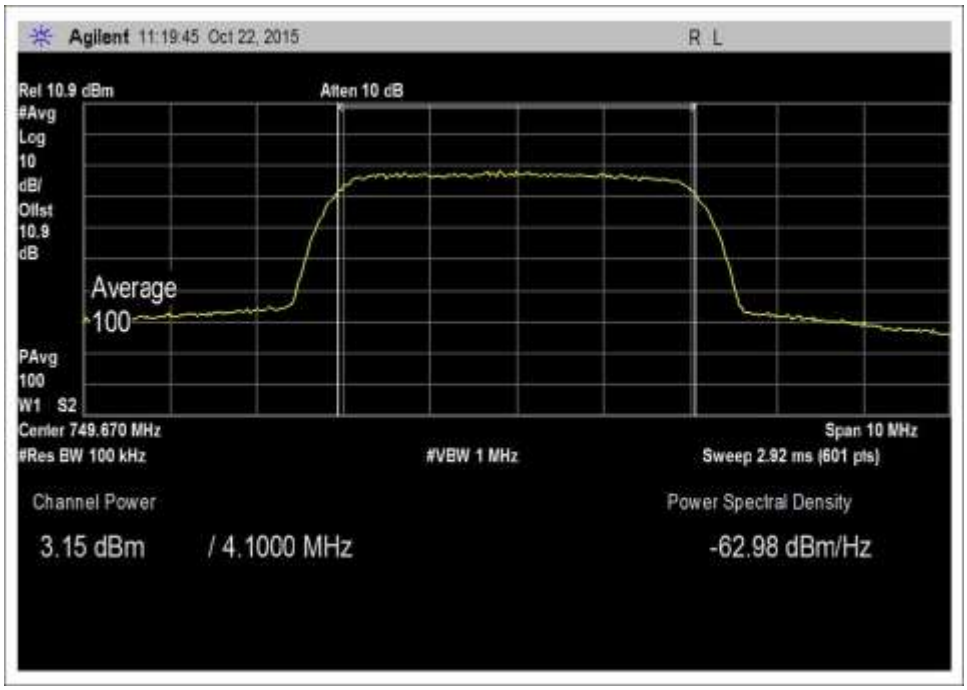
7.2_Power_UL_1850-1915_AWGN-Max



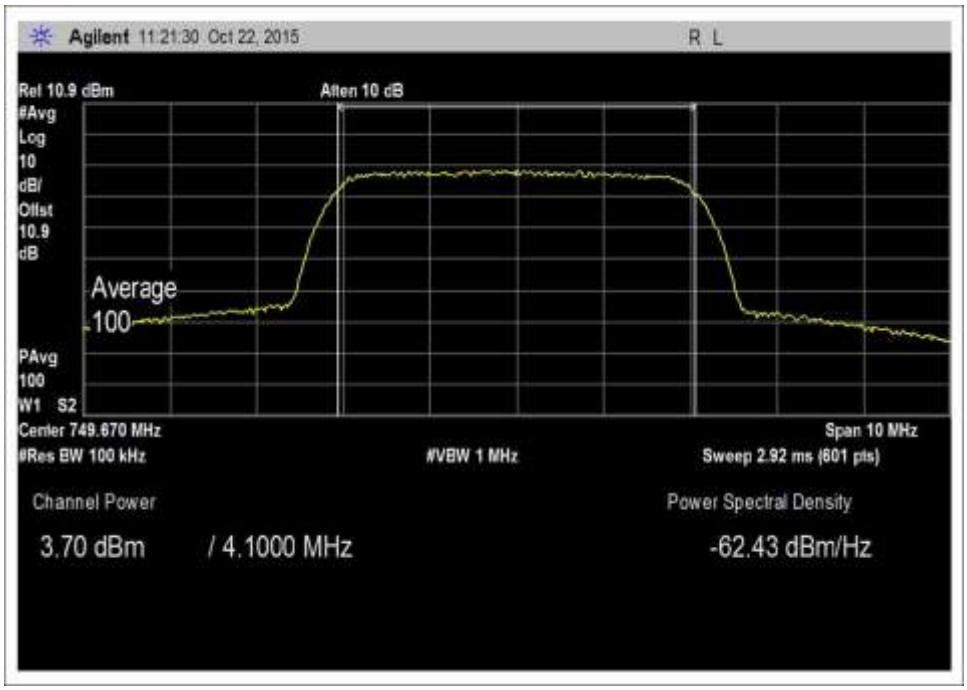
7.2_Power_DL_728-746_AWGN



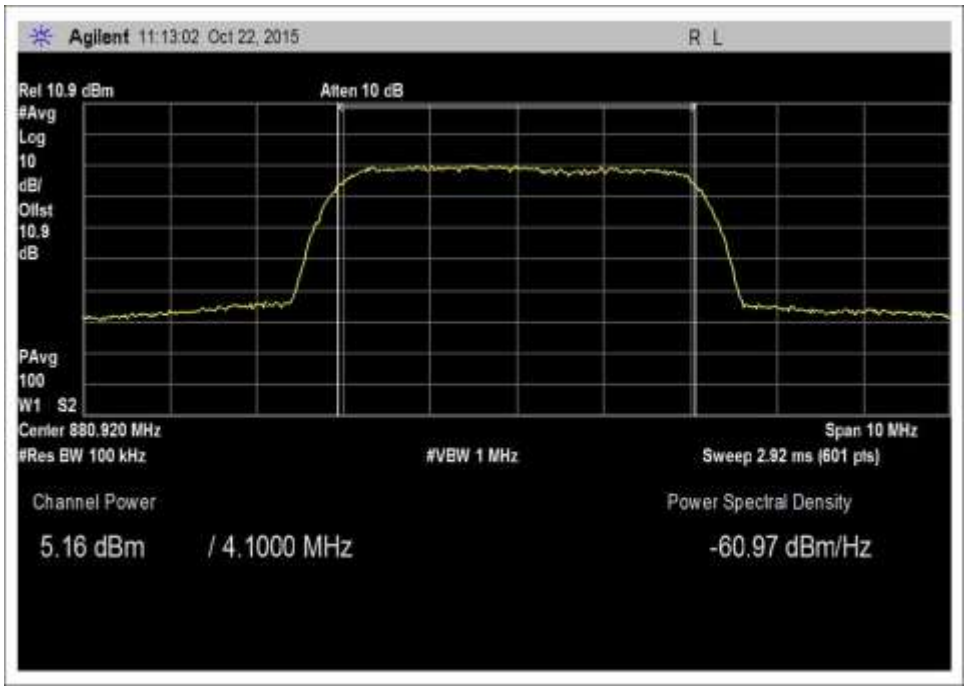
7.2_Power_DL_728-746_AWGN-Max



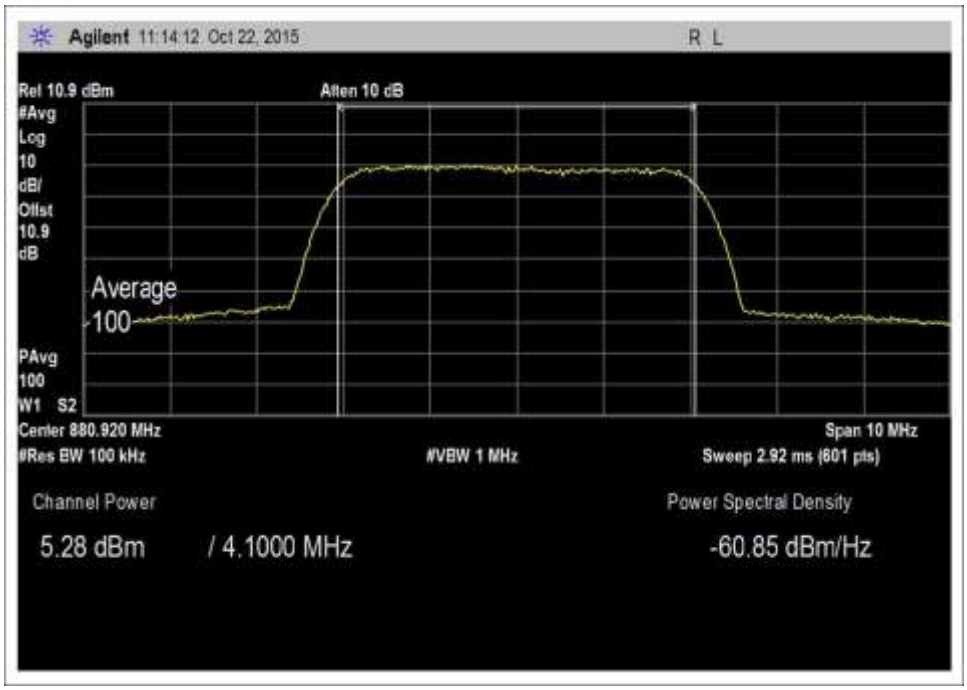
7.2_Power_DL_746-757_AWGN



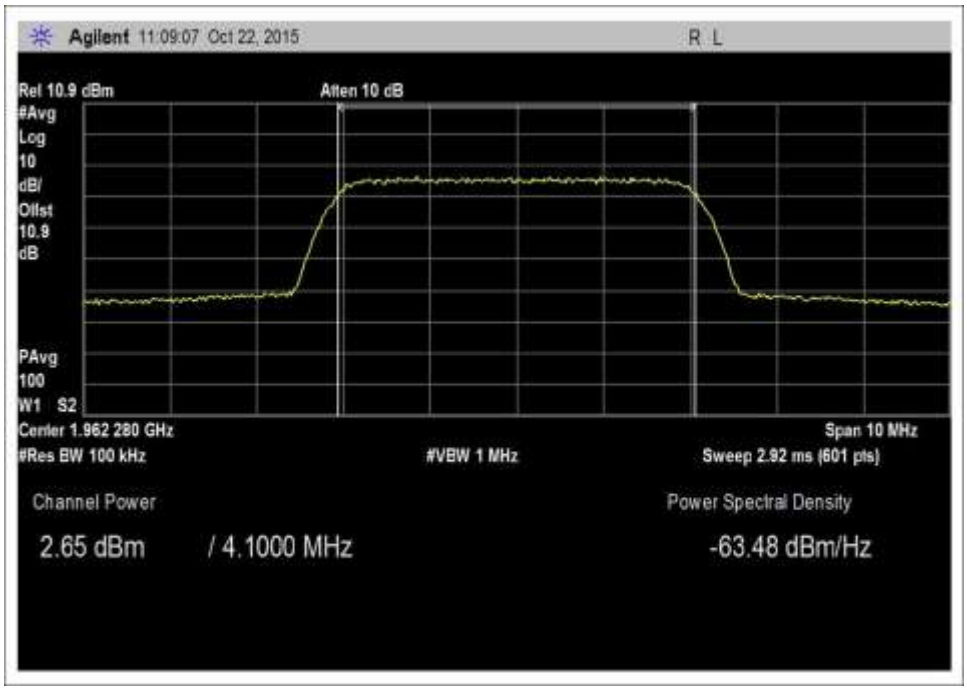
7.2_Power_DL_746-757_AWGN-Max



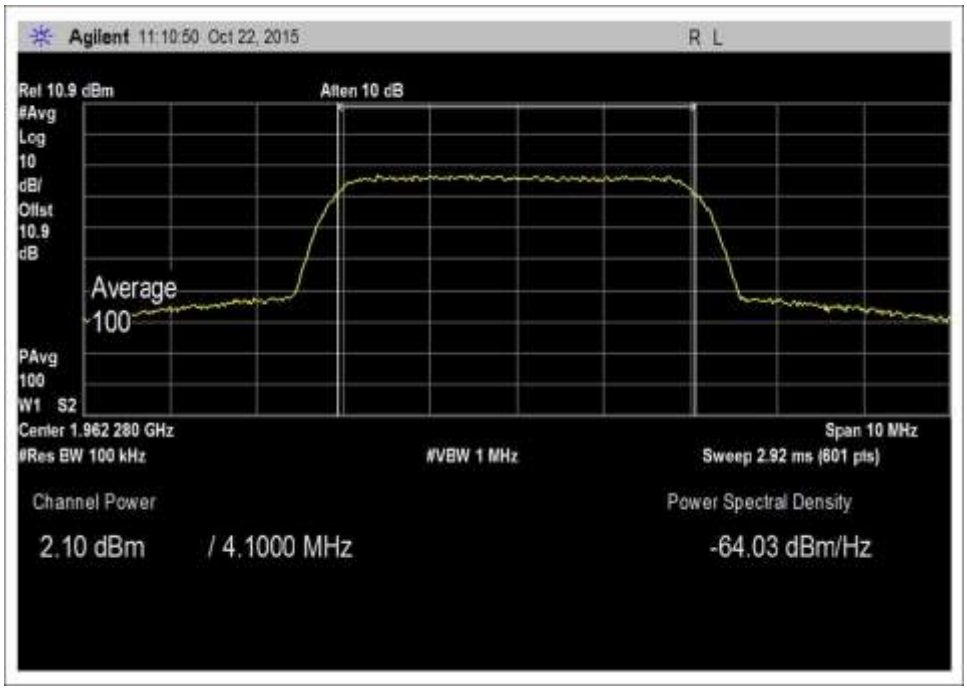
7.2_Power_DL_869-894_AWGN



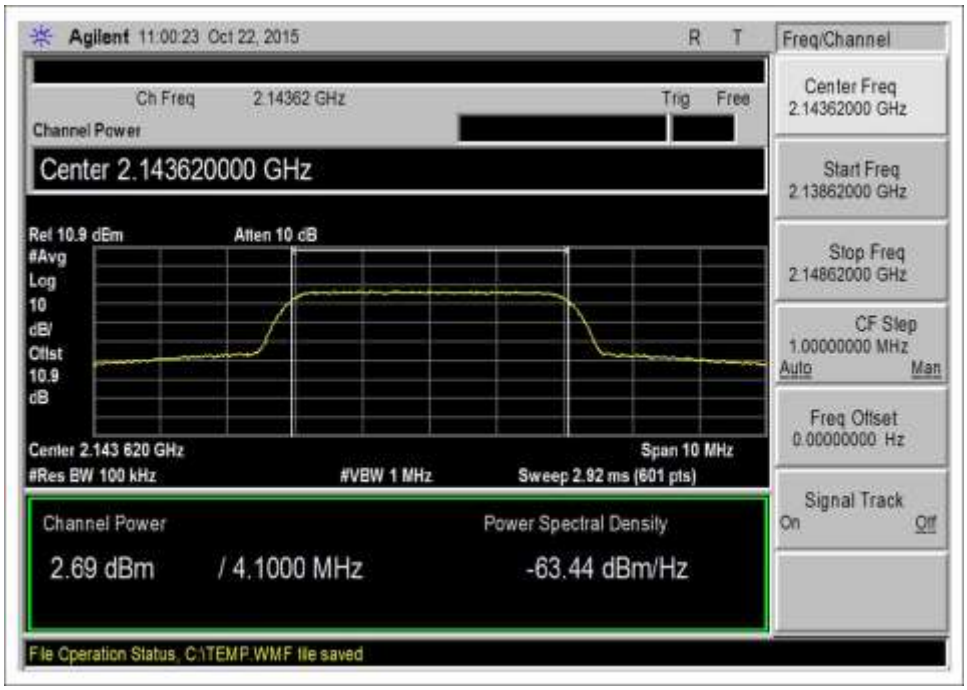
7.2_Power_DL_869-894_AWGN-Max



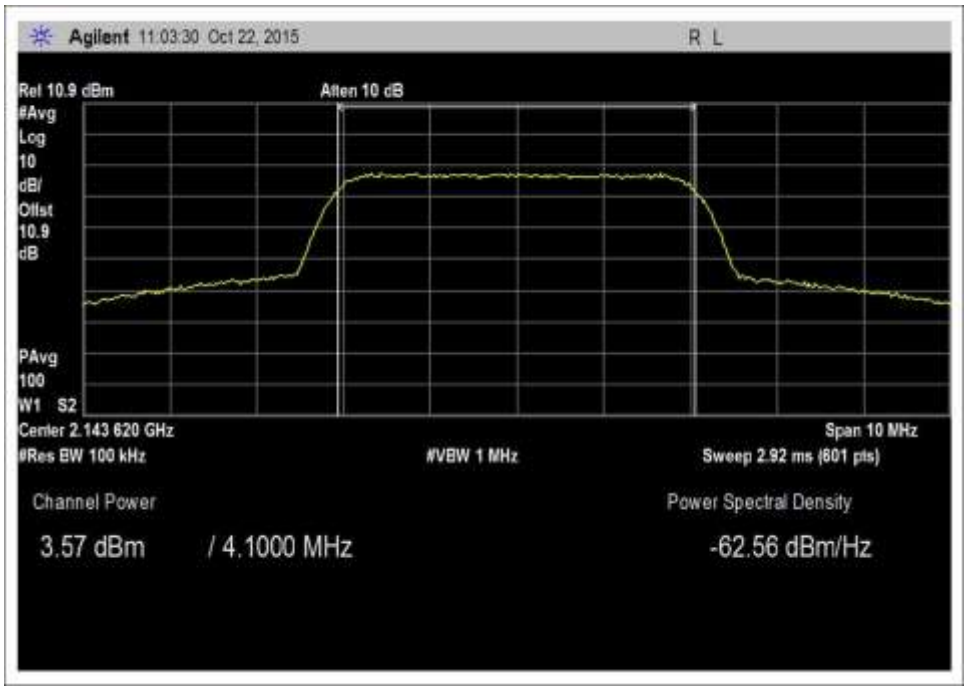
7.2_Power_DL_1930-1995_AWGN



7.2_Power_DL_1930-1995_AWGN-Max



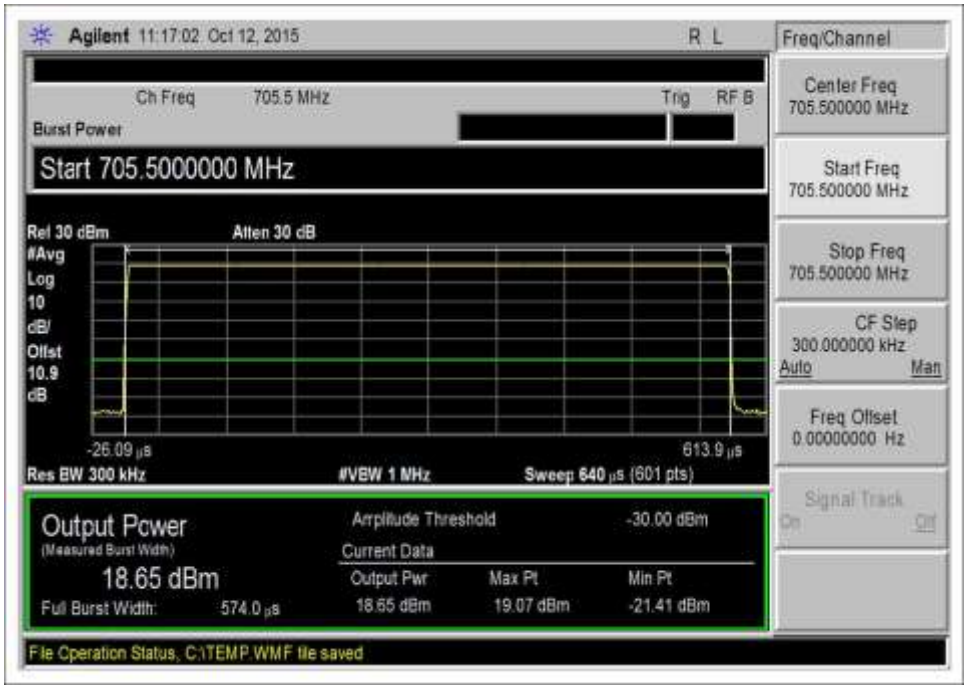
7.2_Power_DL_2110-2155_AWGN



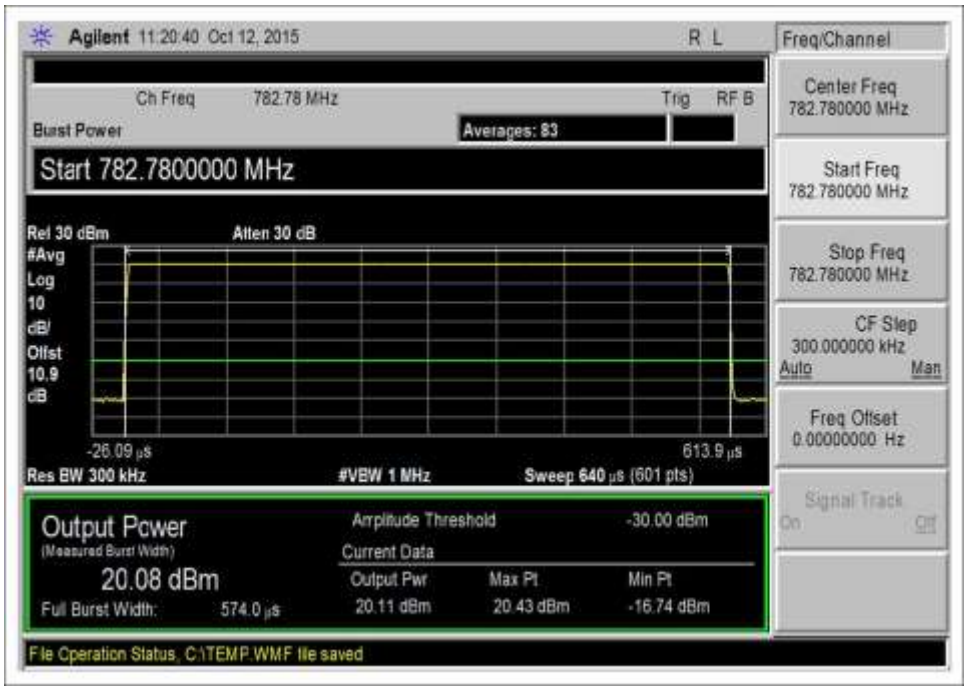
7.2_Power_DL_2110-2155_AWGN-Max

GSM

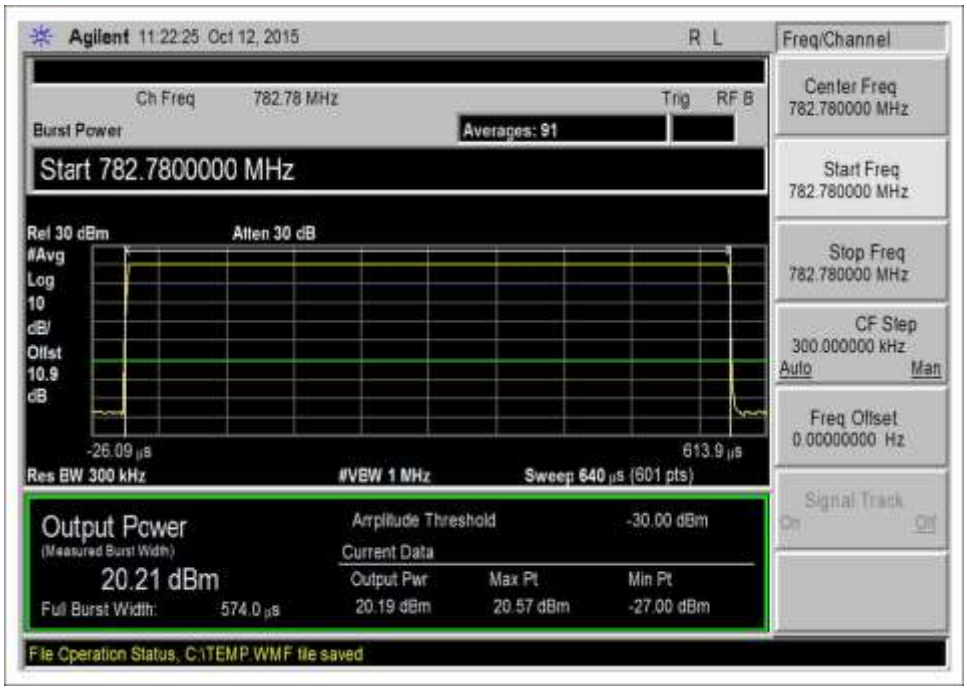
7.2_Power_UL_698-716_GSM



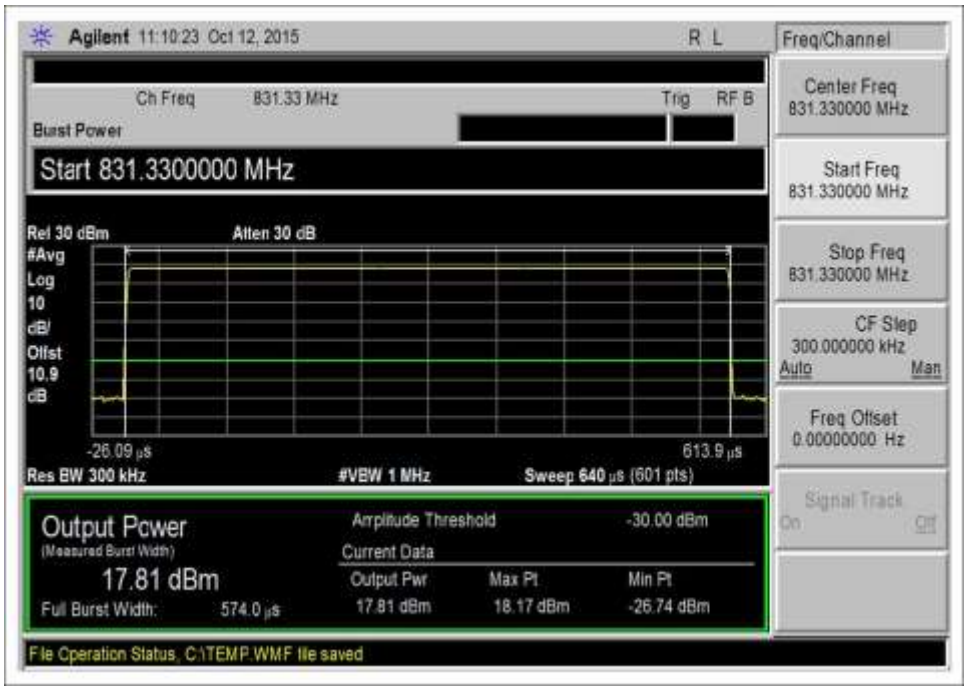
7.2_Power_UL_698-716_GSM-Max



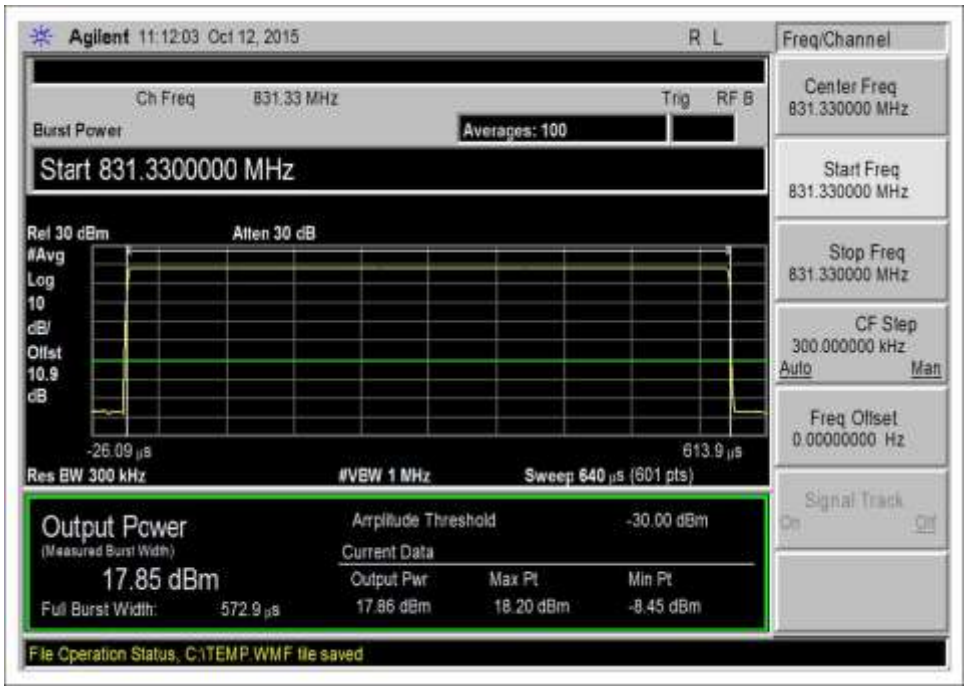
7.2_Power_UL_776-787_GSM



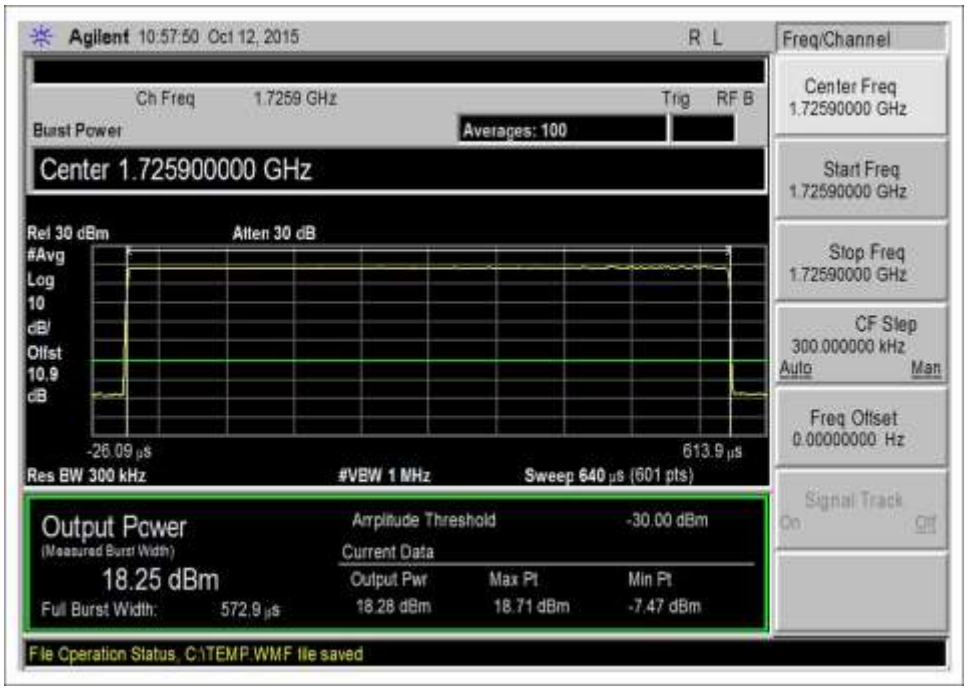
7.2_Power_UL_776-787_GSM-Max



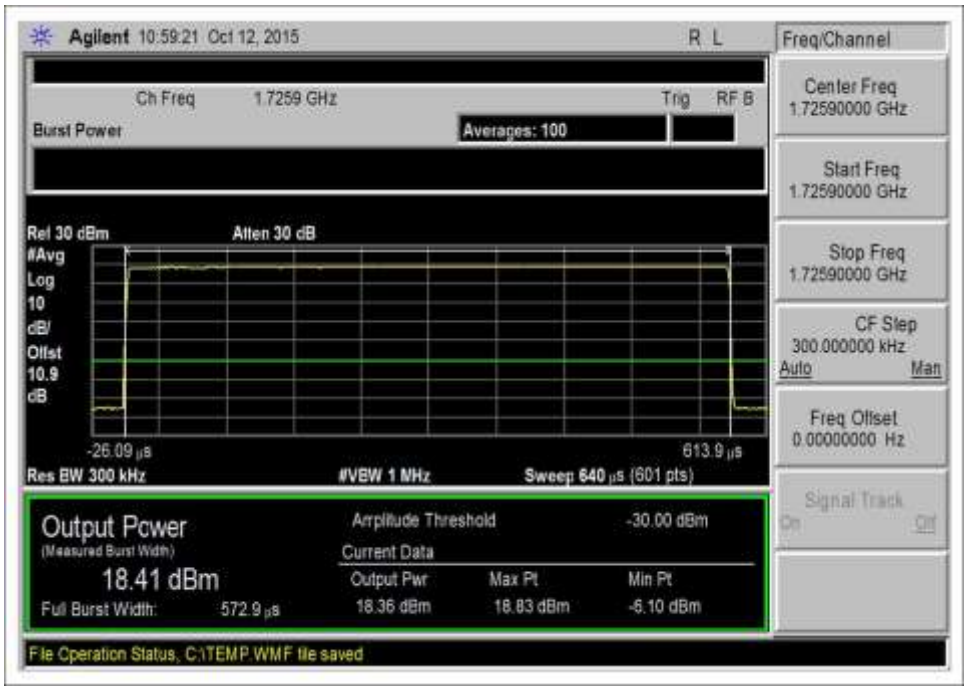
7.2_Power_UL_824-849_GSM



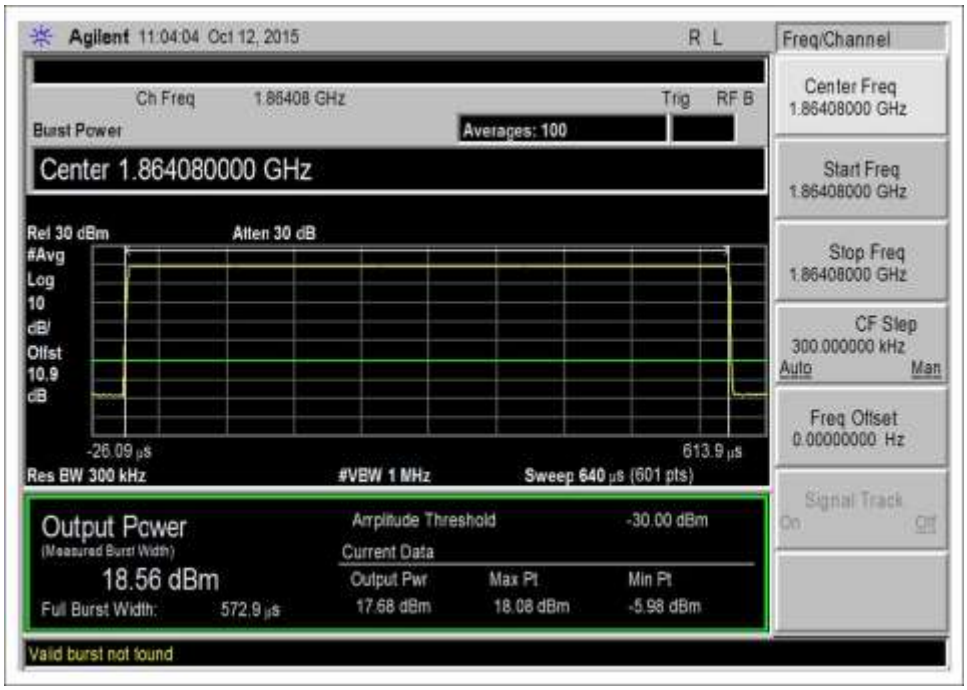
7.2_Power_UL_824-849_GSM-Max



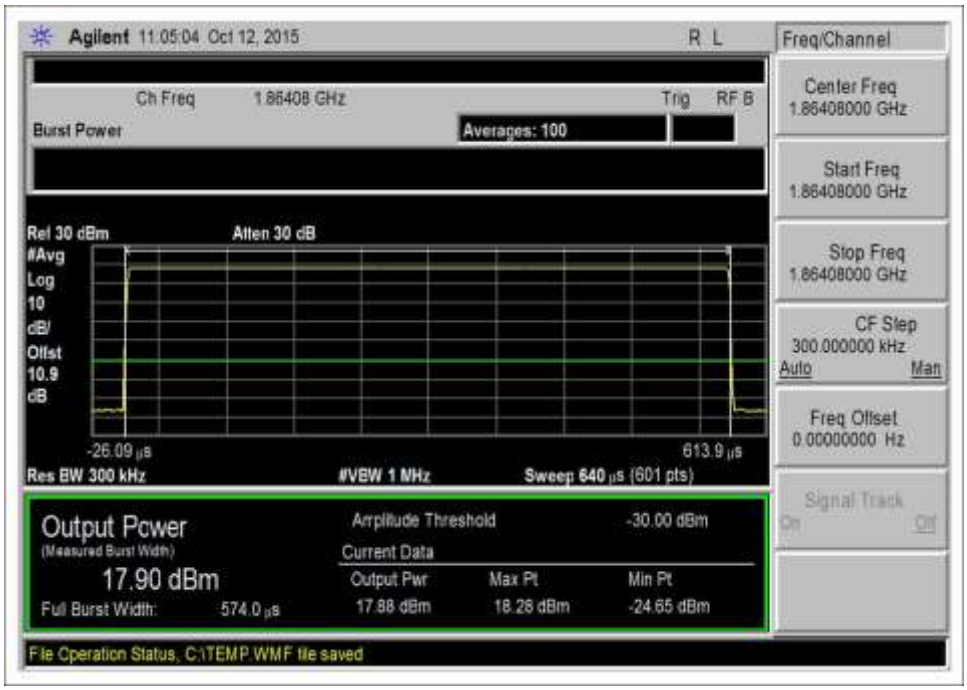
7.2_Power_UL_1710-1755_GSM



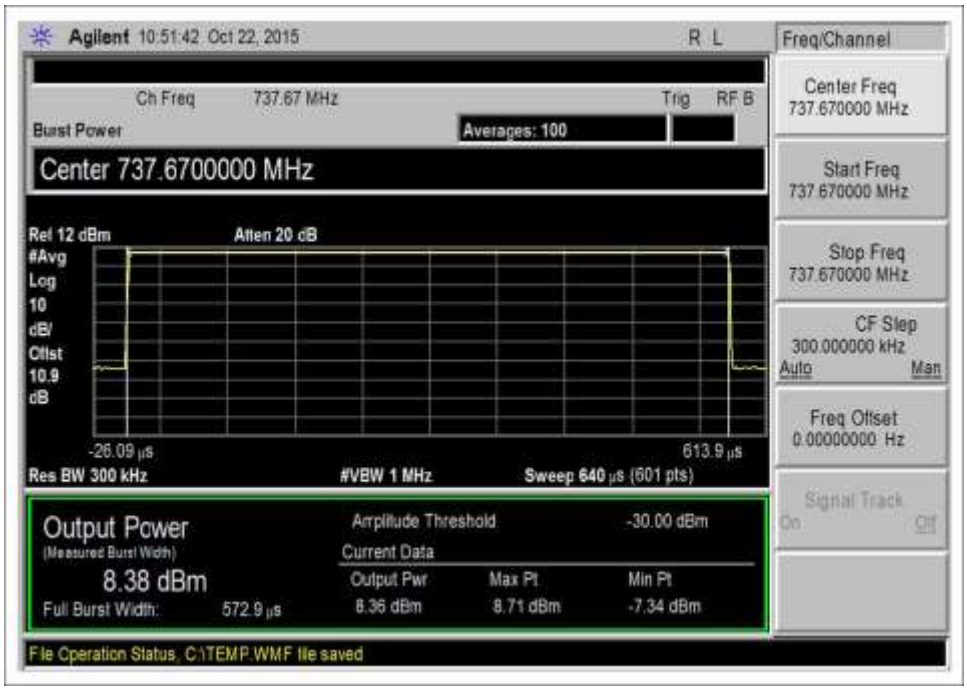
7.2_Power_UL_1710-1755_GSM-Max



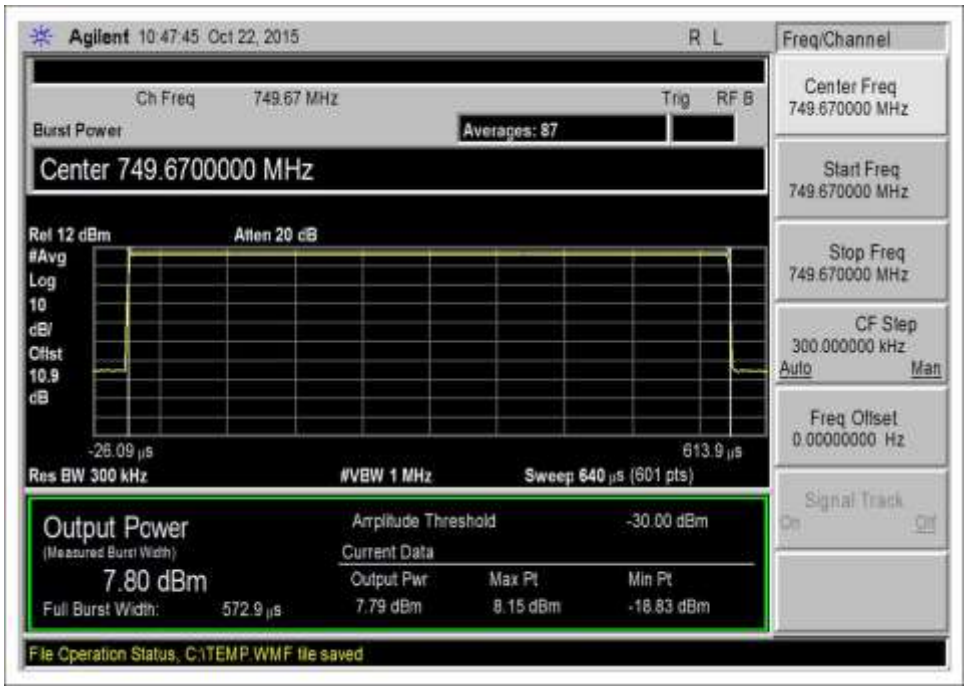
7.2_Power_UL_1850-1915_GSM



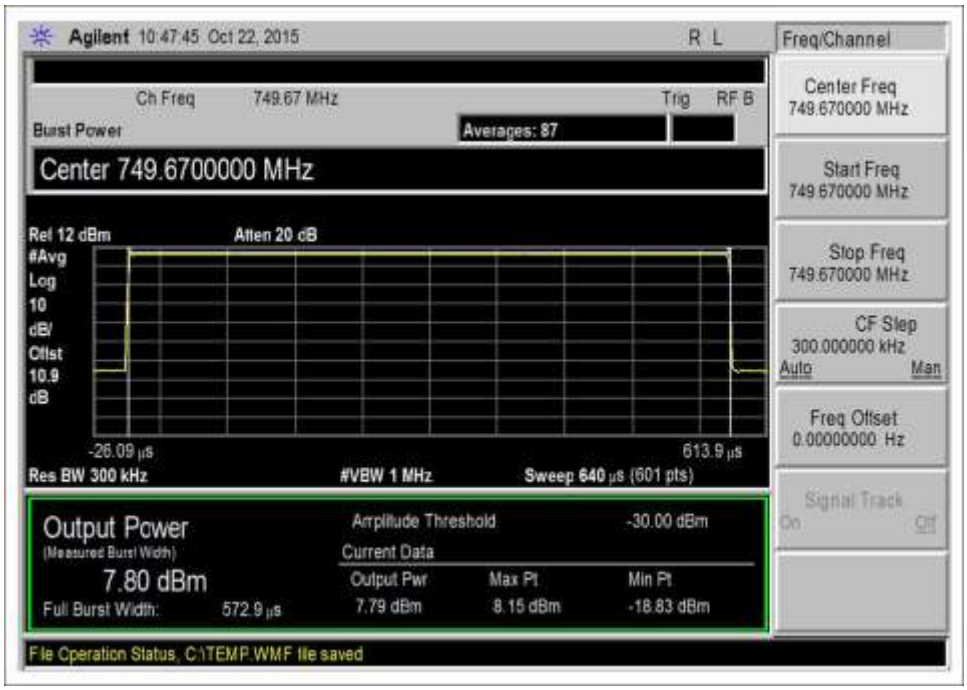
7.2_Power_UL_1850-1915_GSM-Max



7.2_Power_DL_728-746_GSM

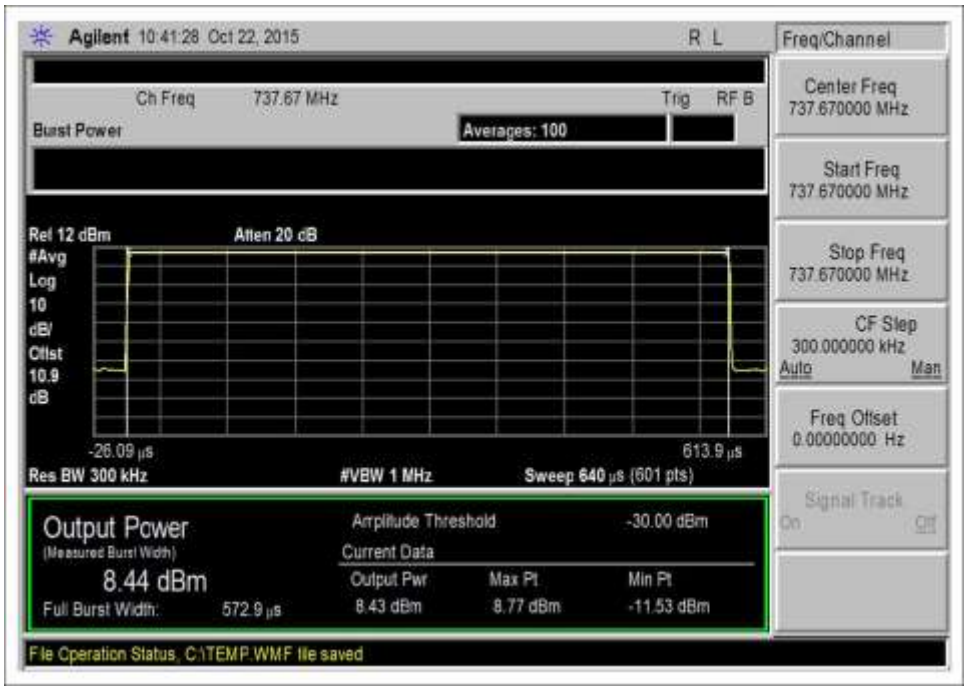


7.2_Power_DL_728-746_GSM-Max



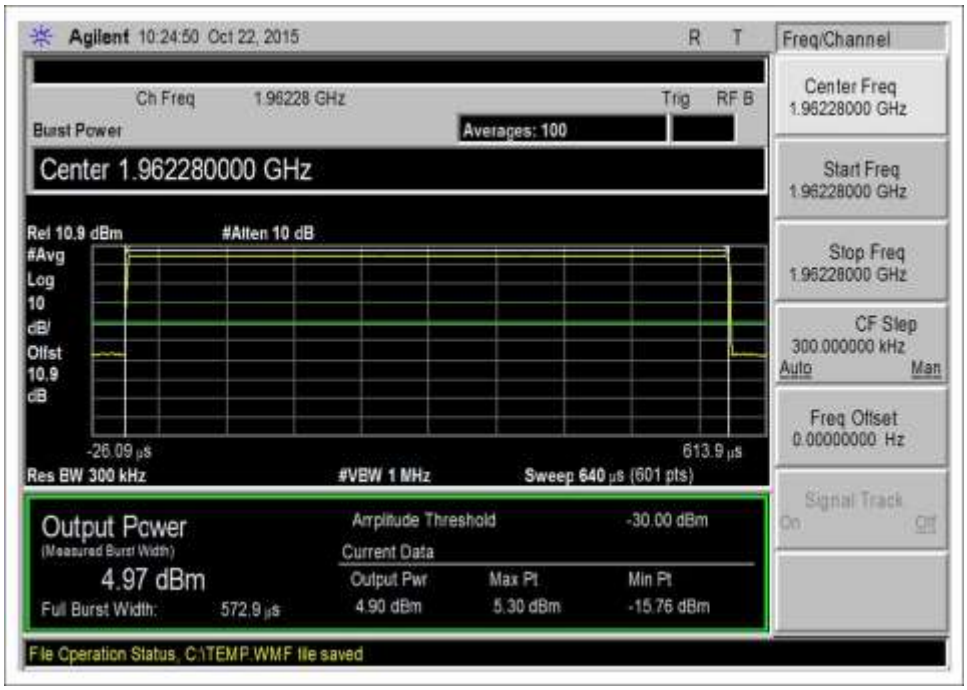
7.2_Power_DL_746-757_GSM

7.2_Power_DL_746-757_GSM-Max

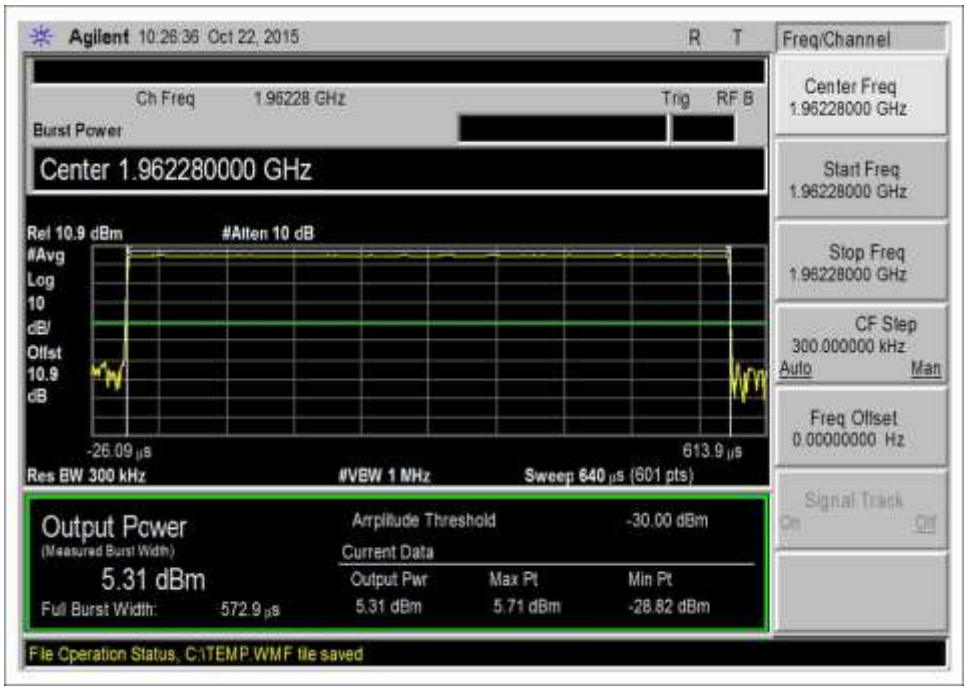


7.2_Power_DL_869-894_GSM

7.2_Power_DL_869-894_GSM-Max

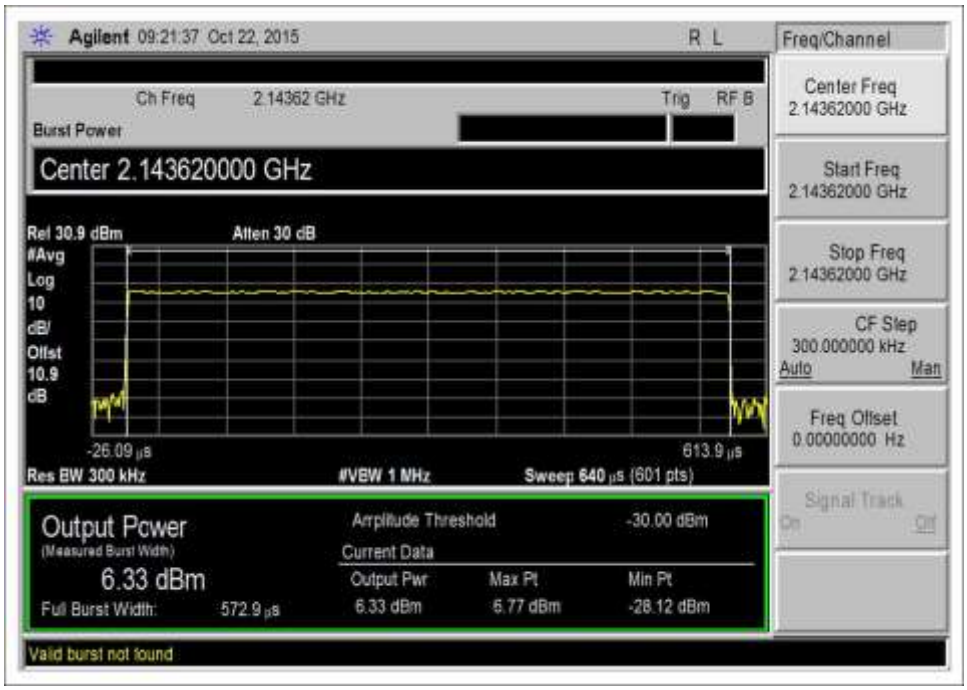


7.2_Power_DL_1930-1995_GSM



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 #:	**97491**	Date:	10/12/2015
Test Type:	**Conducted Emissions**	Time:	10:57:50
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed CMRS Wideband Consumer Booster with a Wi-Fi Router and TV amplifier installed. The CMRS DL signal and the Wi-Fi Signal are combined at the diplexer and transmit via the indoor antenna.
The Consumer booster UL and DL power and gain parameters are initially measured with Wi-Fi transmitting at mid channel using sequentially 802.11b, g, n20 and n40 signal. Since no significant change in measured power was observed, all other parameters are obtained with Wi-Fi transmitting at Mid channel, 802.11b.

