

Cellphone-Mate, Inc.

EMC TEST REPORT FOR

**Industrial Booster, Force 7
AC/DC Power Adapter, ATS090-P190
Wifi Antenna, SC222W
HDTV Antenna, SC306W-H**

Tested To The Following Standards:

FCC PART 27

Report No.: 96950-16

Date of issue: July 6, 2015



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.

TABLE OF CONTENTS

Administrative Information 3

 Test Report Information3

 Report Authorization3

 Test Facility Information4

 Software Versions4

 Site Registration & Accreditation Information4

 Summary of Results5

 Modifications During Testing.....5

 Conditions During Testing.....6

 Equipment Under Test.....6

FCC Part 27 7

 3.3 – Out of Band Rejection 7

 Summary of Results8

 3.4 - Input-vs-Output Signal Comparison12

 Summary of Results13

 3.5 - Mean Output Power and Amplifier Gain38

 Summary of Results41

 3.6.2 Out of Band / Block Emissions (Including Intermodulation) Conducted Measurement.....75

 Summary of Results76

 3.6.3- Spurious Emissions Conducted Measurement126

 Summary of Results127

 3.7 - Frequency Stability Measurements195

 3.8 – Spurious Emissions Radiated Measurements196

 Summary of Results198

Exhibit A: Test Setup Photos 200

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Hongtao Zhan
Customer Reference Number: CKC20150529

DATE OF EQUIPMENT RECEIPT:

DATE(S) OF TESTING:

REPORT PREPARED BY:

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

Project Number: 96950

May 1, 2015

May 1-June 16, 2015

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

Test procedure 935210 D05 Indus Booster Basic Meas v01, June 5, 2015		935210 D02 Signal Boosters Certification v02r01, June 5, 2015		FCC Rule	Mods	Results
Sec #	Guidance Description	Guidance Description	FCC Sec #	FCC Description		
3.3	Out-of-Band Rejection	(l) Out of Band Rejection	NA	NA	NA	PASS
3.4	Input-vs-Output Signal Comparison	(j) Occupied Bandwidth	2.1049(l)	Occupied Bandwidth	NA	PASS
3.5	Mean Output Power and Amplifier Gain	(k) Output Power	2.1046 27.50(b)(4) 27.50(C)(3) 27.50(d)(2)(ii)	RF Power Output: Power and Antenna Height Limit	NA	PASS
3.6.2	Out-of-Band/Block Emissions (including intermodulation) Conducted Measurement	(i) Intermodulation	Band Edge	Band Edge	NA	PASS
3.6.3	Spurious Emissions Conducted Measurement	h) Conducted Spurs	2.1051 27.53 (c)(1) 27.53 (c)(2) 27.53 (g) 27.53 (h)	Spurious Emissions at Ant Terminal	NA	PASS
3.7	Frequency Stability Measurements	NA	2.1055(d) 27.54	Frequency Stability	NA	NA
3.8	Spurious Emissions Radiated Measurements	(g) Radiated Spurs (enclosure)	2.1053 27.53 (c)(1) 27.53 (c)(2) 27.53 (g) 27.53 (h)	Field Strength of Spurious Radiation	NA	PASS

NA = Not Applicable

Modifications* During Testing

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

Summary of Conditions
No modifications were made during testing.

***Modifications listed above must be incorporated into all production units.**

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

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

Configuration 1

Device	Manufacturer	Model #	S/N
Configuration 1			
Industrial Booster	Cellphone-Mate, Inc.	FORCE 7	01
AC/DC Power Adapter	Cellphone-Mate, Inc.	ATS090-P190	None

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			
Laptop	Sony	PCG-6C2L	CXSM507BRD01-D480
AC/DC Adapter	Sony	PCGA-AC16V	1477749530023127
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260

Configuration 3

Device	Manufacturer	Model #	S/N
Configuration 3			
Industrial Booster	Cellphone-Mate, Inc.	FORCE 7	01
AC/DC Power Adapter	Cellphone-Mate, Inc.	ATS090-P190	None

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 3			
AC/DC Adapter	Sony	PCGA-AC16V	1477749530023127
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260
Laptop	Sony	PCG-6C2L	CXSM507BRD01-D480
RF Load	Bird	8201	15976

FCC PART 27

3.3 – Out of Band Rejection

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: Cellphone-Mate, Inc.
 Specification: **3.3 Out of Band Rejection**
 Work Order #: **96950** Date: 5/19/2015
 Test Type: **Conducted Power Measurement** Time: 09:10:28
 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:

Configuration 1

The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna.

The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port.

The Industrial booster UL and DL power and gain parameters are initially measured with WiFi 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.

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.
 Software: Force 7 V1.0
 Firmware: V1.0
 Application: MP_TEST MFC version 1.3.8.0

Test environment conditions: 21°C, 40% Relative Humidity, 101.5kPa

Test procedure: The test was performed in accordance with section 3.3 of the FCC document: D05 Industrial Booster Basic Measurements v01 935210 Dated June 05, 2015.

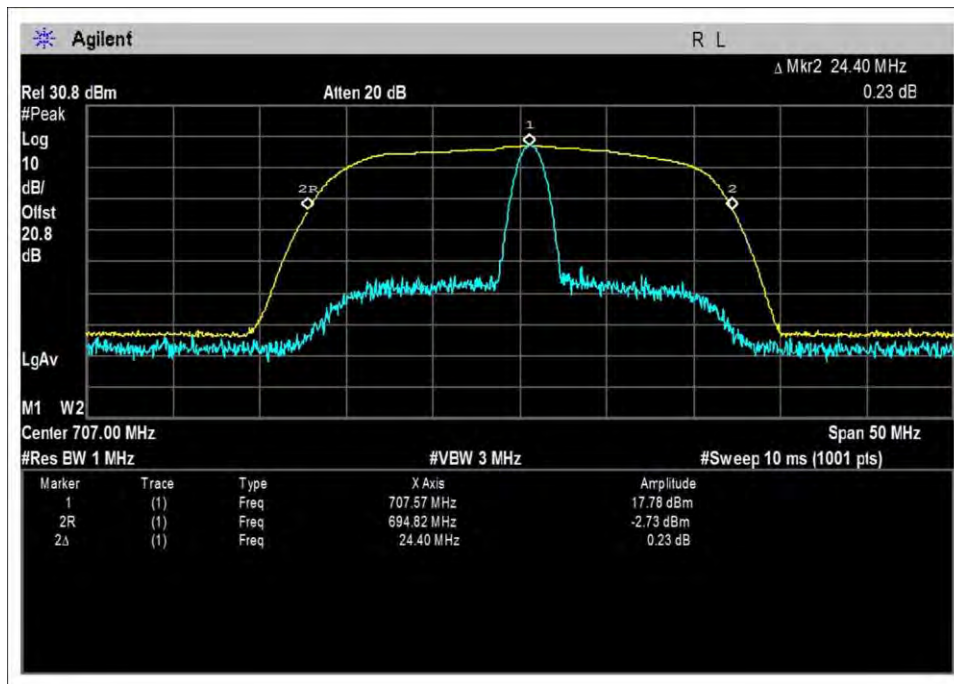
Test Equipment					
Asset #	Description	Model	Manufacturer	Cal Date	Cal Due
ANP06131	Attenuator	18N20W-20	Inmet	2/27/2014	2/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	3/24/2015	3/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/2/2013	12/2/2015

3.3 Summary of Results

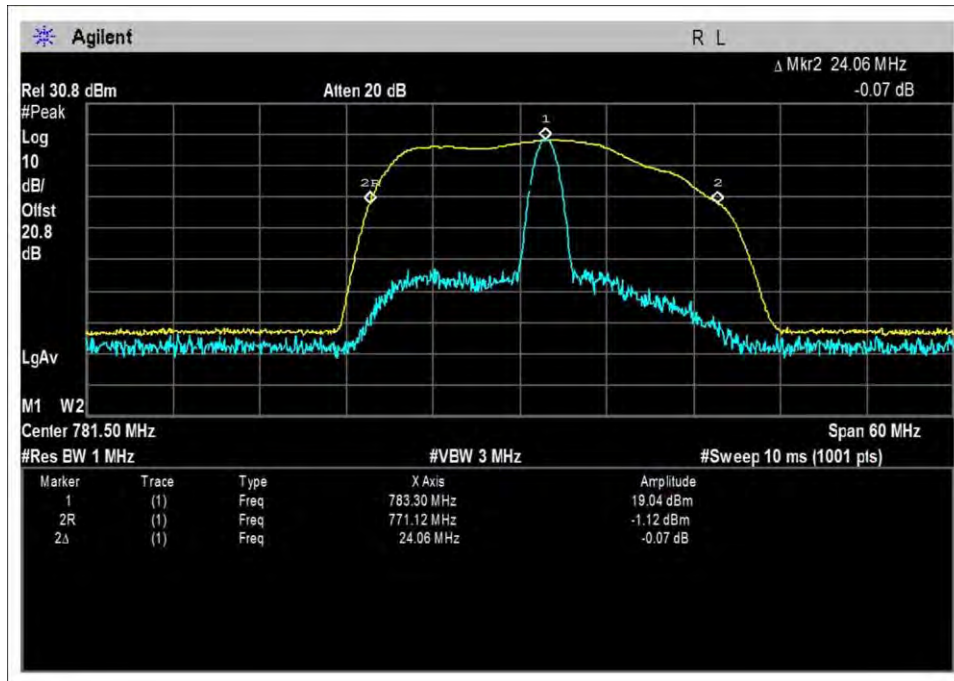
Pass: The plots below show the device only operates on the CMRS frequency bands authorized for use by the NPS.

Test Data

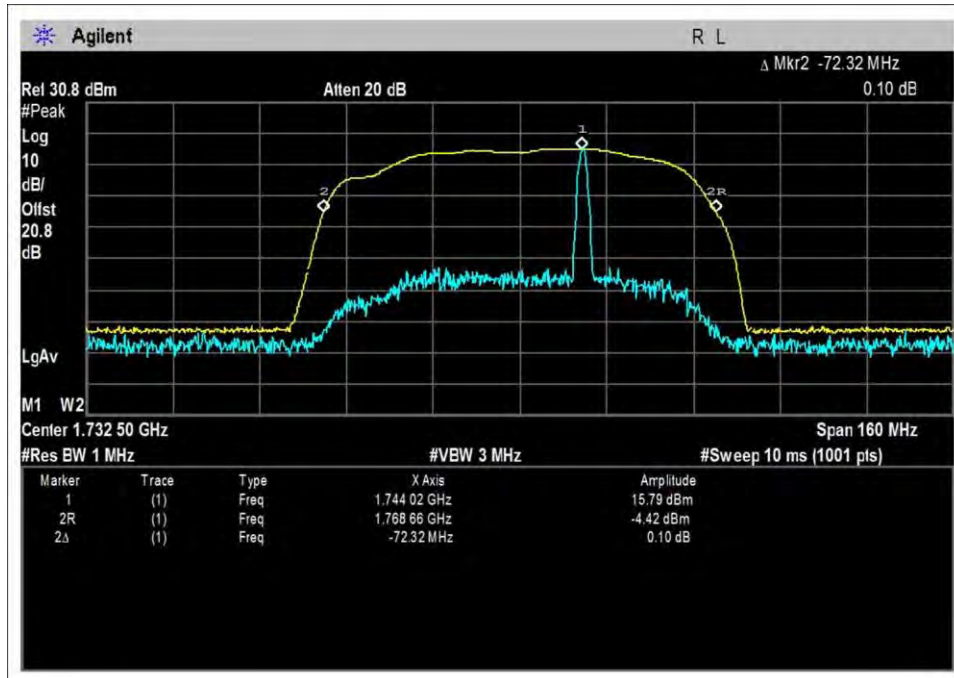
UL



UL-698-716MHz

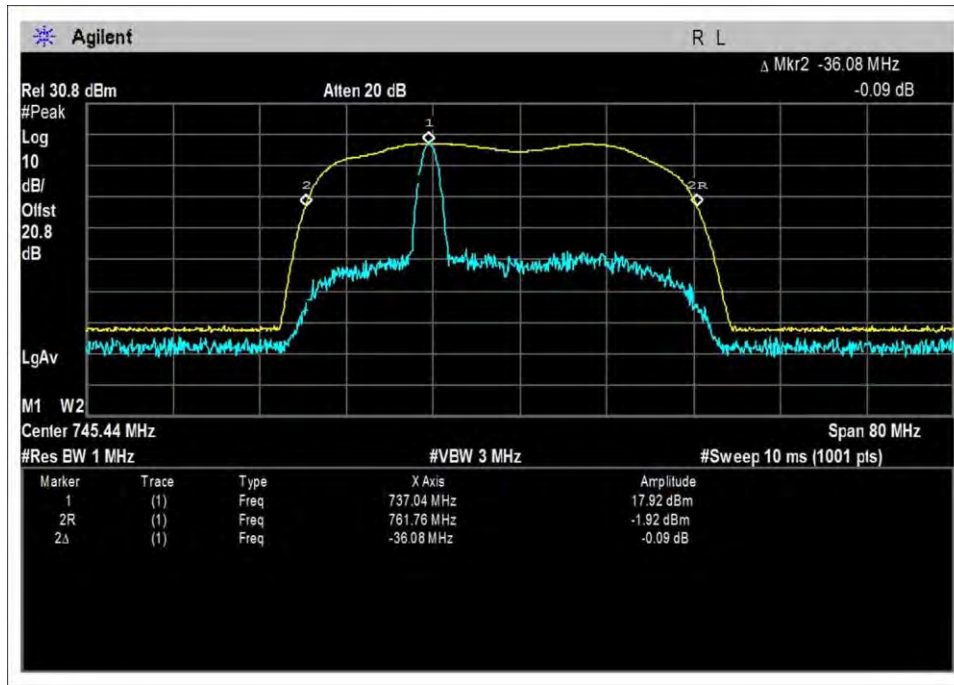


UL-776-787MHz

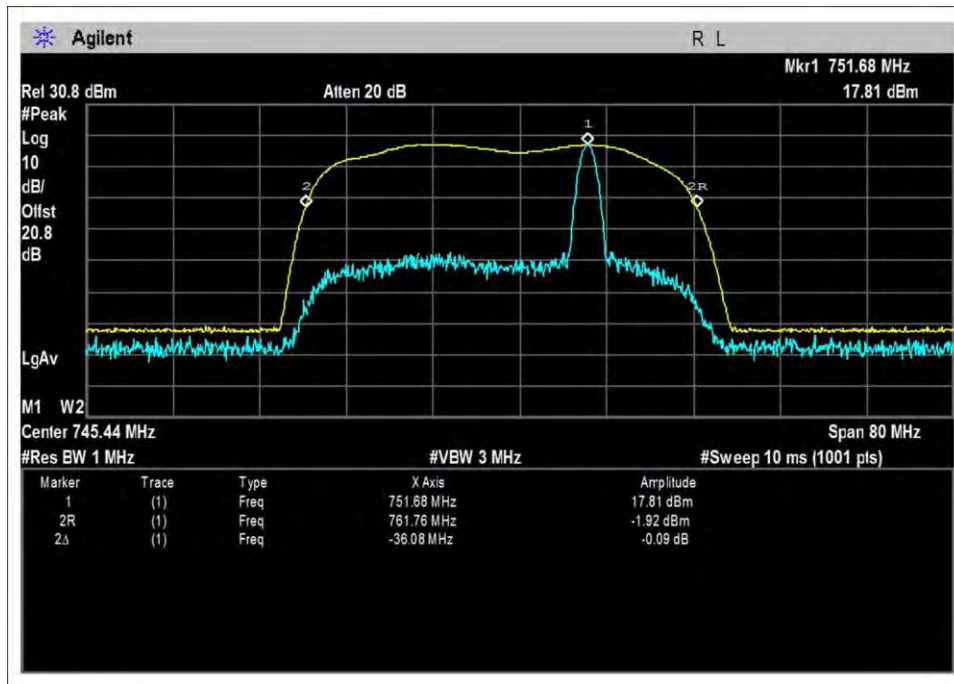


UL-1710-1755MHz

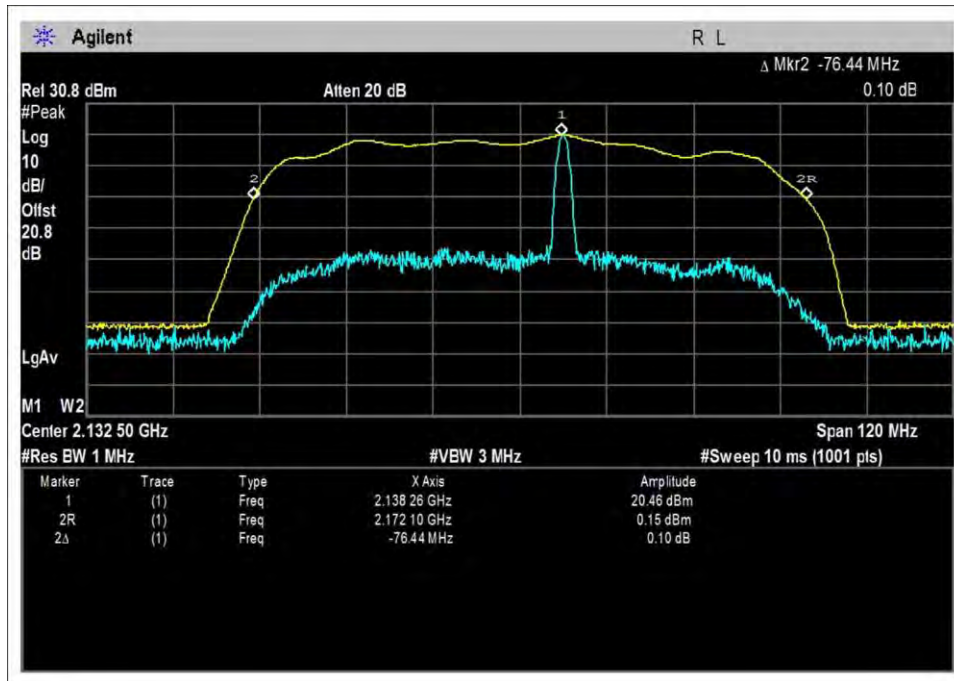
DL



DL-728-746MHz



DL-746-757MHz



DL-2110-2155MHz

3.4 - Input-vs-Output Signal Comparison

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: Cellphone-Mate, Inc.
 Specification: **3.4 OBW (Input vs Output Signal Comparison)**
 Work Order #: **96950** Date: 5/19/2015
 Test Type: **Conducted Power Measurement** Time: 09:10:28
 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:

Configuration 1

The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna.

The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port.

The Industrial booster UL and DL power and gain parameters are initially measured with WiFi 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.

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.
 Software: Force 7 V1.0
 Firmware: V1.0
 Application: MP_TEST MFC version 1.3.8.0

Test environment conditions: 21°C, 40% Relative Humidity, 101.5kPa

Test procedure:
 The test was performed in accordance with section 3.4 of the FCC document: D05 Industrial Booster Basic Measurements v01 935210 Dated June 05, 2015.

Test Equipment					
Asset #	Description	Model	Manufacturer	Cal Date	Cal Due
ANP06131	Attenuator	18N20W-20	Inmet	2/27/2014	2/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	3/24/2015	3/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/2/2013	12/2/2015

3.4 Occupied Bandwidth - Summary of Results

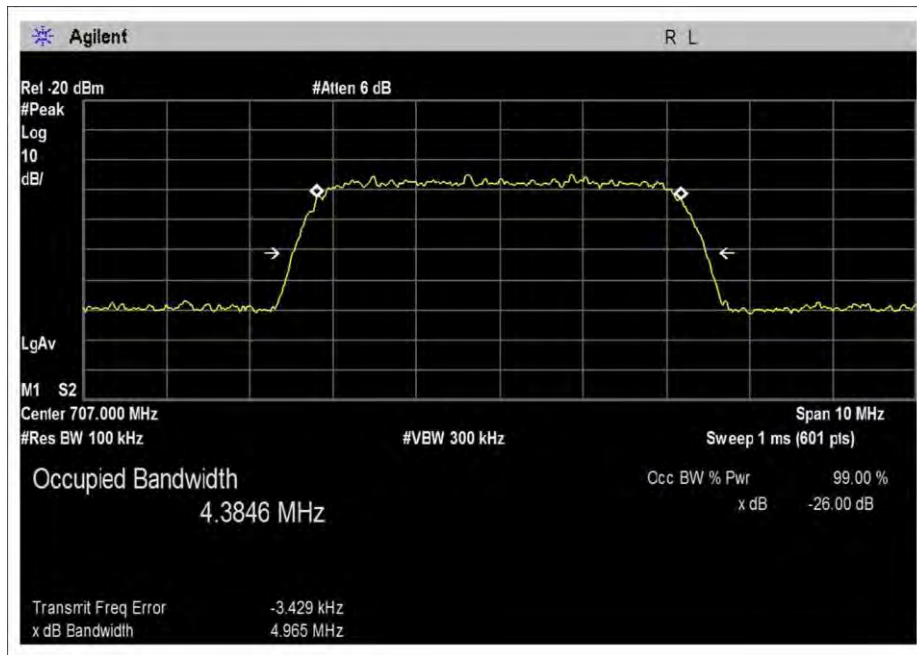
Pass: As summarized in tables and plots below, the spectral shape of the output is similar to input for all modulations.

Worst case results are reported for occupied bandwidth comparison test done with and without AGC circuitry activated.