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

All adjustable settings on the test sample are set at max gain.

Test environment conditions: Temperature: 20.6°C, Relative Humidity: 42%, Pressure: 101.5kPa

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:

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 table below.

	Pre AGC			Pre AGC		
	Pulse GSM			4.1 MHz AWGN		
Frequency (MHz)	Input (dBm)	Output (dBm)	*Gain (dB)	Input (dBm)	Output (dBm)	*Gain (dB)
UL1710-1755	-45.5	18.3	63.8	-48.1	18.1	66.2
UL1850-1915	-45.3	18.6	63.9	-45.0	18.3	63.3
UL824-894	-40.6	17.8	58.4	-40.5	18.0	58.5
UL 698-716	-41.0	18.5	59.5	-40.9	18.1	59.0
UL776-787	-40.6	20.1	60.7	-40.2	19.4	59.6
DL2110-2155	-59.0	6.2	65.2	-62.7	2.7	65.4
DL1930-1995	-59.7	5.0	64.7	-63.0	2.7	65.7
DL869-894	-49.6	8.4	58.0	-53.8	5.2	59.0
DL:728-746	-50.5	8.4	58.9	-52.8	5.1	57.9
DL 746-757	-50.0	7.8	57.8	-54.7	3.2	57.9

*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.

Gain vs Gain	Pulse GSM	4.1MHz AWGN	Limit (dB)
UL gain vs DL gain 1710/2110	-1.5	0.8	9
UL gain vs DL gain 1850/1930	-0.8	-2.3	9
UL gain vs DL gain 824/869	0.4	-0.5	9
UL gain vs DL gain 776/728	0.6	1.1	9
UL gain vs DL gain 776/746	2.9	1.8	9

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 #:	**97491** Date 03/06/2019
Test Type:	**Conducted Emissions**
Tested By:	**Hieu S. Nguyenpham**
Software:	EMITest 5.03.11

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Test environment conditions:
Temperature: 21.1° C
Relative Humidity: 48%
Pressure: 101.8 kPa

Test Equipment:

Asset #	Description	Manufacturer	Model	Calibration Date	Cal Due Date
P05411	Attenuator	Weinschel	54A-10	1/19/2018	1/19/2020
P07192	Cable	Astro	32022-29094K-29094K-48TC	10/9/2017	10/9/2019
P07191	Cable	Astro	32022-29094K-29094K-48TC	10/30/2017	10/30/2019
03418	Signal Generator	Agilent	E4438C	6/19/2017	6/19/2019
03471	Spectrum Analyzer	Agilent	E4440A	1/18/2018	1/18/2020

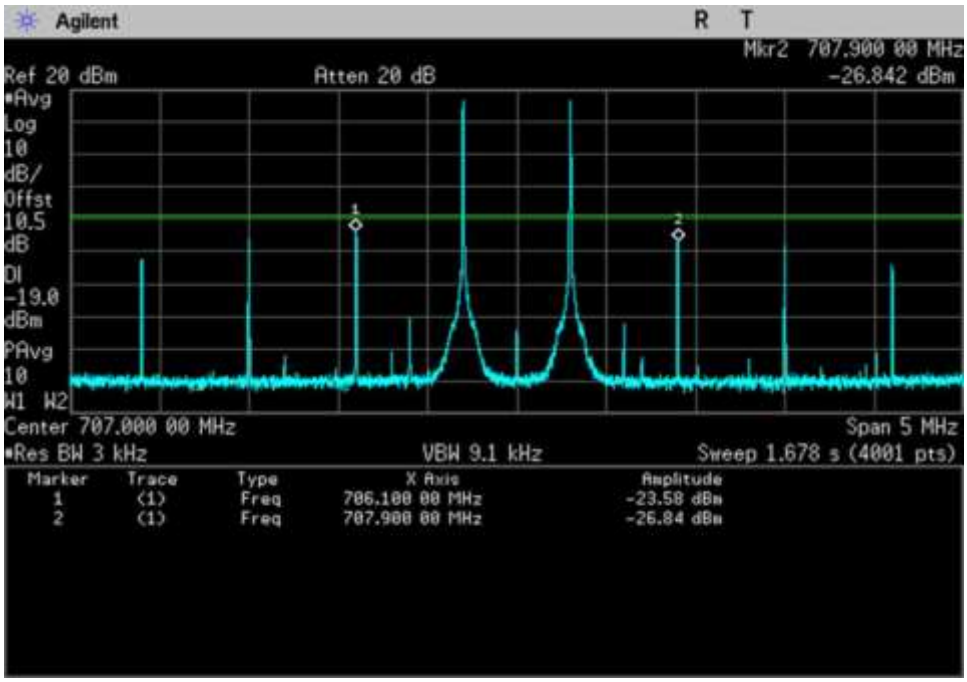
Summary of Results

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

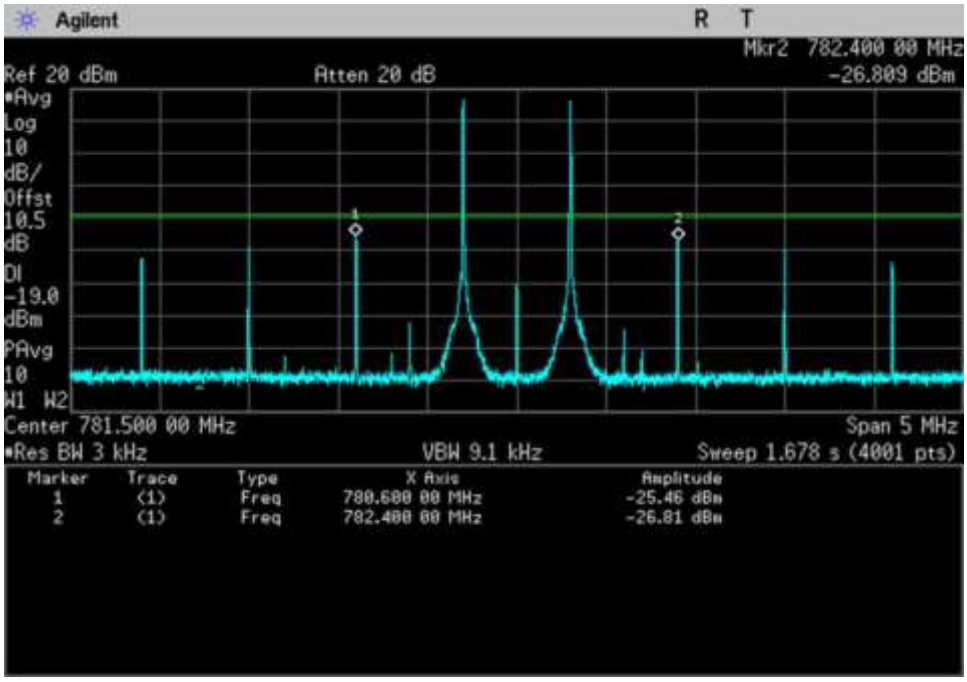
Inter Modulation Product			
Freq (MHz)	Pre AGC (dBm)	Limit (dBm)	Results
UL 1710-1755	-21.4	-19	Pass
UL 1850-1915	-21.3	-19	Pass
UL 824-894	-23.9	-19	Pass
UL 698-716	-23.6	-19	Pass
UL 776-787	-25.5	-19	Pass
DL 2110-2155	-45.6	-19	Pass
DL 1930-1995	-38.4	-19	Pass
DL 869-894	-40.0	-19	Pass
DL 728-746	-37.3	-19	Pass
DL 746-757	-37.8	-19	Pass

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

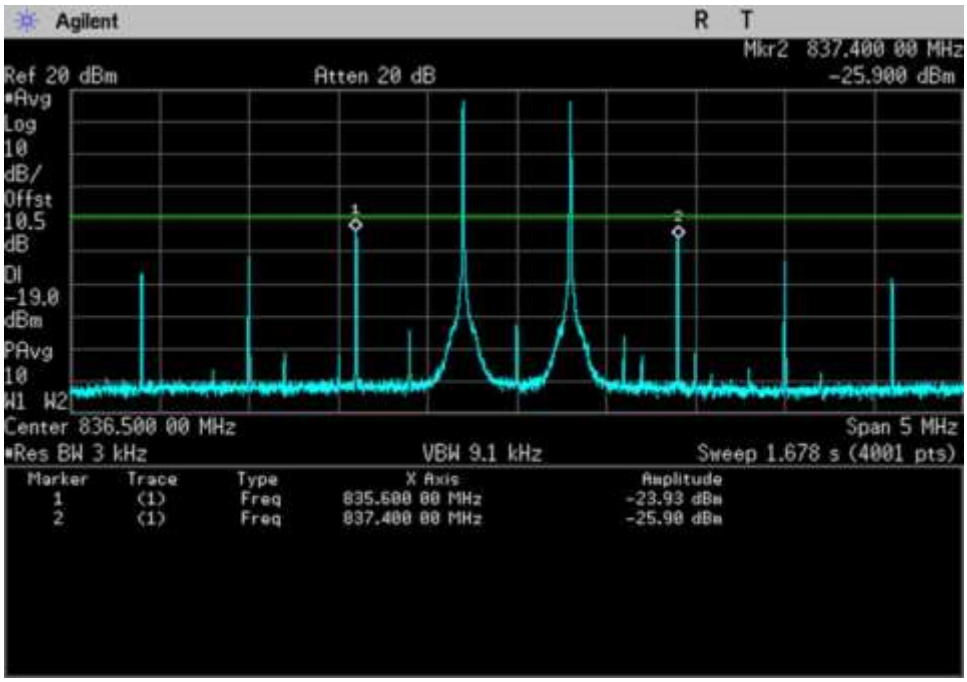
Plots



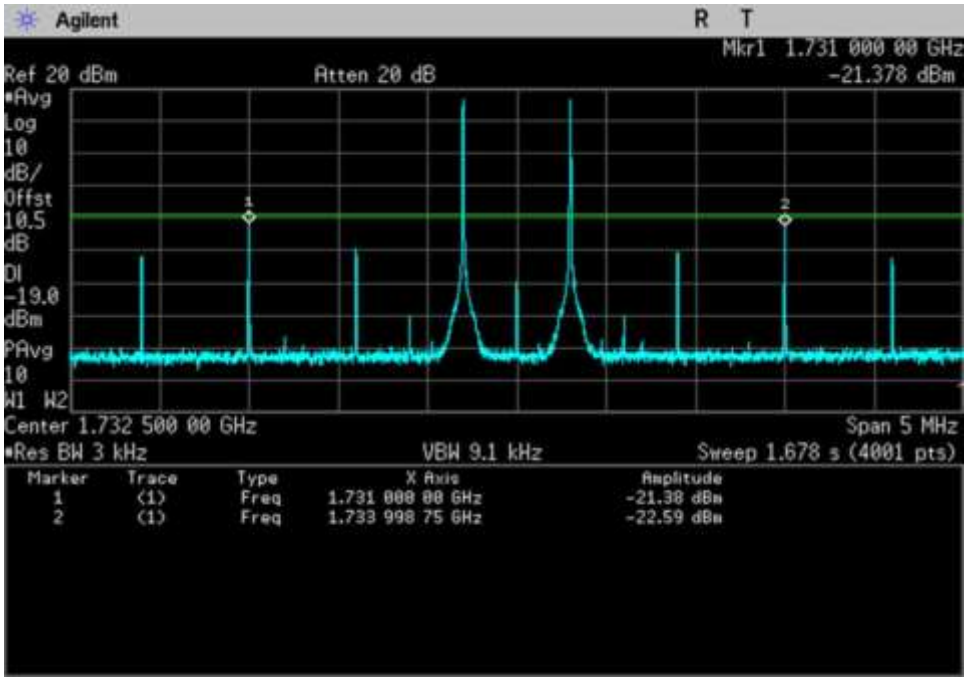
7.4_Intermod_UL_698-716MHz



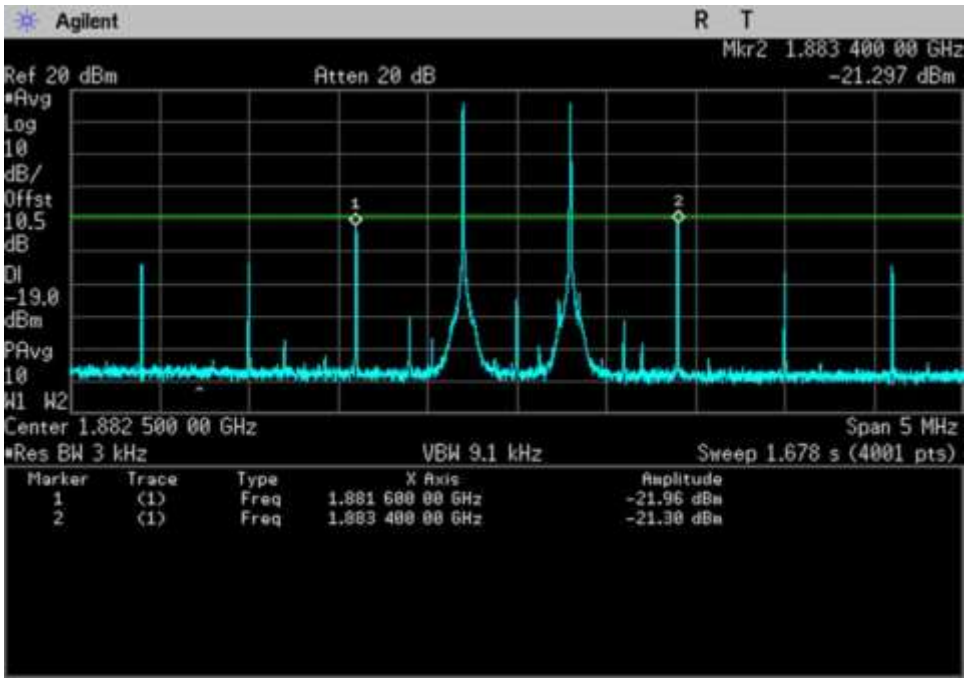
7.4_Intermod_UL_776-787MHz



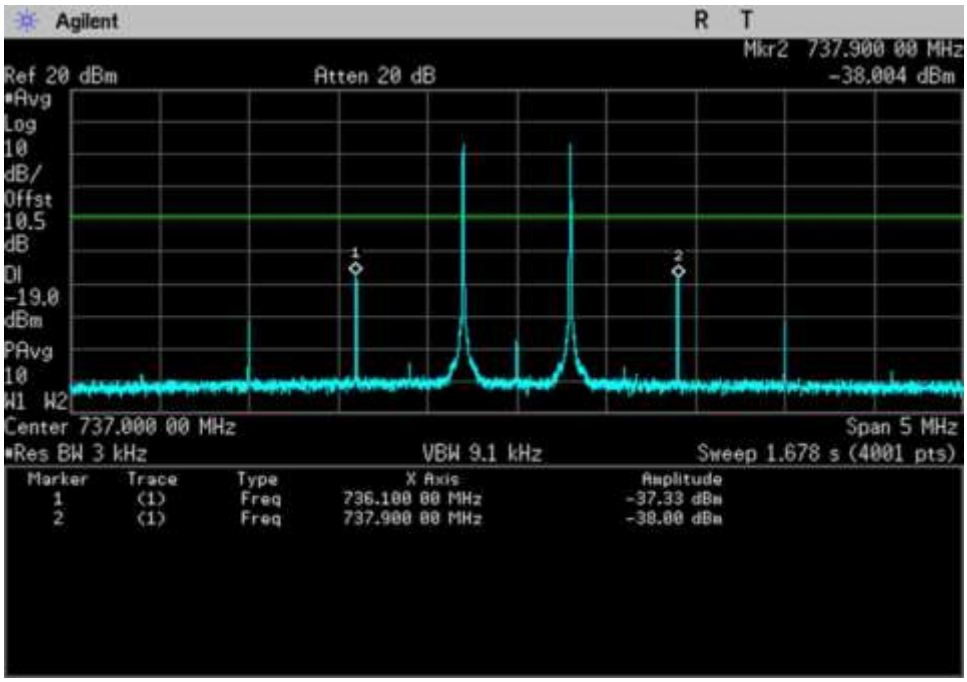
7.4_Intermod_UL_824-849MHz



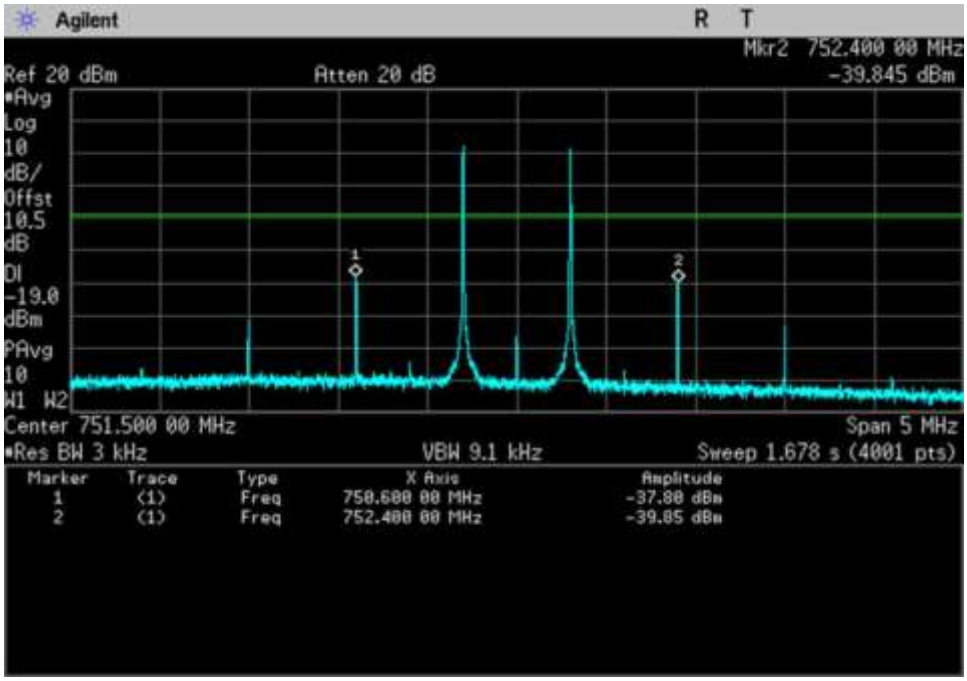
7.4_Intermod_UL_1710-1755MHz



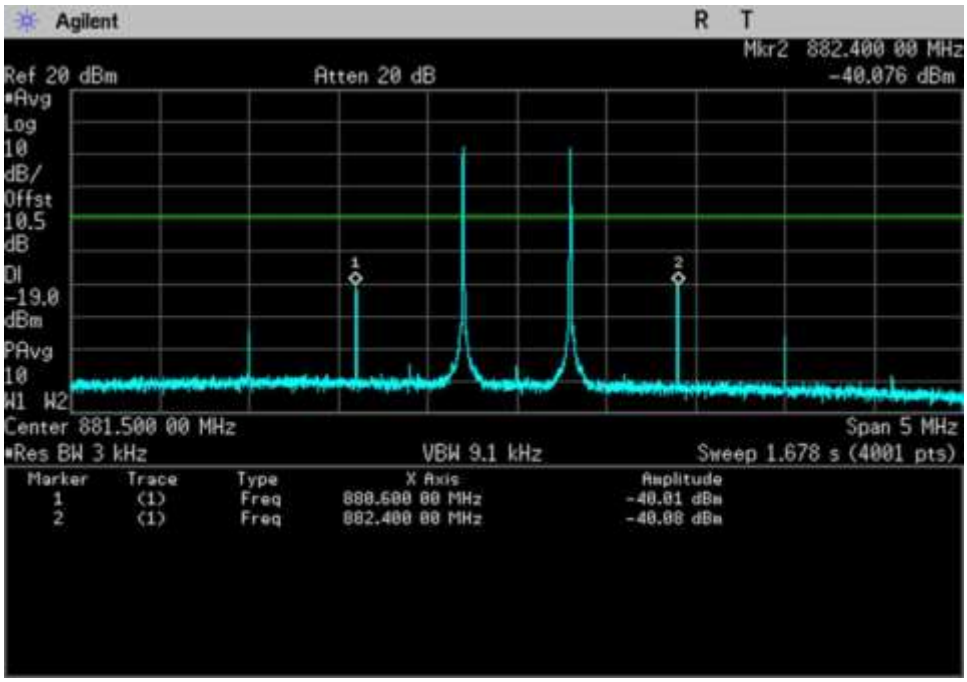
7.4_Intermod_UL_1850-1915MHz



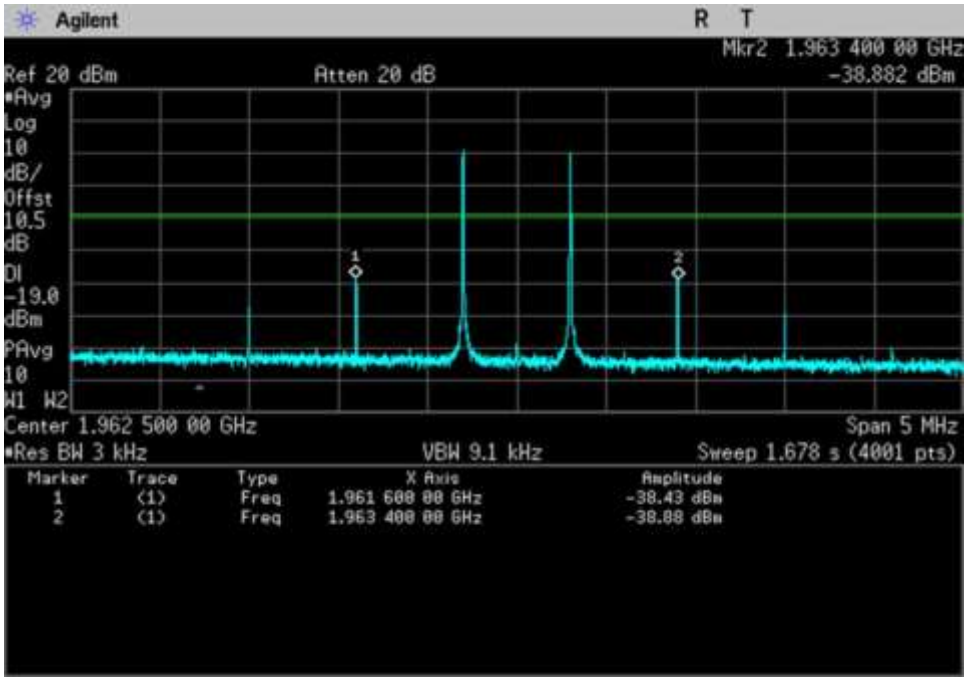
7.4_Intermod_DL_728-746MHz



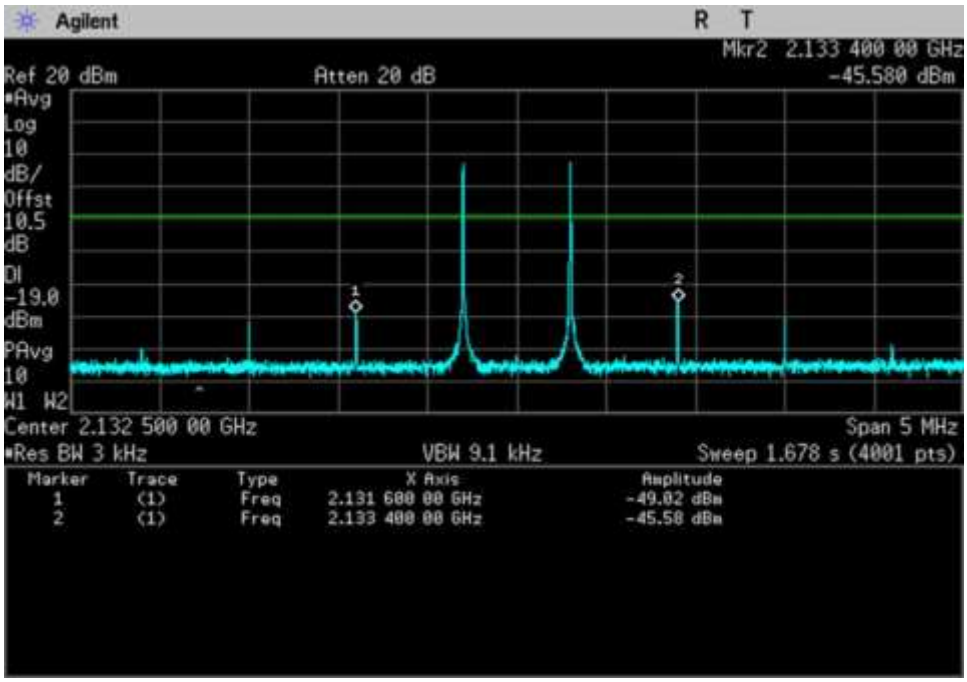
7.4_Intermod_DL_746-757MHz



7.4_Intermod_DL_869-894MHz



7.4_Intermod_DL_1930-1995MHz+10dB



7.4_Intermod_DL_2110-2155MHz

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 #:	**97491**	Date:	10/13/2015
Test Type:	**Conducted Emissions**	Time:	10:54:49
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

The equipment under test (EUT) is a Fixed CMRS Wideband Consumer Booster with a Wi-Fi Router and TV amplifier installed. The CMRS DL signal and the Wi-Fi Signal are combined at the diplexer and transmit via the indoor antenna.
The Consumer booster UL and DL power and gain parameters are initially measured with Wi-Fi transmitting at mid channel using sequentially 802.11b, g, n20 and n40 signal. Since no significant change in measured power was observed, all other parameters are obtained with Wi-Fi transmitting at Mid channel, 802.11b.
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
All adjustable settings on the test sample are set at max gain.

Test environment conditions: Temperature: 20.6°C, Relative Humidity: 42%, Pressure: 101.5kPa

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 FCC document referenced 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:

Asset #/Serial #	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: Indicated in the plots below, all OBE are under the limit of -19dBm.

GSM

Low

Out of Band Emission			
Freq	Pre AGC	Max input	Limit
MHz	dBm	+0dBm	dBm
UL1710-1755	-26.65	-25.62	-19.0
UL1850-1915	-25.67	-25.10	-19.0
UL824-894	-25.05	-24.74	-19.0
UL 698-716	-25.84	-24.71	-19.0
UL776-787	-22.88	-22.34	-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	-25.59	-22.28	-19.0
DL 746-757	< -39.00	< -39.00	-19.0

High

Out of Band Emission			
Freq	Pre AGC	Max input	Limit
MHz	dBm	+0dBm	dBm
UL1710-1755	-25.35	-24.52	-19.0
UL1850-1915	-29.16	-29.93	-19.0
UL824-894	-26.55	-26.10	-19.0
UL 698-716	-28.08	-26.28	-19.0
UL776-787	-23.10	-23.58	-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

CDMA

Low

Out of Band Emission			
Freq	Pre AGC	Max input	Limit
MHz	dBm	+0dBm	dBm
UL1710-1755	-36.80	-36.65	-19.0
UL1850-1915	-35.54	-37.33	-19.0
UL824-894	-40.33	-38.79	-19.0
UL 698-716	-45.02	-45.36	-19.0
UL776-787	-41.74	-41.02	-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

Out of Band Emission			
Freq	Pre AGC	Max input	Limit
MHz	dBm	+0dBm	dBm
UL1710-1755	-37.64	-37.38	-19.0
UL1850-1915	-41.05	-38.41	-19.0
UL824-894	-41.28	-41.15	-19.0
UL 698-716	-51.19	-50.91	-19.0
UL776-787	-40.10	-39.35	-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

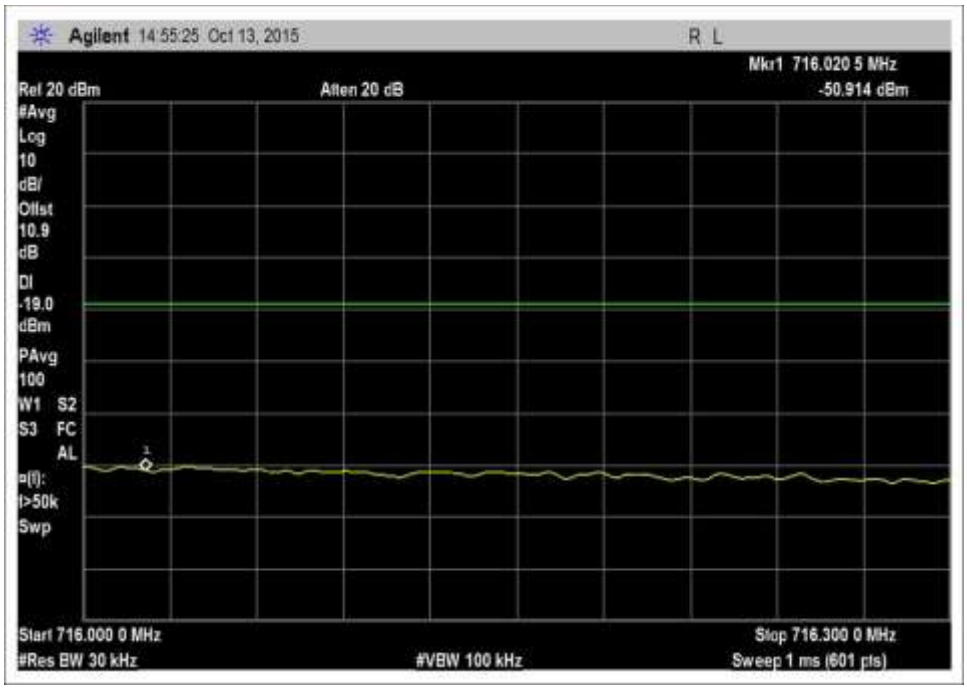
Out of Band Emission			
Freq	Pre AGC	Max input	Limit
MHz	dBm	+0dBm	dBm
UL1710-1755	-34.34	-35.14	-19.0
UL1850-1915	-33.98	-34.26	-19.0
UL824-894	-36.50	-36.43	-19.0
UL 698-716	-39.11	-39.57	-19.0
UL776-787	-36.88	-36.82	-19.0
		-20dBm	
DL2110-2155	< -39.00	< -39.00	-19.0
DL1930-1995	< -39.00	< -39.00	-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

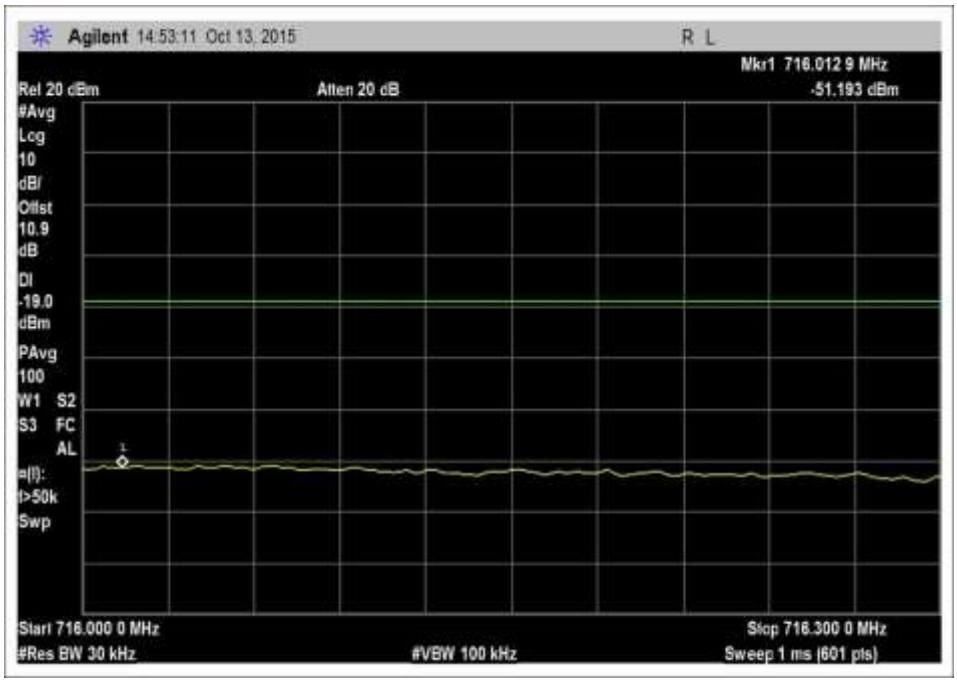
Out of Band Emission			
Freq	Pre AGC	Max input	Limit
MHz	dBm	+0dBm	dBm
UL1710-1755	-33.75	-33.26	-19.0
UL1850-1915	-40.45	-39.20	-19.0
UL824-894	-35.33	-35.35	-19.0
UL 698-716	-43.34	-43.80	-19.0
UL776-787	-36.55	-35.71	-19.0
		-20dBm	
DL2110-2155	< -39.00	< -39.00	-19.0
DL1930-1995	< -39.00	< -39.00	-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