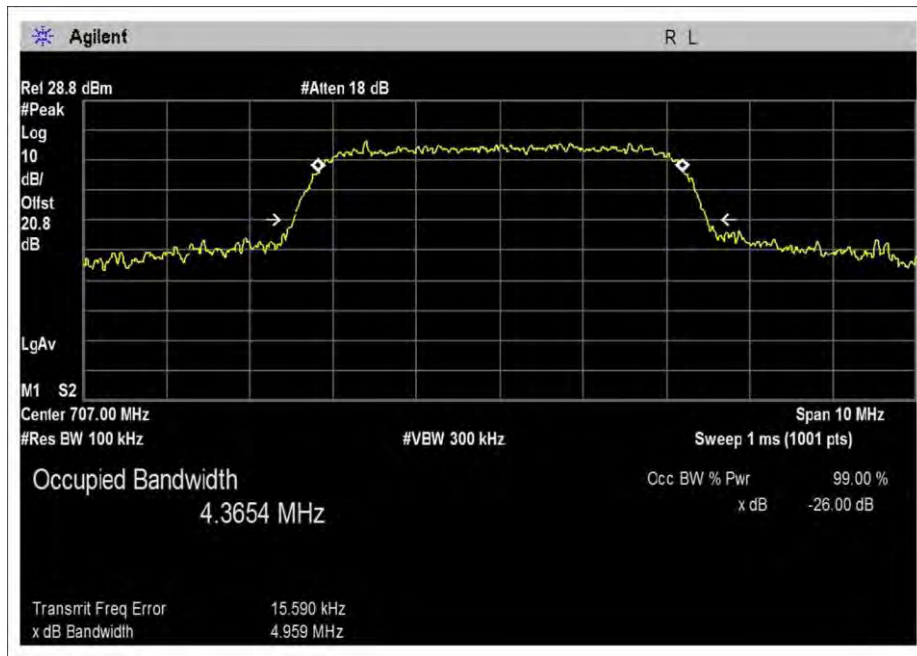
Operational Frequencies (MHz)	BB/NB Signal	Link	Freq Tunned (MHz)	OBW PreAGC (KHz)	OBW AGC+3dB (kHz)	OBW Input (kHz)	Max In&Out Diff (PreAGC)	Max In&Out Diff (AGC)
1710-1755	AWGN	Uplink	1732.5	4409.9	4398.9	4369.6	0.92%	0.67%
698-716	AWGN	Uplink	707	4365.4	4347.4	4384.6	0.44%	0.85%
776-787	AWGN	Uplink	781.5	4374.1	4381.3	4379.4	0.12%	0.04%
2110-2155	AWGN	Downlink	2132.5	4440.8	4429.4	4395.7	1.03%	0.77%
728-746	AWGN	Downlink	737	4364.5	4373.5	4367.2	0.06%	0.14%
746-757	AWGN	Downlink	751.5	4365.9	4365.8	4368.1	0.05%	0.05%
1710-1755	GSM	Uplink	1732.5	242.546	243.9294	242.9799	0.18%	0.39%
698-716	GSM	Uplink	707	245.293	244.9789	243.9172	0.56%	0.44%
776-787	GSM	Uplink	781.5	244.438	244.7266	244.6174	0.07%	0.04%
2110-2155	GSM	Downlink	2132.5	244.497	243.9772	243.0978	0.58%	0.36%
728-746	GSM	Downlink	737	243.917	245.5459	245.3449	0.58%	0.08%
746-757	GSM	Downlink	751.5	244.799	244.9809	245.3837	0.24%	0.16%