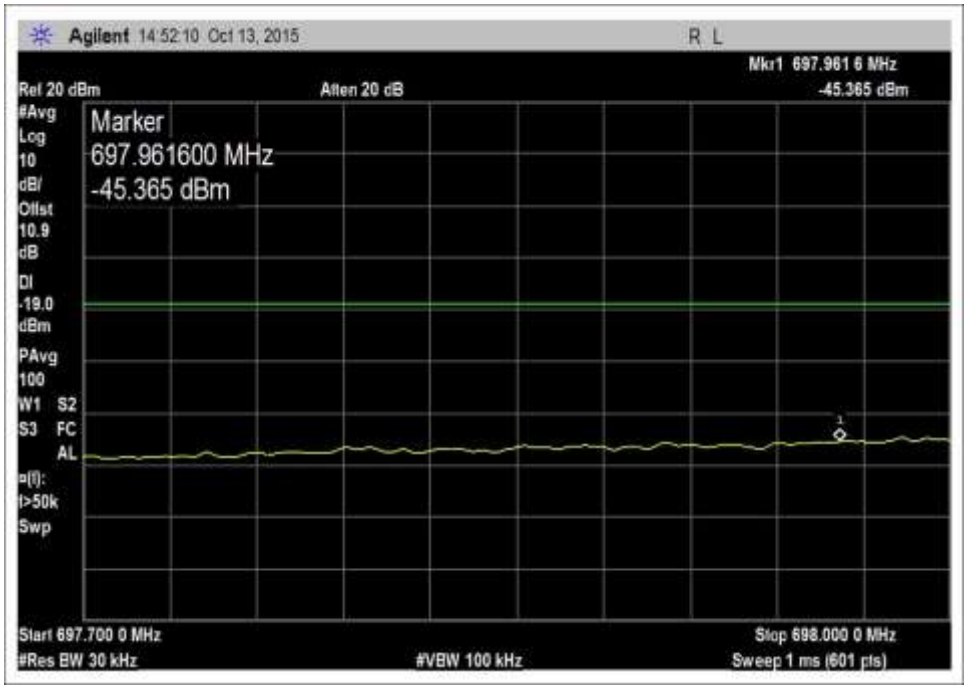
CDMA



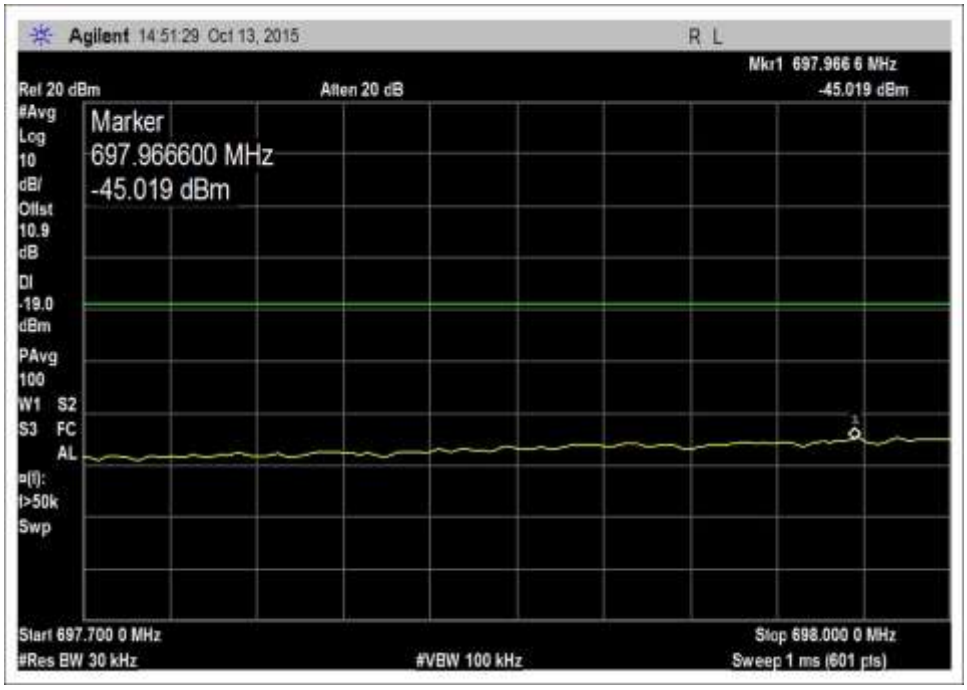
7.5_OBE_UL_698-716MHz_H_Max



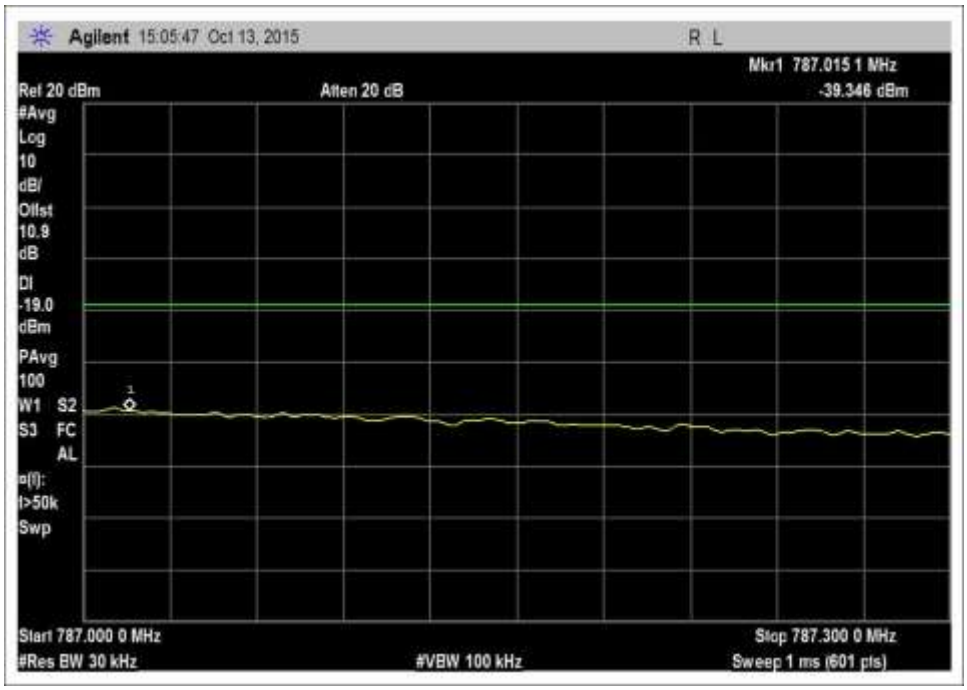
7.5_OBE_UL_698-716MHz_H_PreAGC



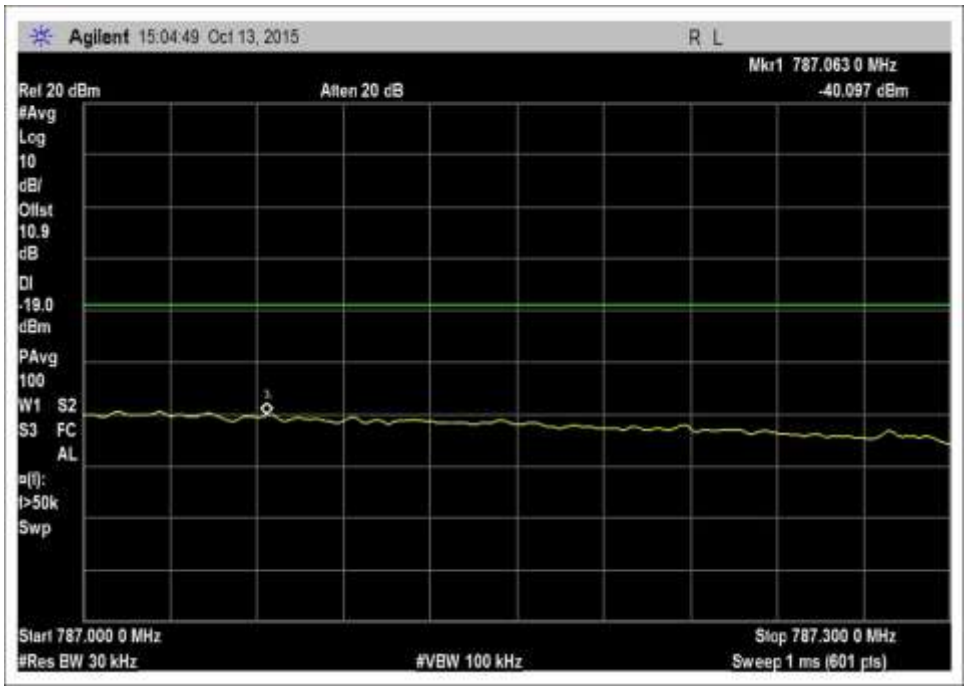
7.5_OBE_UL_698-716MHz_L_Max



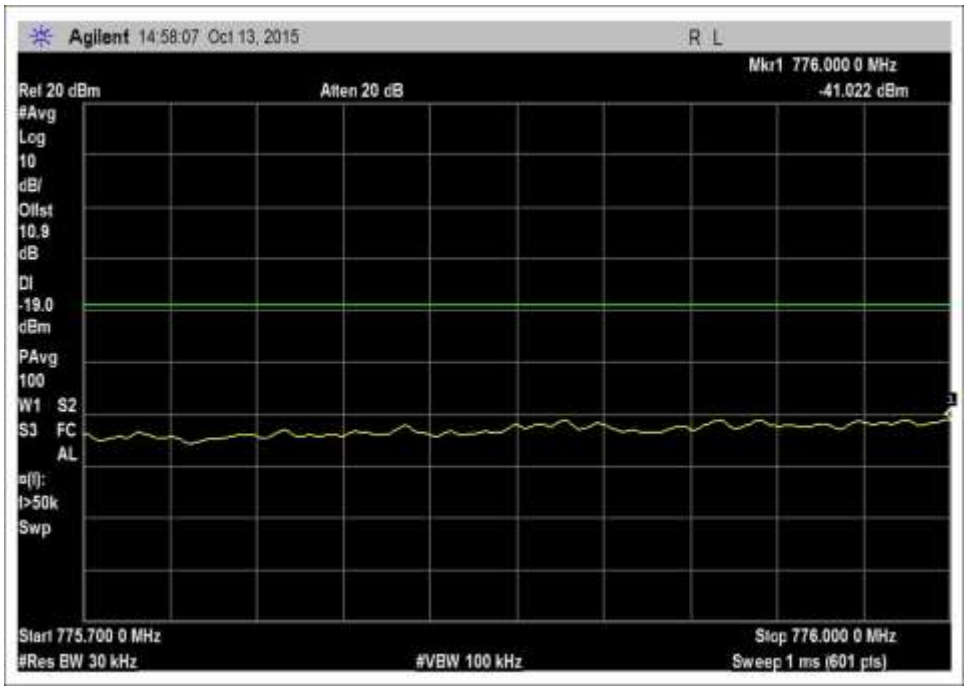
7.5_OBE_UL_698-716MHz_L_PreAGC



7.5_OBE_UL_776-787MHz_H_Max



7.5_OBE_UL_776-787MHz_H_PreAGC



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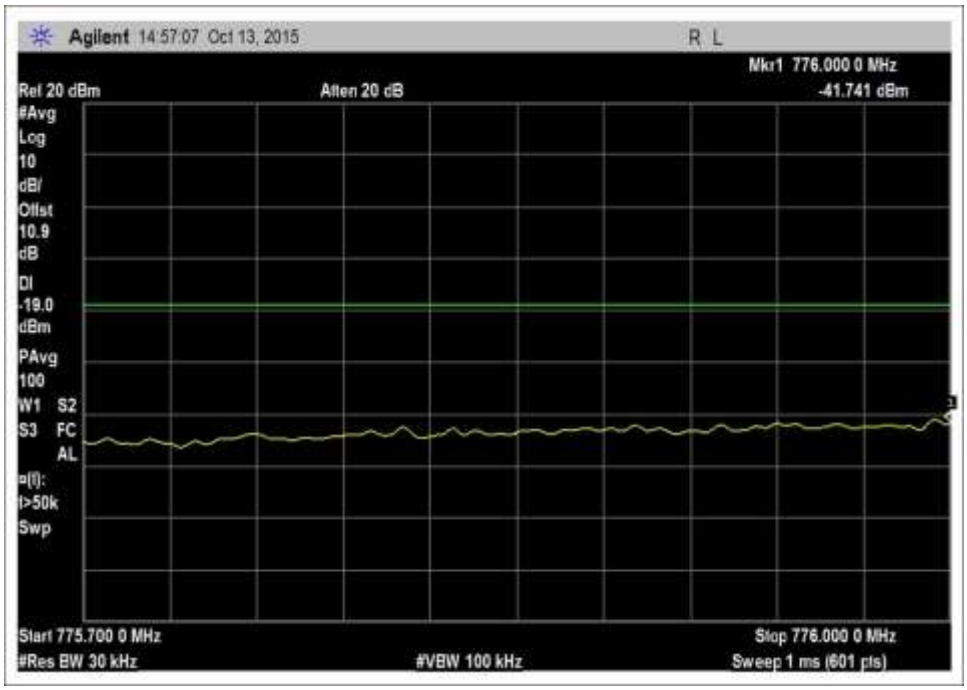
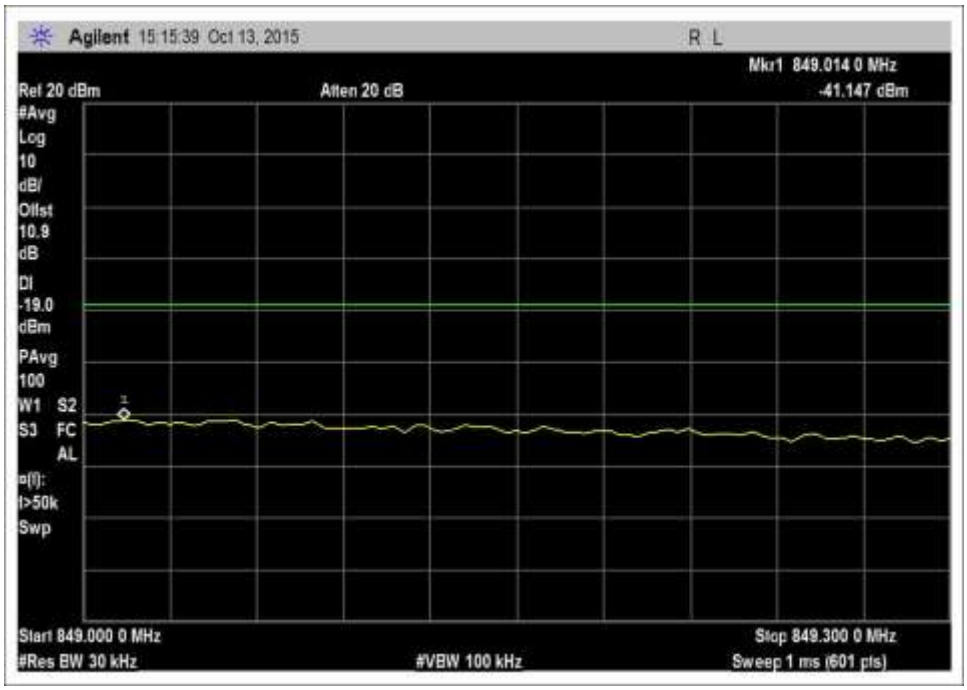
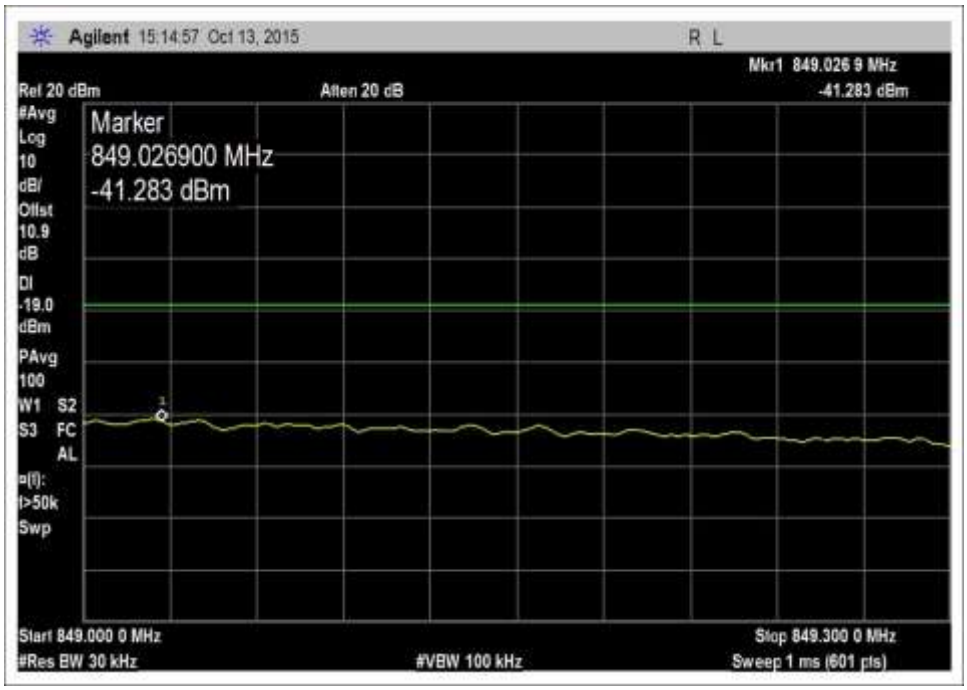


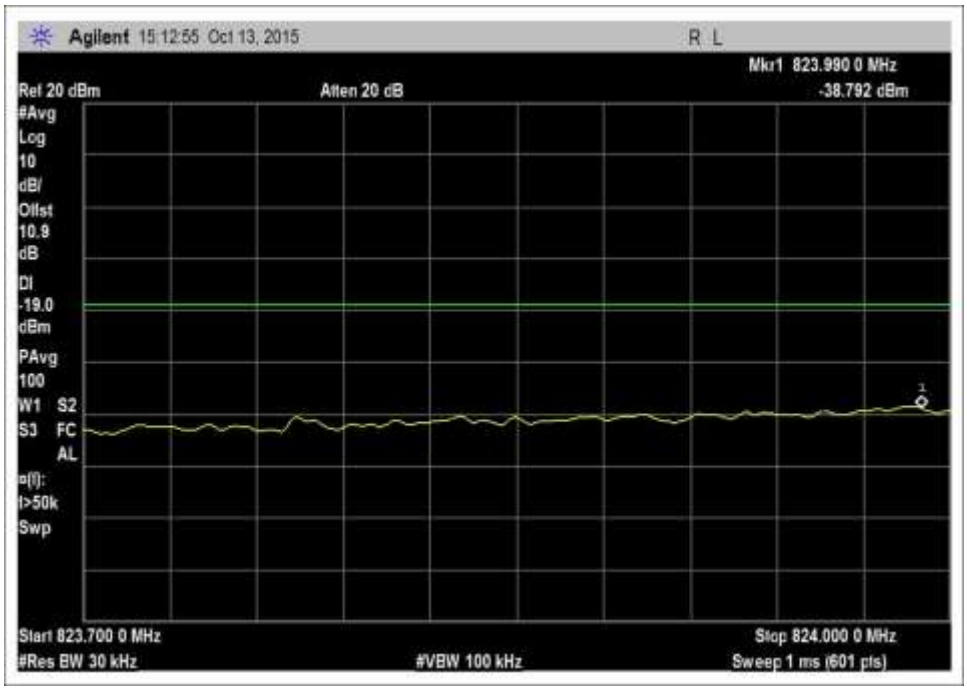
7.5_OBE_UL_776-787MHz_L_PreAGC



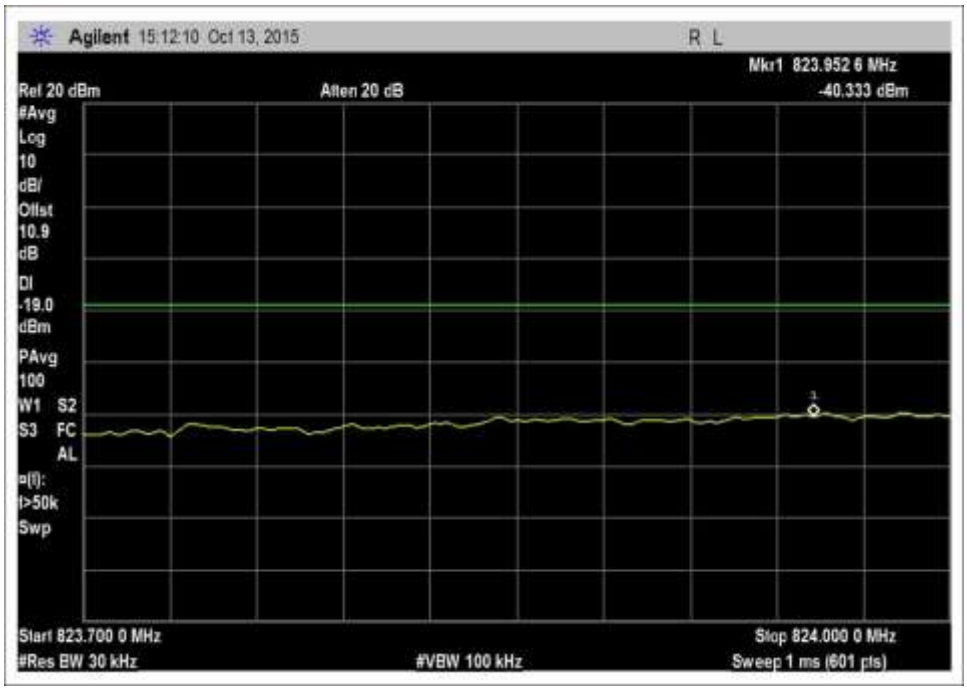
7.5_OBE_UL_824-849MHz_H_Max



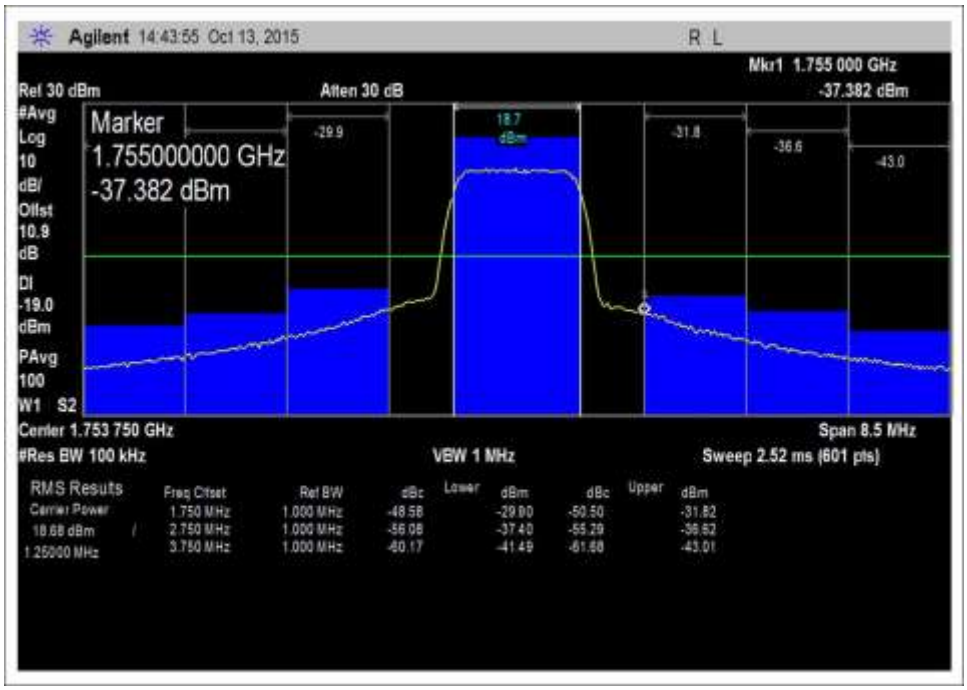
7.5_OBE_UL_824-849MHz_H_PreAGC



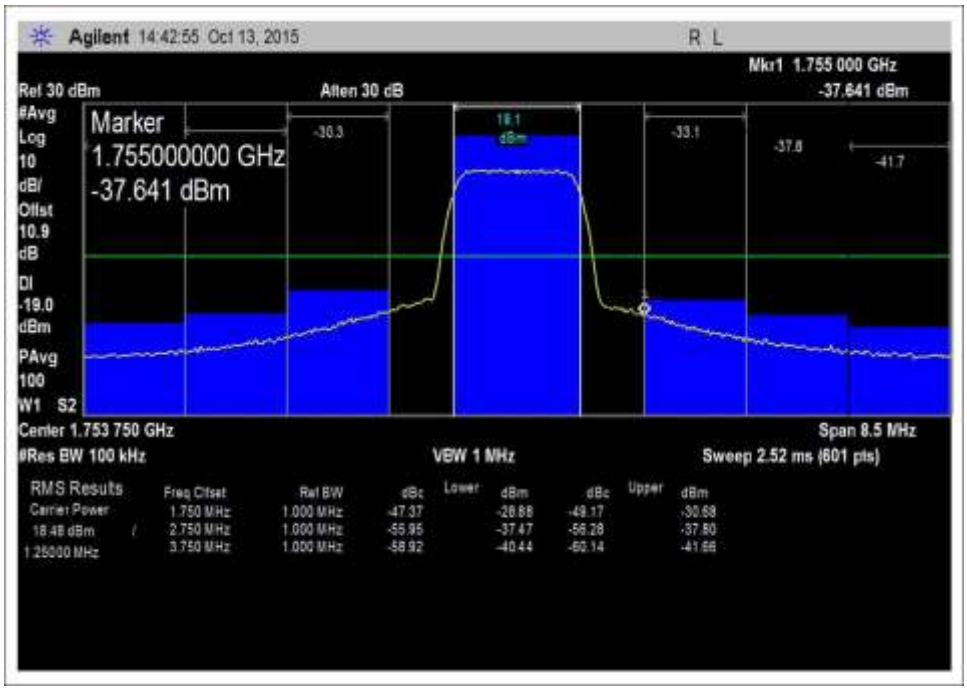
7.5_OBE_UL_824-849MHz_L_Max



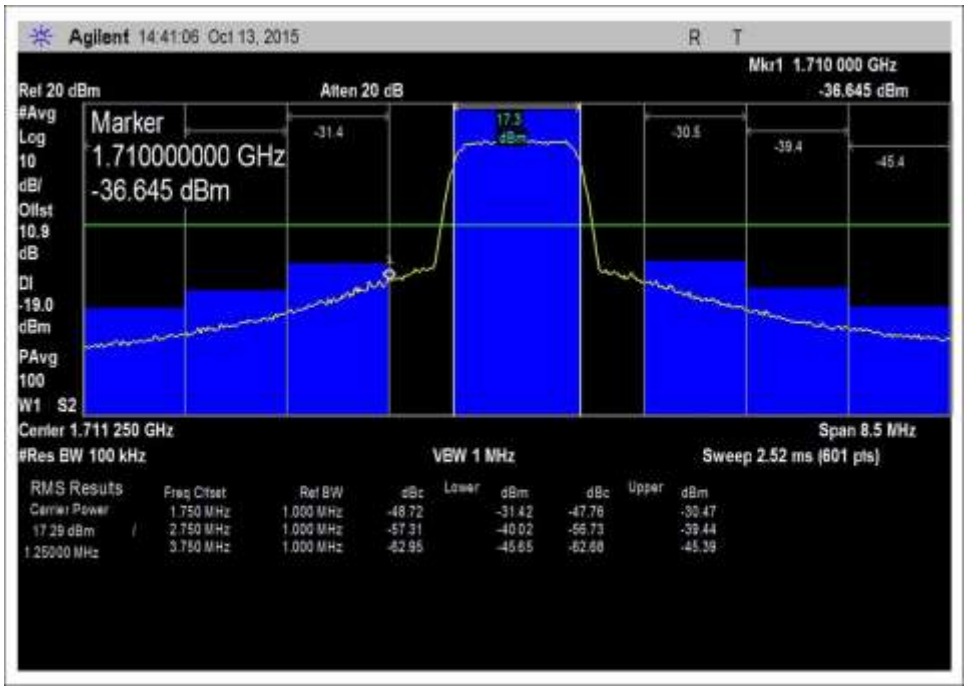
7.5_OBE_UL_824-849MHz_L_PreAGC



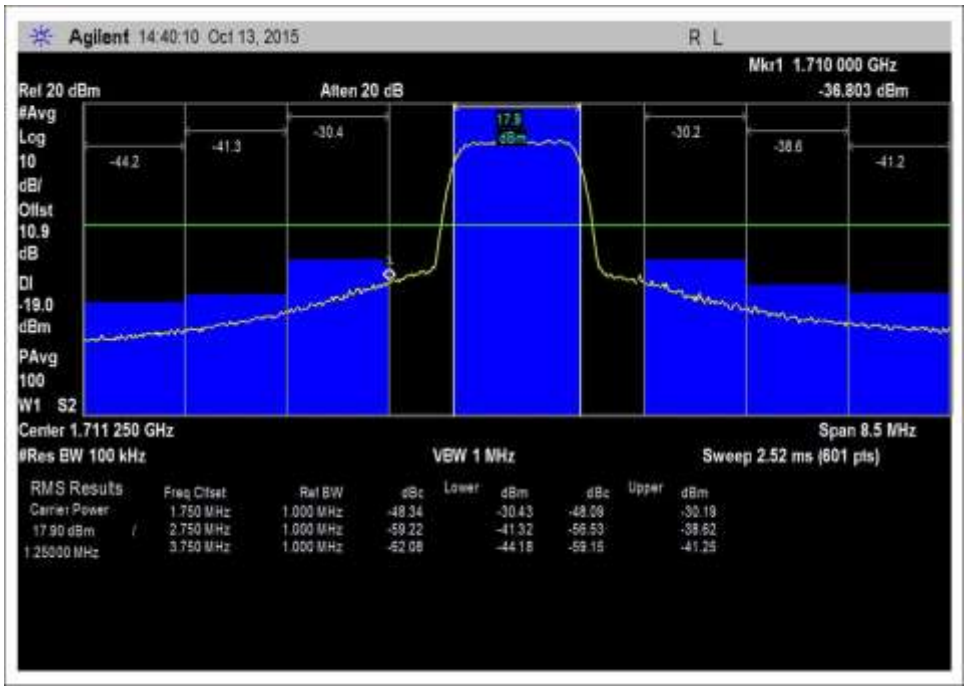
7.5_OBE_UL_1710-1755MHz_H_Max



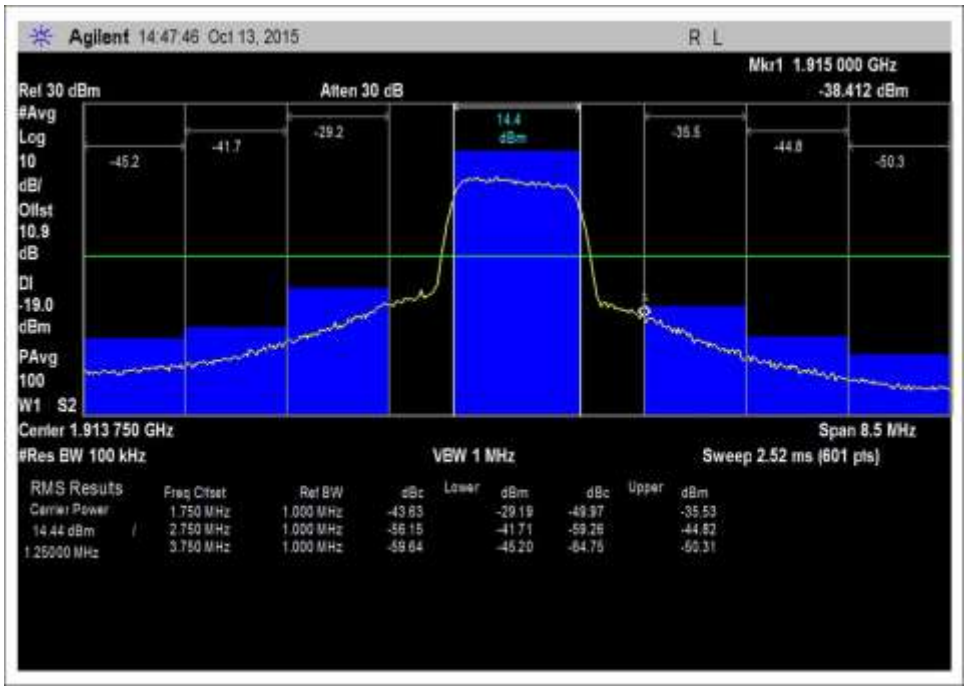
7.5_OBE_UL_1710-1755MHz_H_PreAGC



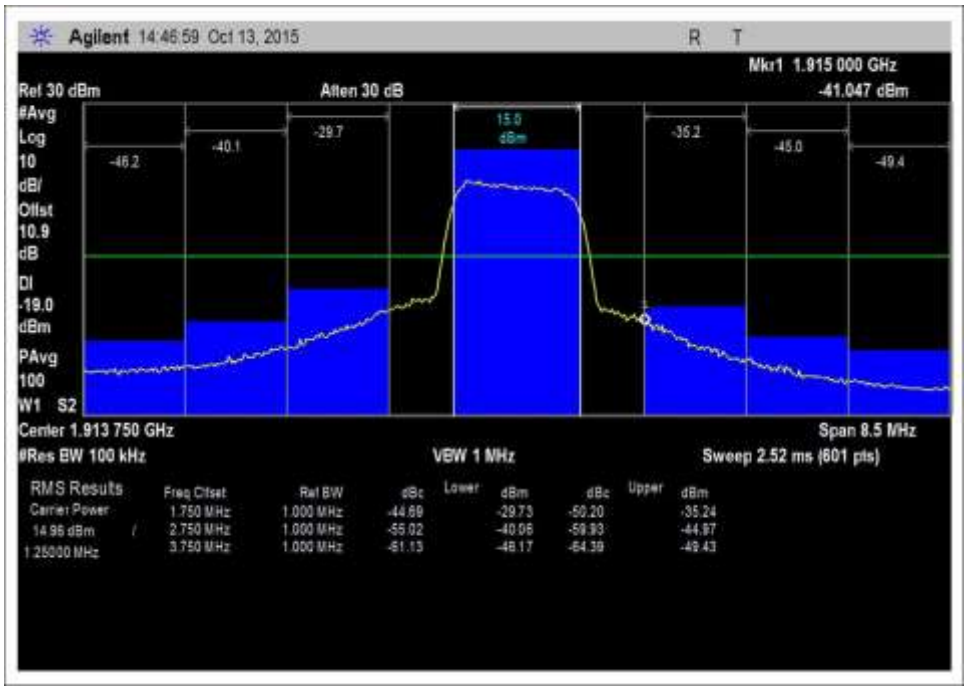
7.5_OBE_UL_1710-1755MHz_L_Max



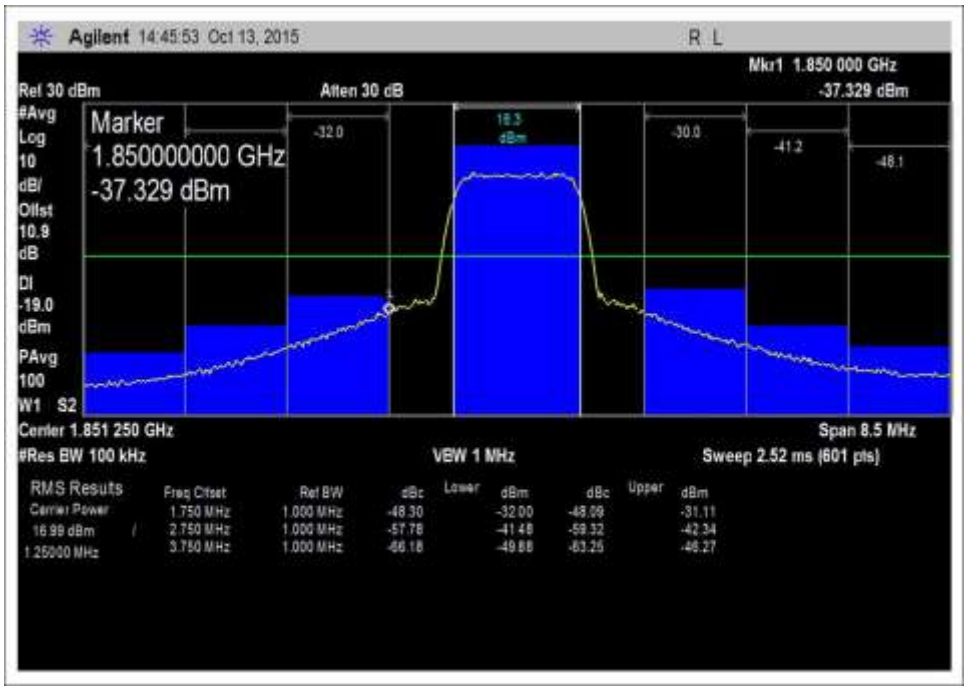
7.5_OBE_UL_1710-1755MHz_L_PreAGC



7.5_OBE_UL_1850-1915MHz_H_Max



7.5_OBE_UL_1850-1915MHz_H_PreAGC



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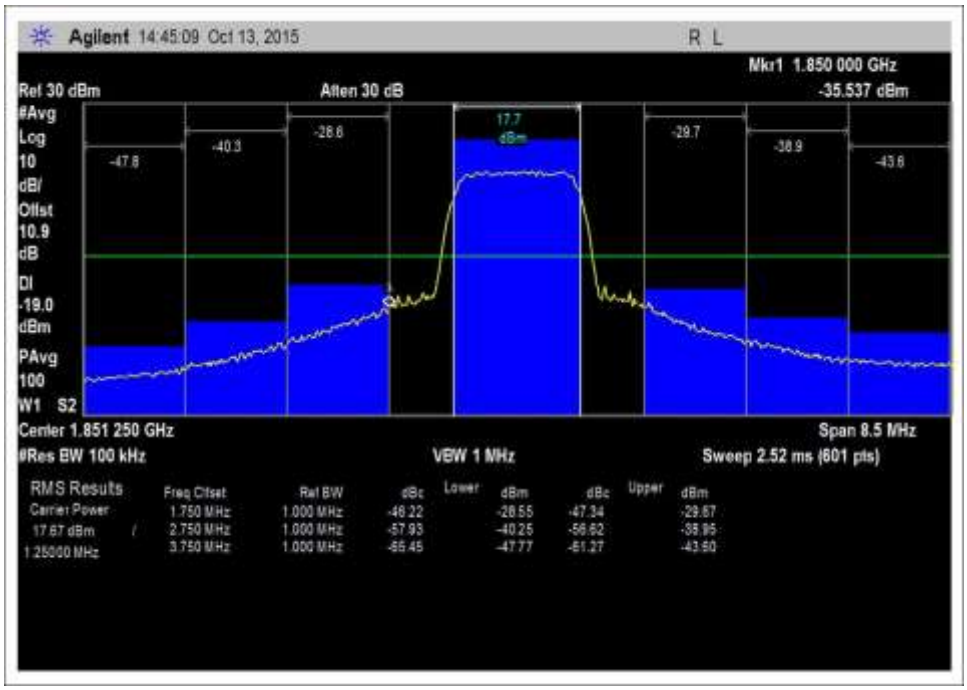

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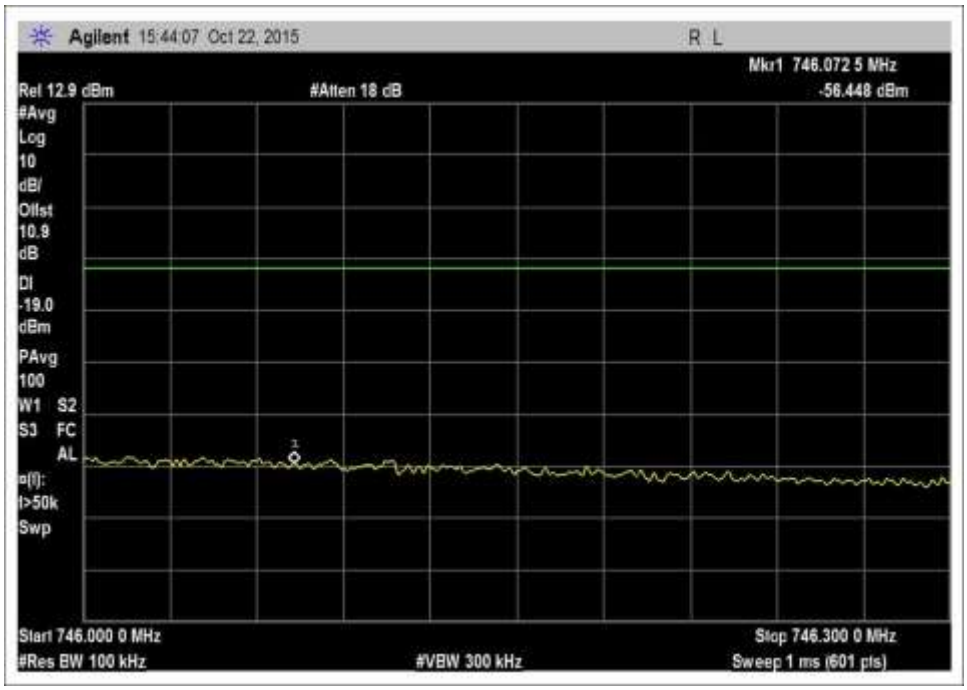
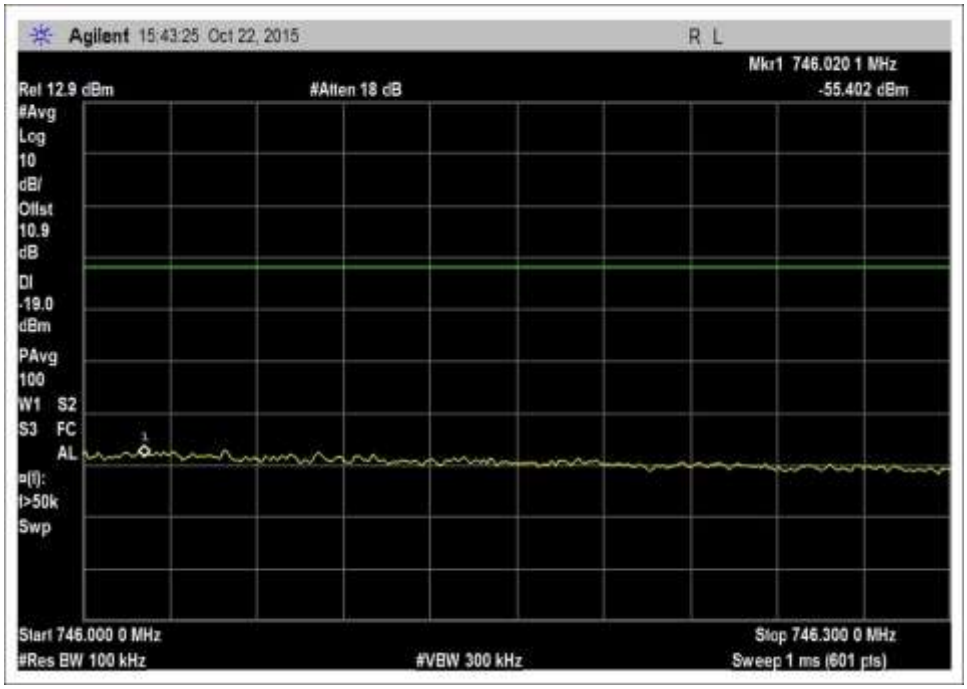


7.5_OBE_DL_728-746MHz_H_Max



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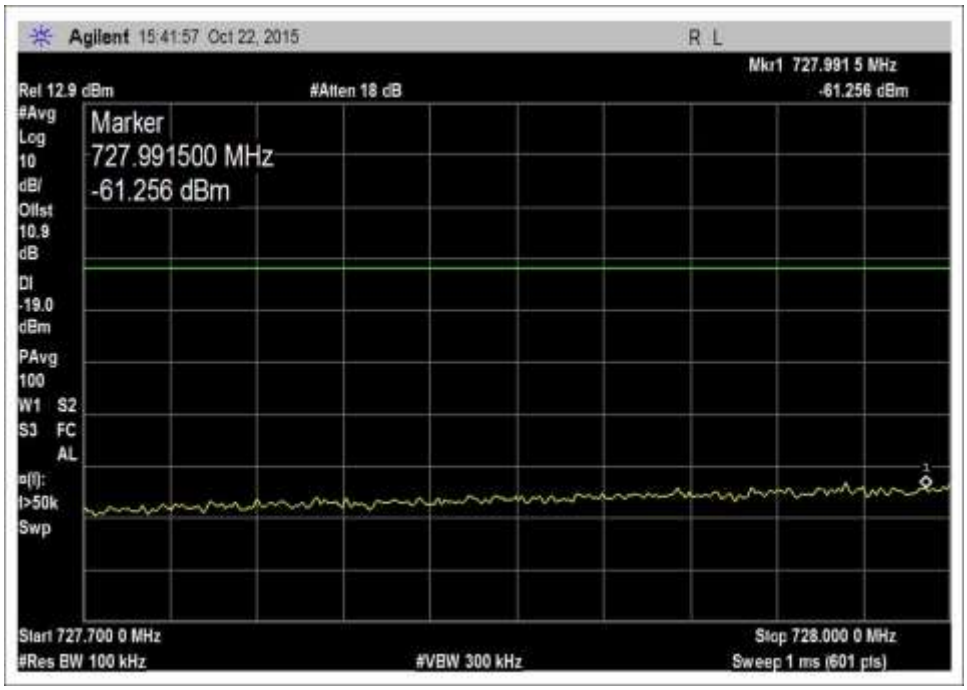

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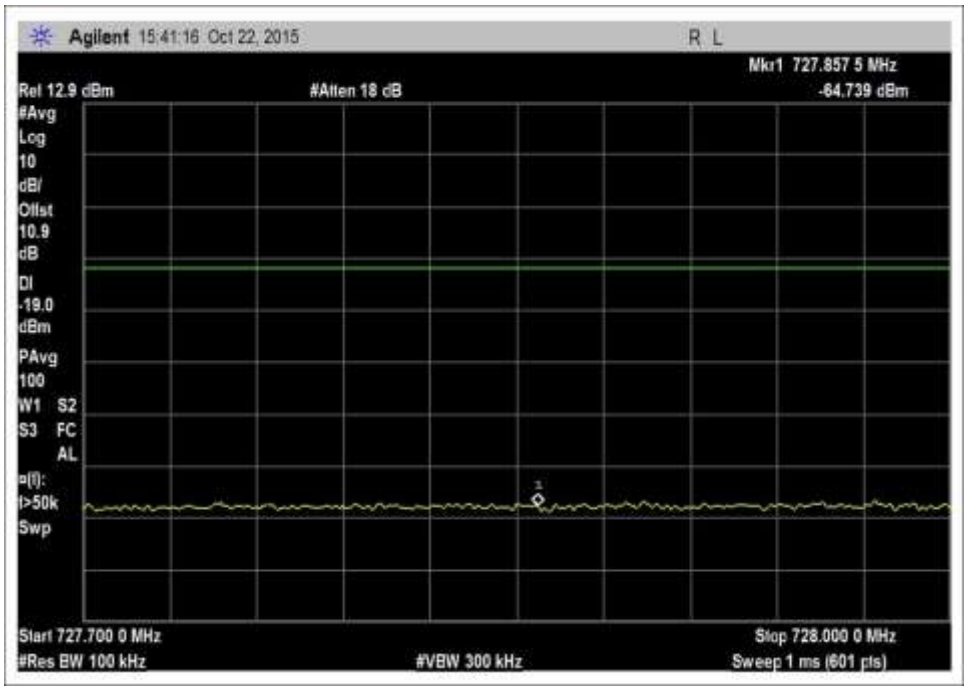

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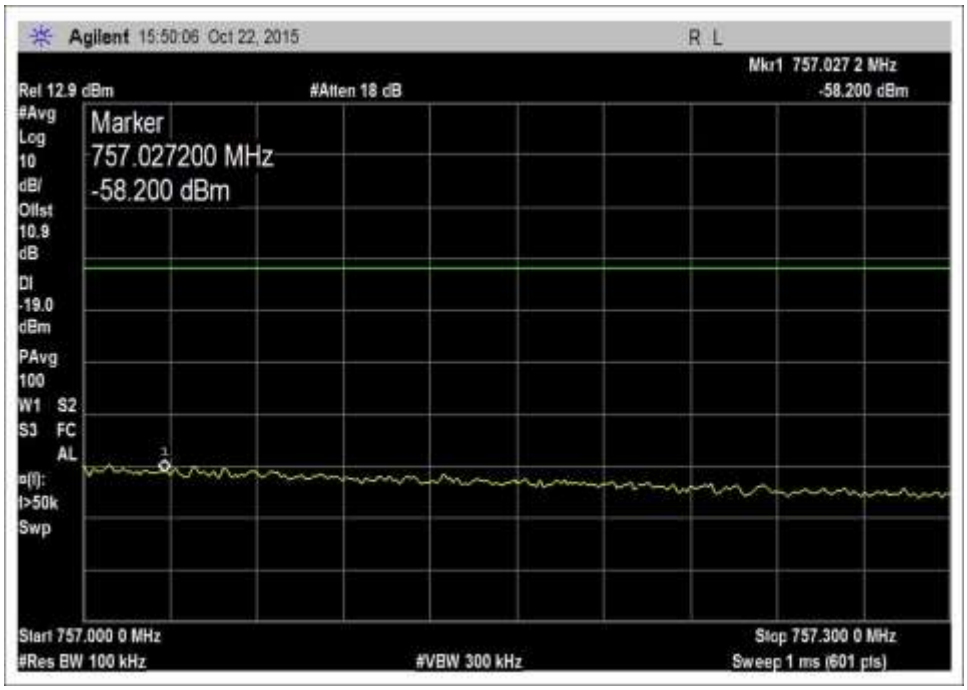
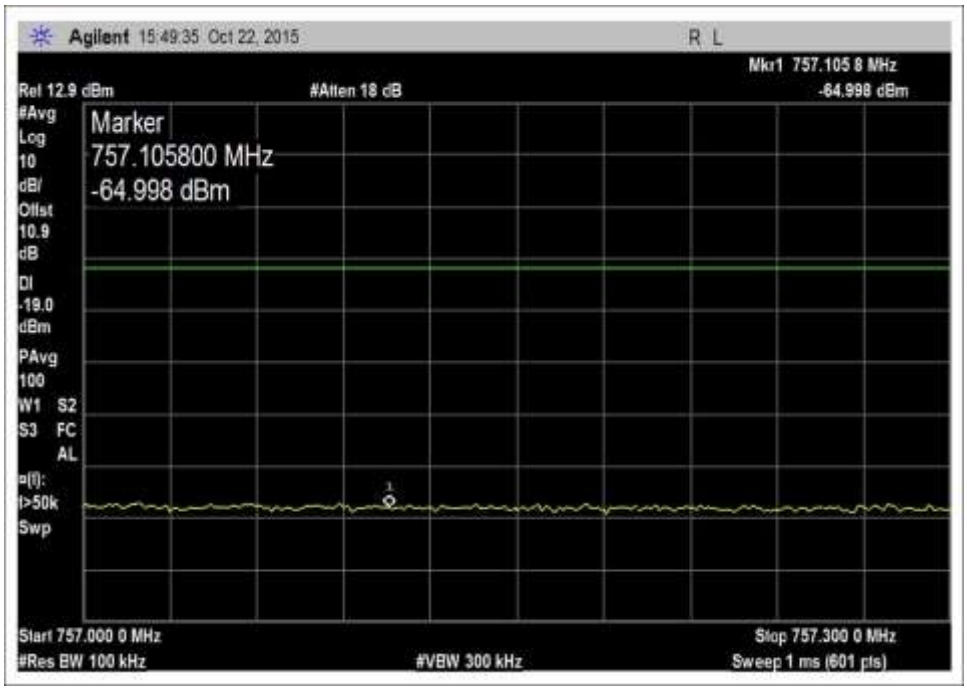
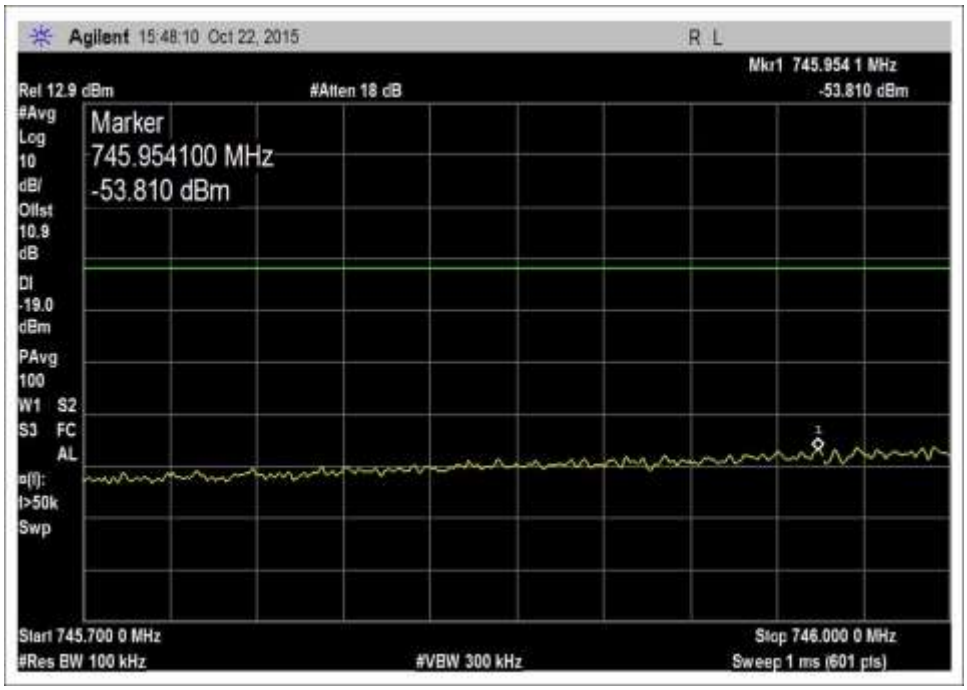


7.5_OBE_DL_746-757MHz_H_Max



7.5_OBE_DL_746-757MHz_H_PreAGC



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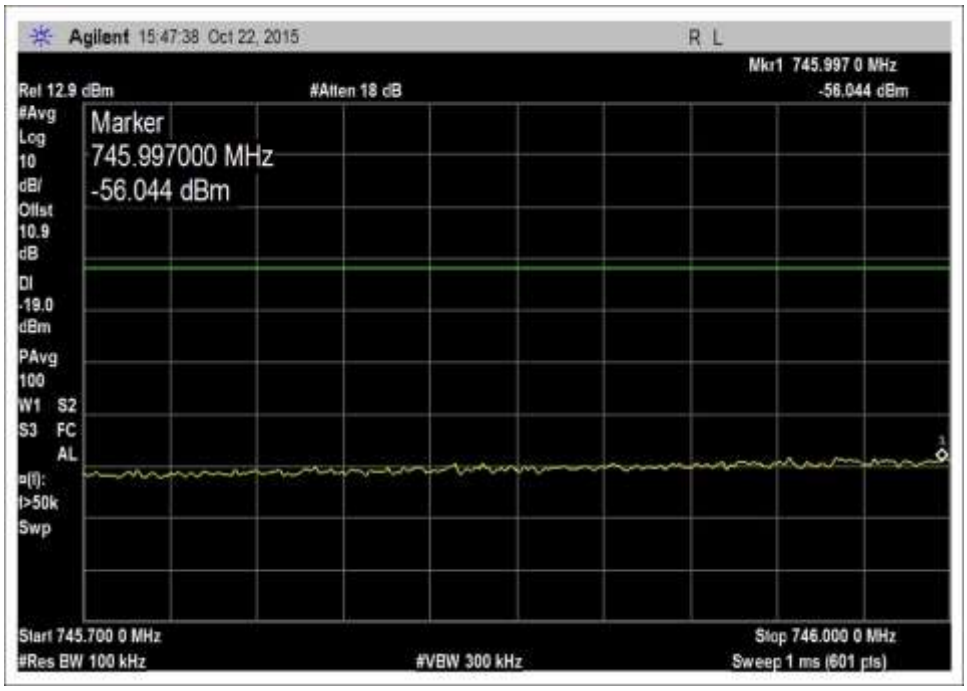

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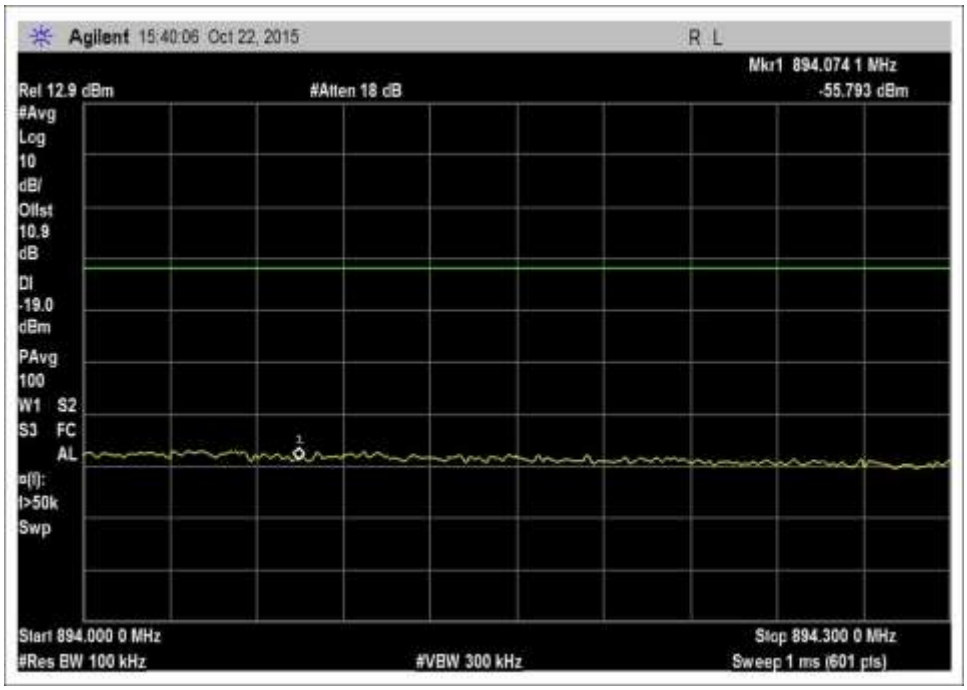
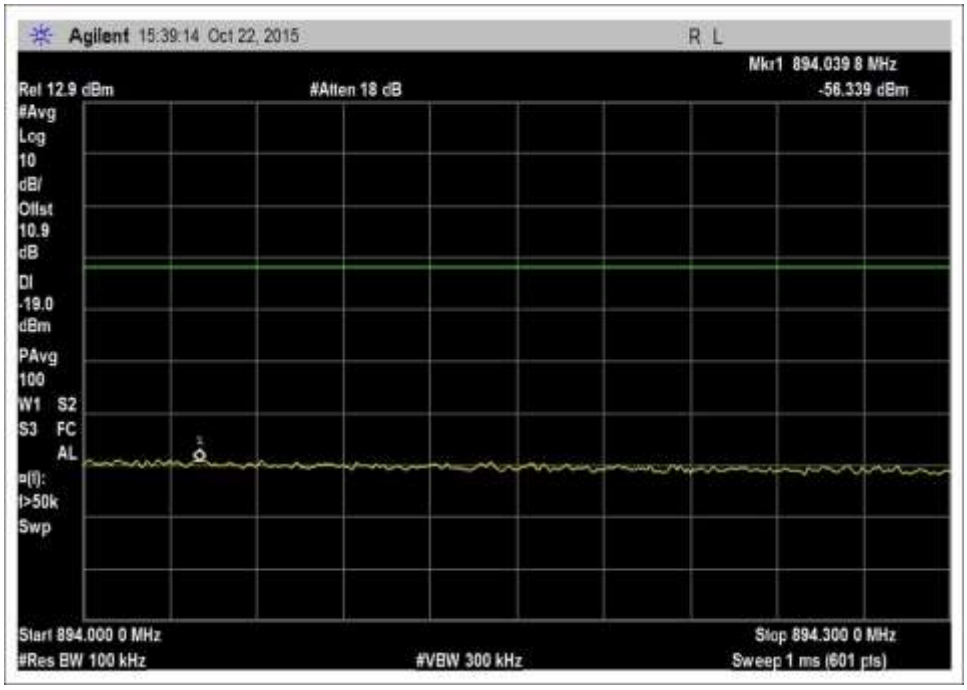


7.5_OBE_DL_869-894MHz_H_Max



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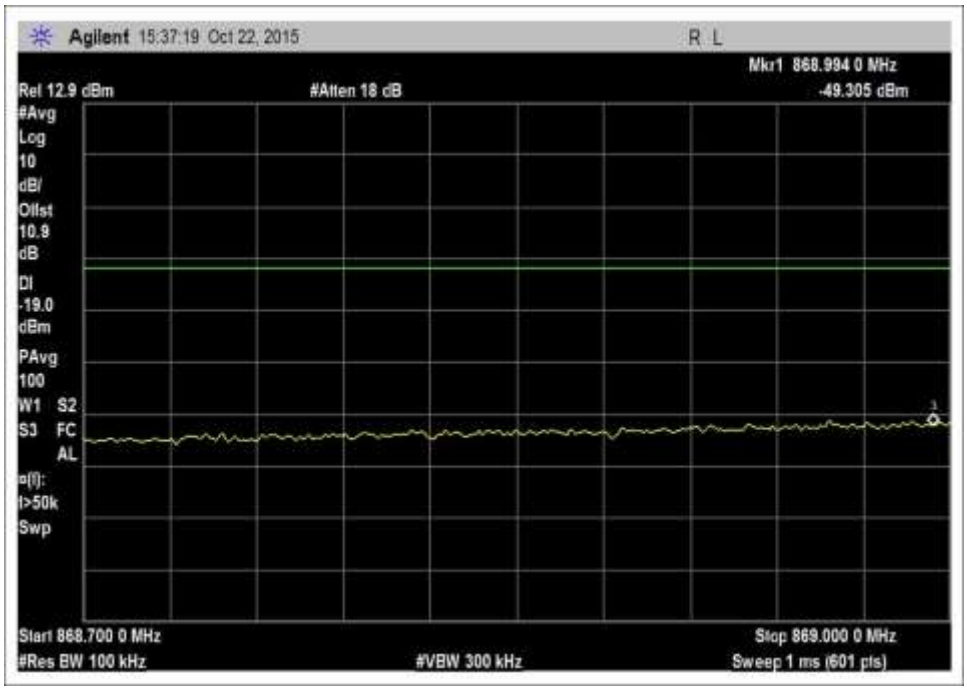

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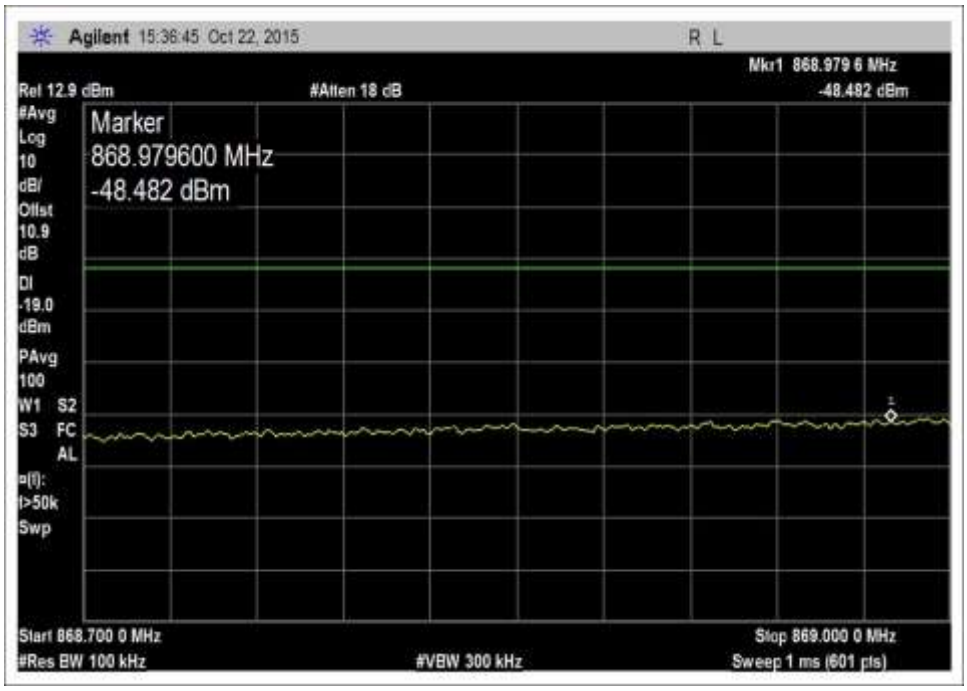
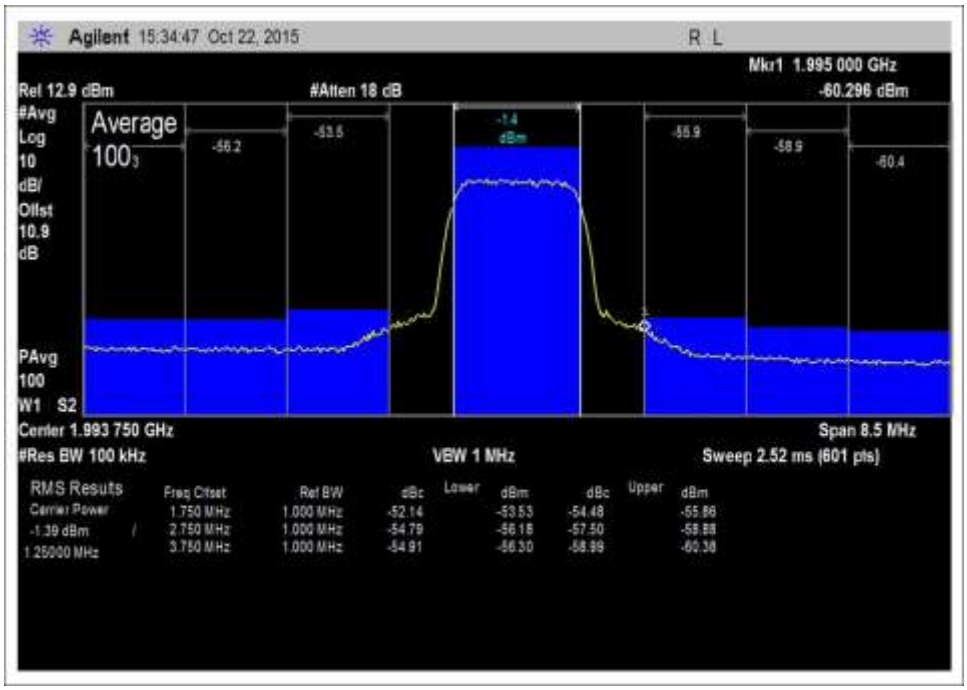
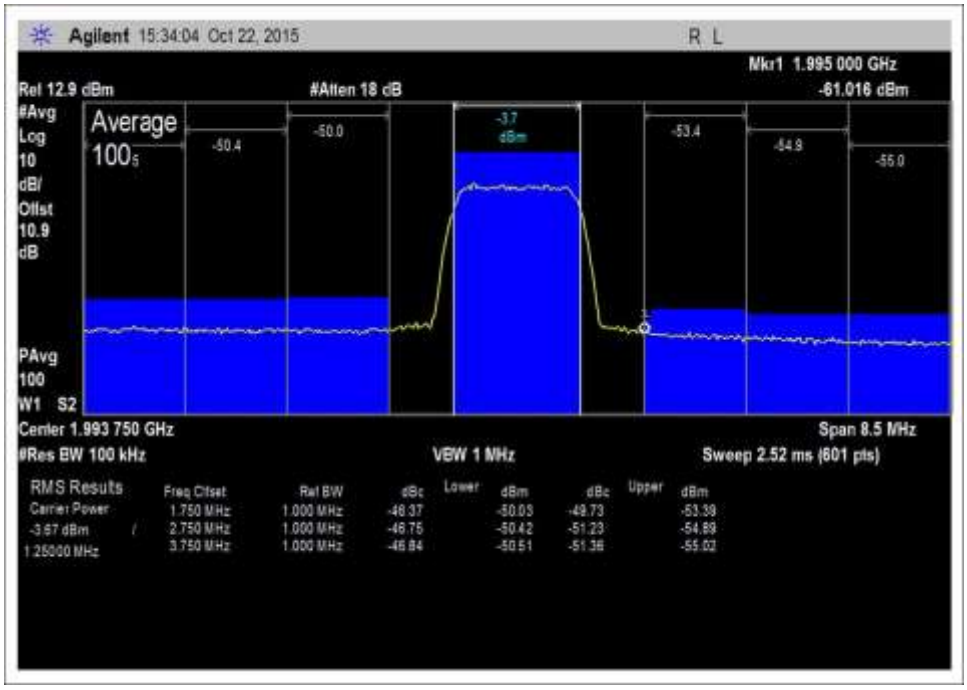


7.5_OBE_DL_869-894MHz_L_PreAGC



7.5_OBE_DL_1930-1995MHz_H_Max



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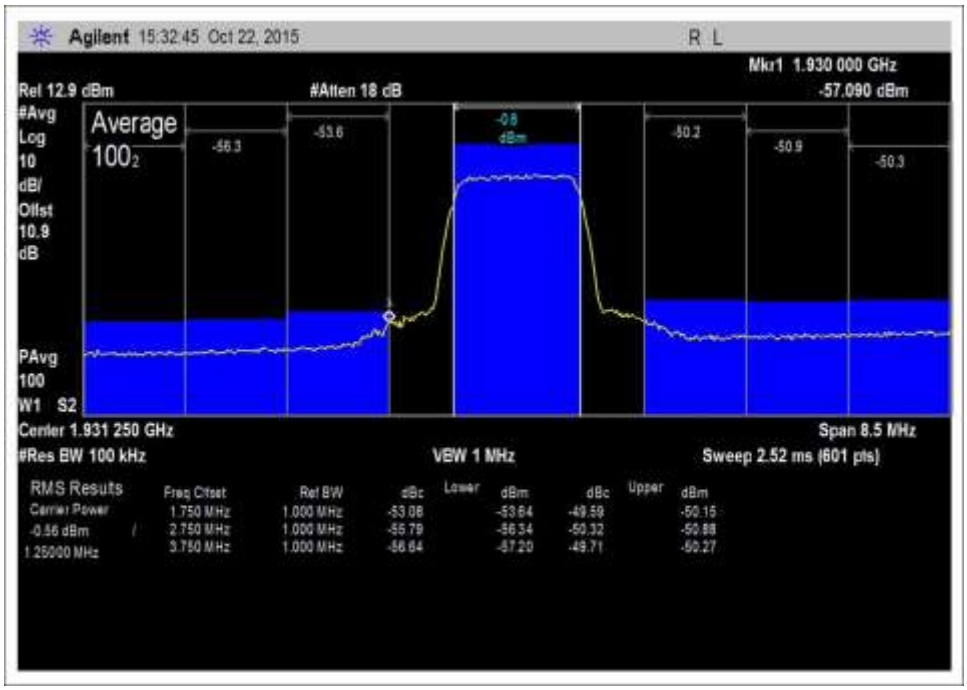

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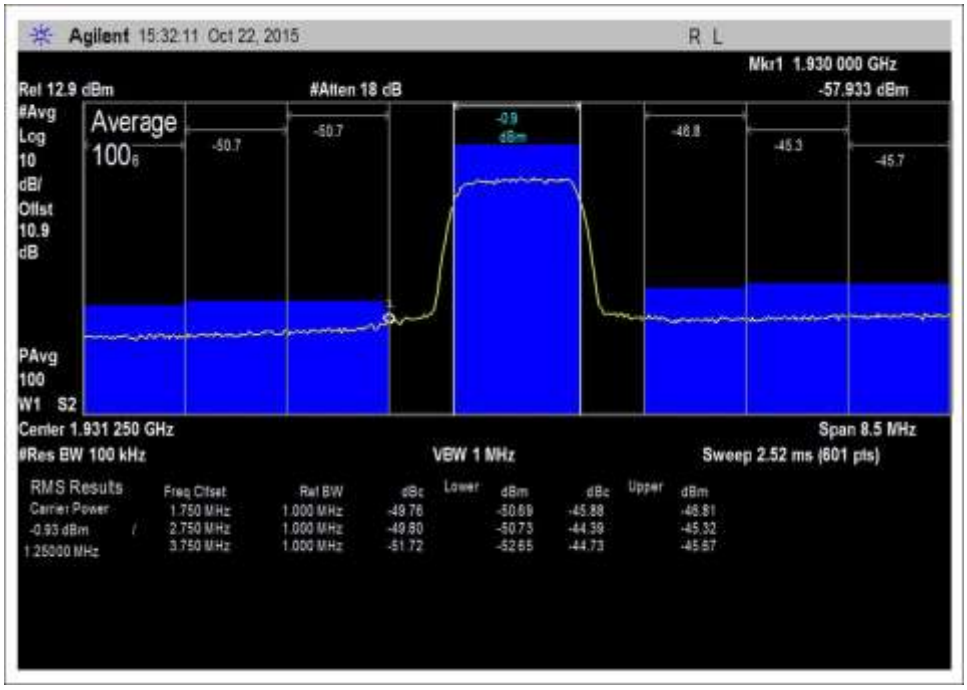

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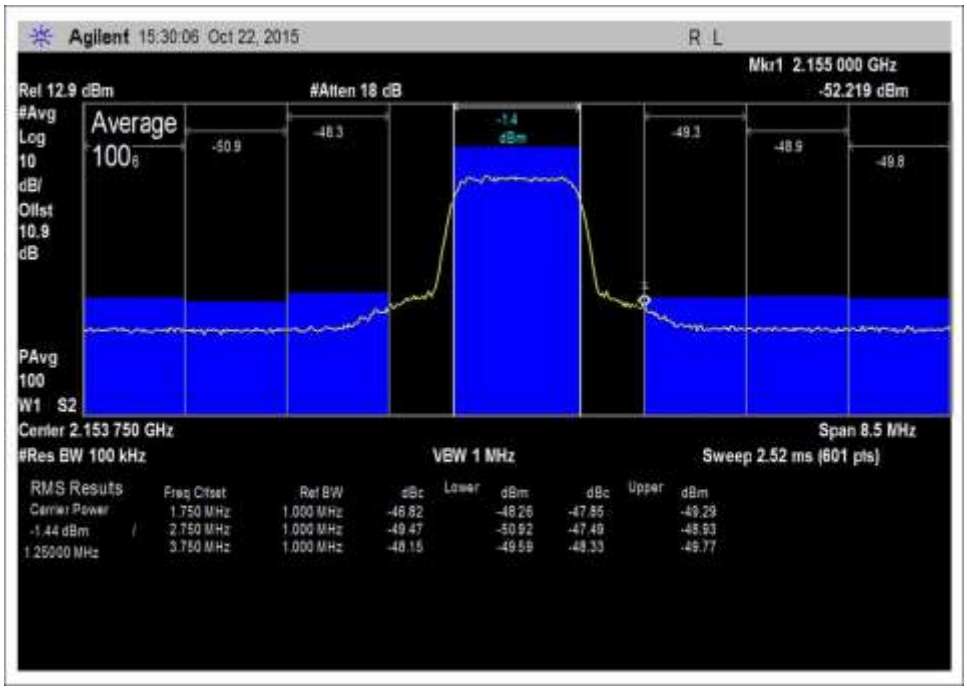
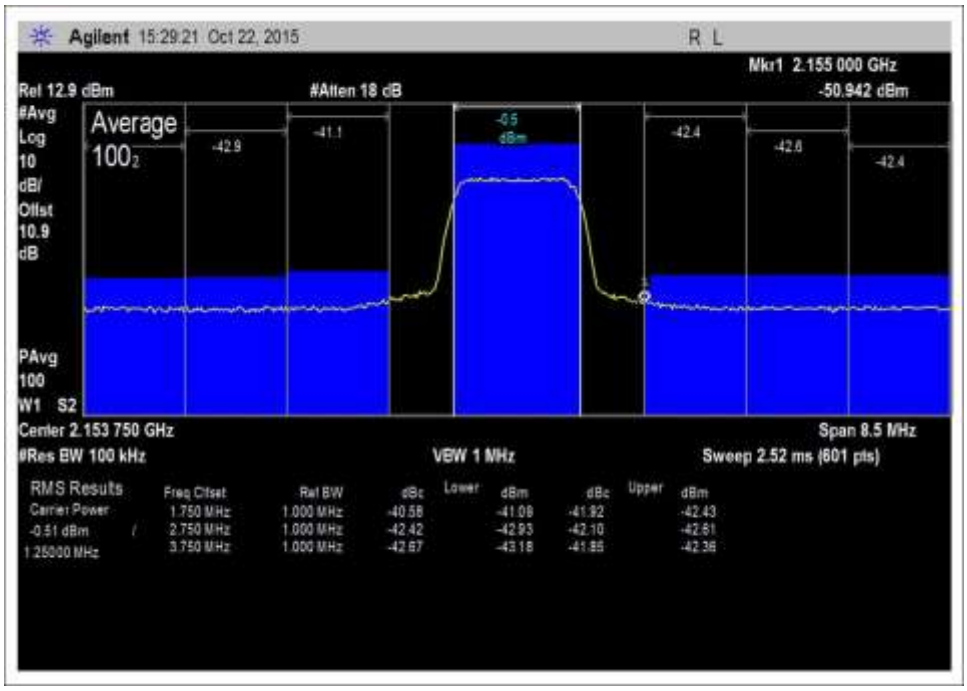