Test Data

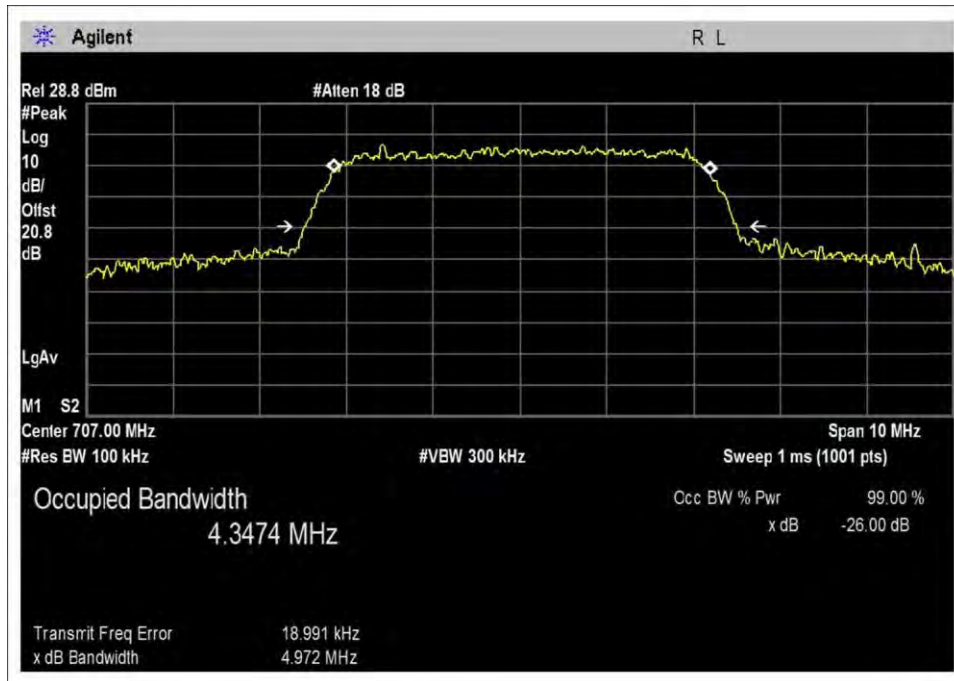
AWGN - UL



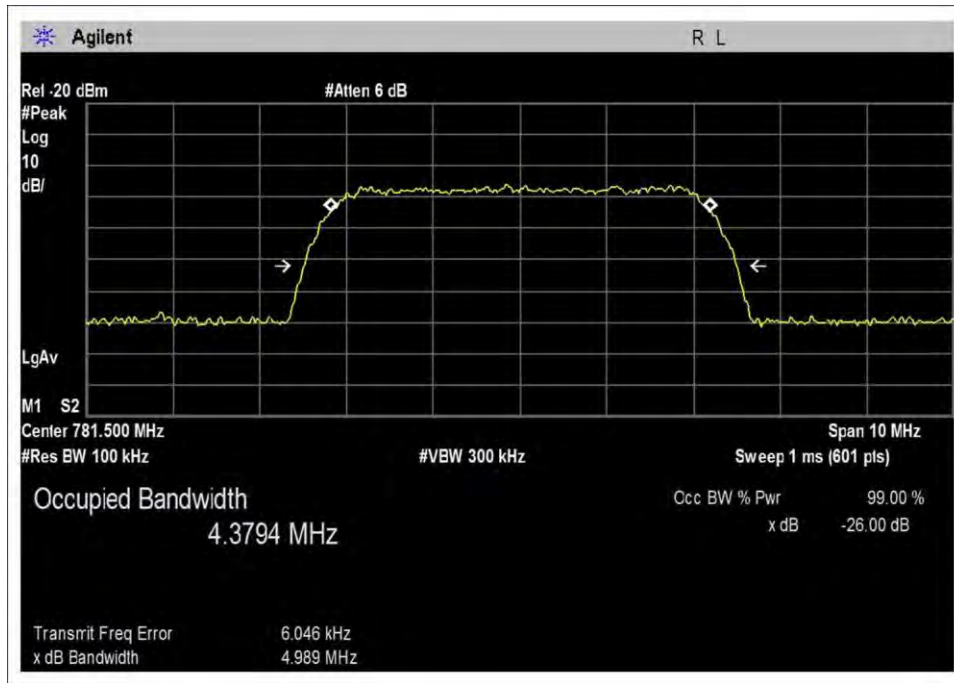
UL-698-716M-Input



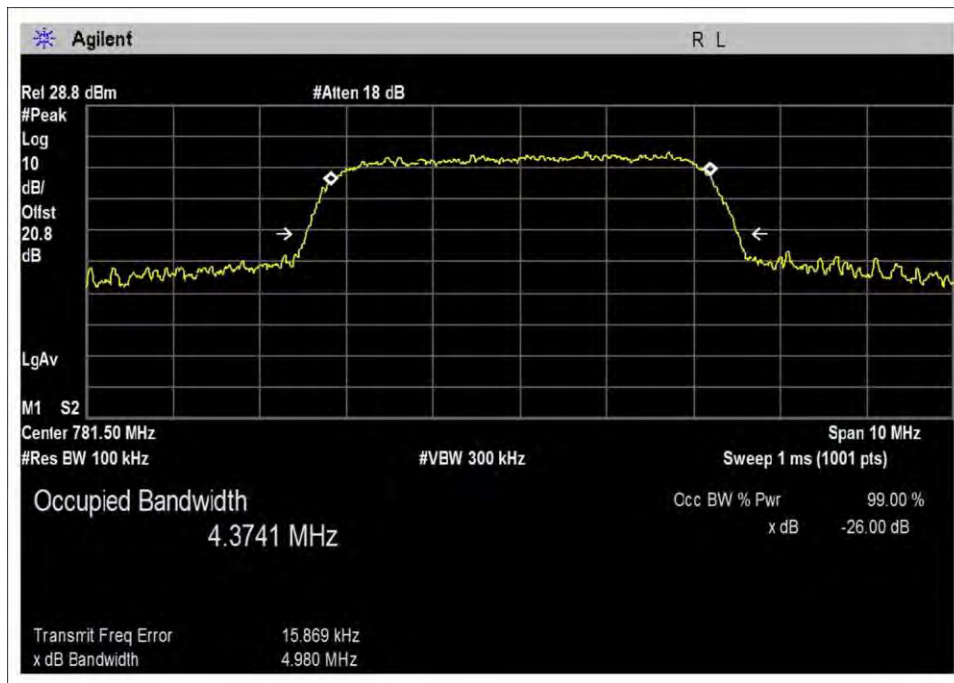
UL-698-716M-Out-43.2



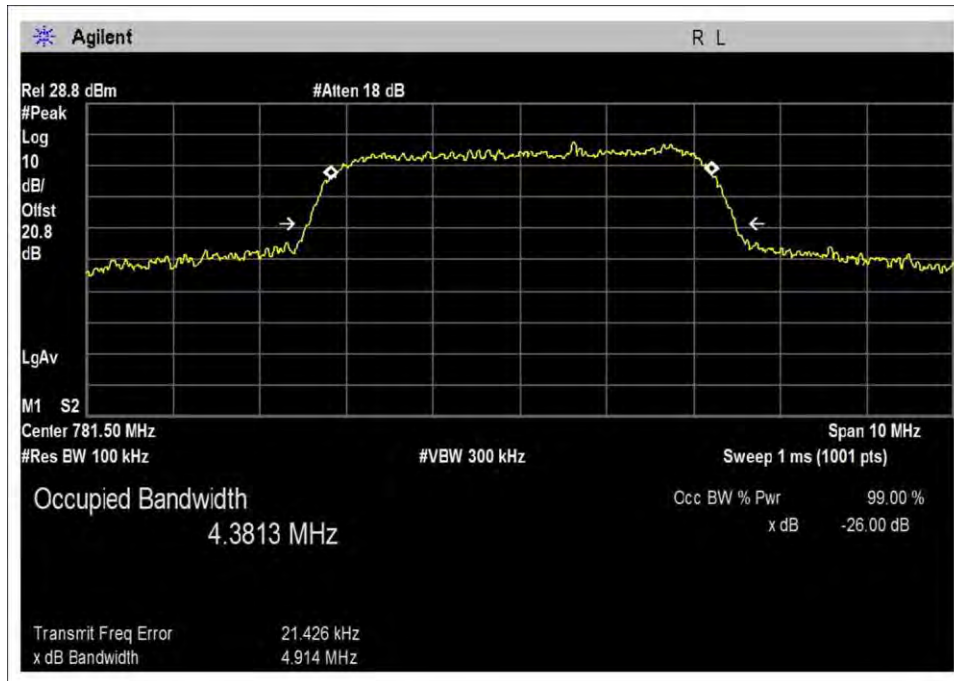
UL-698-716M-Out-AGC+3



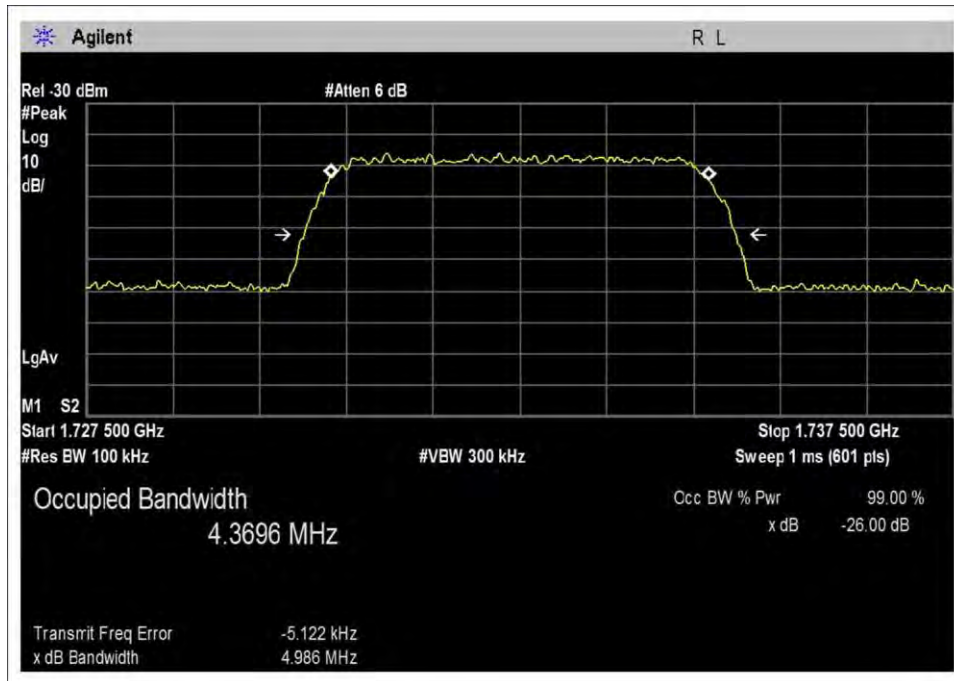
UL-776-787M-M-Input



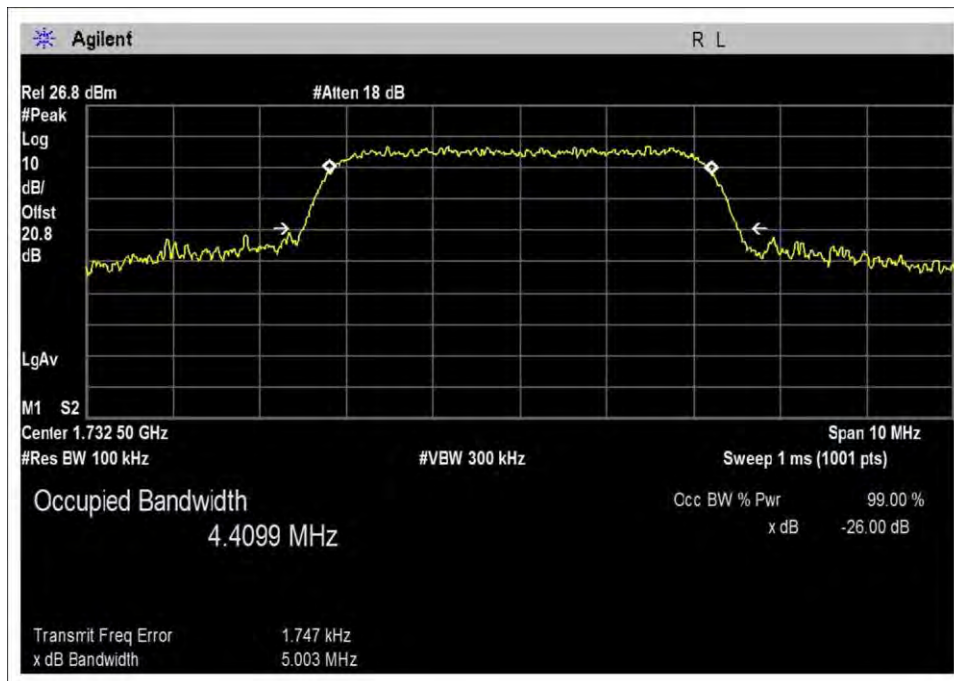
UL-776-787M-Out-43.1



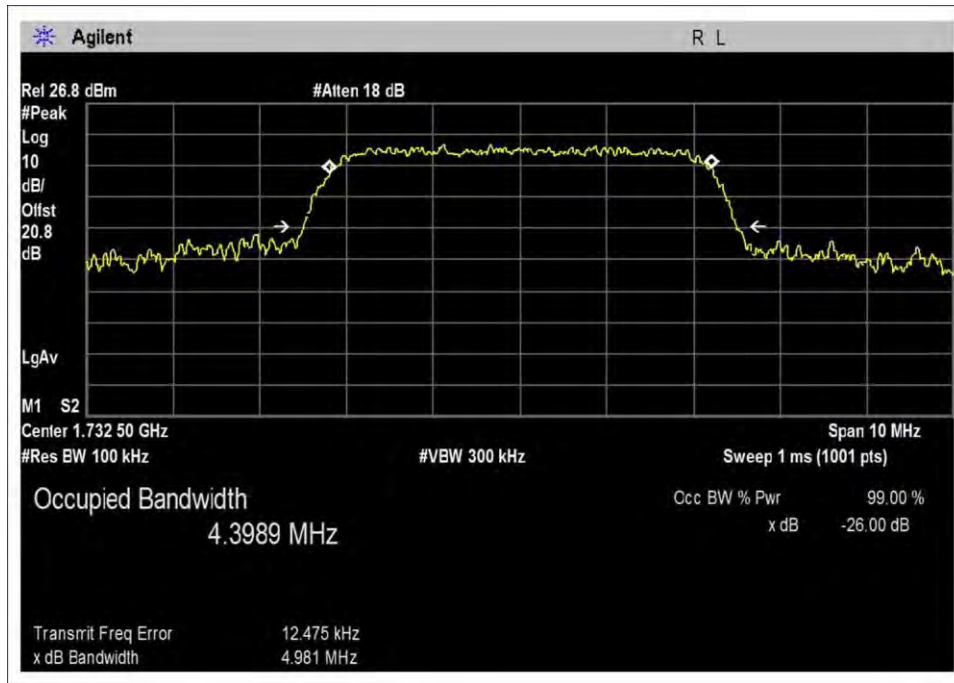
UL-776-787M-Out-AGC+3



UL-1710-1755M-M-Input

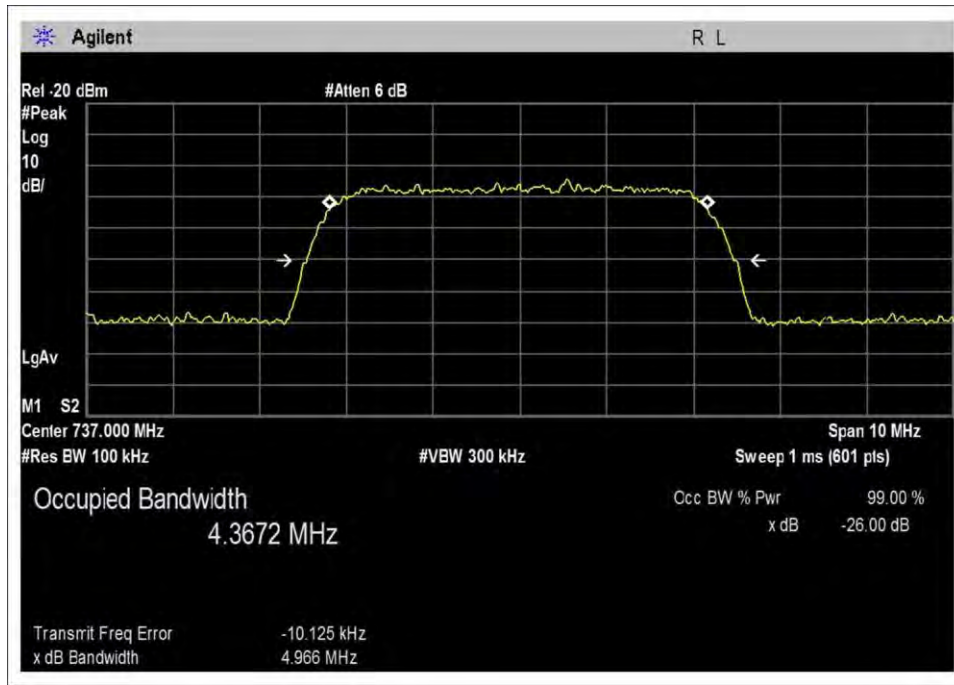


UL-1710-1755M-Out-42.9

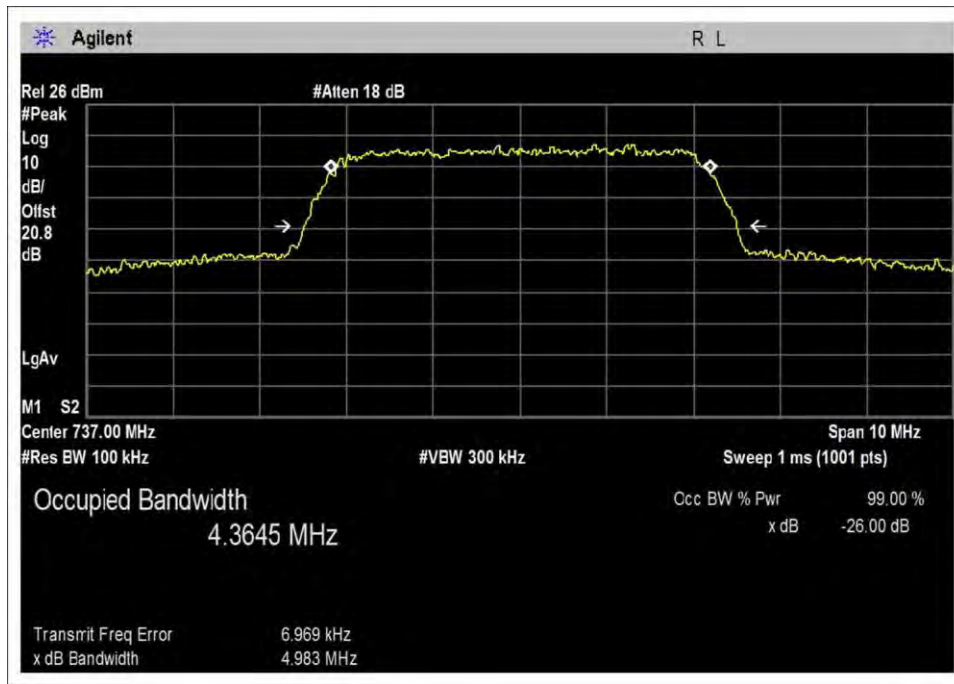


UL-1710-1755M-Out-AGC+3

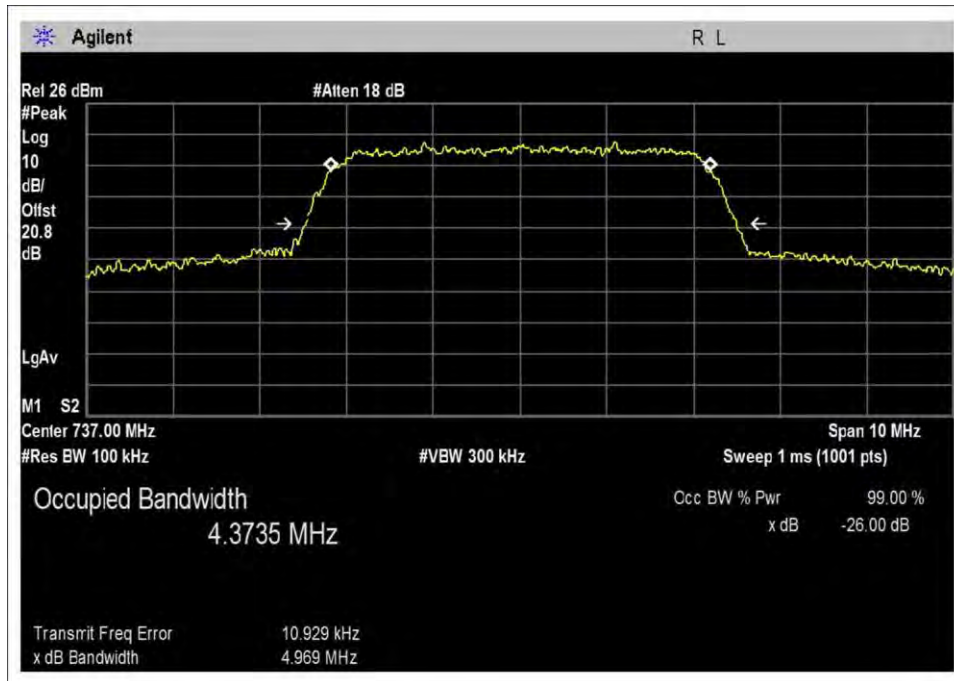
AWGN - DL



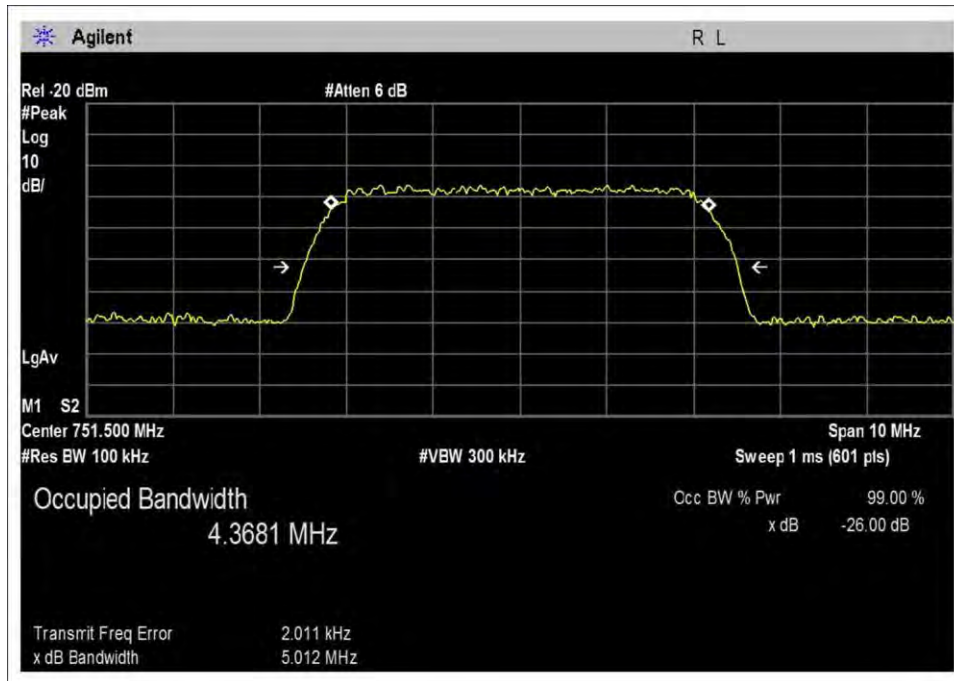
DL-728-746M-Input



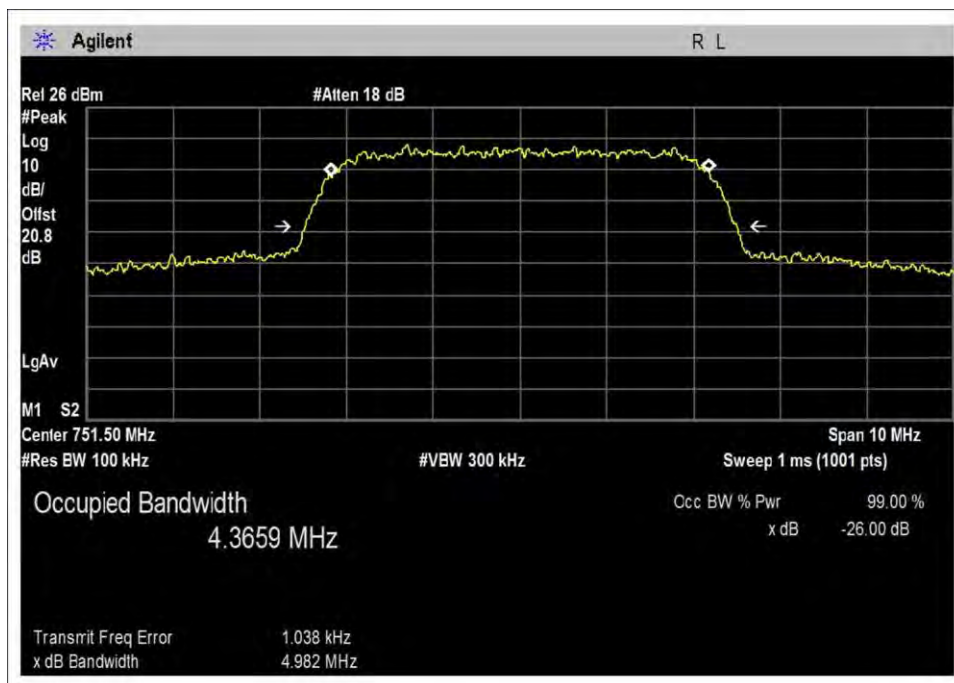
DL-728-746M-Out-49.4



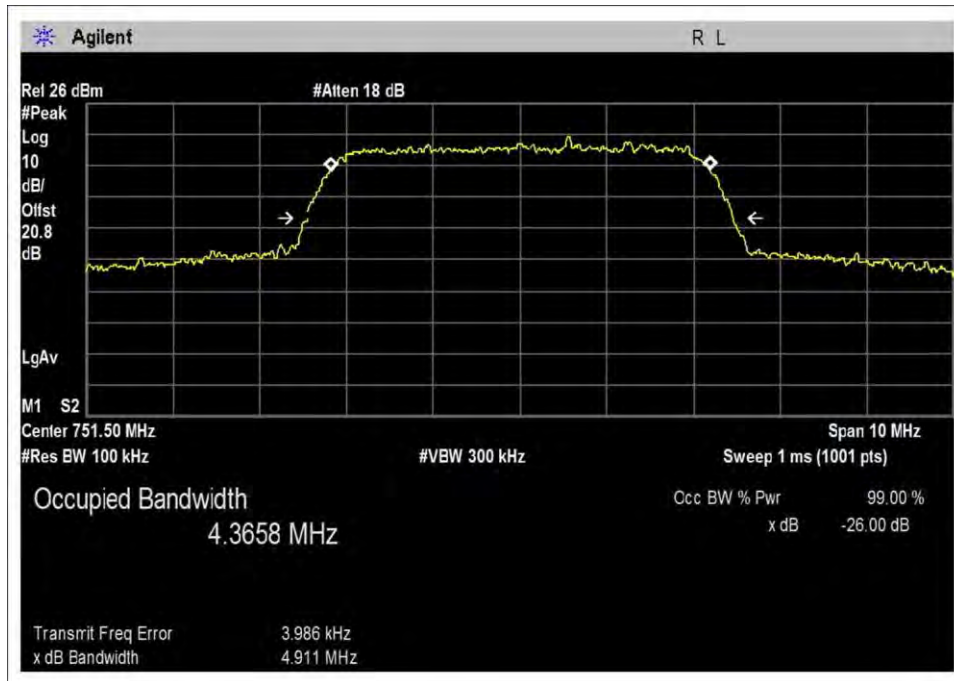
DL-728-746M-Out-AGC+3



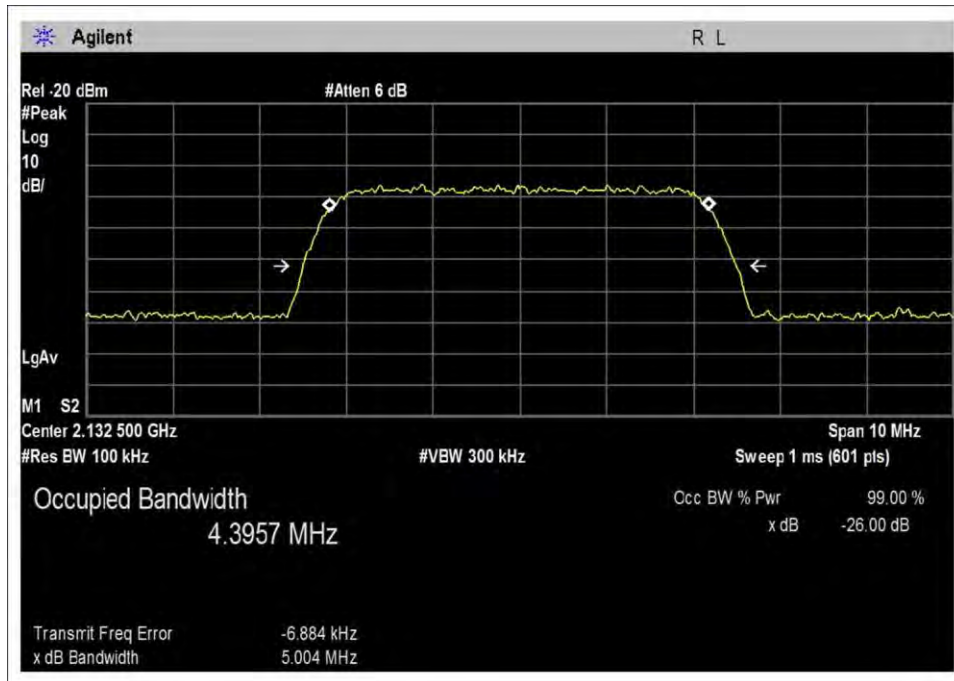
DL-746-757M-M-Input



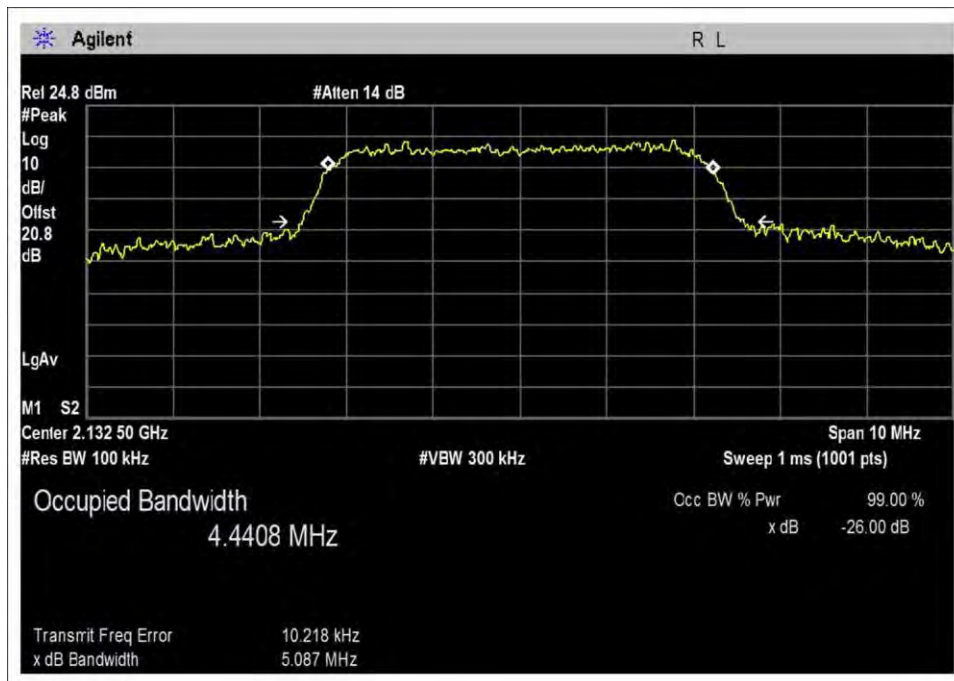
DL-746-757M-Out-49.6



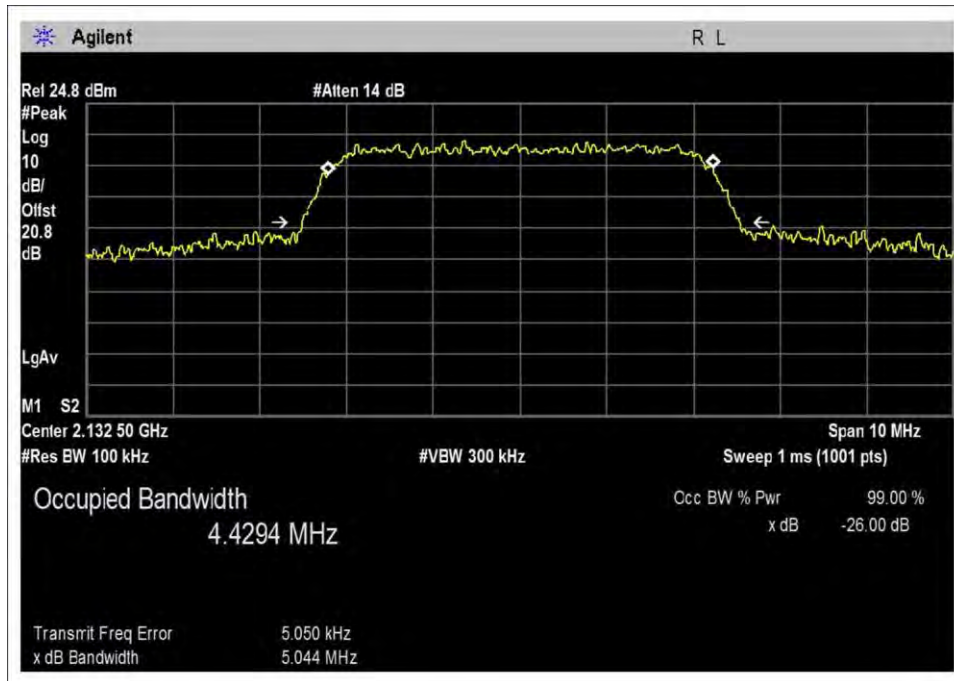
DL-746-757M-Out-AGC+3



DL-2110-2155M-M-Input

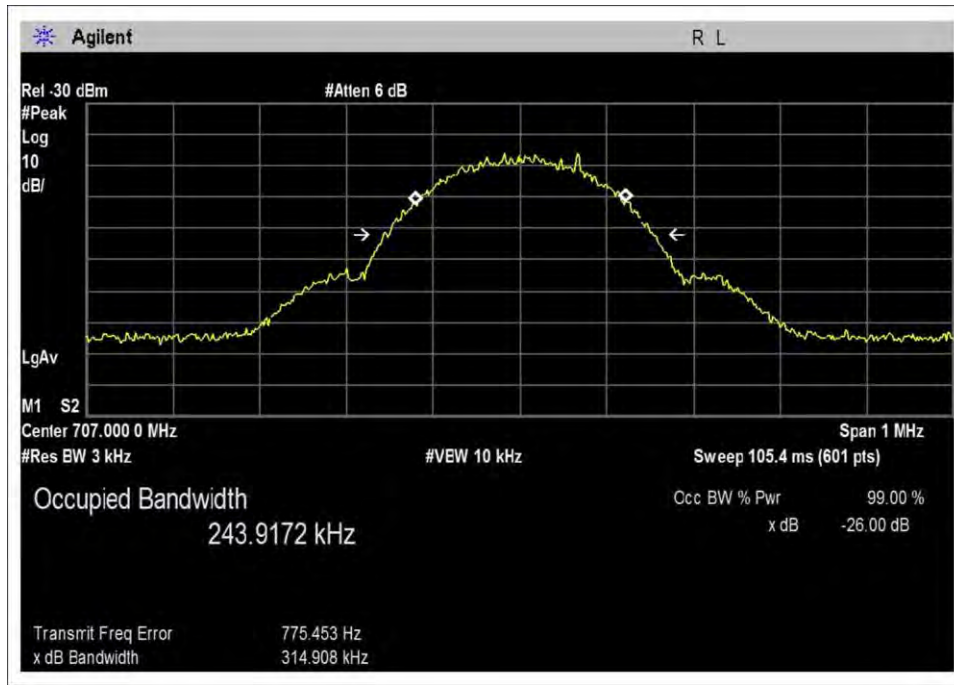


DL-2110-2155M-Out-46.8

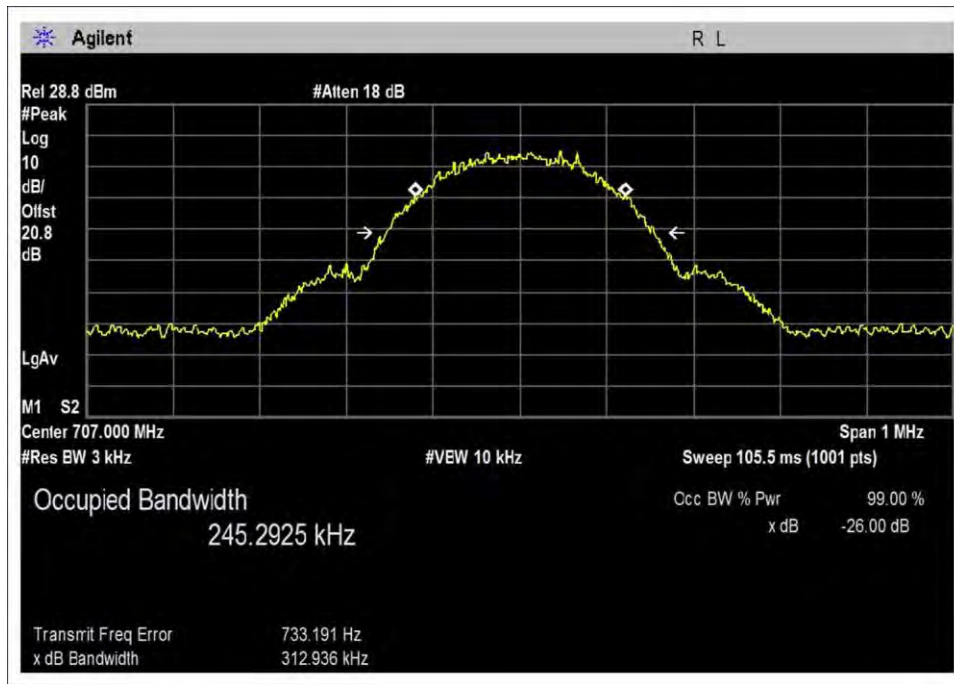


DL-2110-2155M-Out-AGC+3

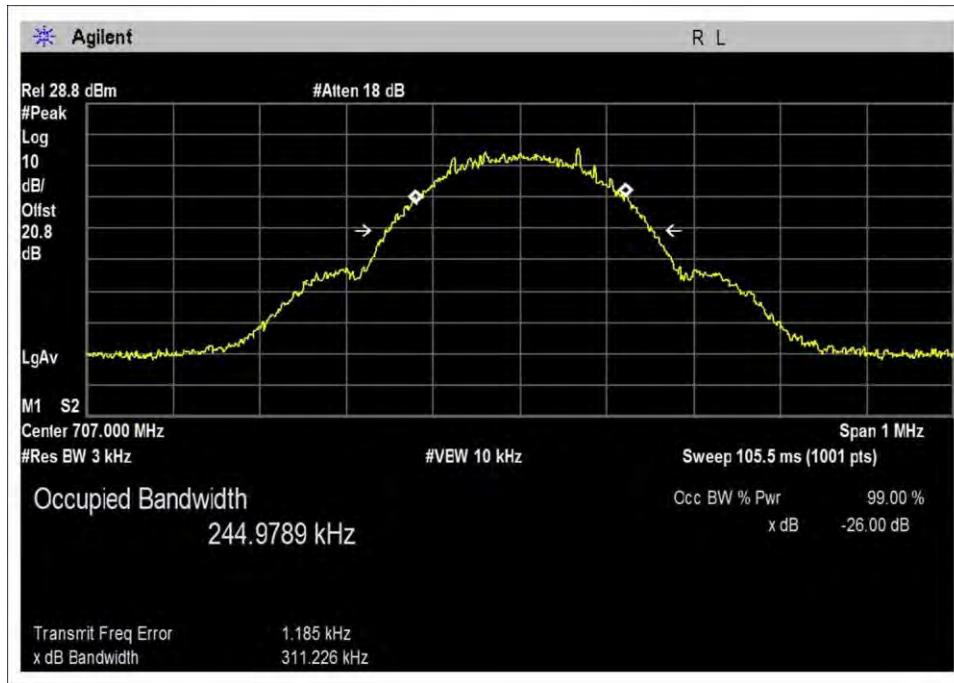
GSM - UL



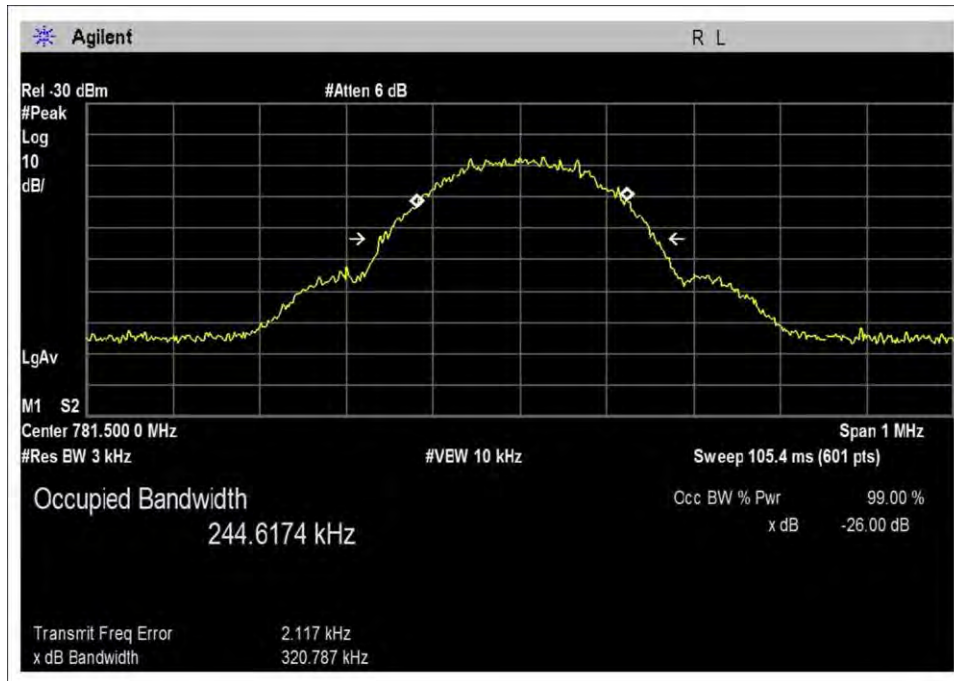
UL-698-716M-Input



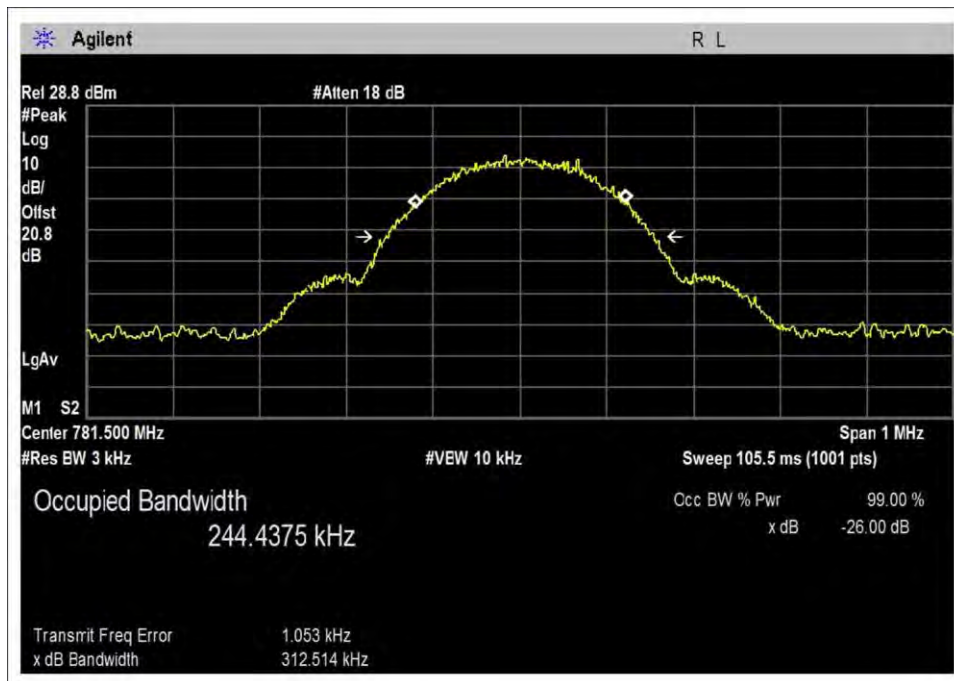
UL-698-716M-Out-43



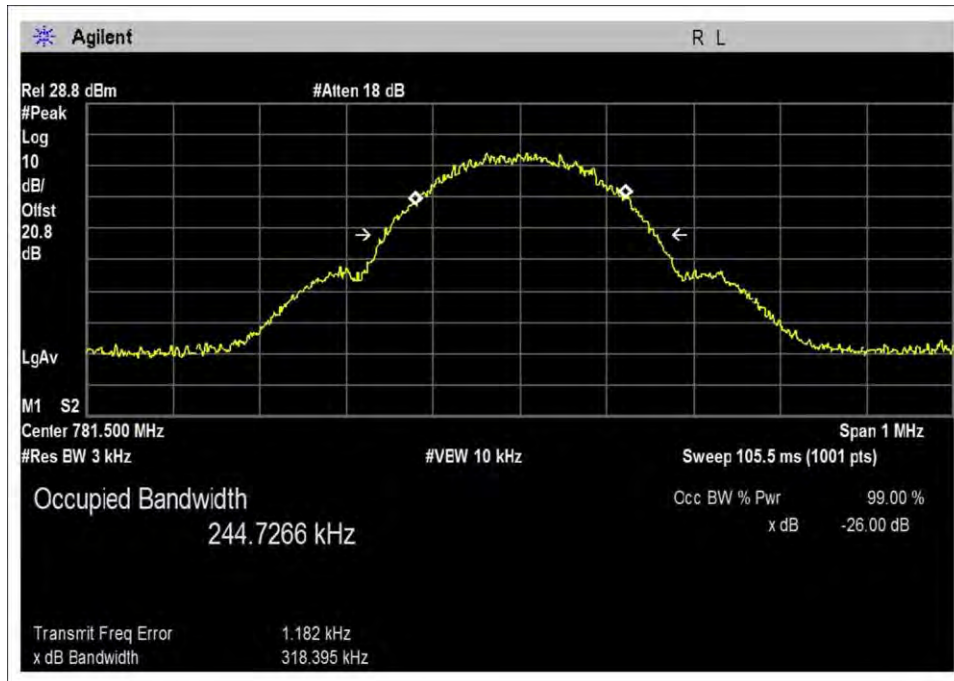
UL-698-716M-Out-AGC+3



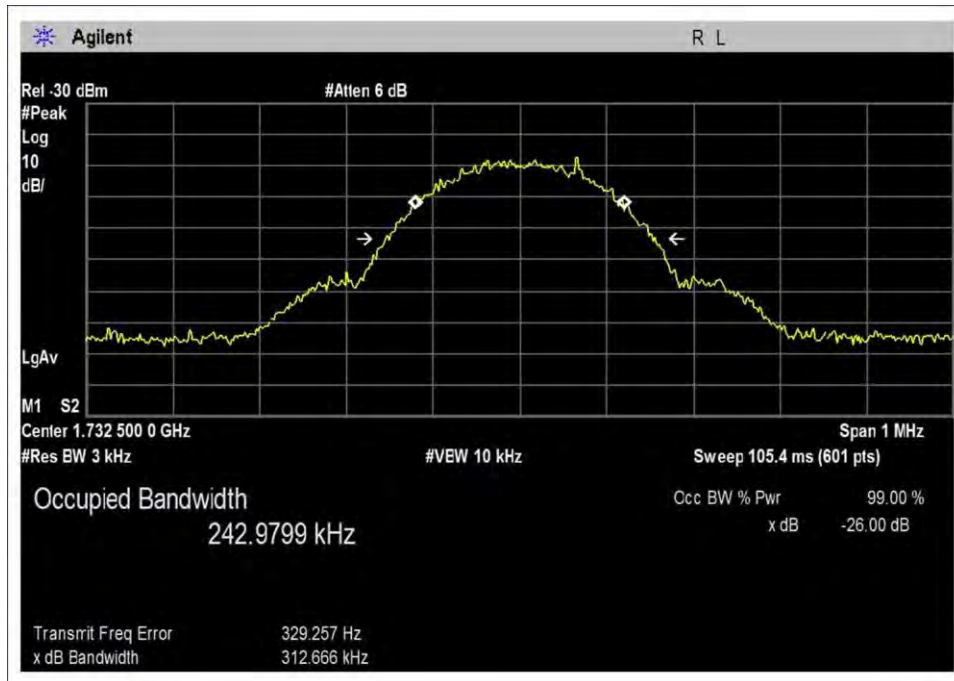
UL-776-787M-Input



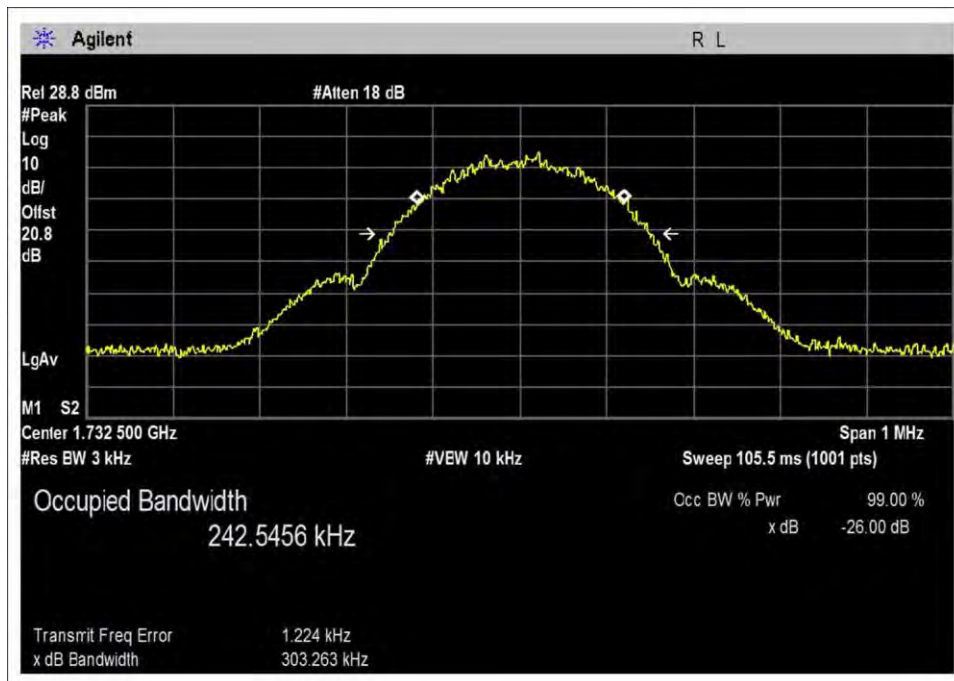
UL-776-787M-Out-42.9



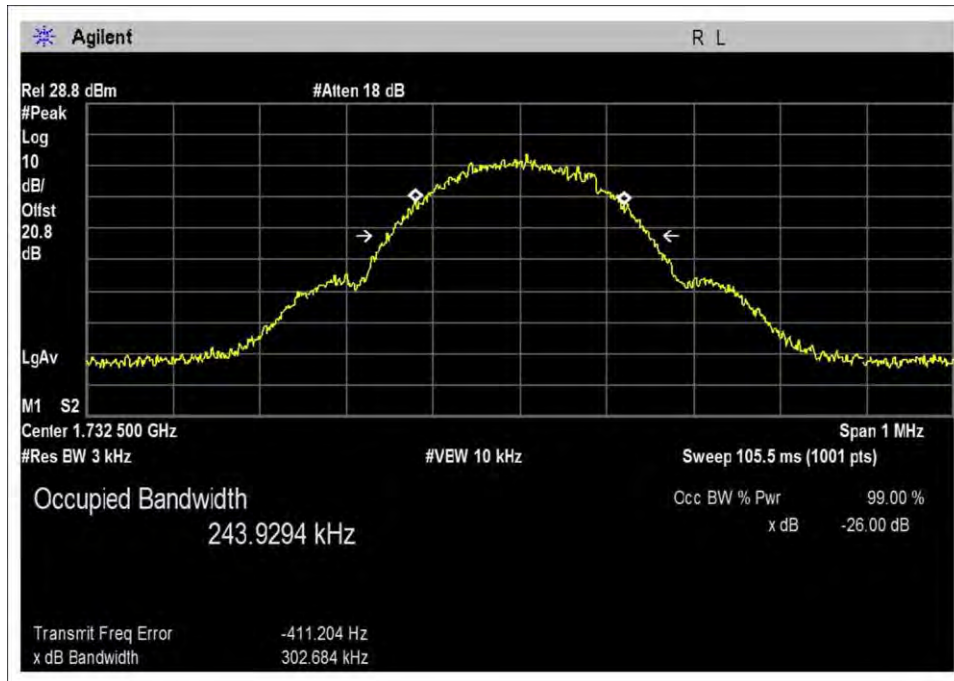
UL-776-787M-Out-AGC+3



UL-1710-1755M-Input

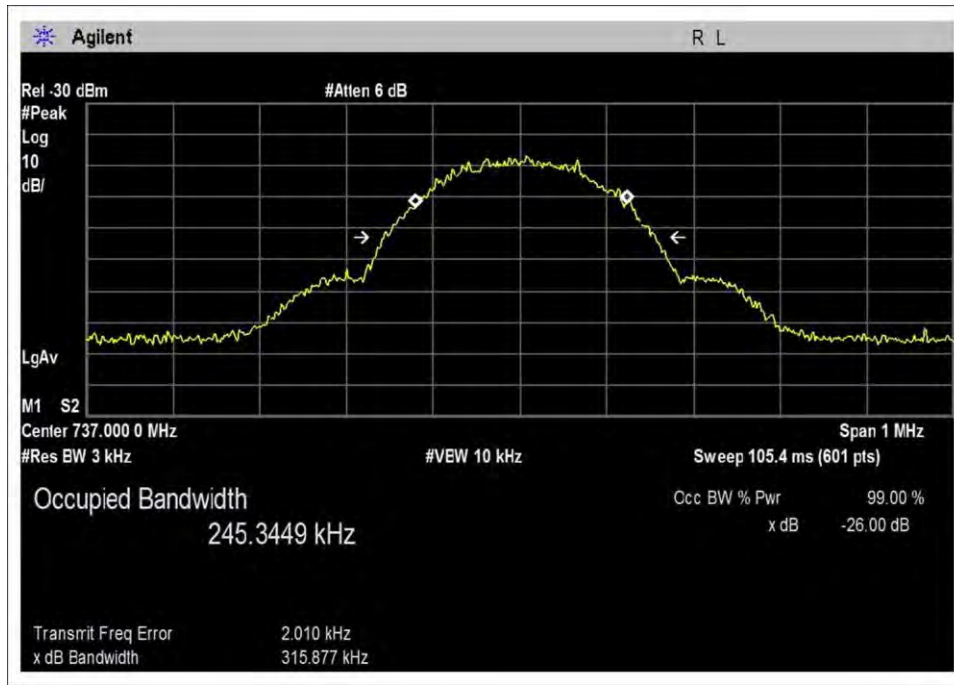


UL-1710-1755M-Out-42.5

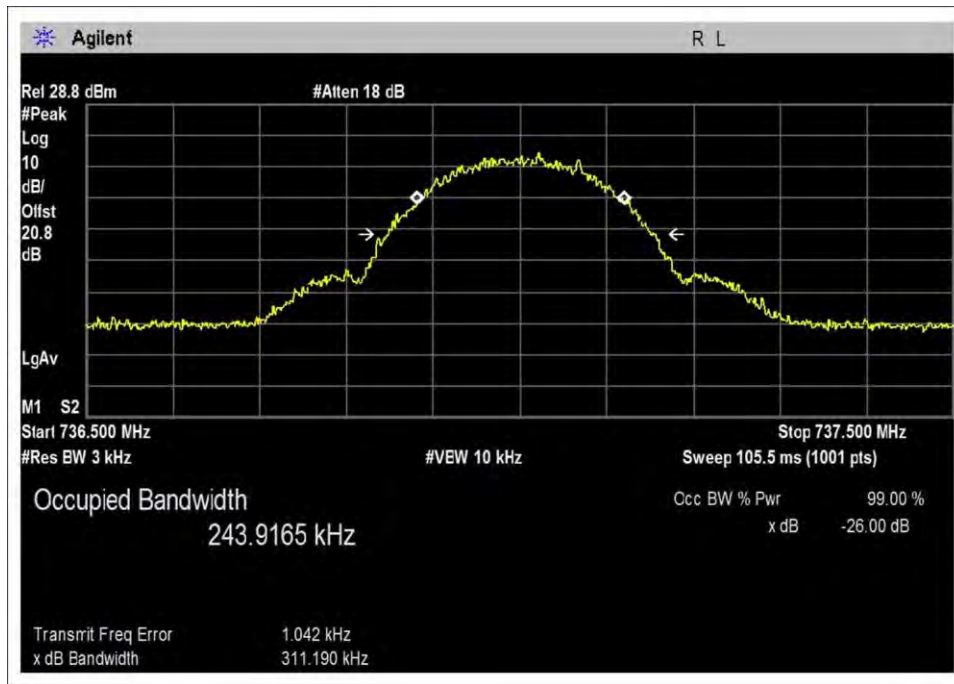


UL-1710-1755M-Out-AGC+3

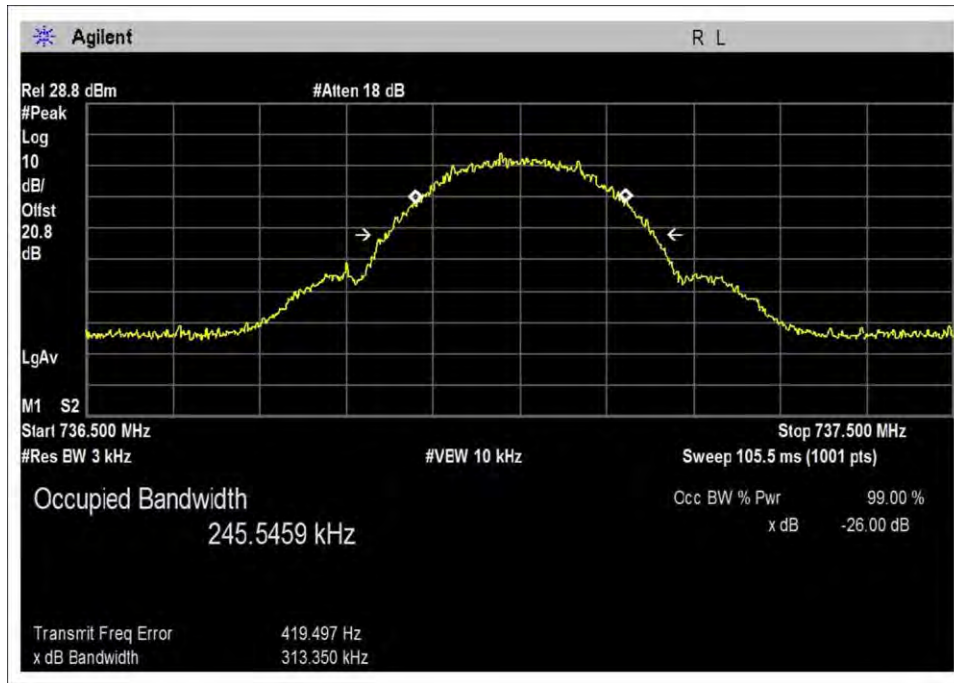
GSM - DL



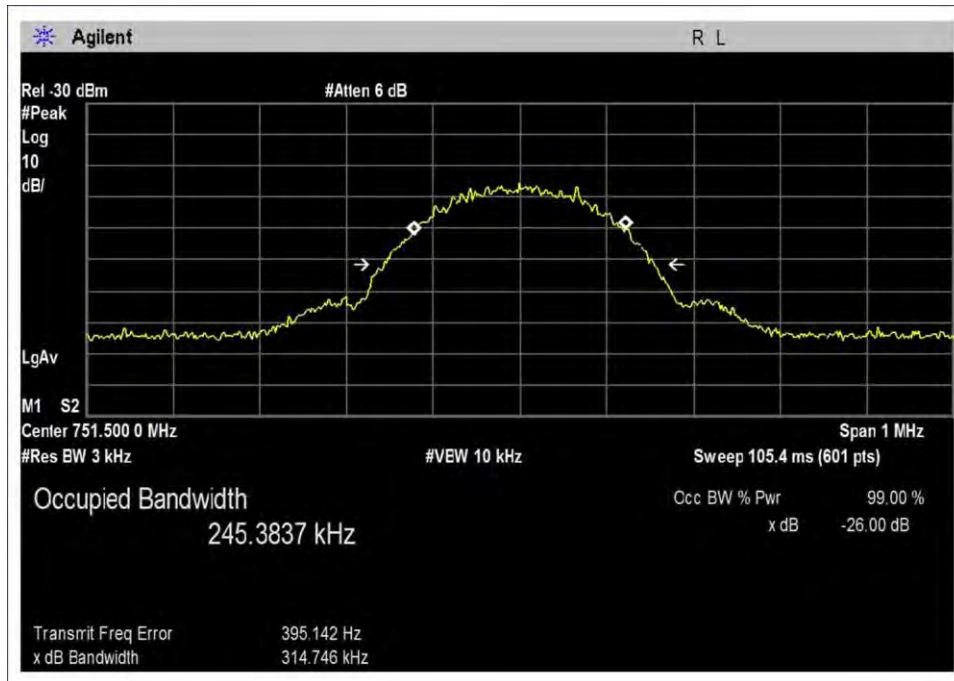
DL-728-746M-Input



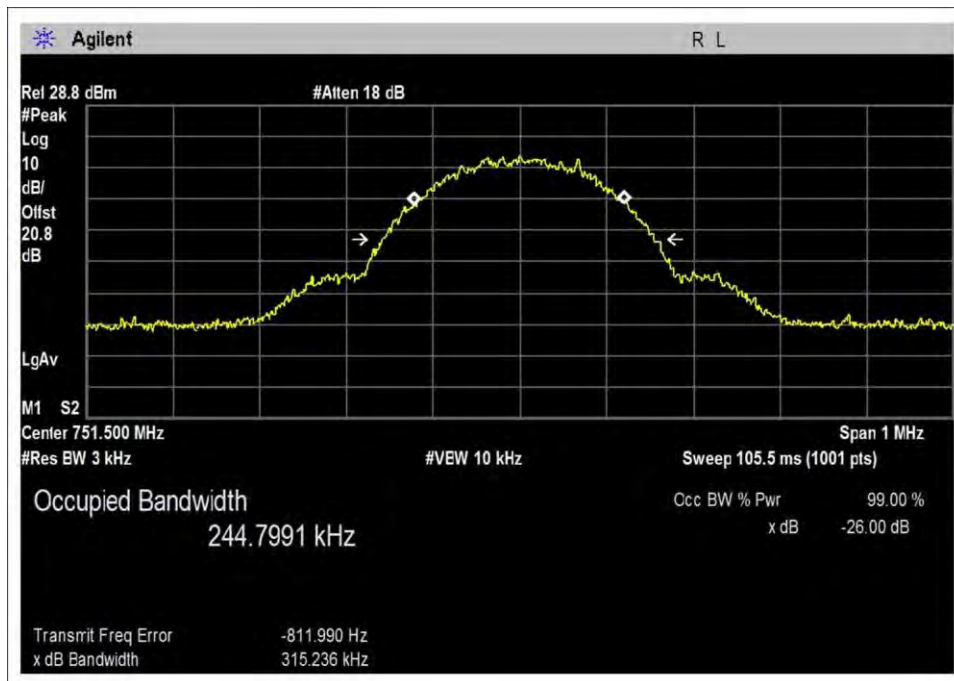
DL-728-746M-Out-49.5



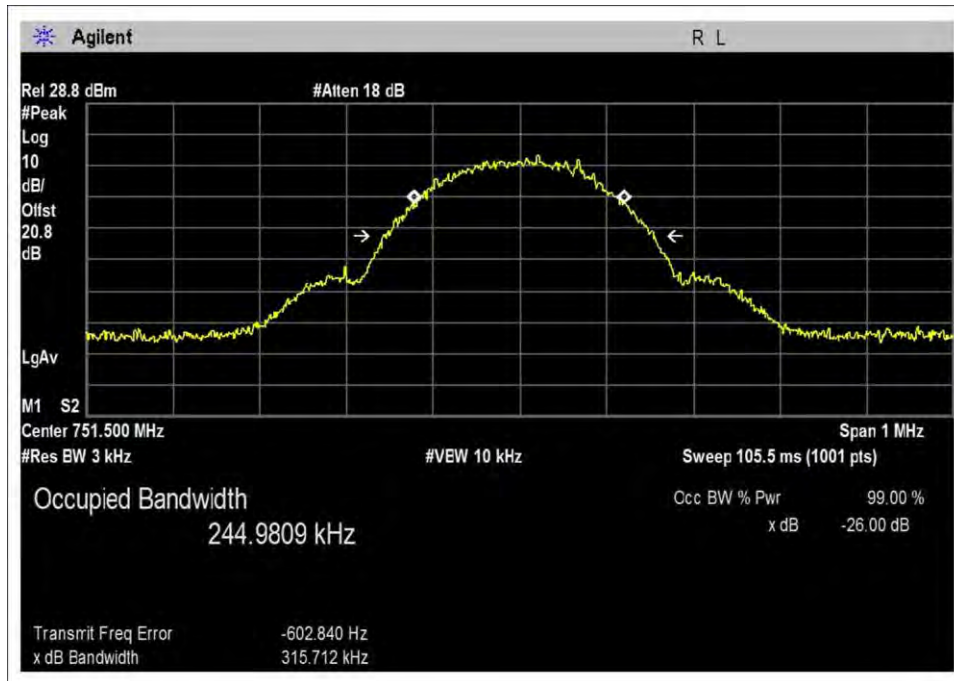
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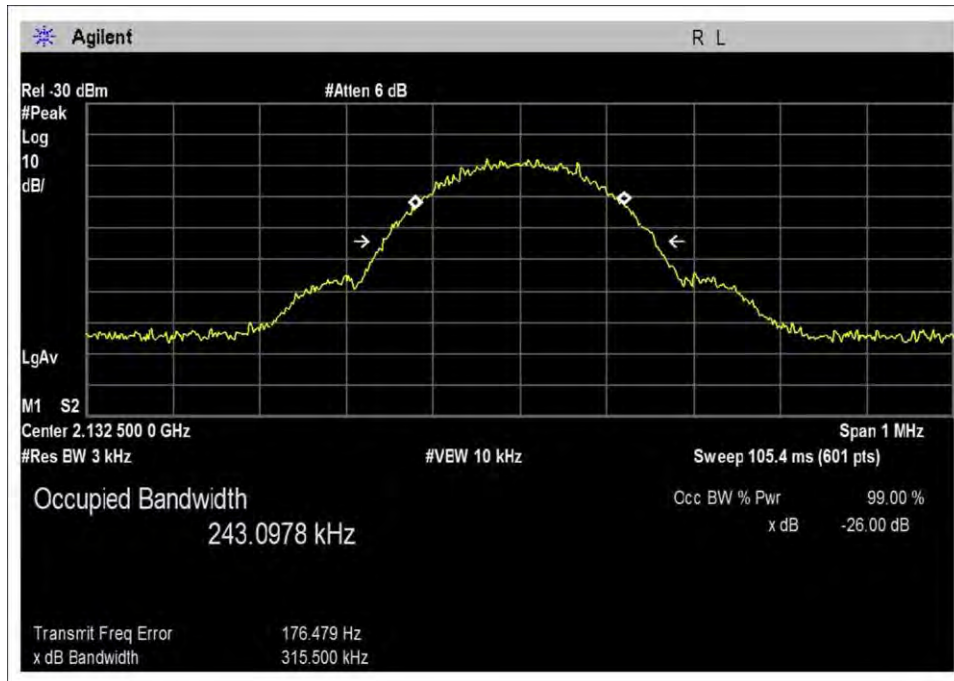
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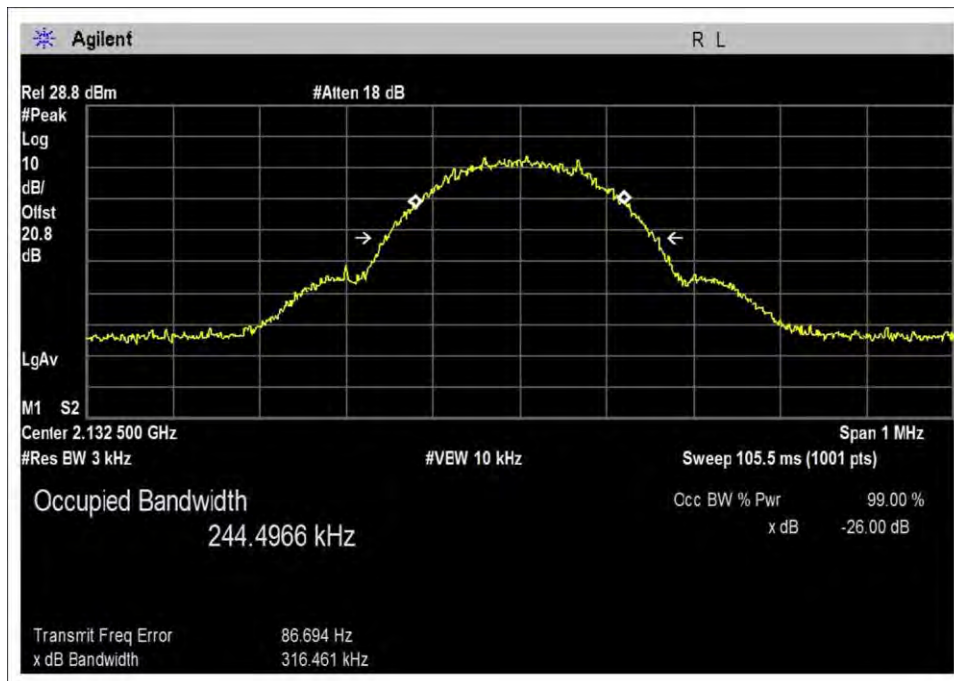
DL-746-757M-Out-49.2



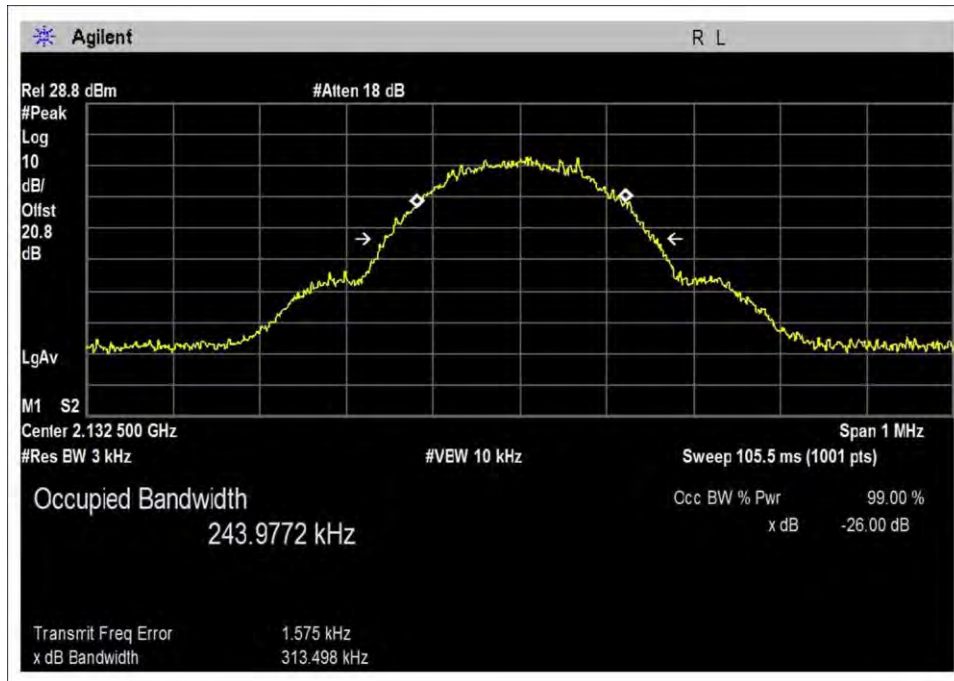
DL-746-757M-Out-AGC+3



DL-2110-2155M-Input



DL-2110-2155M-Out-46.2



DL-2110-2155M-Out-AGC+3

3.5 - Mean Output Power and Amplifier Gain

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: Cellphone-Mate, Inc.
 Specification: **3.5 EUT mean output power and amplifier gain**
 Work Order #: **96950** Date: 5/19/2015
 Test Type: **Conducted Power Measurement** Time: 09:10:28
 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:

Configuration 1