7.5_OBE_DL_2110-2155MHz_H_Max



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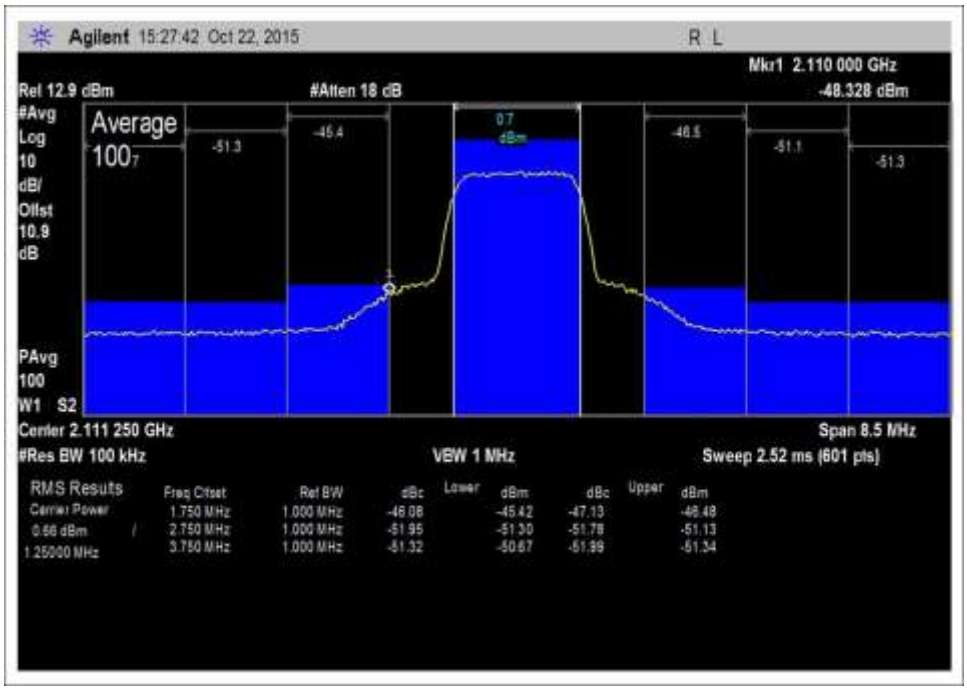

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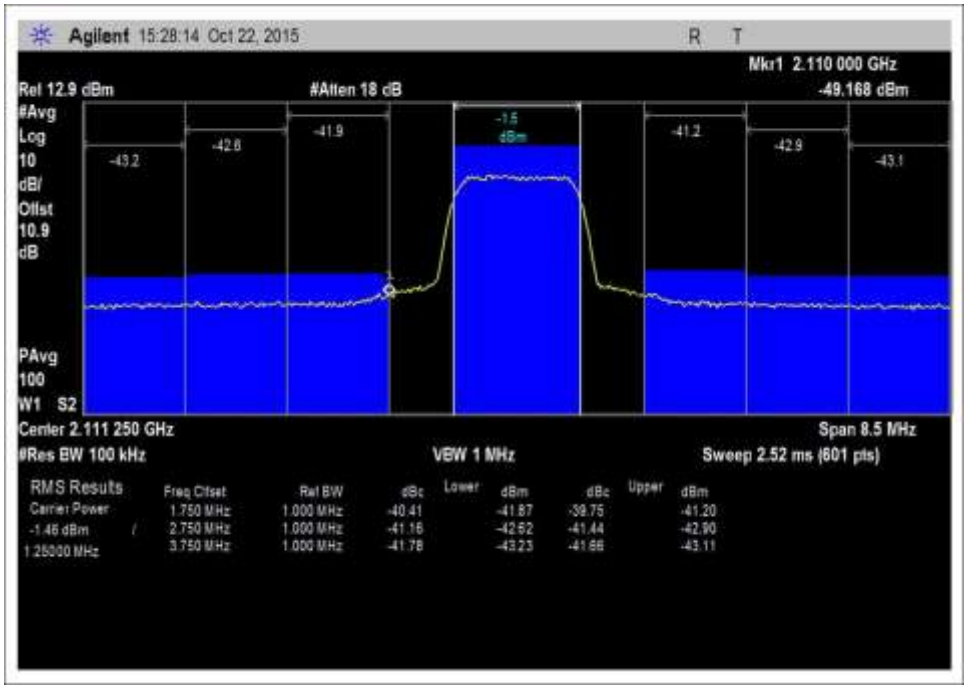
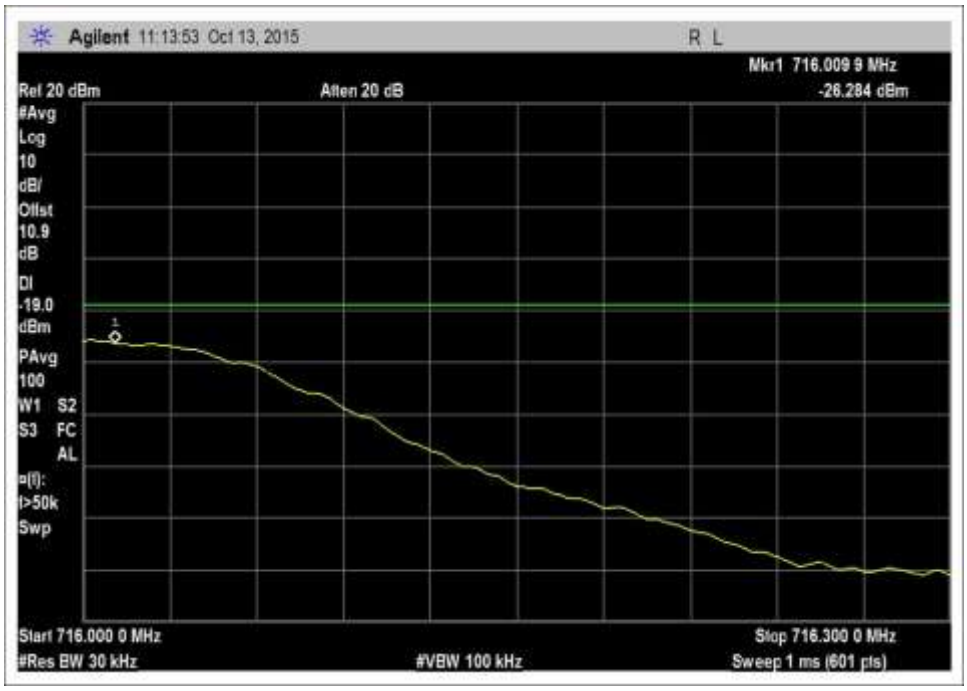
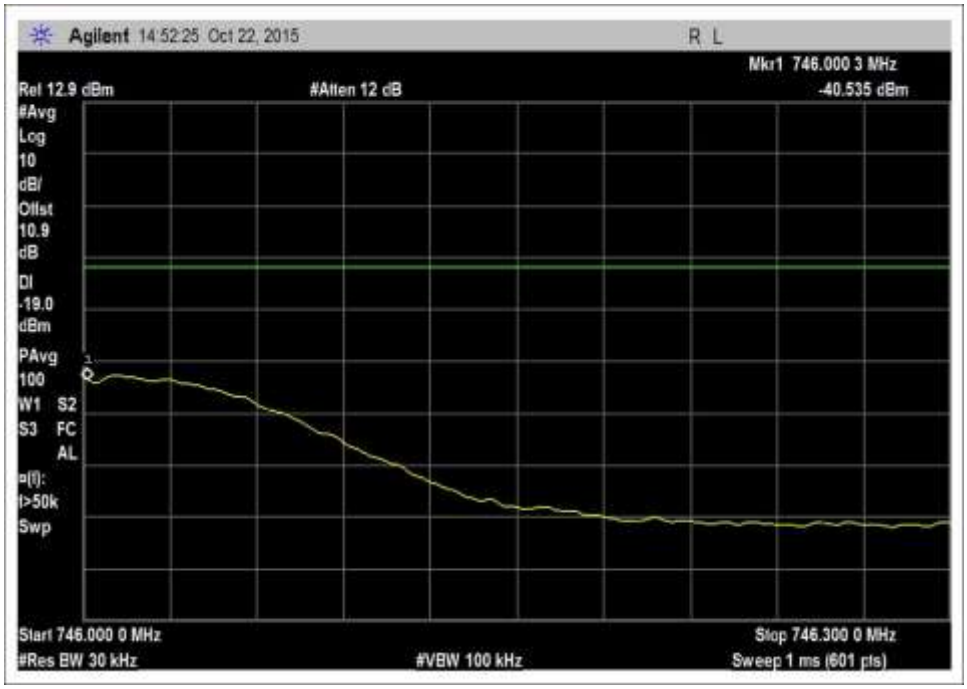


7.5_OBE_DL_2110-2155MHz_L_PreAGC

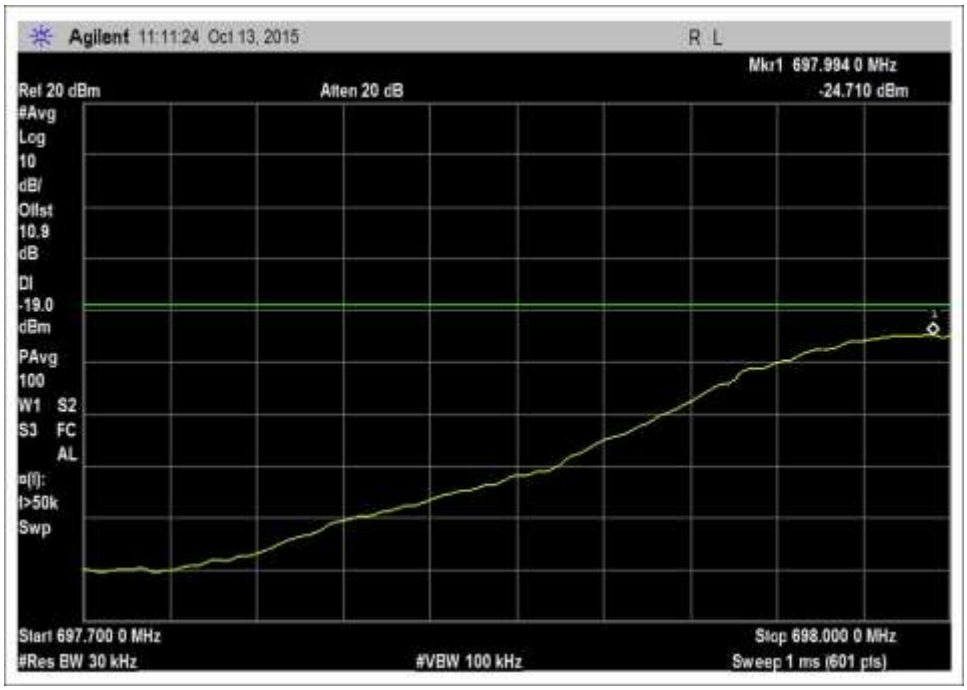
GSM



7.5_OBE_UL_698-716MHz_H_Max

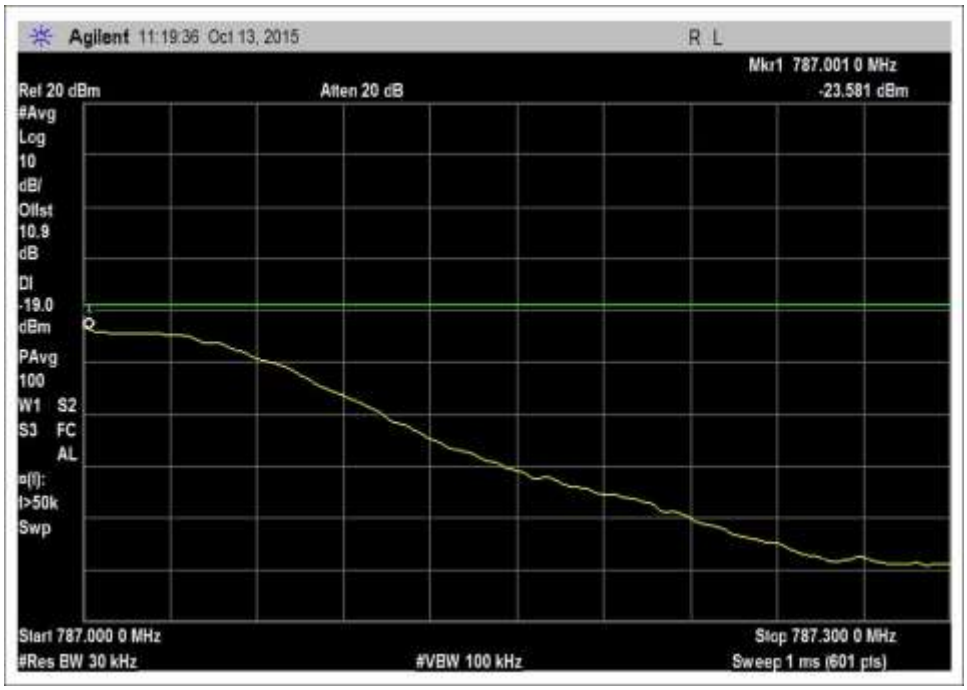


7.5_OBE_UL_698-716MHz_H_PreAGC

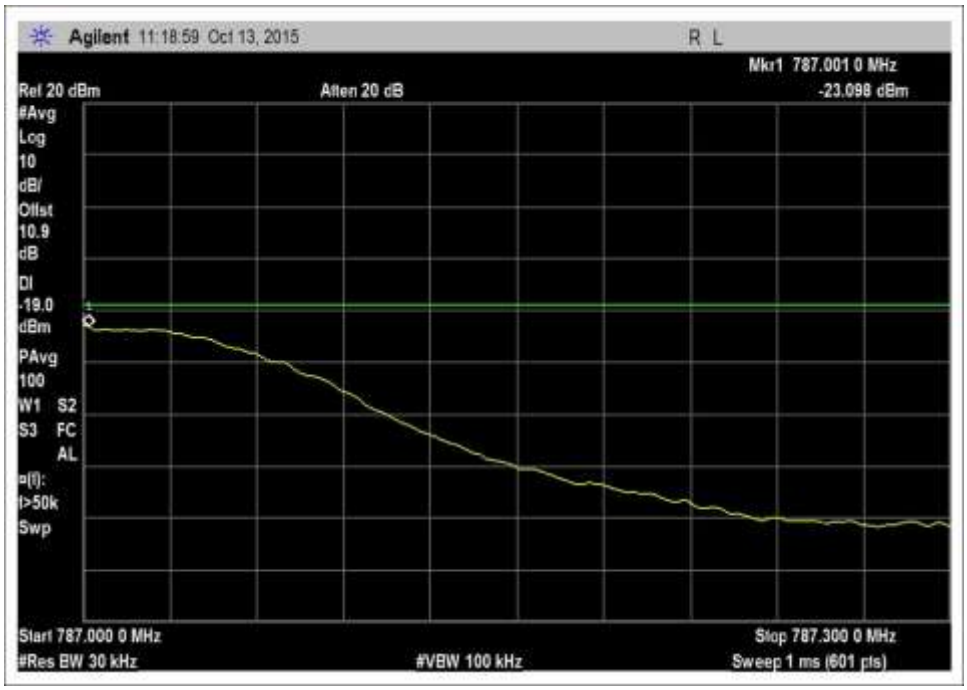


7.5_OBE_UL_698-716MHz_L_Max

7.5_OBE_UL_698-716MHz_L_PreAGC



7.5_OBE_UL_776-787MHz_H_Max



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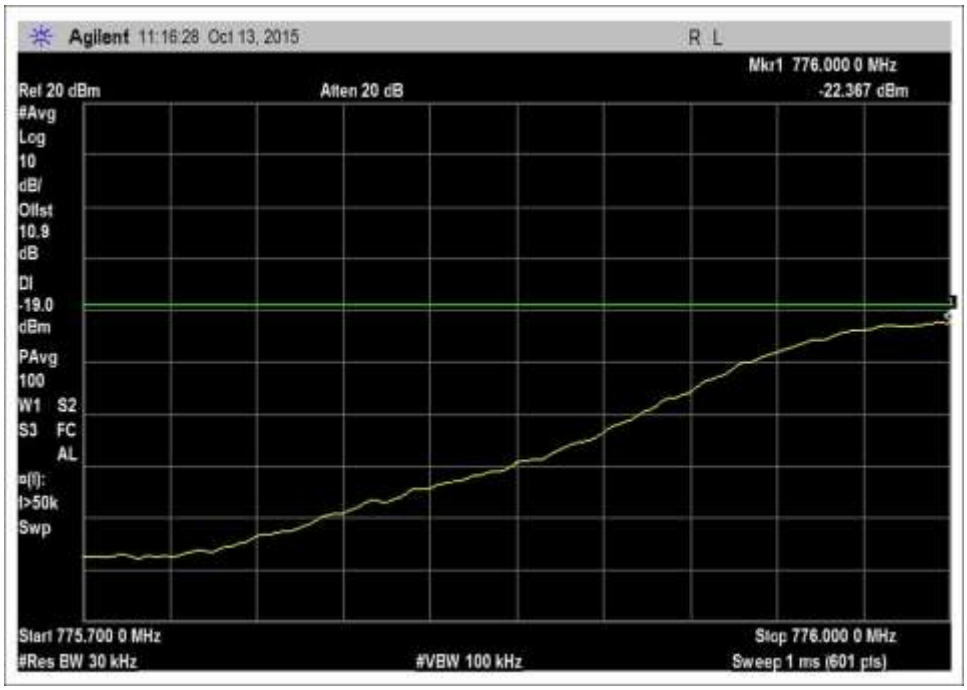

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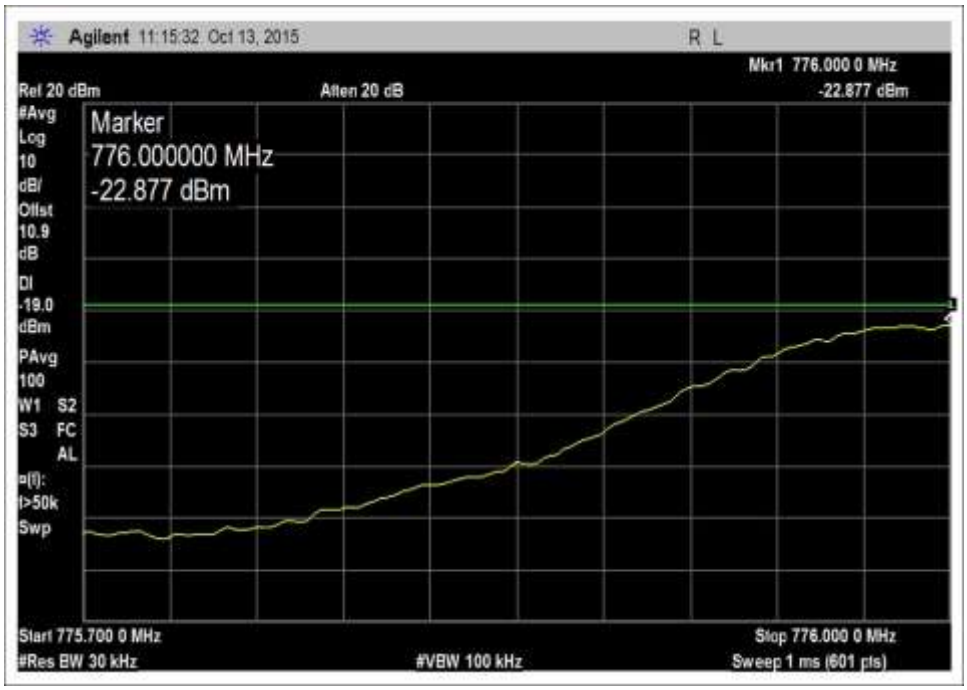

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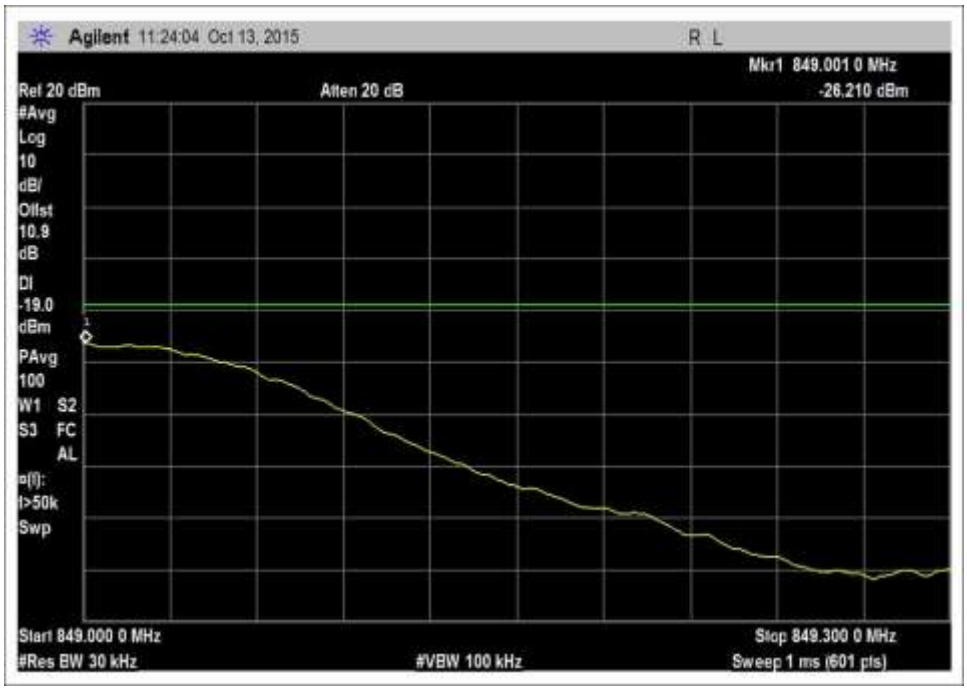
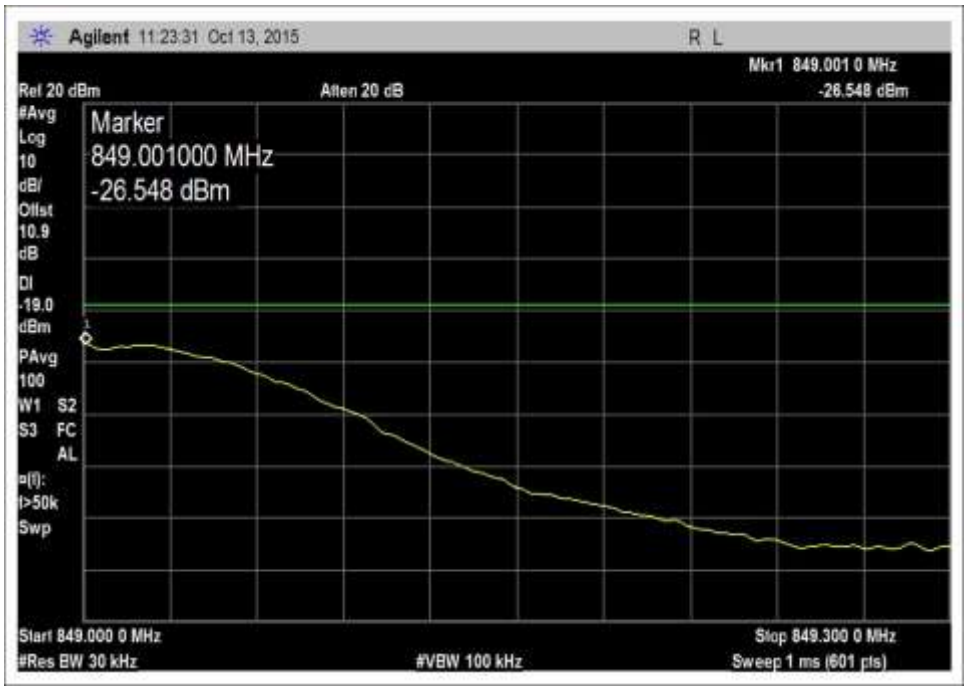


7.5_OBE_UL_824-849MHz_H_Max



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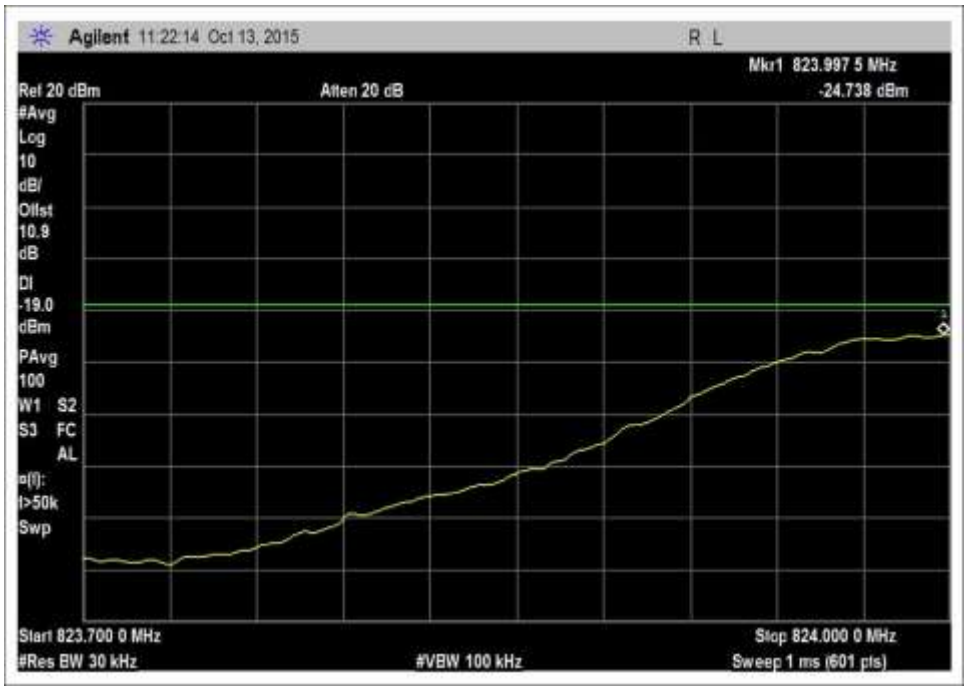

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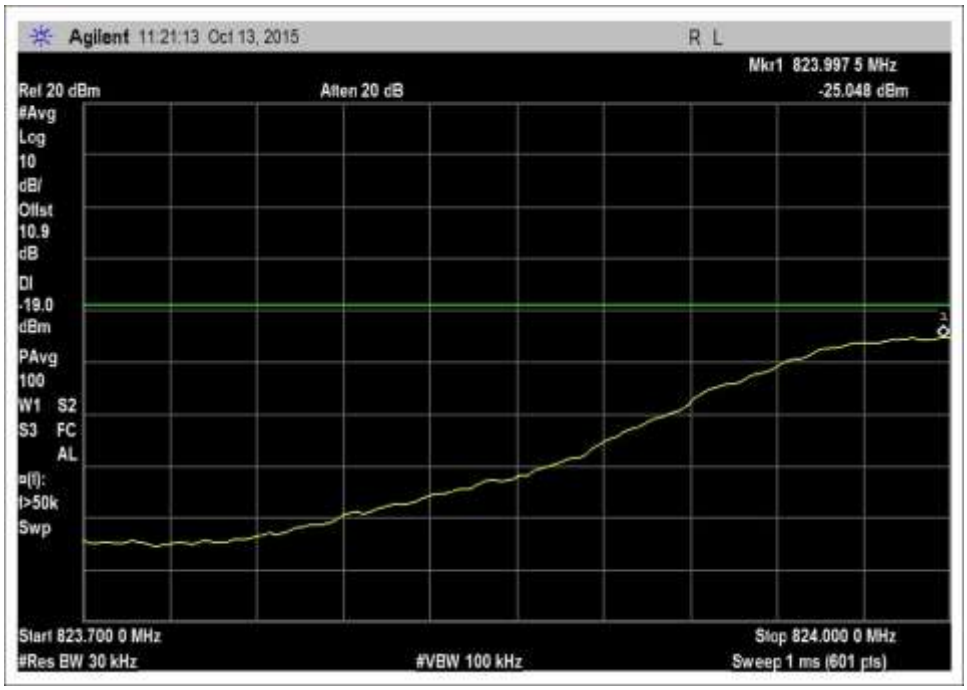