The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna.

The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port.

The Industrial booster UL and DL power and gain parameters are initially measured with WiFi 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.

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.
 Software: Force 7 V1.0
 Firmware: V1.0
 Application: MP_TEST MFC version 1.3.8.0

Test environment conditions: 21°C, 40% Relative Humidity, 101.5kPa

Test procedure:
 The test was performed in accordance with section 3.5 of the FCC document: D05 Industrial Booster Basic Measurements v01 935210 Dated June 05, 2015.

Test Equipment					
Asset #	Description	Model	Manufacturer	Cal Date	Cal Due
ANP06131	Attenuator	18N20W-20	Inmet	2/27/2014	2/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	3/24/2015	3/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/2/2013	12/2/2015
C00087	Combiner	44000		1/9/2014	1/9/2016
AN03471	Spectrum Analyzer	E4440A	Agilent	12/19/2013	12/19/2015

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

Antenna Kitting Information

Force-7 (80dB)

Component	Prod No. Description	Gain/Loss							Notes
		HDTV	LTE-A	LTE-V	800MHz	1900MHz	1700MHz \ 2100MHz	2400-2500 MHz	
Outdoor Antenna	SC288W	/	3dBi	3dBi	3dBi	4dBi	4dBi \ 4dBi	-	With N connector
	SC230W	/	10dBi	10dBi	10dBi	10dBi	10dBi \ 10dBi	-	With N connector
Outdoor Cable	SC400-30NN 30Feet	/	2.05 dB	2.05 dB	2.12dB	2.83dB	2.68dB \ 2.98dB	-	30 Feet or longer with N connector
Indoor Antenna	SC222W	/	3dBi	3dBi	3dBi	6dBi	6dBi \ 6dBi	6dBi	with RP-TNC connector
Indoor Cable	SC400-75NN 75Feet	/	4.22 dB	4.22 dB	4.41dB	6.17dB	5.8d B \ 6.54dB	6.85 dB**	75 Feet or longer with RP-TNC connector
HDTV Outdoor Antenna	SC306W-H	3dBi	/	/	/	/	/	/	With F connector
HDTV Cable 1 & 2	SC-RG6-75								With F connector
	SC-RG6-50								

*All equivalent antennas and cables are suitable for use with the Force 7 80dB booster.

**3dB coupling loss is not included.

Note1 : Dual Indoor Antenna Kit

Component	Prod No. Description	Quantity	Notes
Outdoor Antenna	SC230W	1pcs	With N connector.
Outdoor Cable	SC400-30NN 30Feet	1pcs	30 Feet or longer with N connector.
Indoor Cable	SC400-20NN 20Feet	1pcs	Insertion loss: 2.3dB. 20 Feet or longer with RP-TNC connector.
Splitter	SC-WS-2	1pcs	Insertion loss: 3dB. With RP-TNC connector.
Cable After Splitting	SC400-40NN 40Feet	2pcs	Insertion loss: 4.04dB. 40 Feet or longer with RP-TNC connector
Indoor Antenna	SC222W	2pcs	With RP-TNC connector
*All equivalent antennas and cables are suitable for use with the Force 7 80dB booster.			

Note2 : Four Indoor Antenna Kit

Component	Prod No. Description	Quantity	Notes
Outdoor Antenna	SC230W	1pcs	With N connector
Outdoor Cable	SC400-30NN 30Feet	1pcs	30 Feet or longer with N connector.
Indoor Cable	SC400-20NN 20Feet	1pcs	20 Feet or longer with RP-TNC connector.
Splitter	SC-WS-4	1pcs	With RP-TNC connector.
Cable After Splitting	SC400-40NN 40Feet	4pcs	40 Feet or longer with RP-TNC connector.
Indoor Antenna	SC222W	4pcs	With RP-TNC connector.
*All equivalent antennas and cables are suitable for use with the Force 7 80dB booster.			

Note3 : Multiple Indoor antenna kit is also an option.

3.5 Summary of Results

Pass: As summarized in table and plots below, calculated EIRP and Gain are within limit.

Operational Frequencies (MHz)	BB/NB Signal	Link	Freq Tunned (MHz)	PreAGC (dBm)	AGC+3dB (dBm)	Input (dBm)	Gain PreAGC (dB)	Gain AGC +3dB (dB)
1710-1755	AWGN	Uplink	1732.5	19.19	19.03	-58.2	77.4	74.2
698-716	AWGN	Uplink	707	19.4	19.8	-58.1	77.5	74.9
776-787	AWGN	Uplink	781.5	19.17	19.44	-58.0	77.2	74.5
2110-2155	AWGN	Downlink	2132.5	17.31	17.29	-62.9	80.2	77.2
728-746	AWGN	Downlink	737	18.68	18.67	-64.6	83.3	80.3
746-757	AWGN	Downlink	751.5	18.58	18.35	-64.4	83.0	79.8
1710-1755	GSM	Uplink	1732.5	19.16	18.24	-58.3	77.5	73.6
698-716	GSM	Uplink	707	20.7	19.35	-57.7	78.4	74.0
776-787	GSM	Uplink	781.5	20.02	19.82	-57.3	77.3	74.1
2110-2155	GSM	Downlink	2132.5	18.72	18.42	-62.3	81.0	77.7
728-746	GSM	Downlink	737	19.22	18.08	-64.7	83.9	79.7
746-757	GSM	Downlink	751.5	19.15	18.15	-64.2	83.4	79.4

GSM

Frequency (MHz)	Output Power (dBm)	Ant Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Result
UL1710-1755	19.2	10	5.11	24.09	Compliant
UL 698-716	20.7	10	3.74	26.96	Compliant
UL776-787	20.0	10	3.74	26.26	Compliant
DL2110-2155	18.7	10	6.54	22.16	Compliant
DL:728-746	19.2	7	4.22	21.98	Compliant
DL 746-757	19.2	7	4.22	21.98	Compliant

4.1MHz

AWGN

Frequency (MHz)	Output Power (dBm)	Ant Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Result
UL1710-1755	19.2	10	5.11	24.09	Compliant
UL 698-716	19.8	10	3.74	26.06	Compliant
UL776-787	19.4	10	3.74	25.66	Compliant
DL2110-2155	17.3	10	6.54	20.76	Compliant
DL:728-746	18.7	7	4.22	21.48	Compliant
DL 746-757	18.6	7	4.22	21.38	Compliant

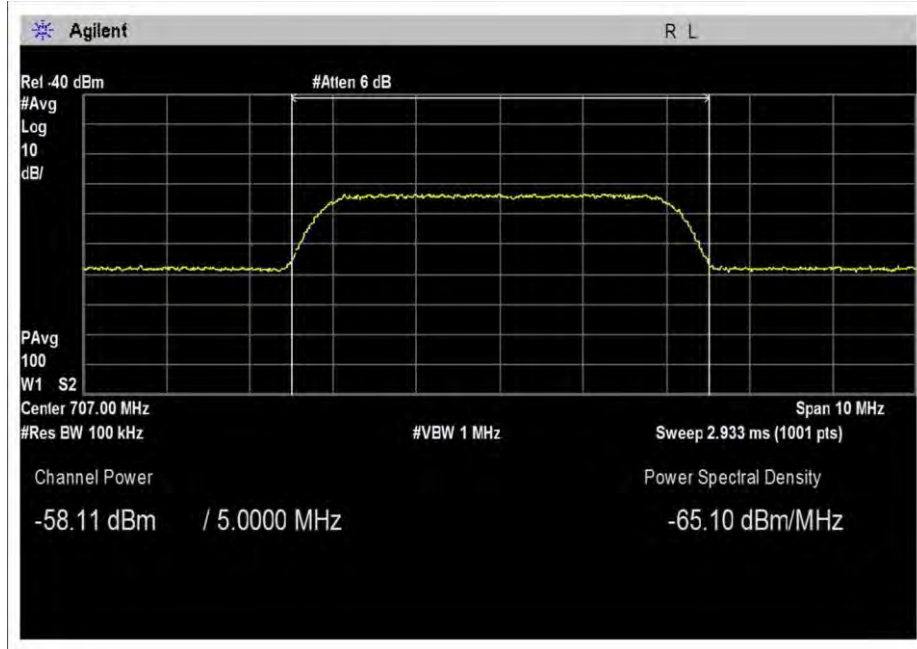
Power/Gain Verification with Booster ON and OFF

DL 2132.5	b		Diff	g		Diff	N20		Diff	N40		Diff
	OFF	ON		OFF	ON		OFF	ON		OFF	ON	
Mid	24.7	24.5	-0.2	23.03	22.83	-0.2	22.08	22	-0.06	21.51	21.49	-0.02
DL 2132.5	b		Diff	g		Diff	N20		Diff	N40		Diff
GSM	OFF	ON		OFF	ON		OFF	ON		OFF	ON	
Mid	24.7	24.2	-0.49	23.03	22.97	-0.06	22.08	21.8	-0.24	21.51	21.44	-0.07

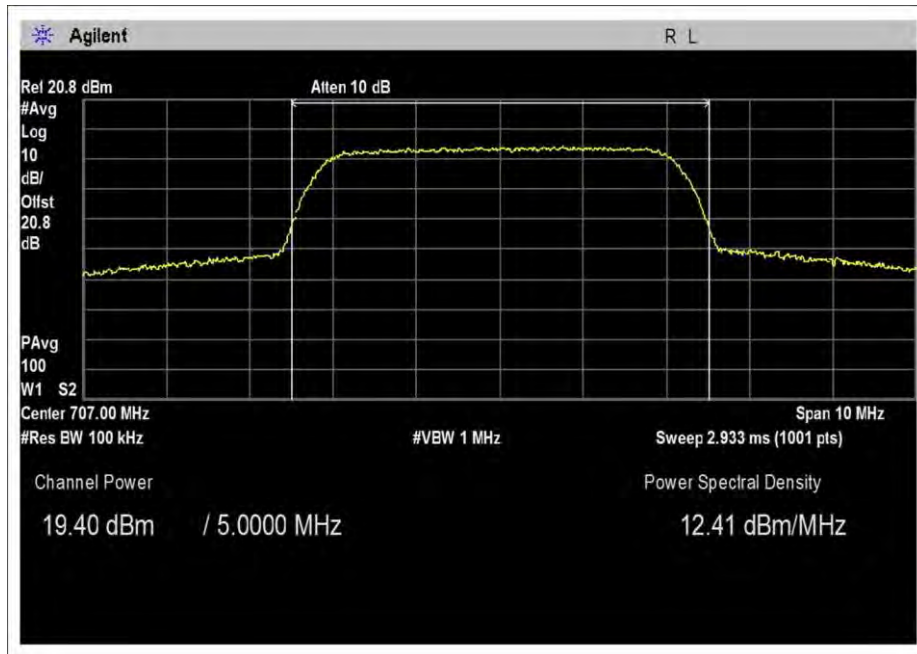
Note: The Industrial booster UL and DL power and gain parameters are initially measured with WiFi transmitting at mid channel using sequentially 802.11b, g, n20 and n40 signal. Since no significant change in measured power was observed, all other parameters are obtained with WiFi transmitting at Mid channel, 802.11b.