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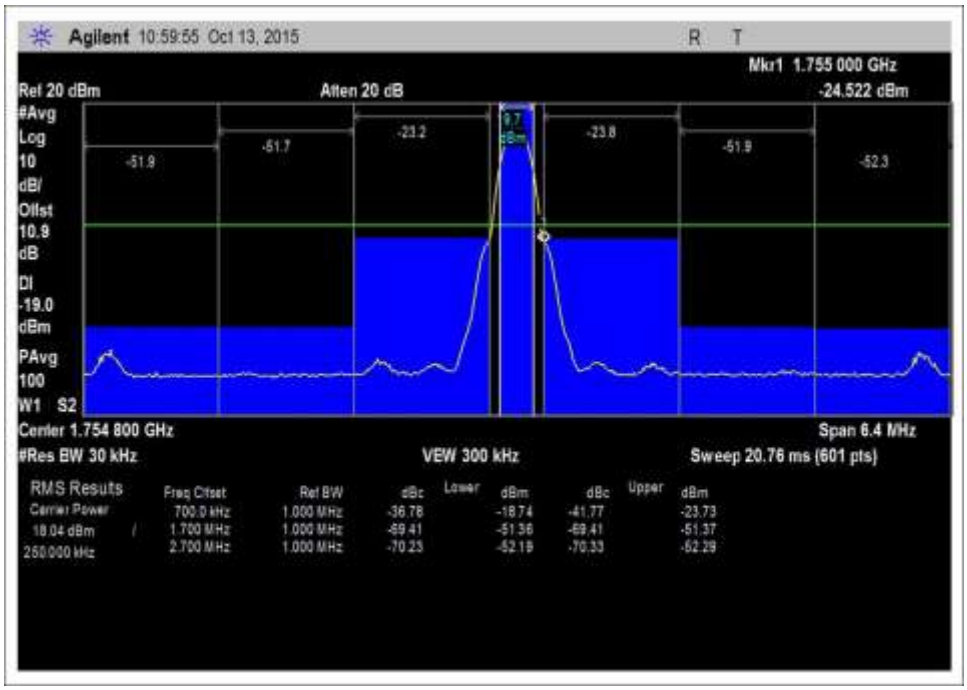
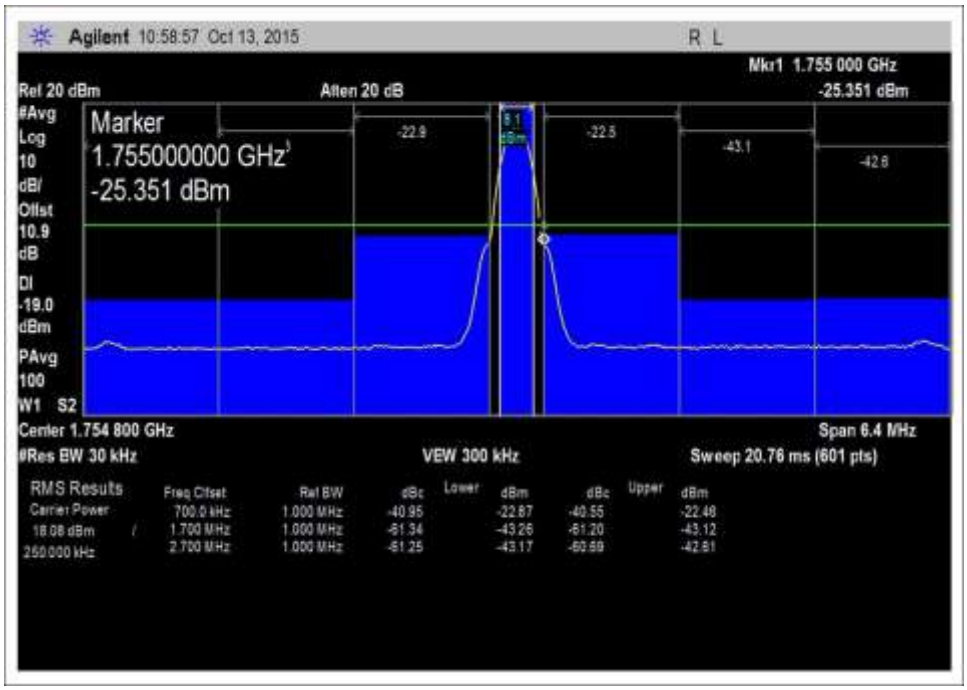
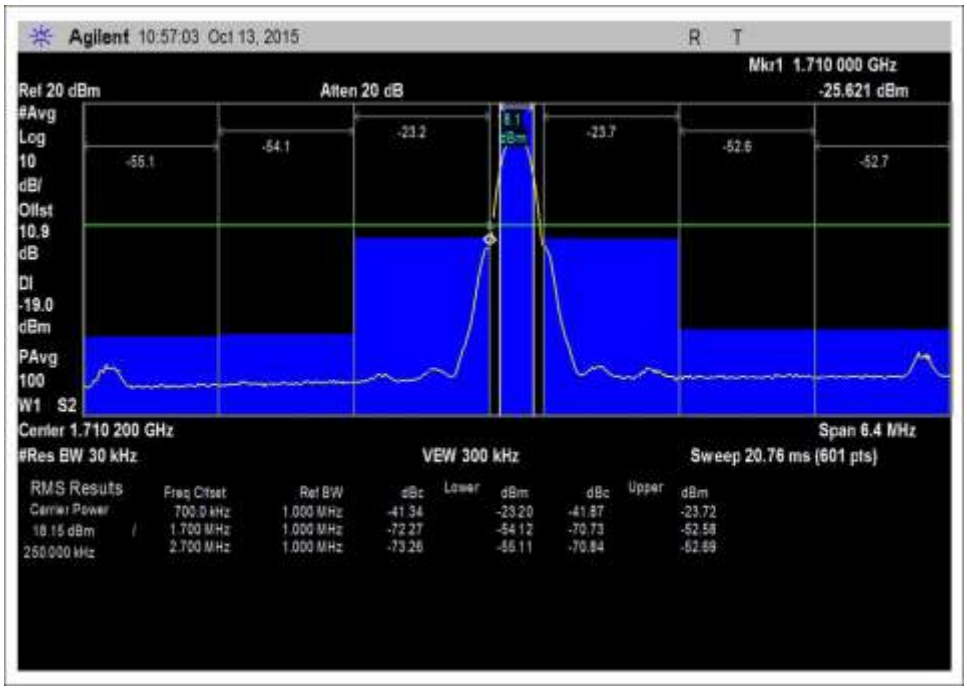


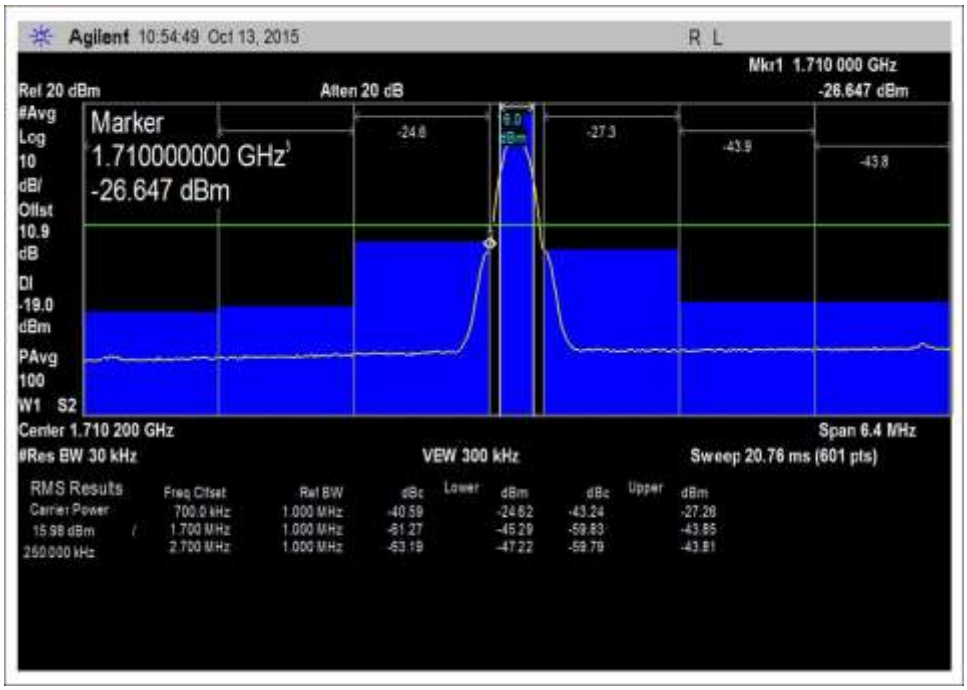
7.5_OBE_UL_1710-1755MHz_H_Max



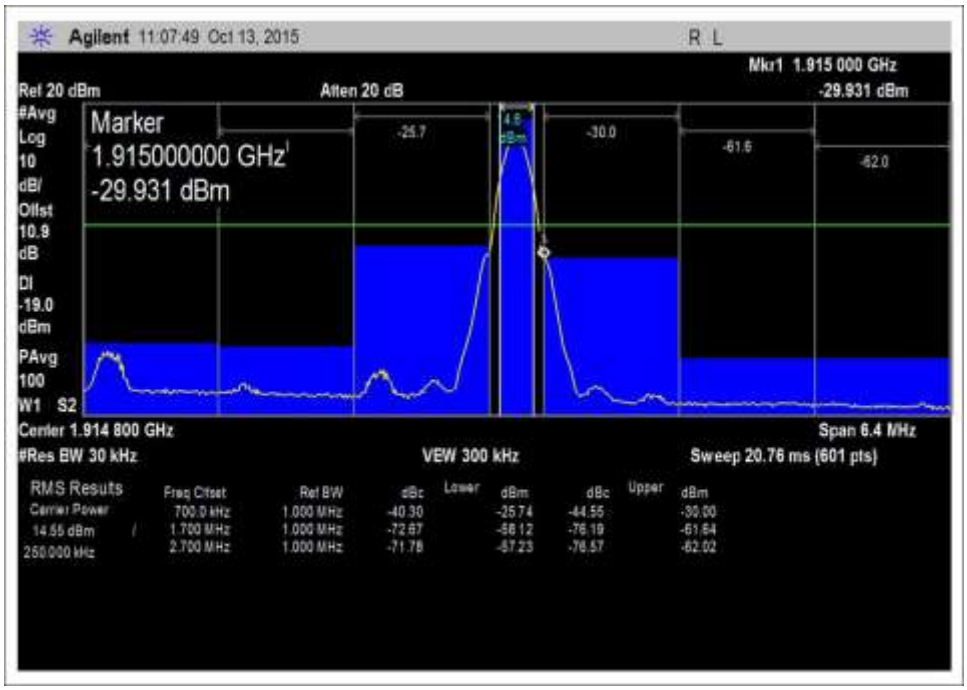
7.5_OBE_UL_1710-1755MHz_H_PreAGC



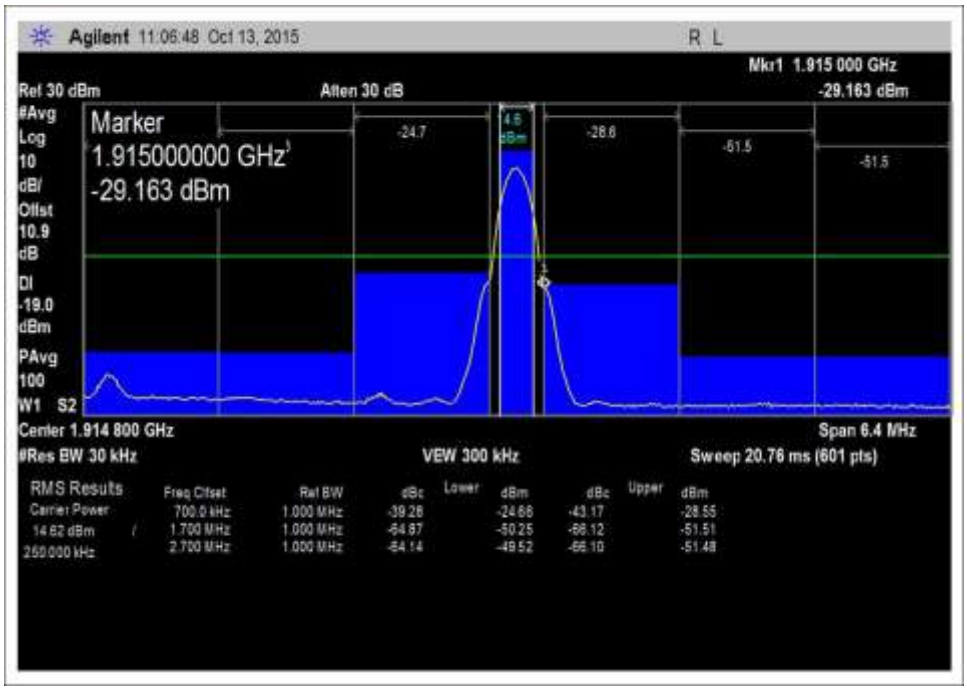
7.5_OBE_UL_1710-1755MHz_L_Max



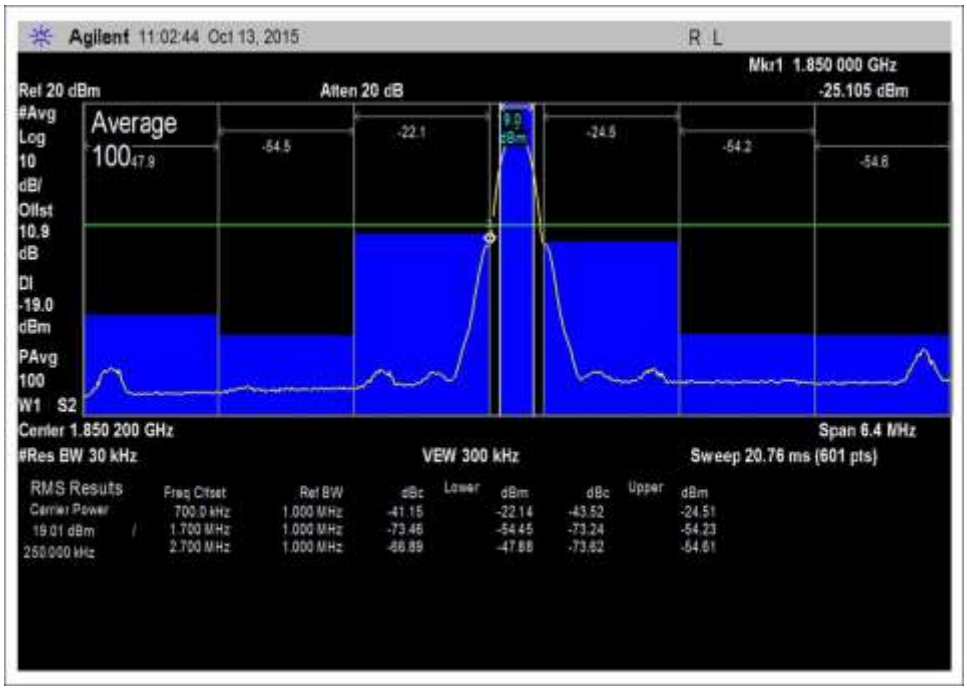
7.5_OBE_UL_1710-1755MHz_L_PreAGC



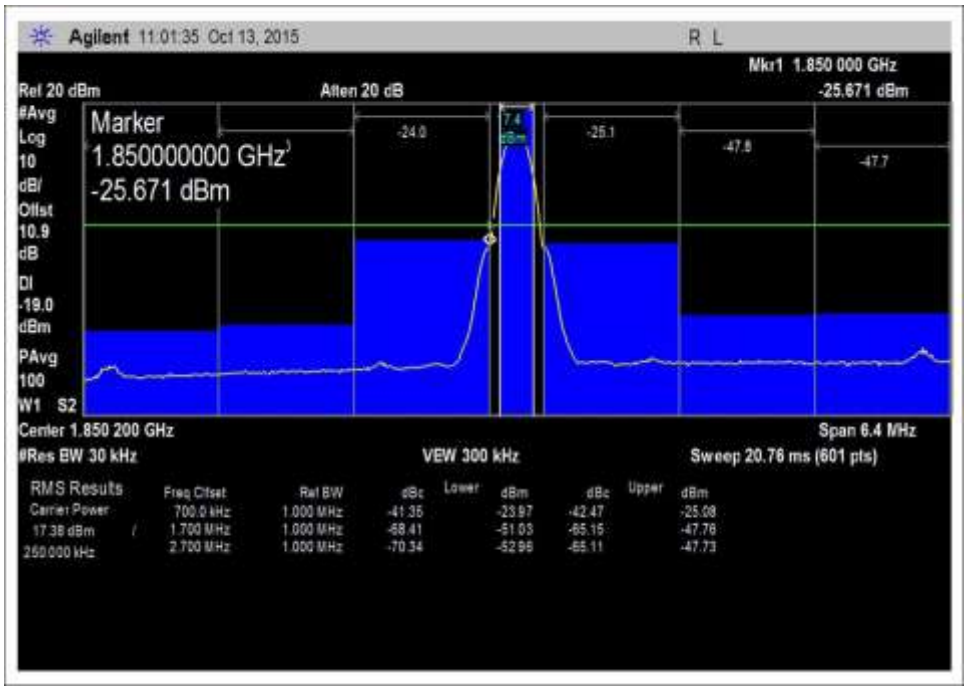
7.5_OBE_UL_1850-1915MHz_H_Max



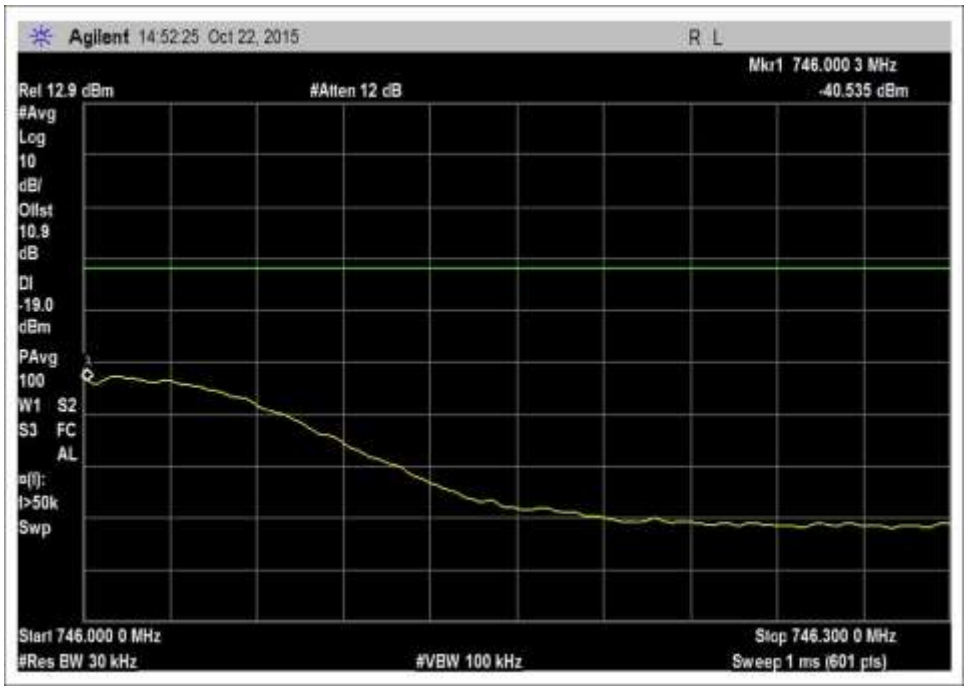
7.5_OBE_UL_1850-1915MHz_H_PreAGC



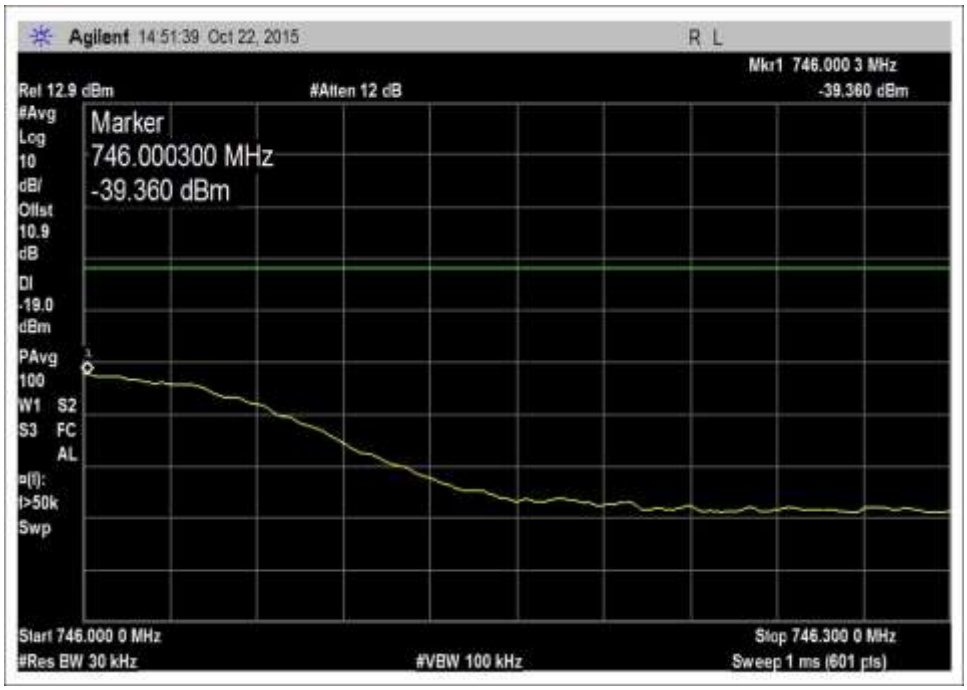
7.5_OBE_UL_1850-1915MHz_L_Max



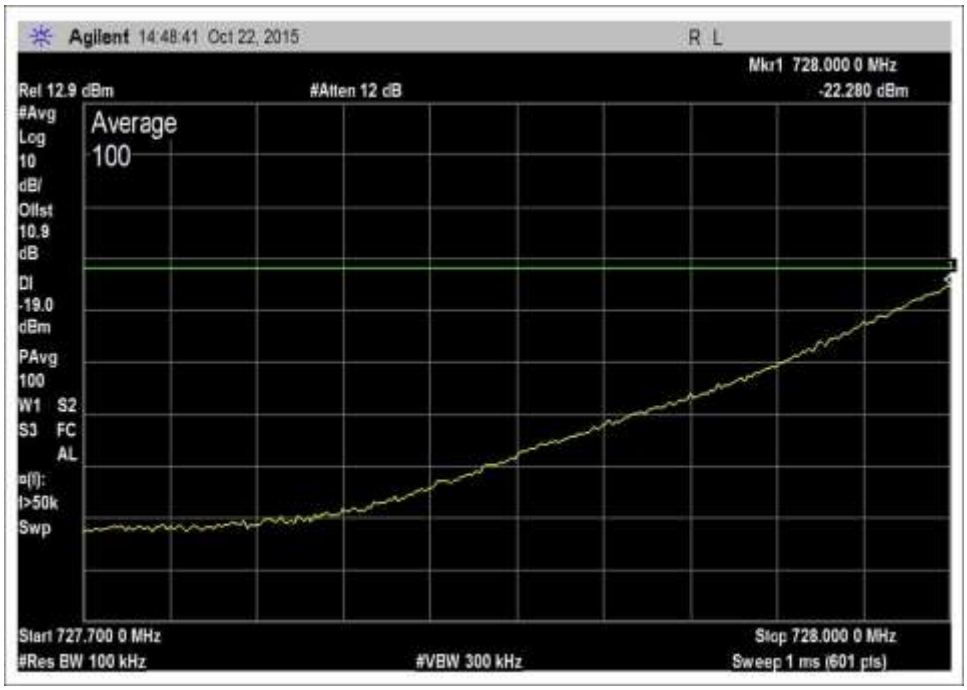
7.5_OBE_UL_1850-1915MHz_L_PreAGC



7.5_OBE_DL_728-746MHz_H_Max



7.5_OBE_DL_728-746MHz_H_PreAGC



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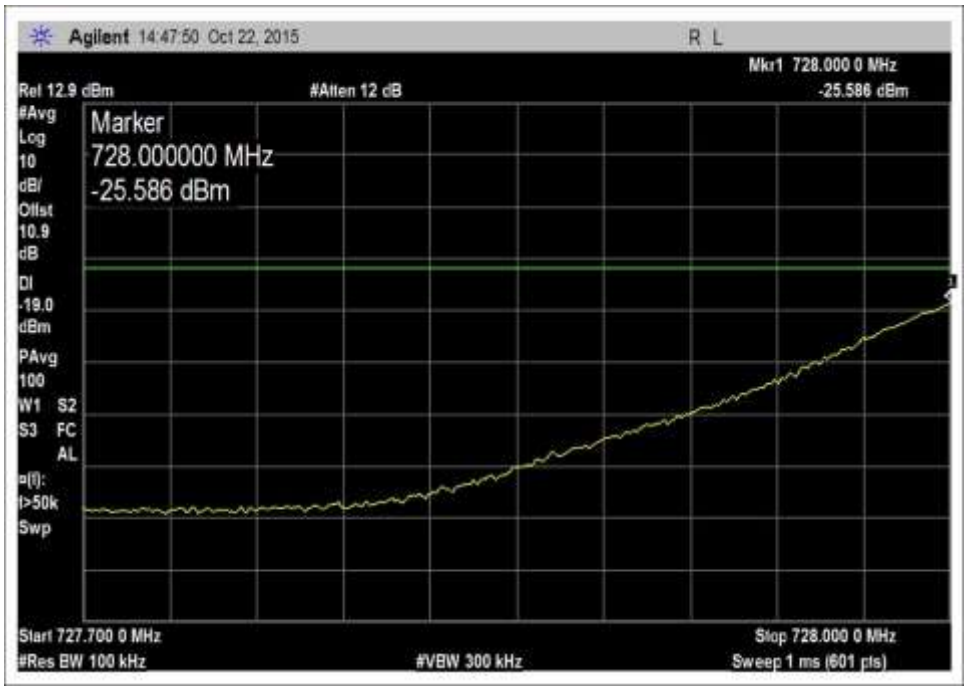
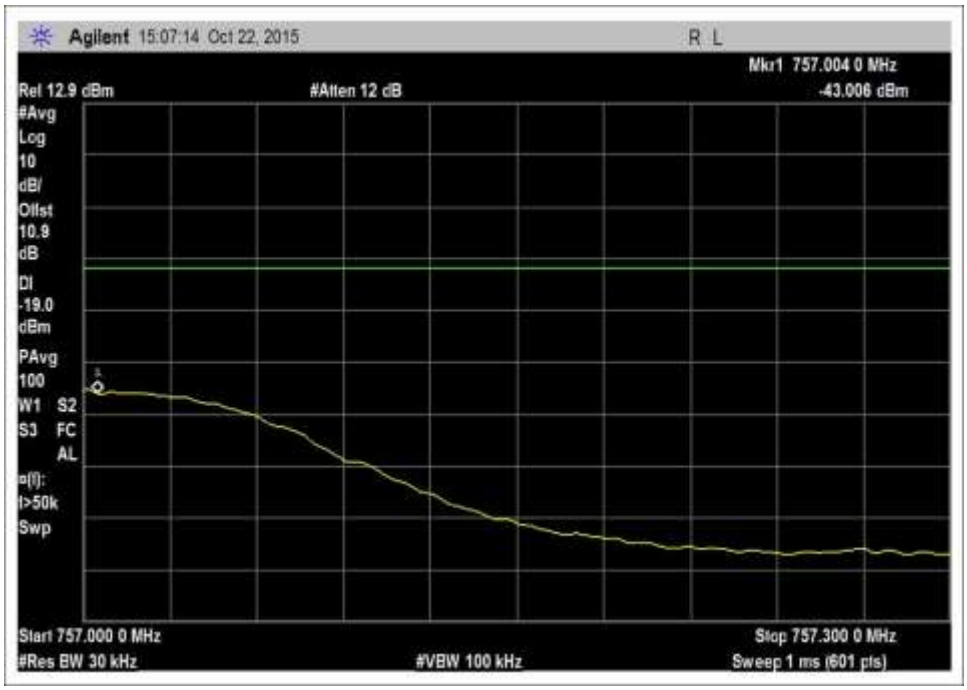
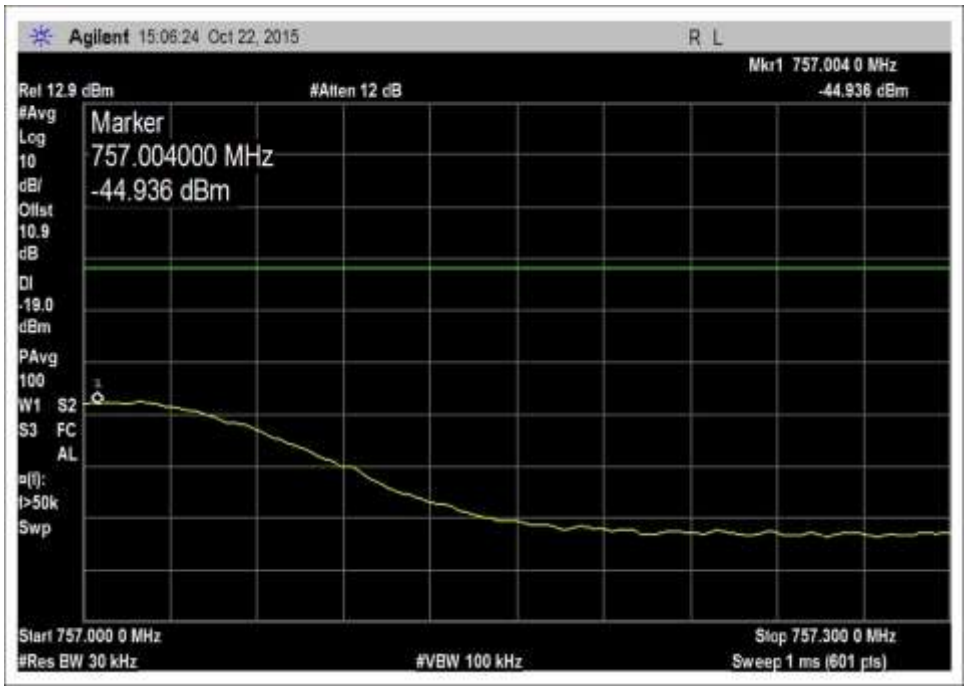