Test Data

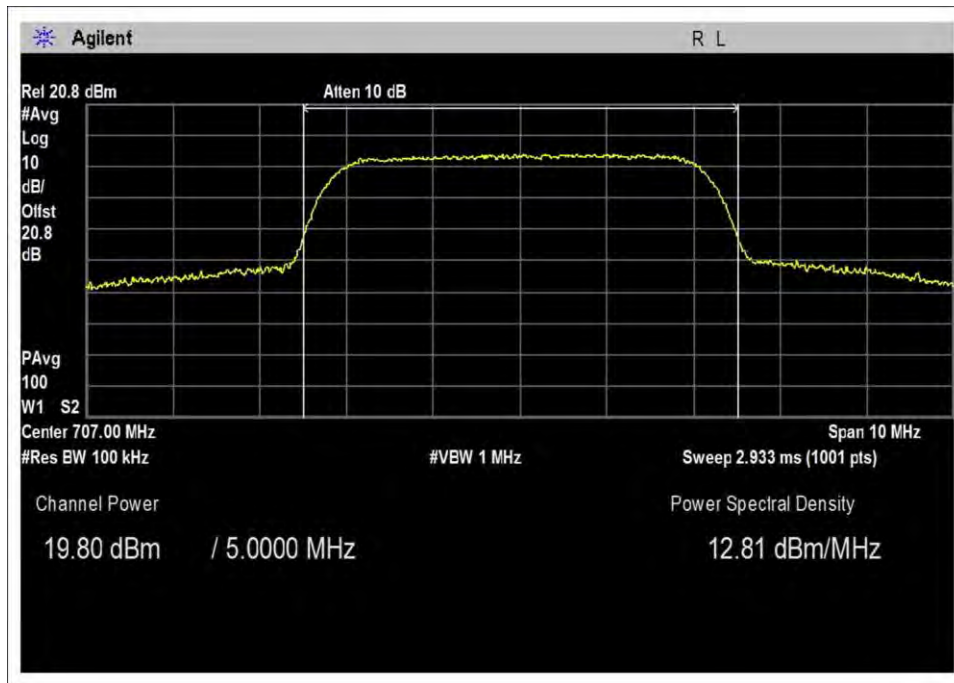
AWGN - UL



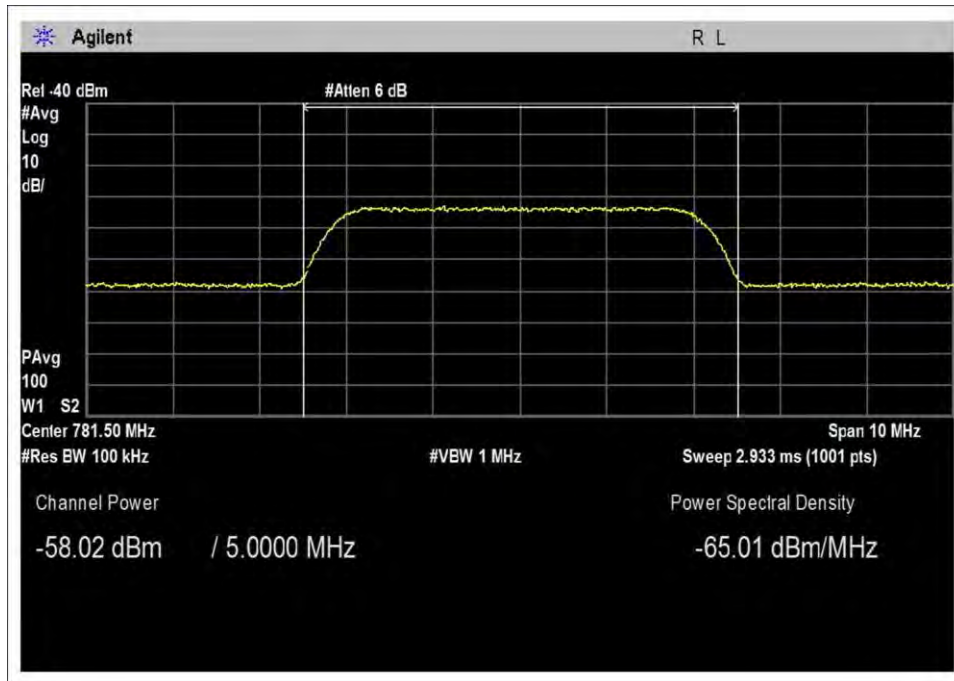
UL-698-716M-Input



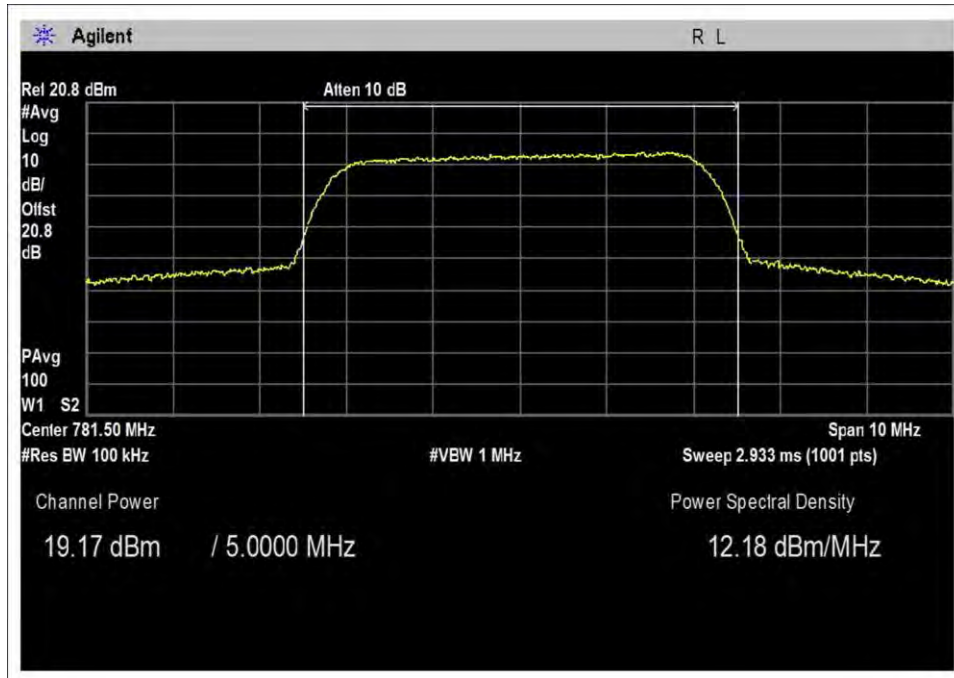
UL-698-716M-Out-43.2



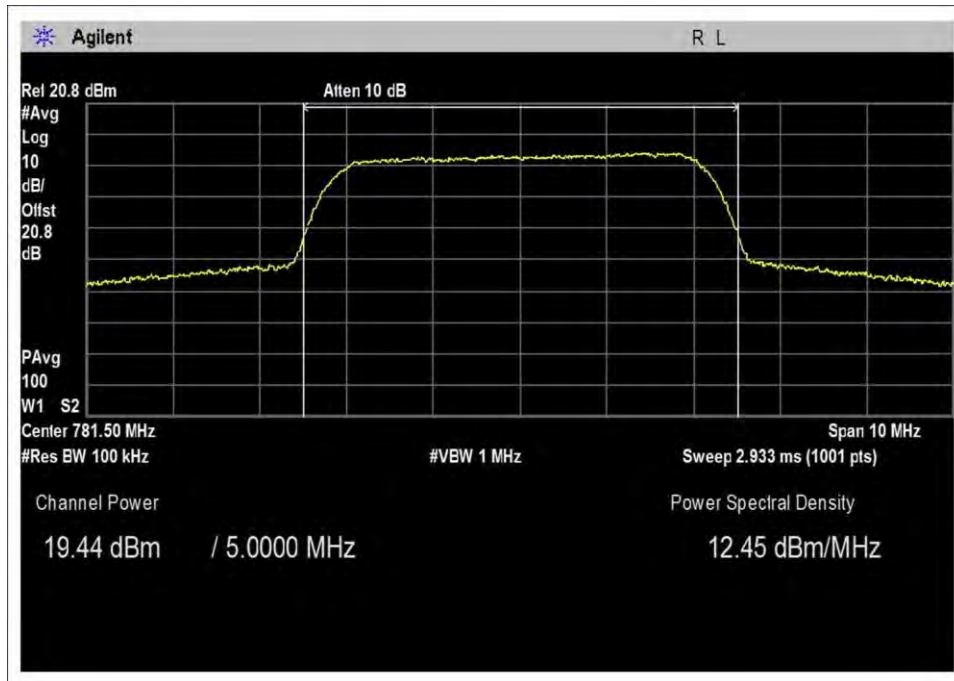
UL-698-716M-Out-AGC+3



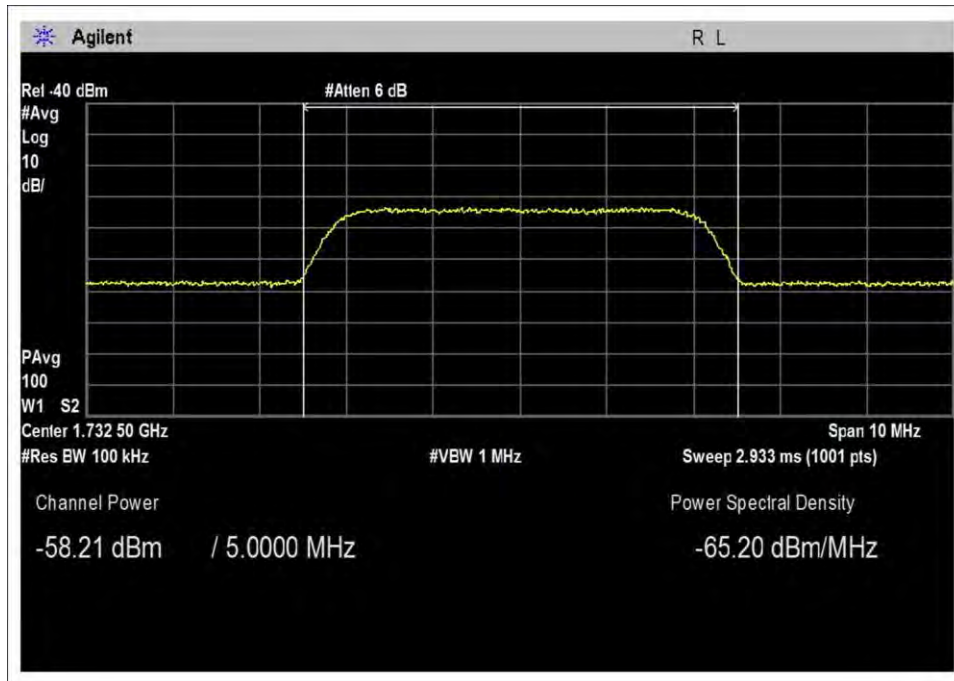
UL-776-787M-Input



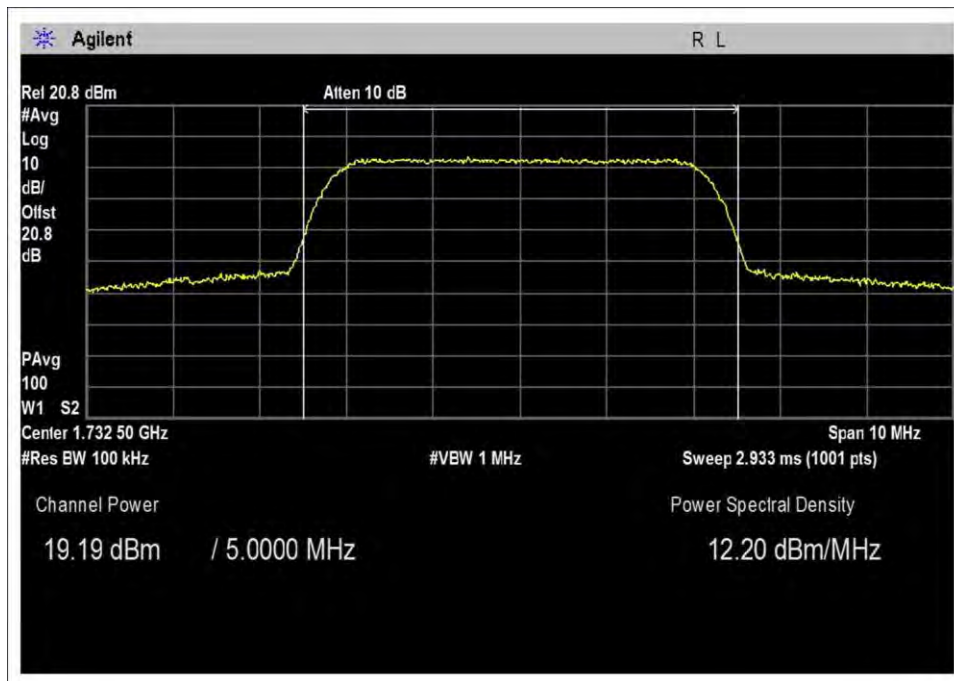
UL-776-787M-Out-43.1



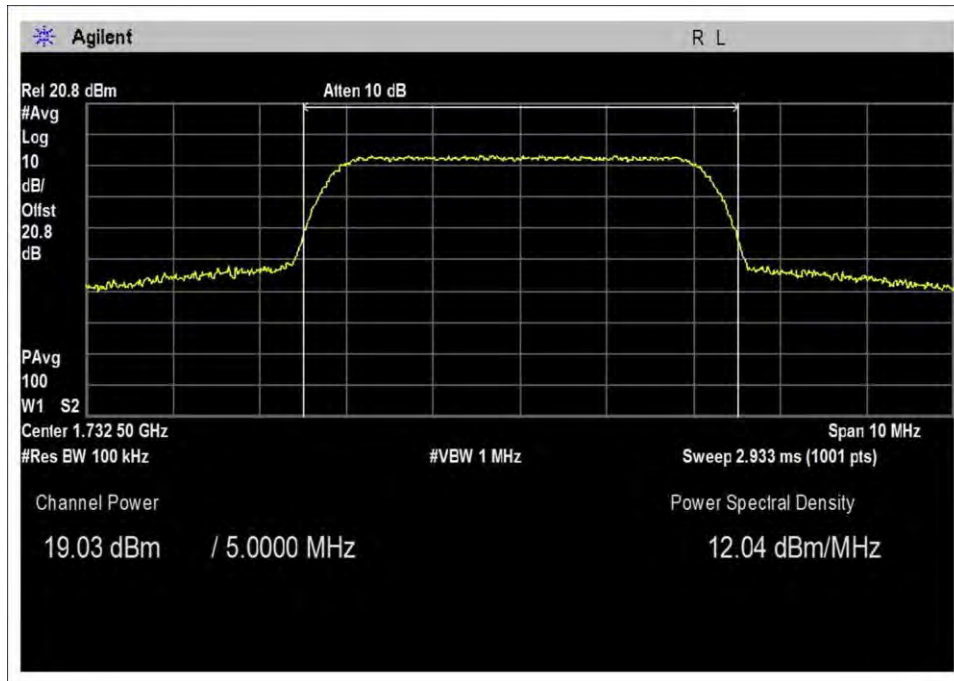
UL-776-787M-Out-AGC+3



UL-1710-1755M-Input

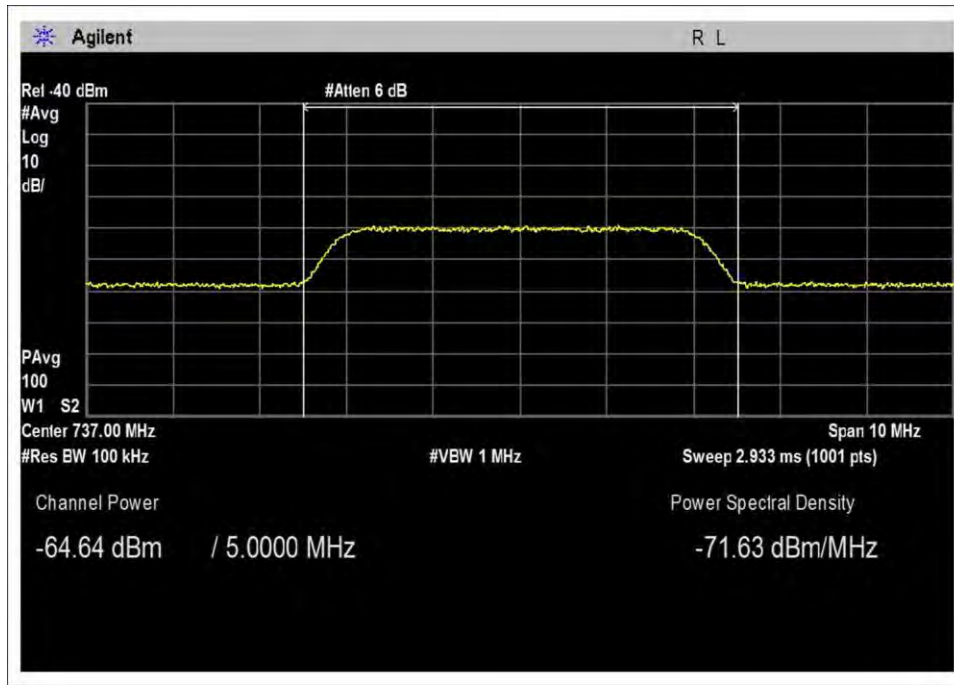


UL-1710-1755M-Out-42.9

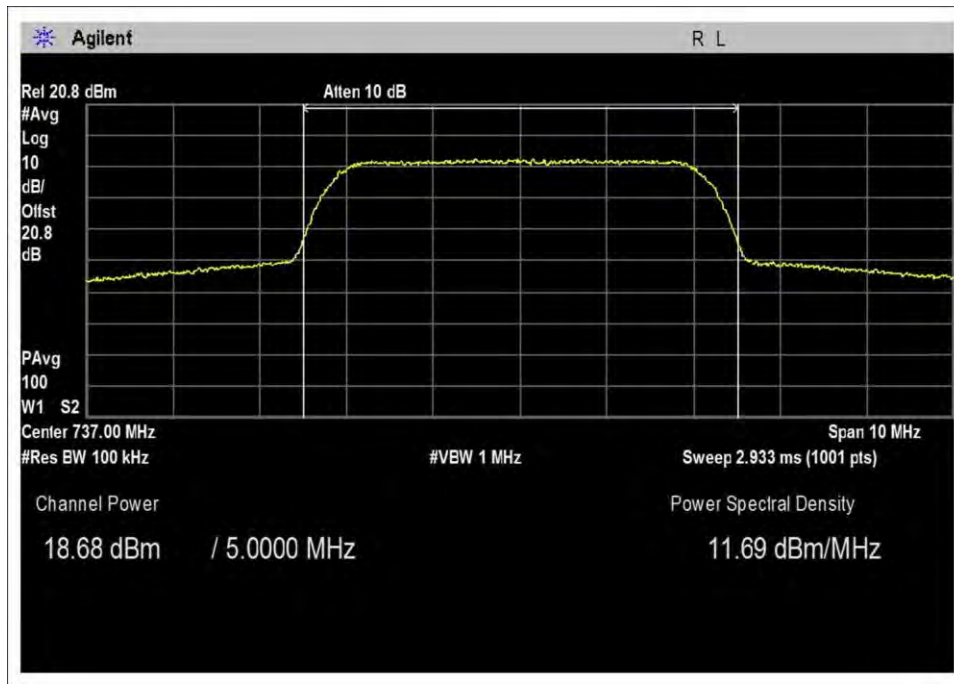


UL-1710-1755M-Out-AGC+3

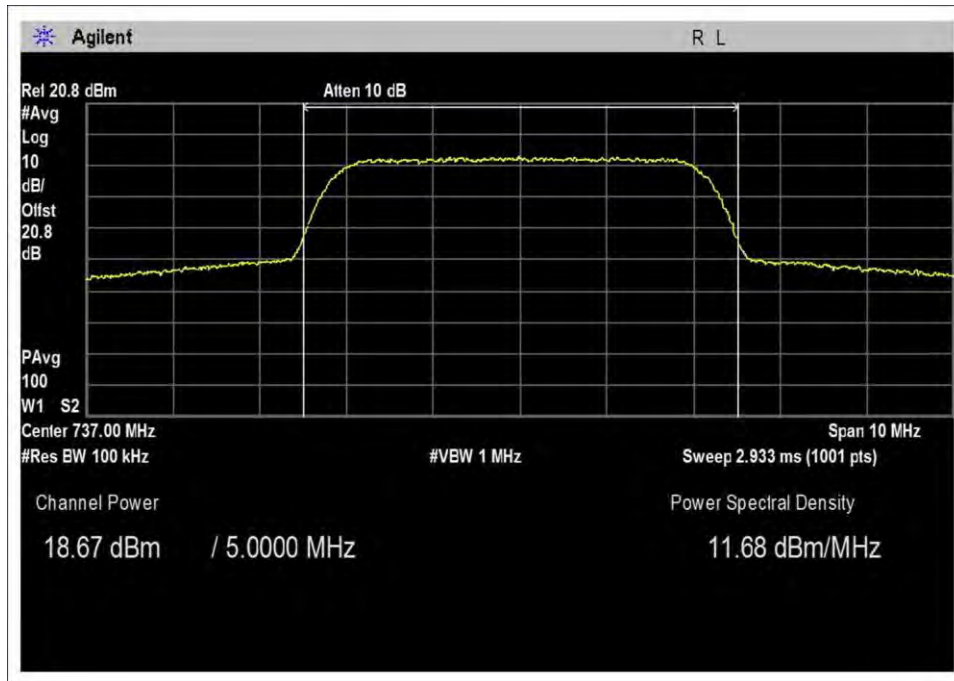
AWGN - DL



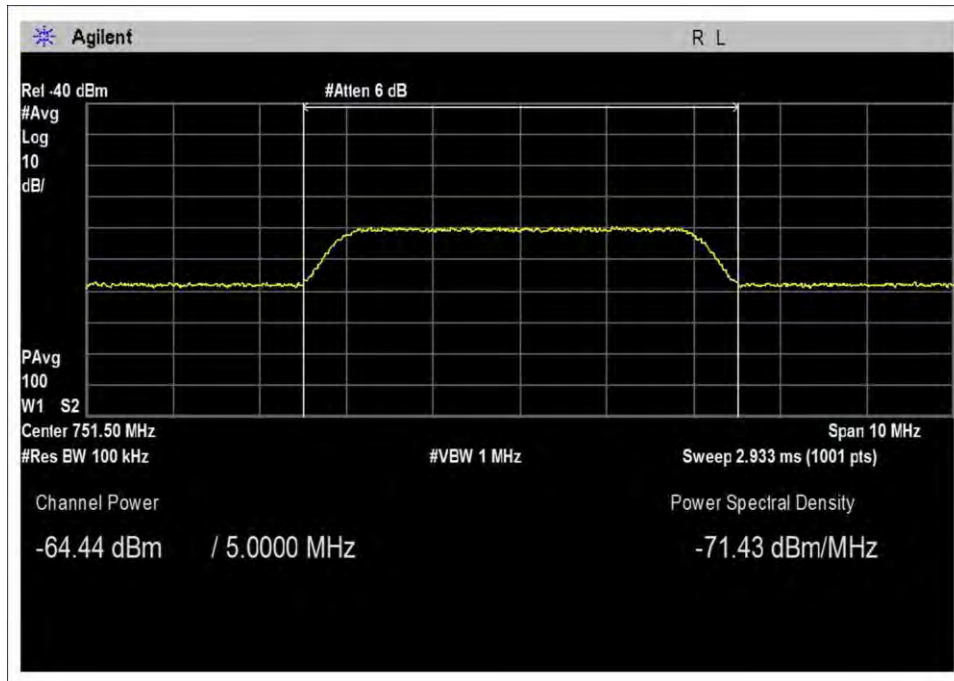
DL-728-746MHz-Input



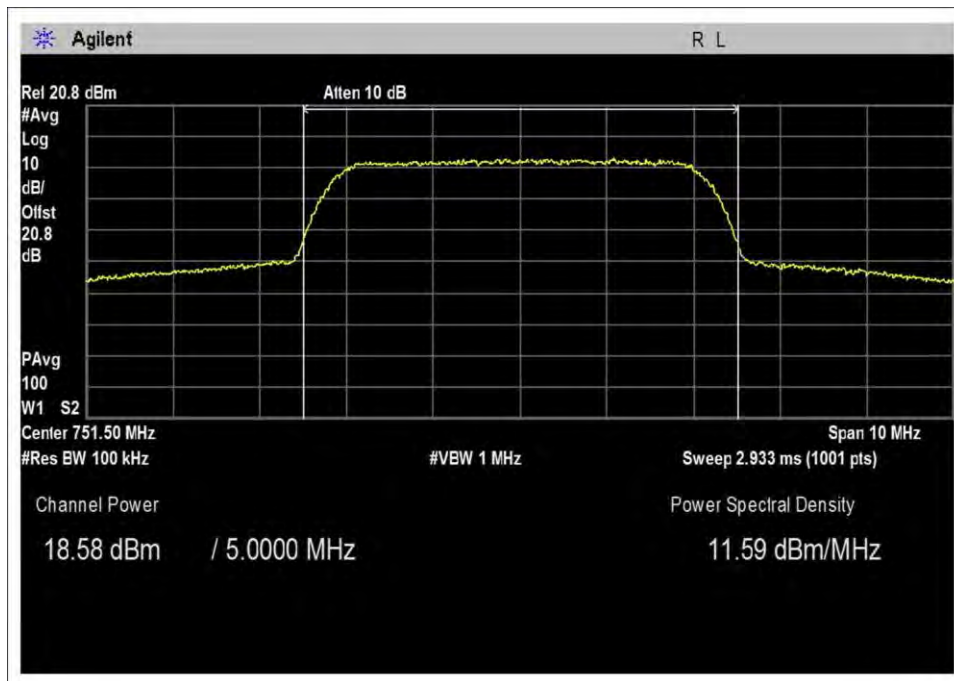
DL-728-746MHz-Out-49.4



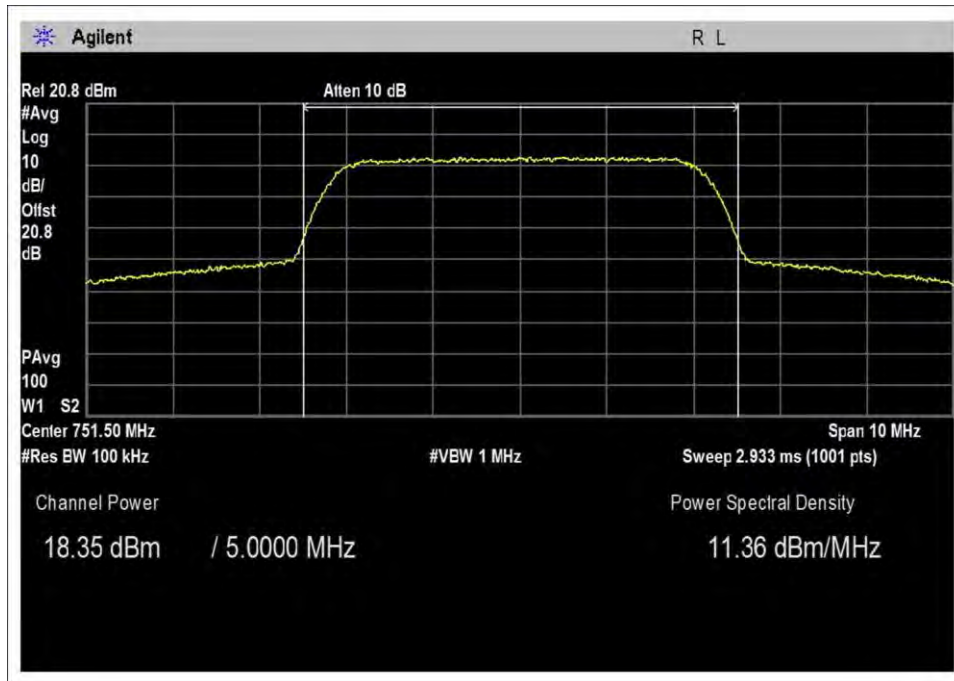
DL-728-746MHz-Out-AGC+3



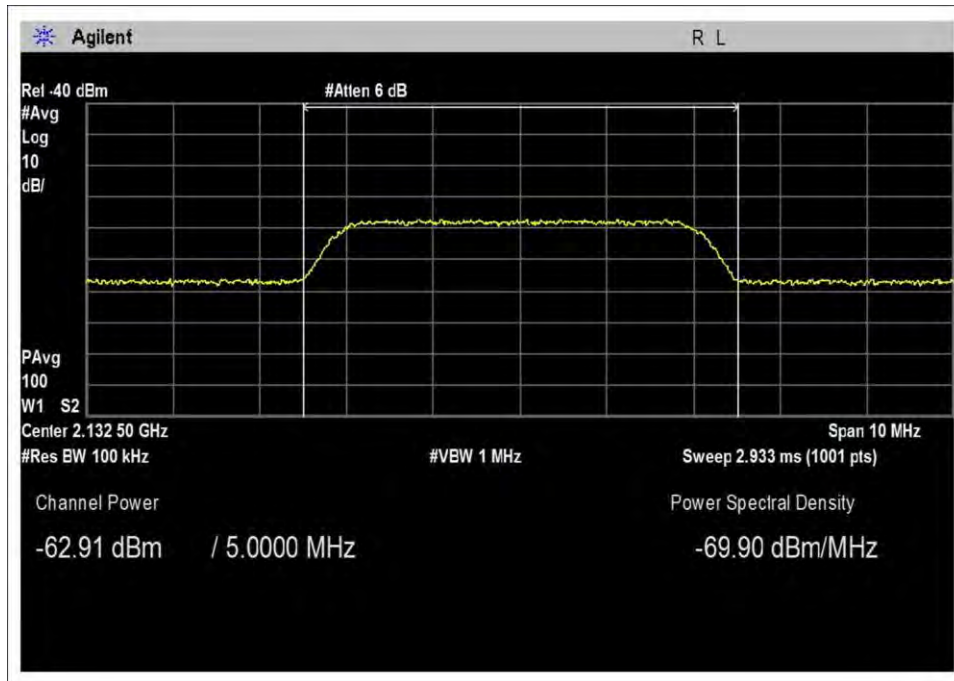
DL-746-757M-Input



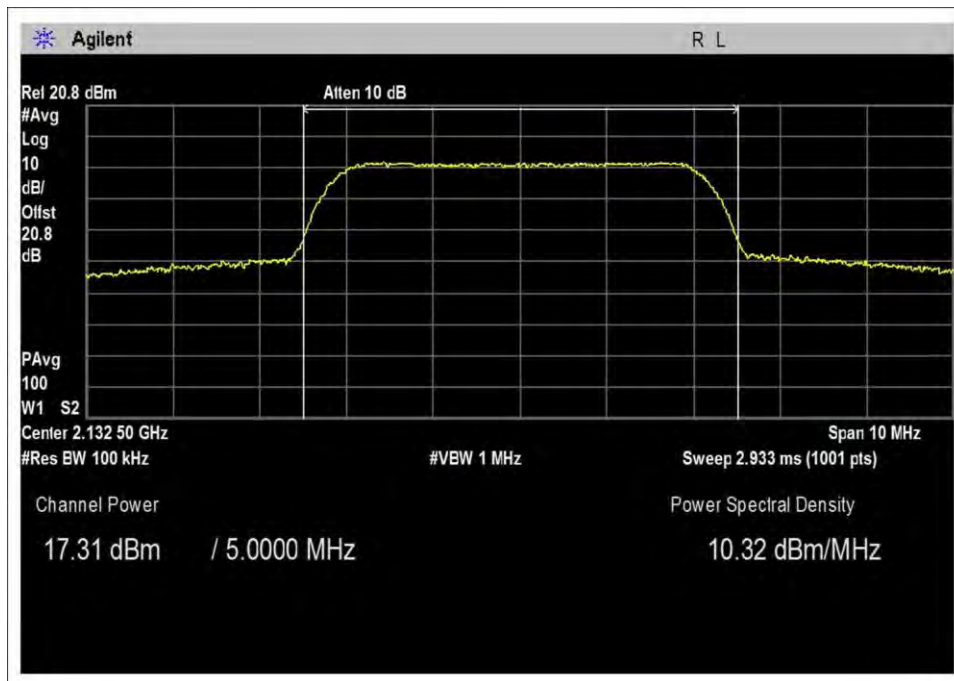
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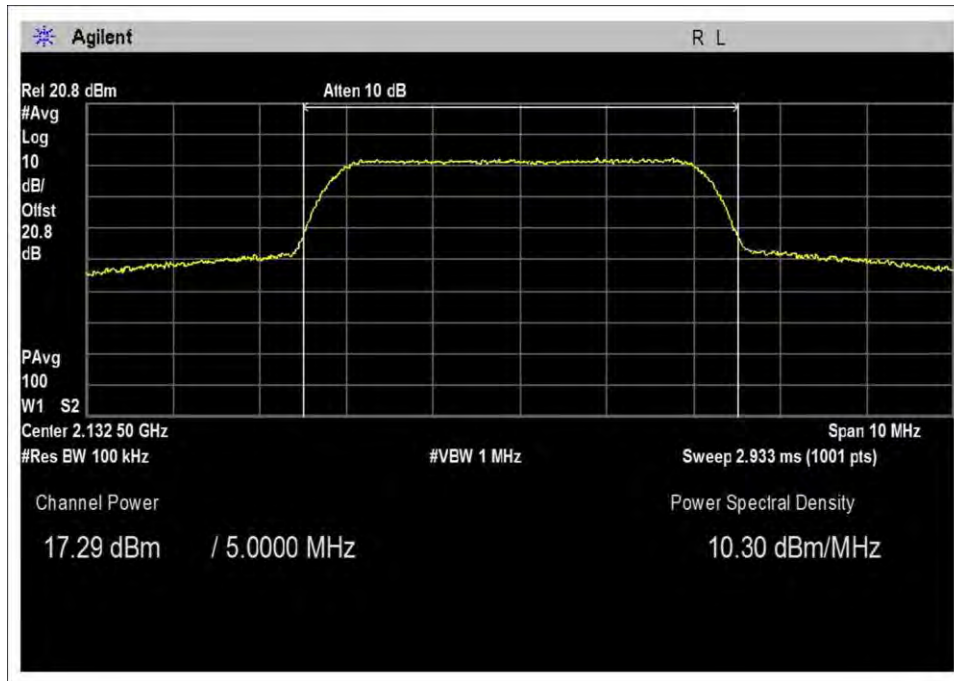
DL-746-757M-Out-AGC+3



DL-2110-2155M-Input

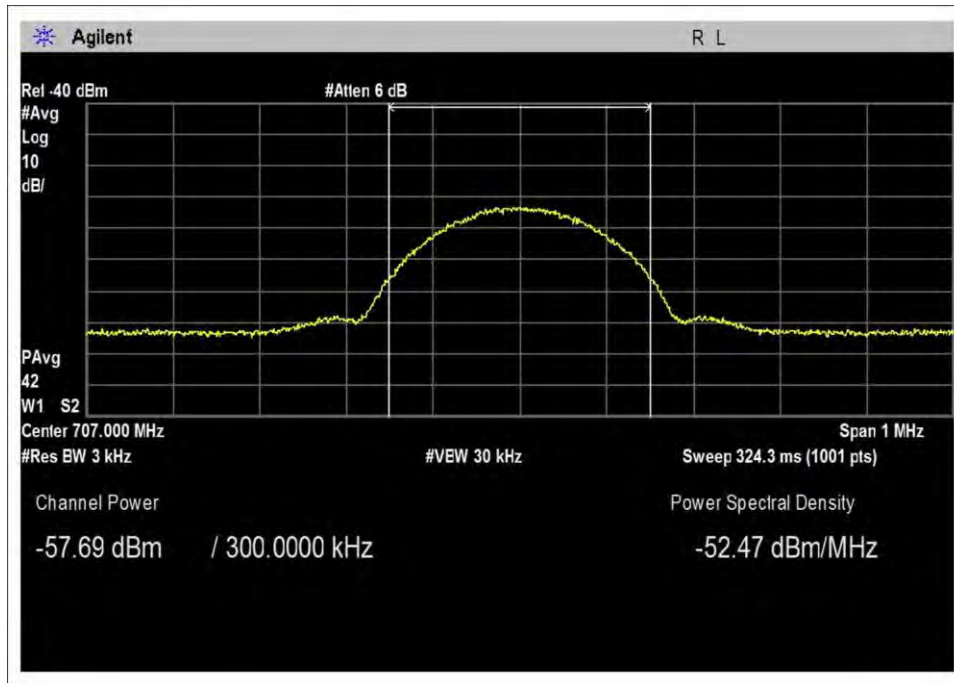


DL-2110-2155M-Out-46.8

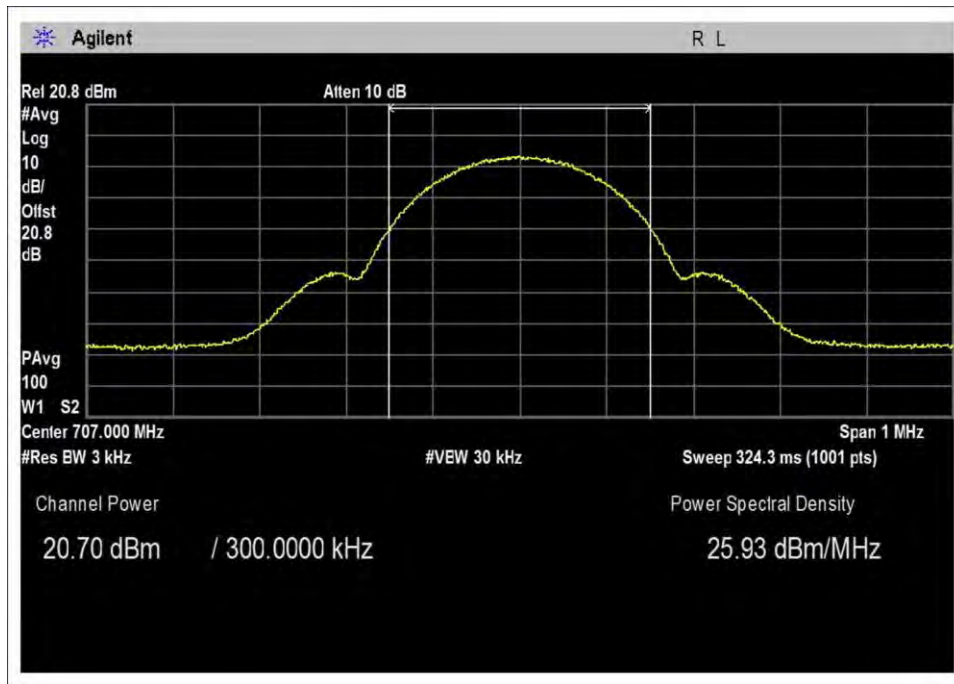


DL-2110-2155M-Out-AGC+3

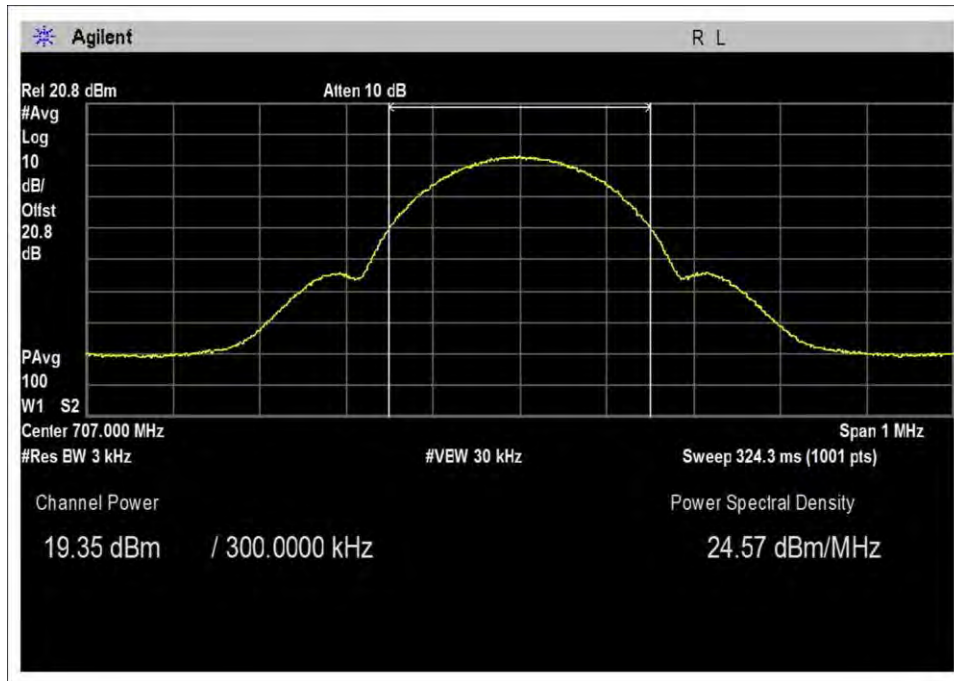
GSM - UL



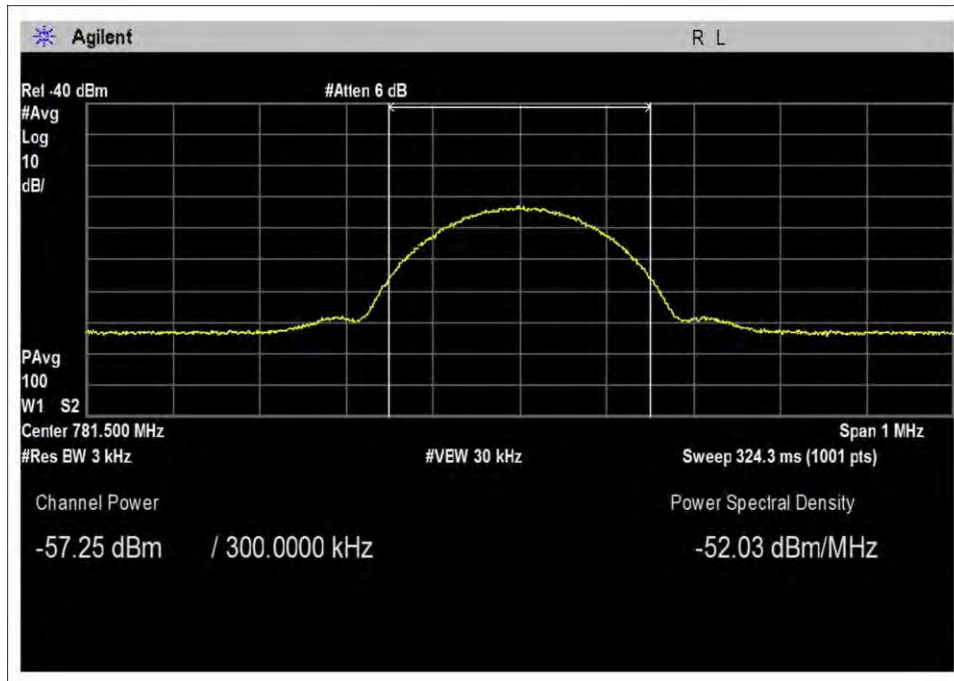
UL-698-716M-Input



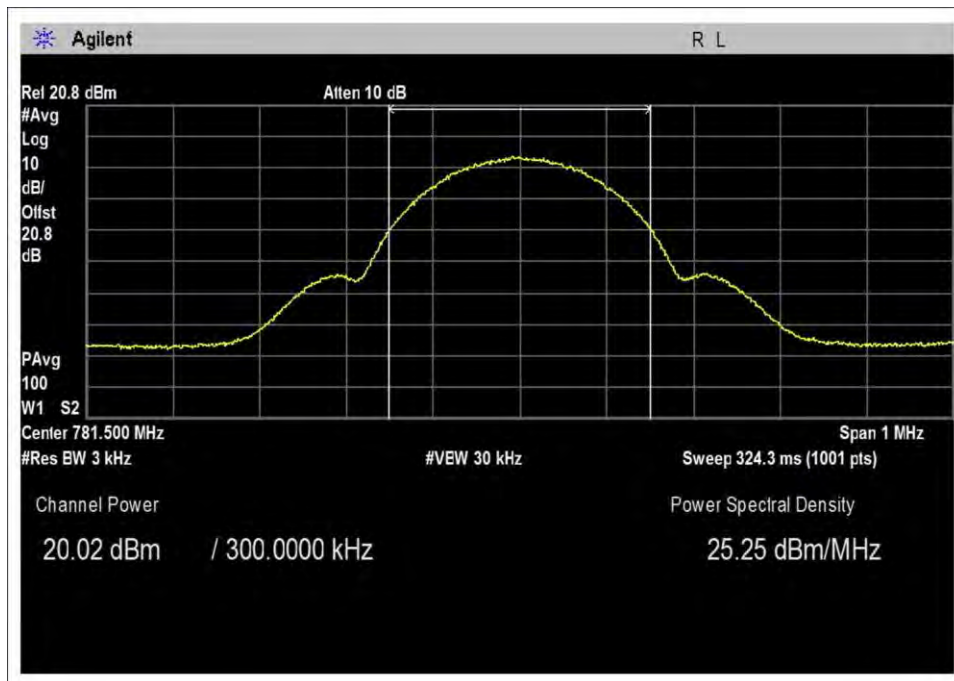
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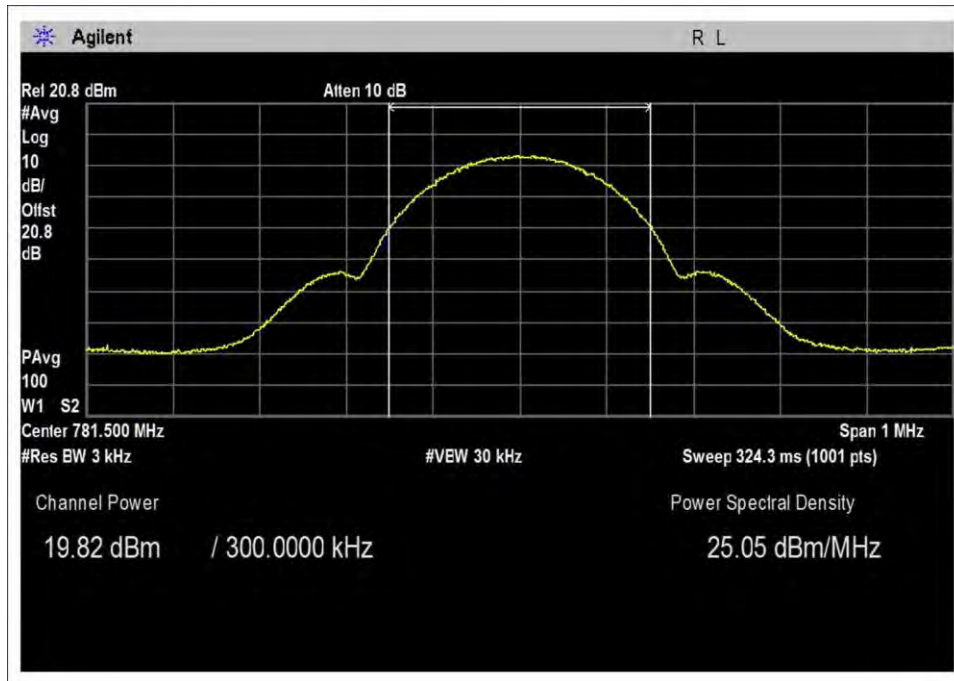
UL-698-716M-Out-AGC+3