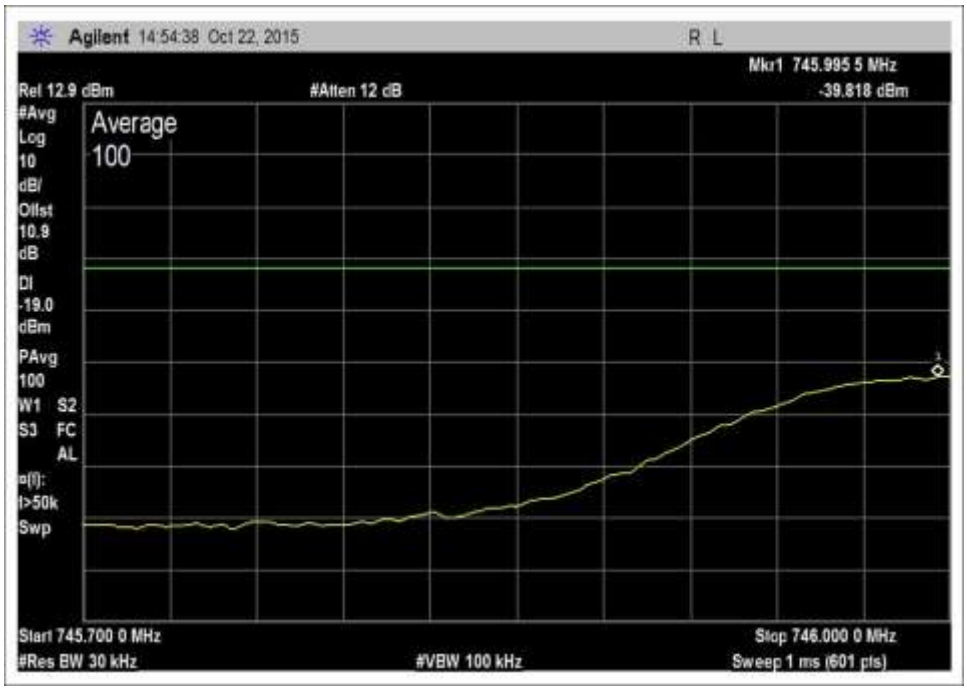
7.5_OBE_DL_728-746MHz_L_PreAGC



7.5_OBE_DL_746-757MHz_H_Max

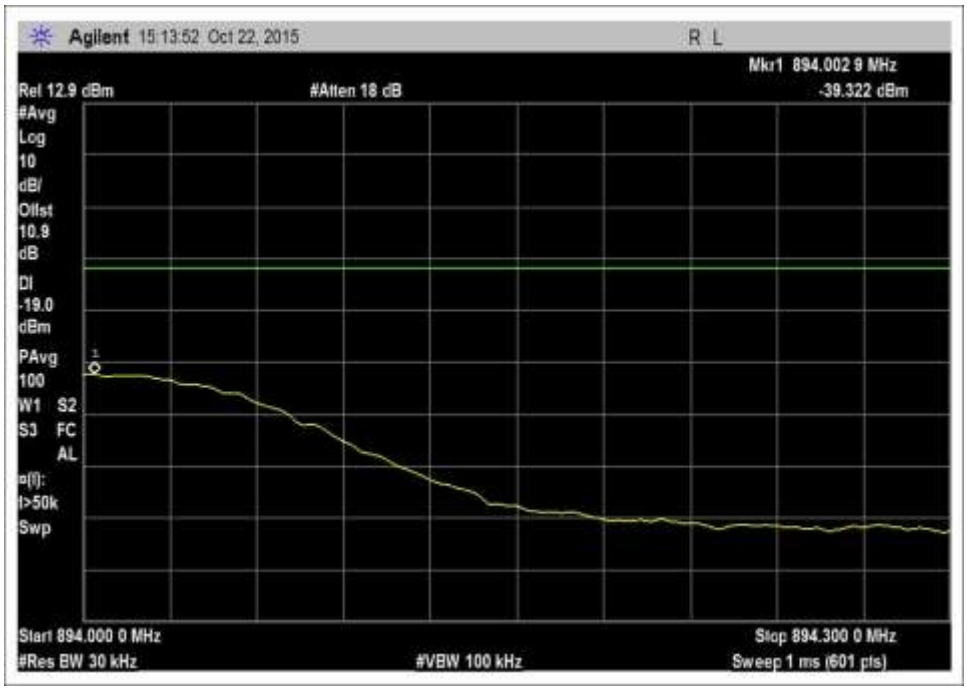


7.5_OBE_DL_746-757MHz_H_PreAGC

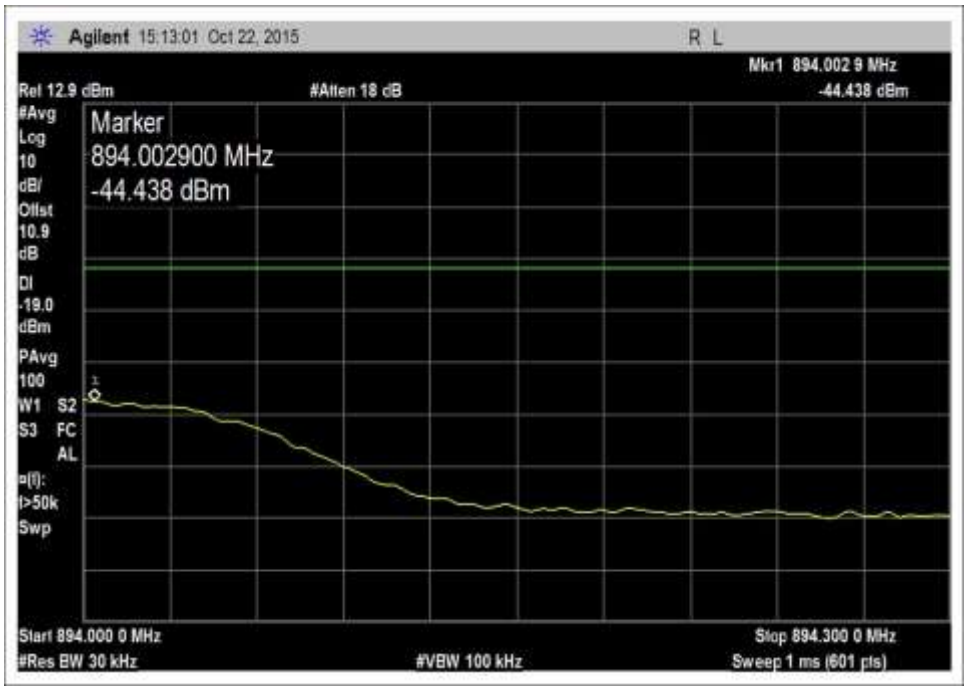


7.5_OBE_DL_746-757MHz_L_Max

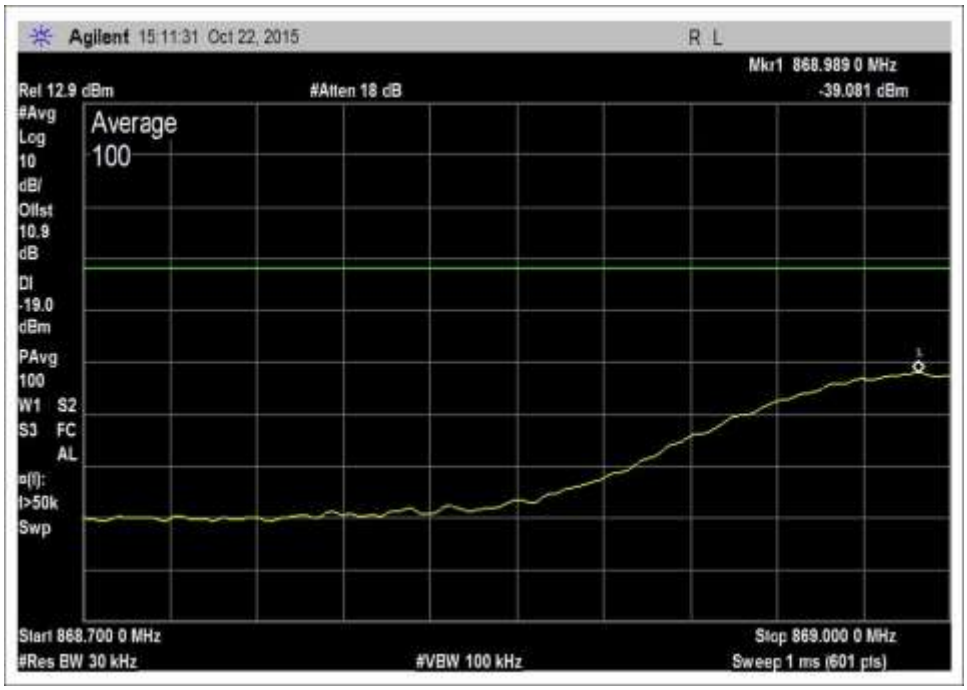
7.5_OBE_DL_746-757MHz_L_PreAGC



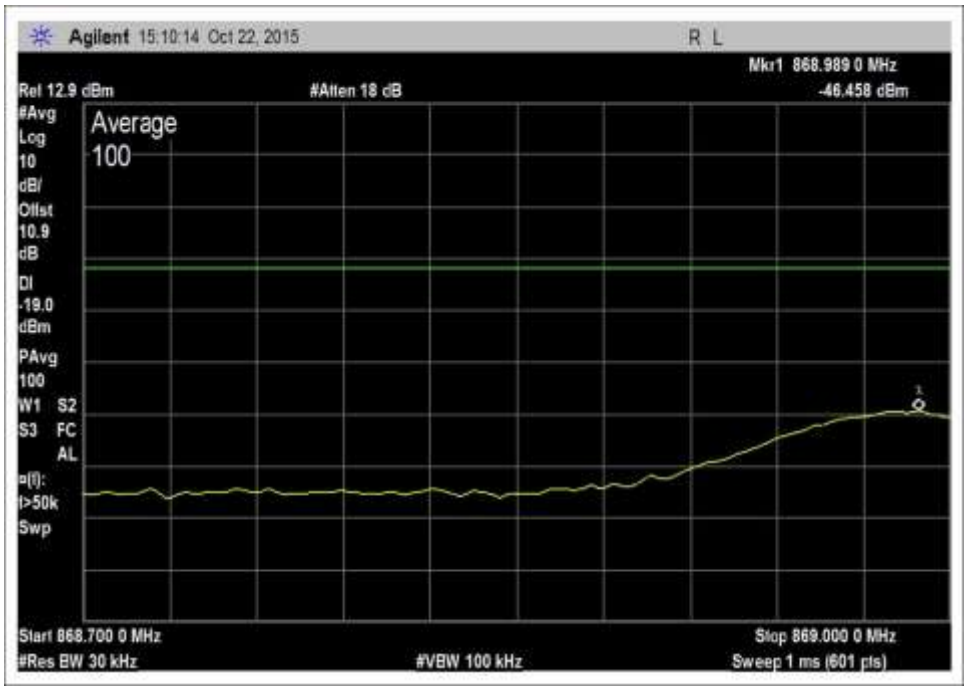
7.5_OBE_DL_869-894MHz_H_Max



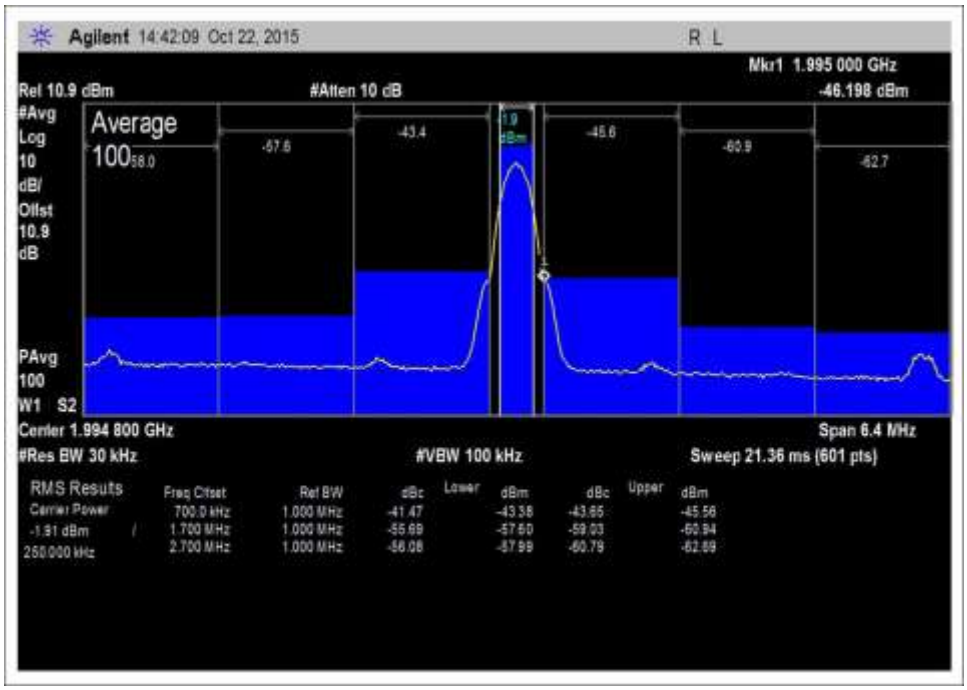
7.5_OBE_DL_869-894MHz_H_PreAGC



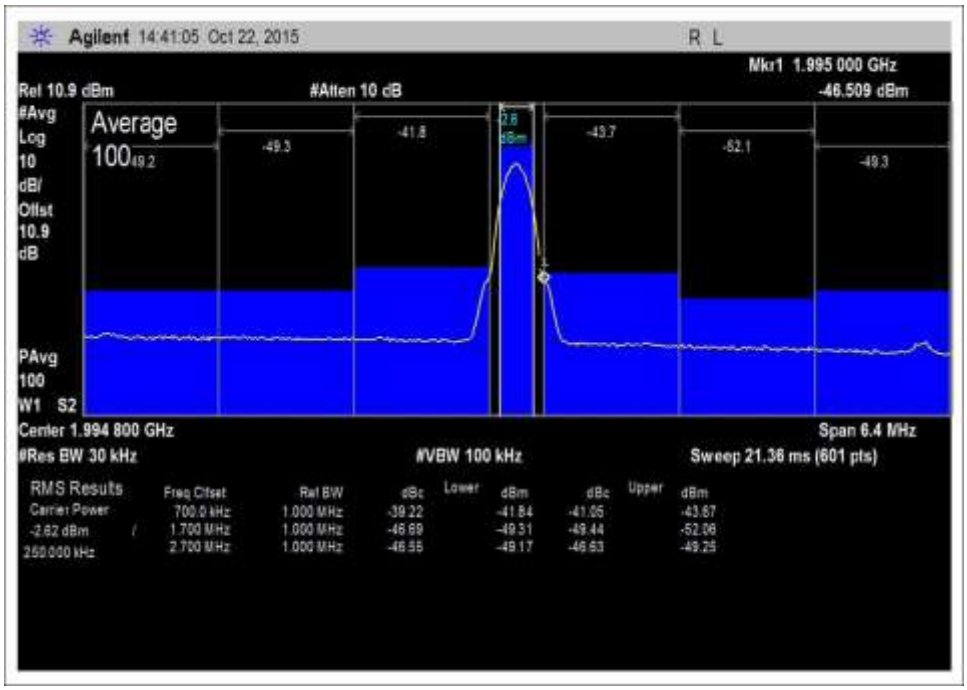
7.5_OBE_DL_869-894MHz_L_Max



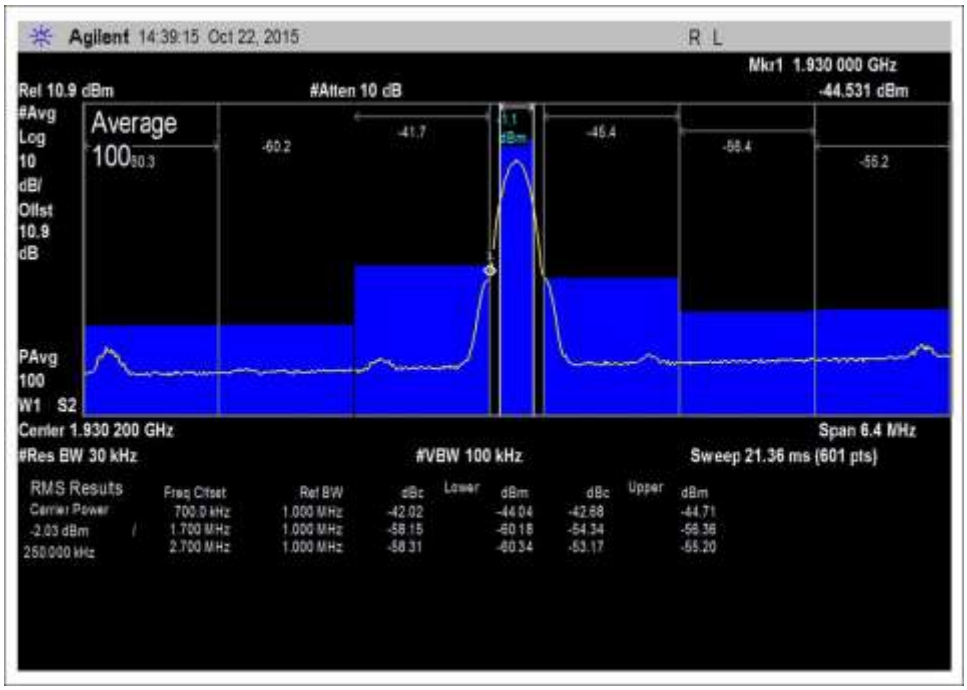
7.5_OBE_DL_869-894MHz_L_PreAGC



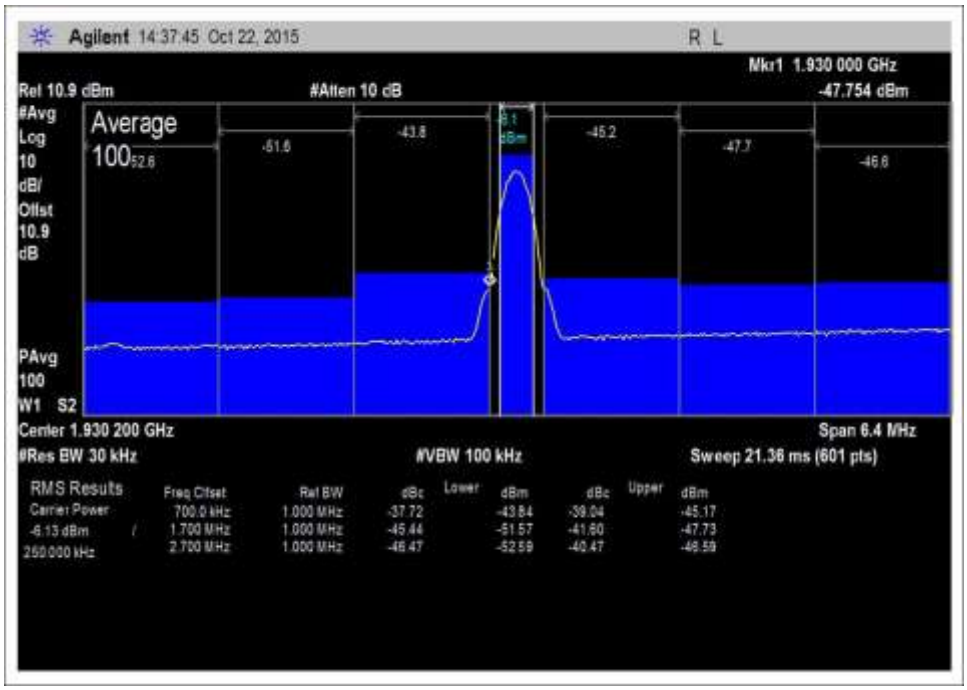
7.5_OBE_DL_1930-1995MHz_H_Max



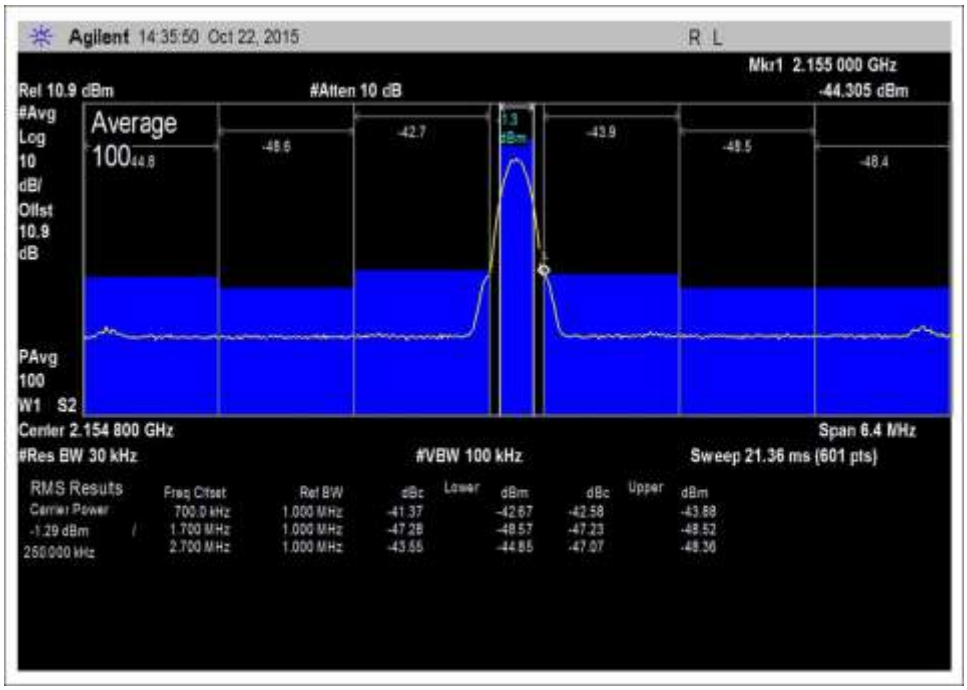
7.5_OBE_DL_1930-1995MHz_H_PreAGC



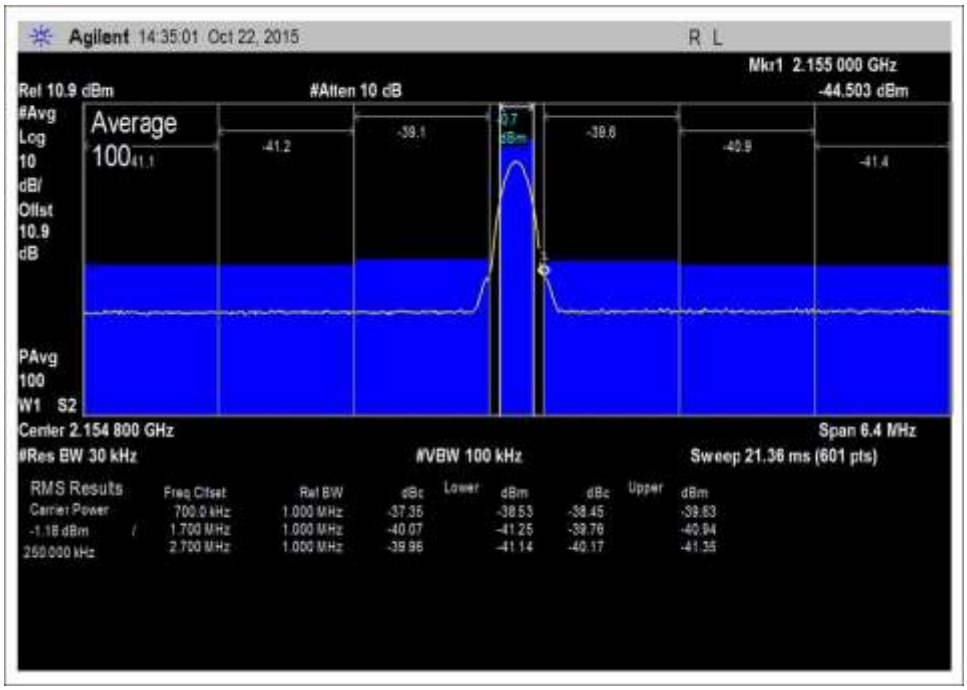
7.5_OBE_DL_1930-1995MHz_L_Max



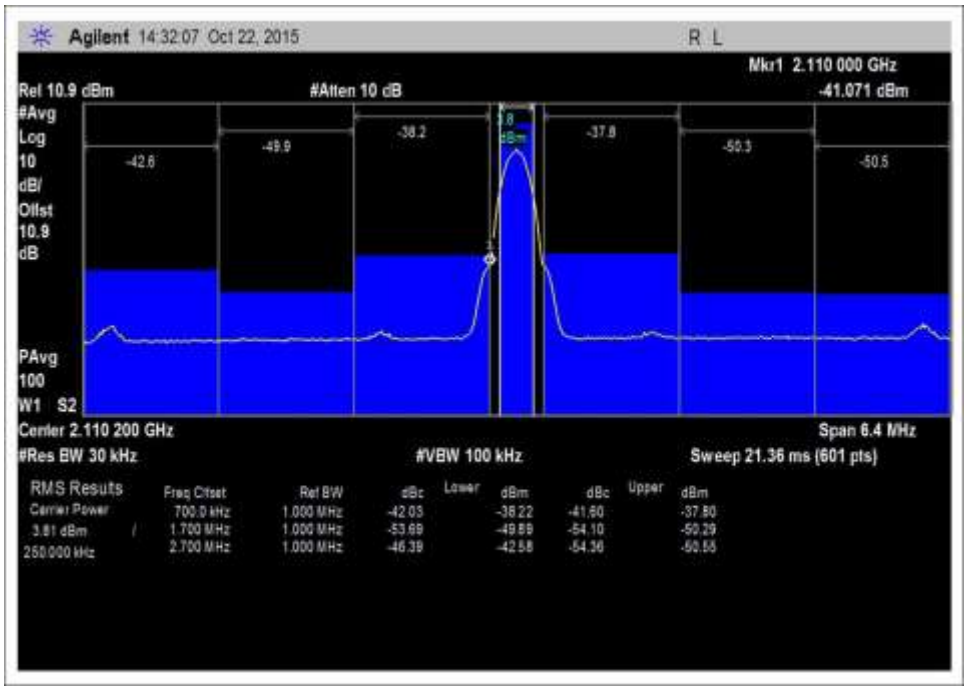
7.5_OBE_DL_1930-1995MHz_L_PreAGC



7.5_OBE_DL_2110-2155MHz_H_Max



7.5_OBE_DL_2110-2155MHz_H_PreAGC



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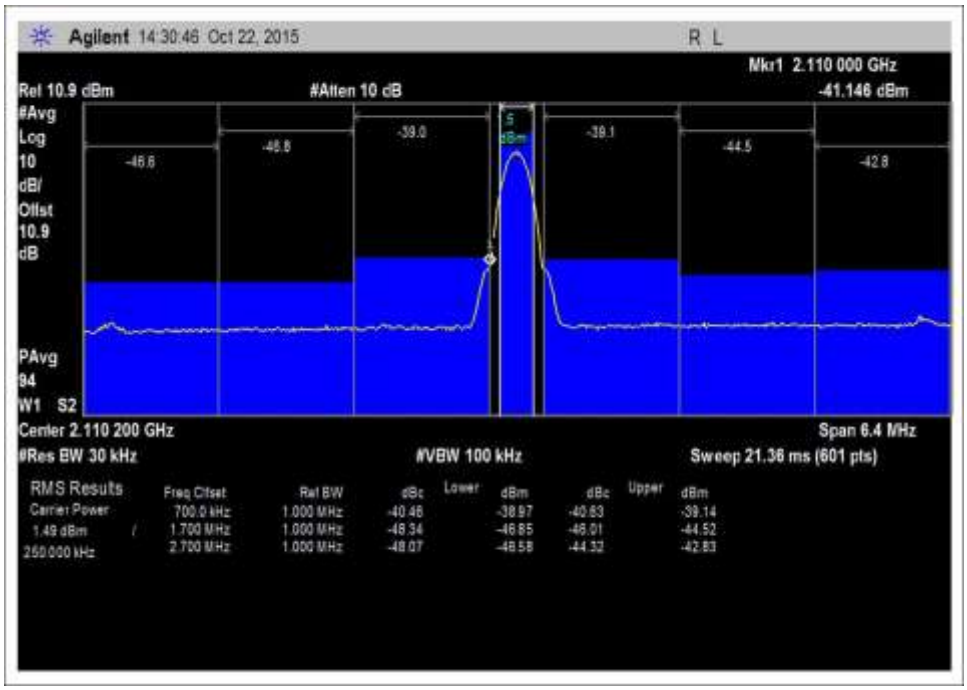
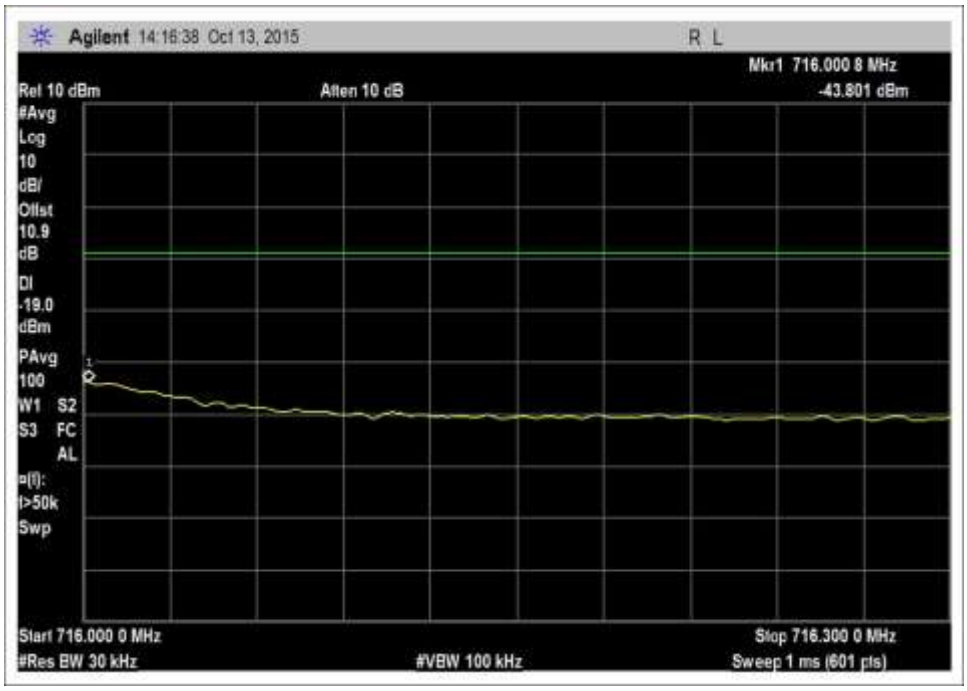
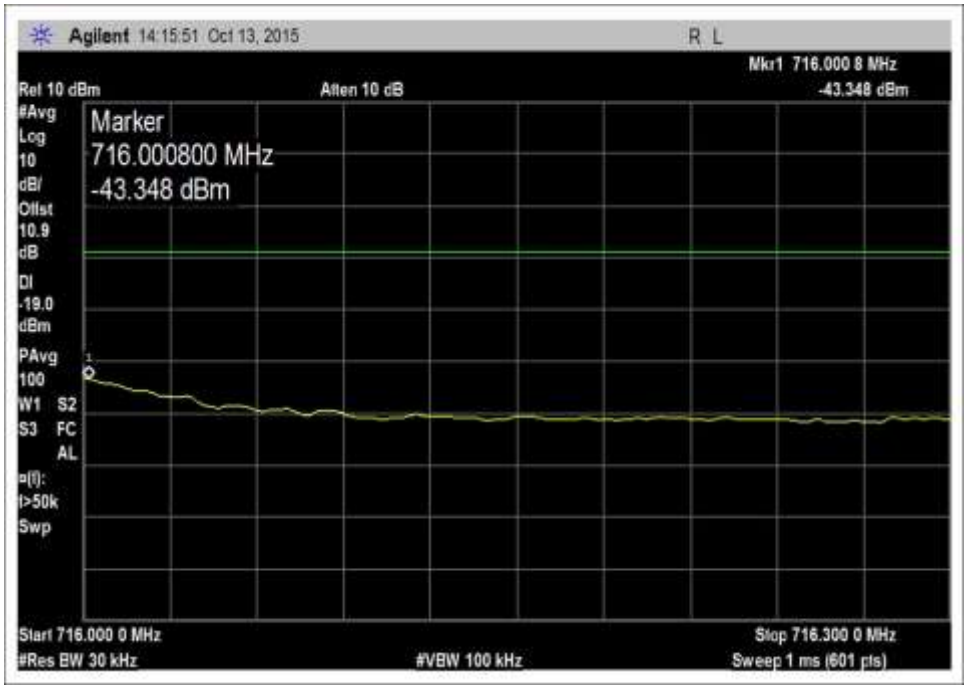


7.5_OBE_DL_2110-2155MHz_L_PreAGC

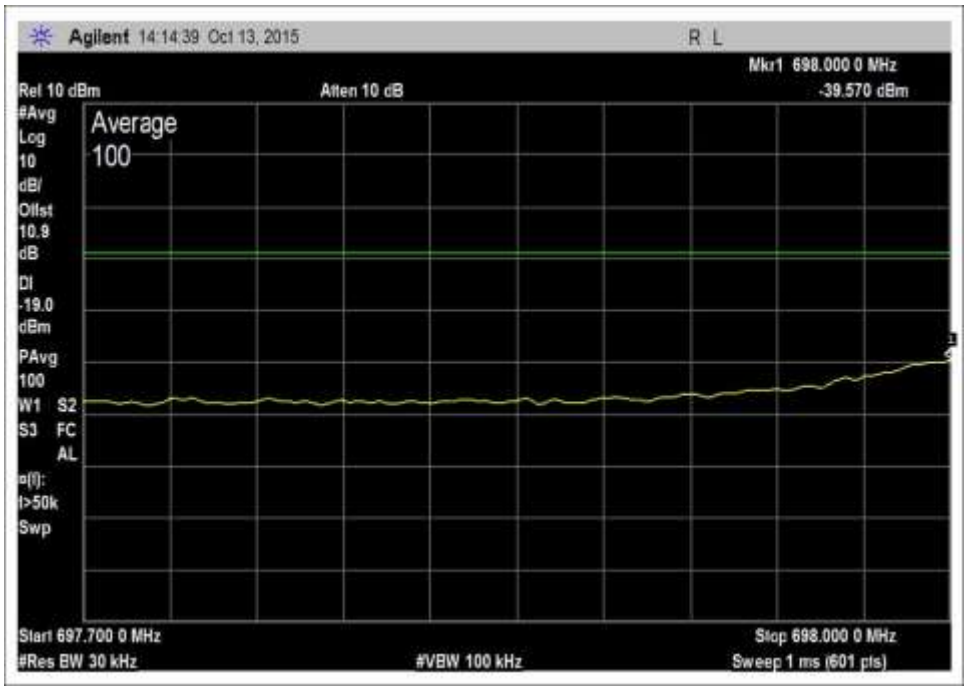
LTE



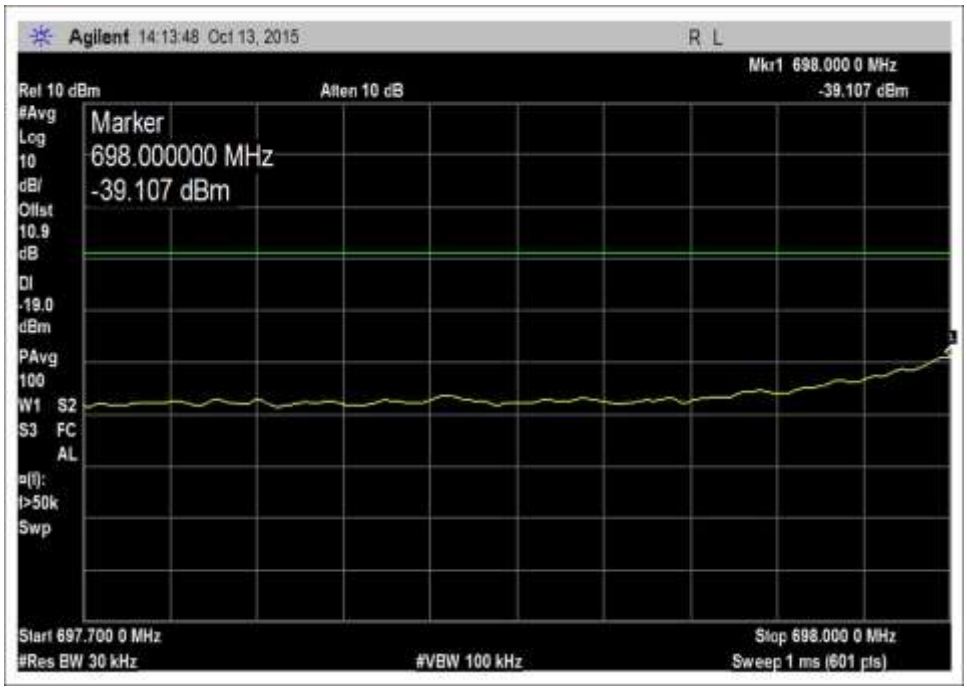
7.5_OBE_UL_698-716MHz_H_Max



7.5_OBE_UL_698-716MHz_H_PreAGC



7.5_OBE_UL_698-716MHz_L_Max



7.5_OBE_UL_698-716MHz_L_PreAGC