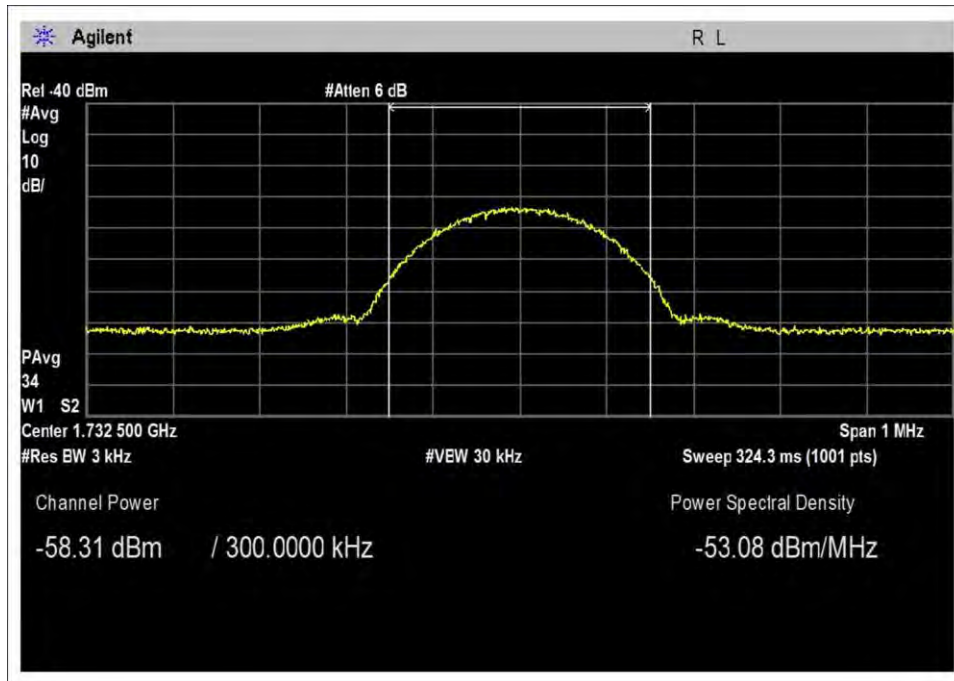
UL-776-787M-Input



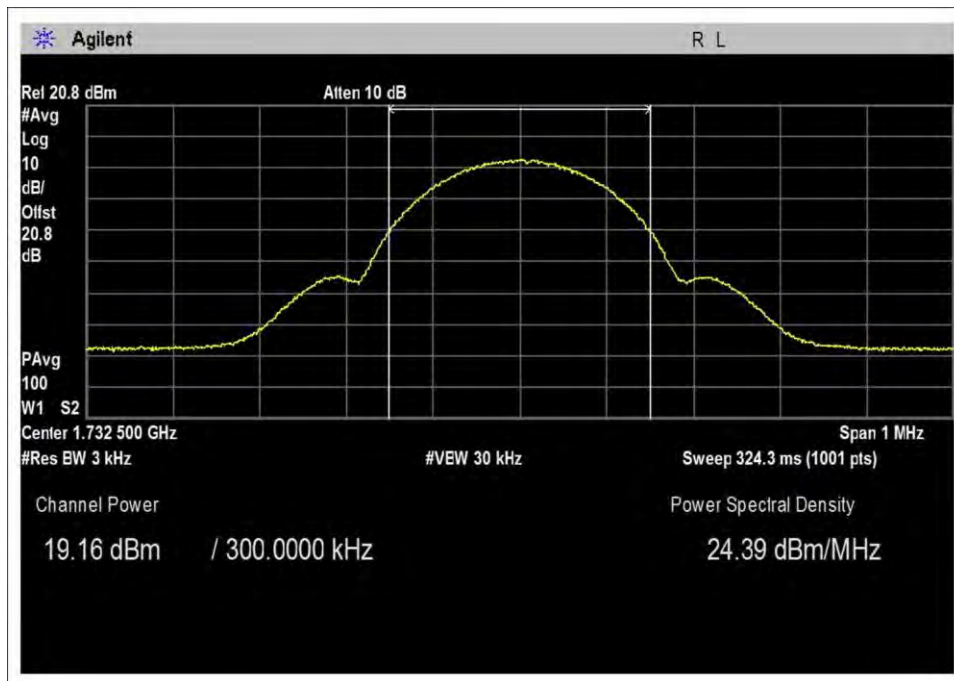
UL-776-787M-Out-42.9



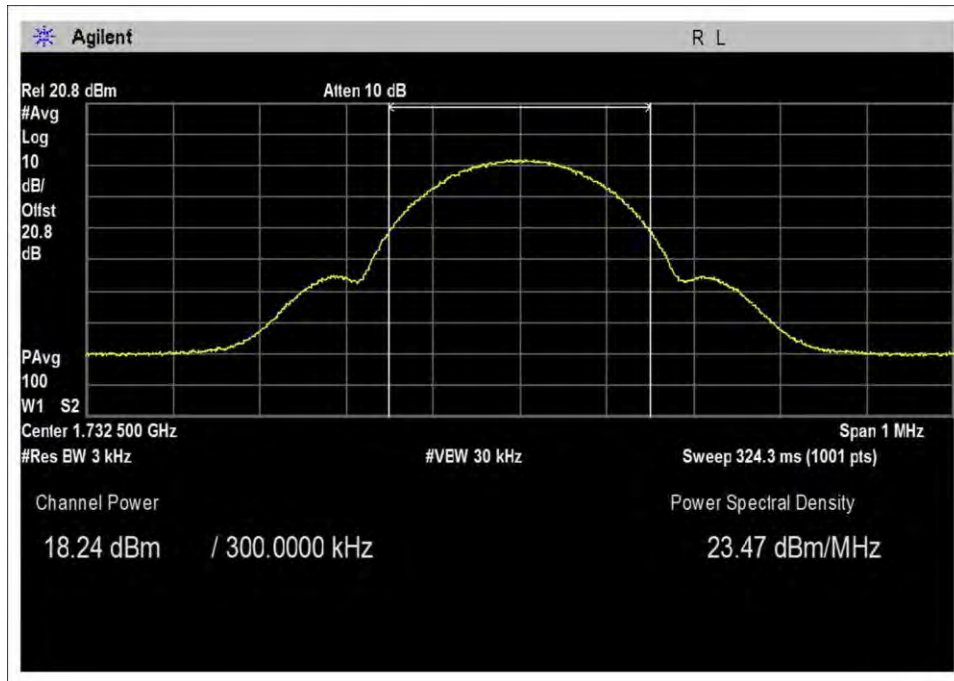
UL-776-787M-Out-AGC+3



UL-1710-1755M-Input

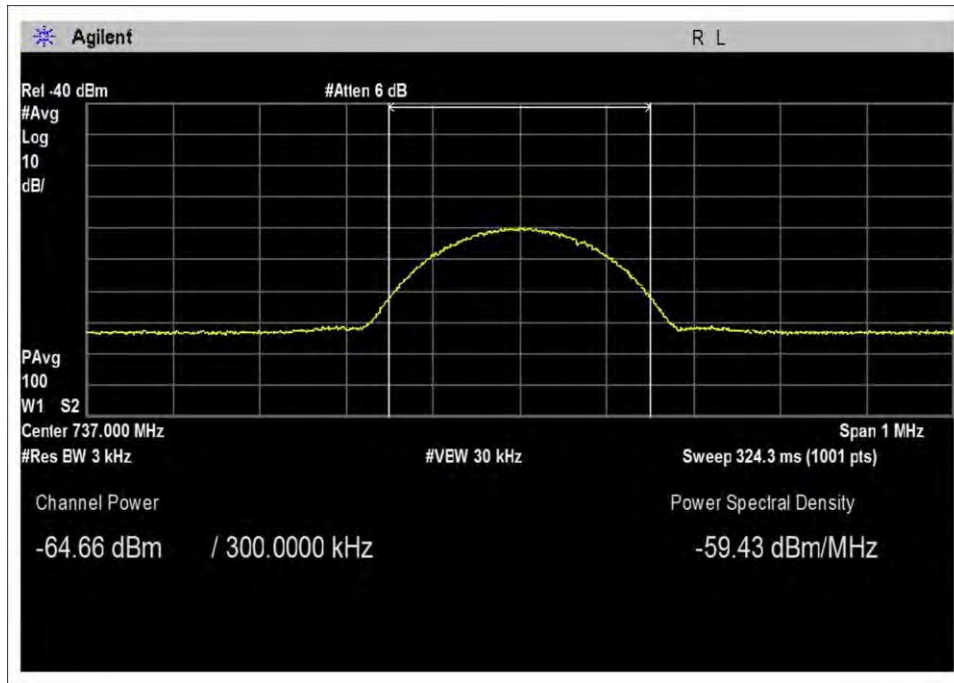


UL-1710-1755M-Out-42.5

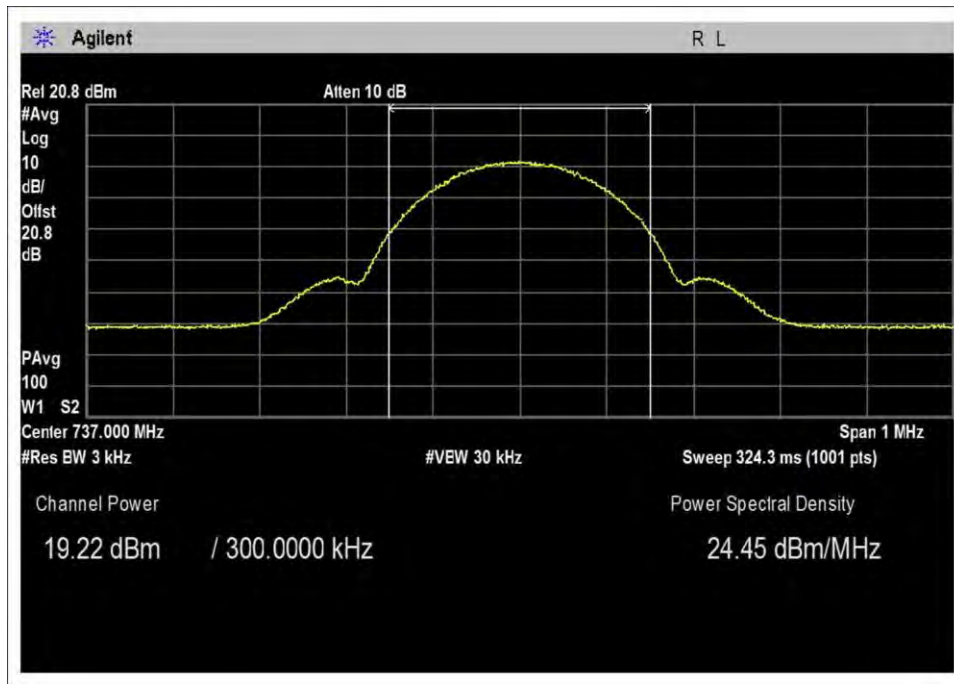


UL-1710-1755M-Out-AGC+3

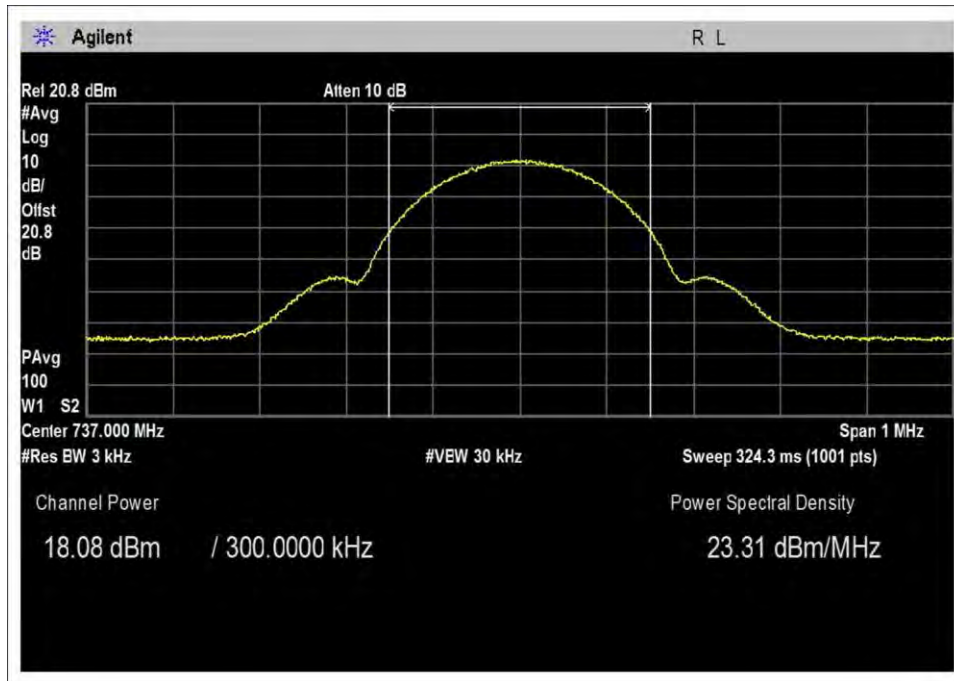
GSM - DL



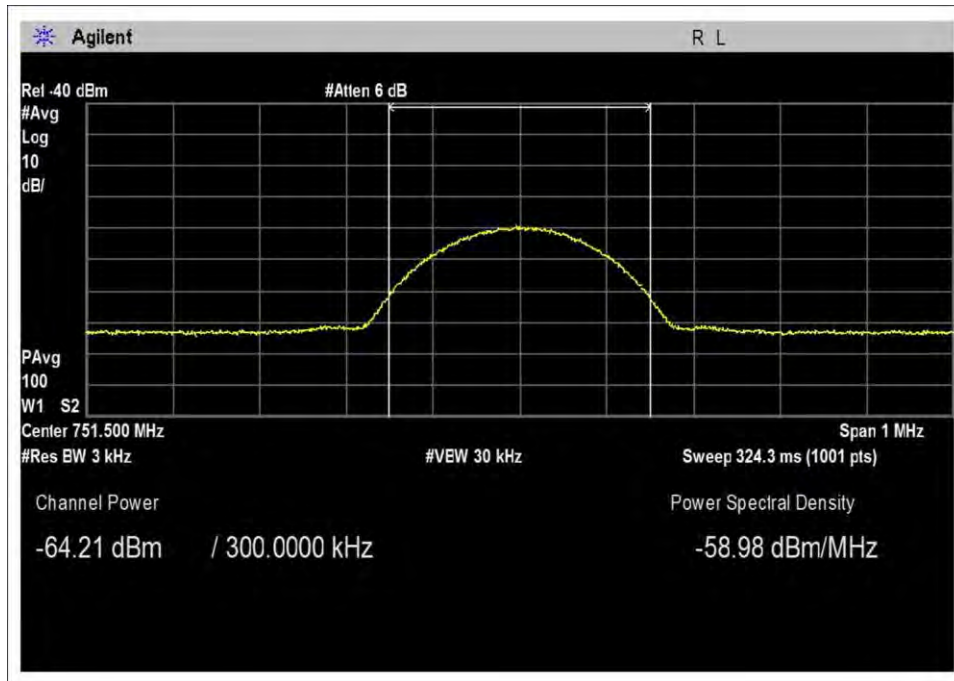
DL-728-746M-Input



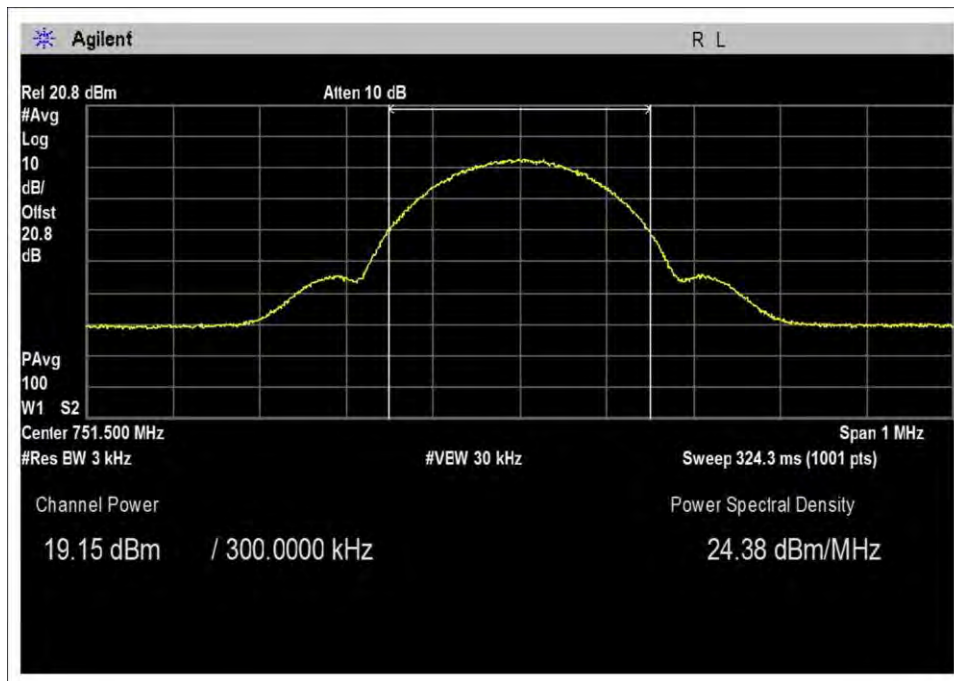
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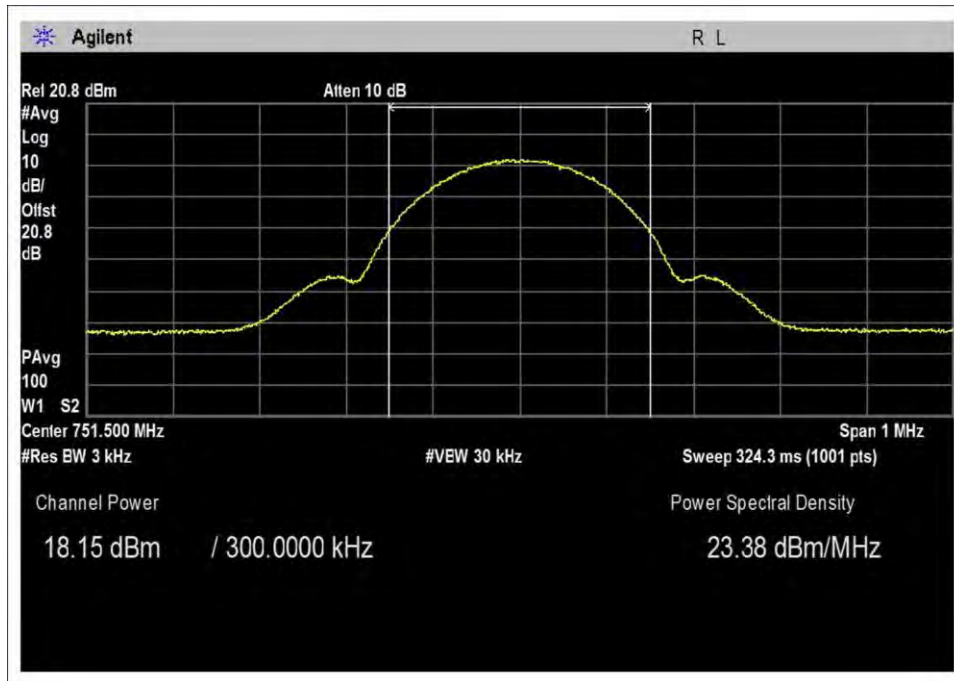
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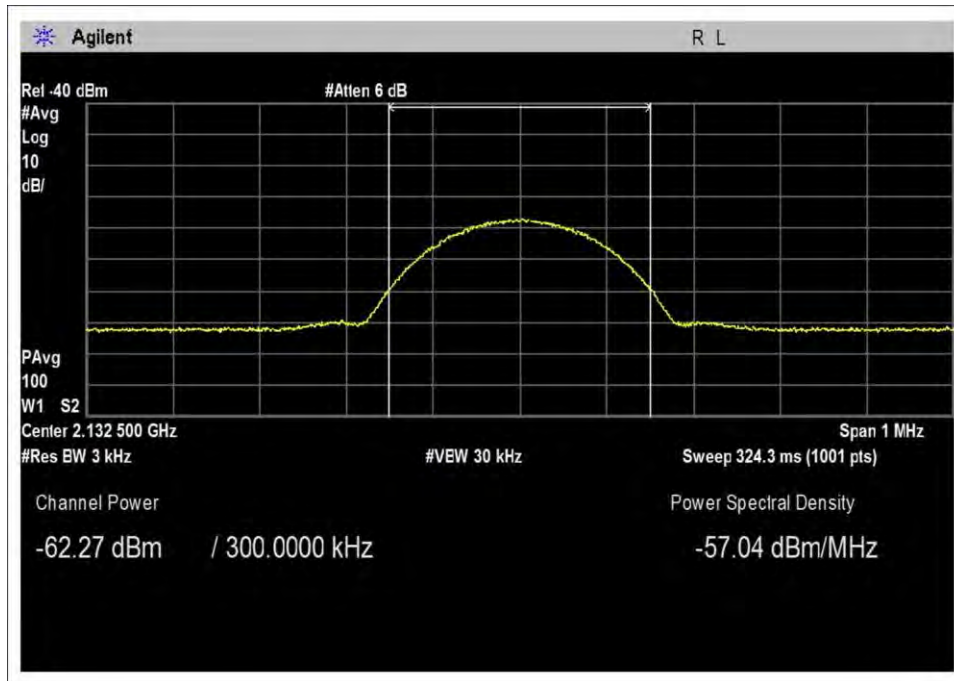
DL-746-757M-Input



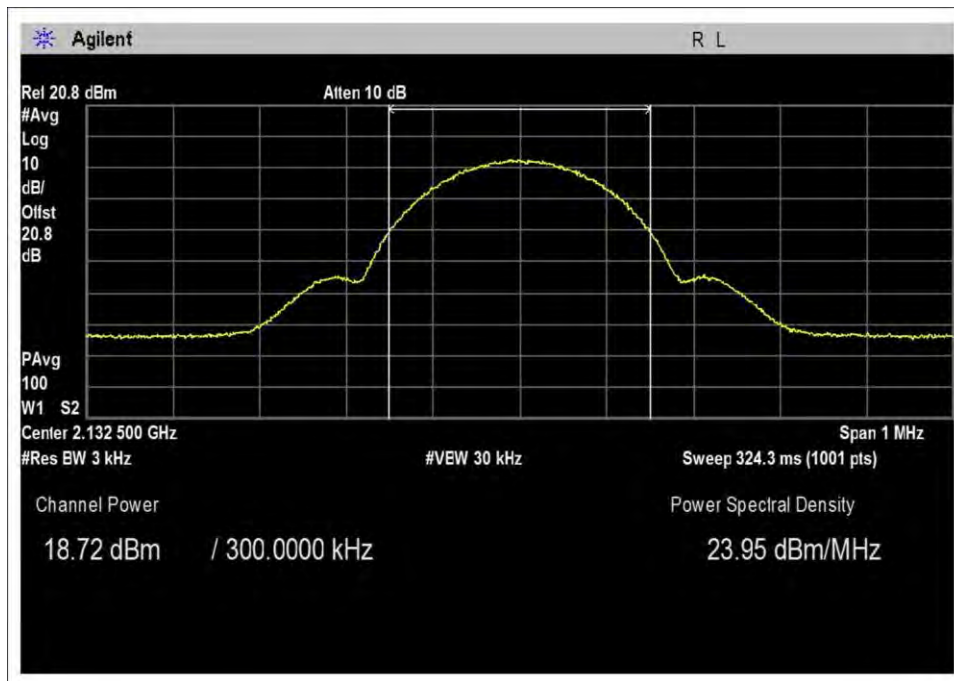
DL-746-757M-Out-49.2



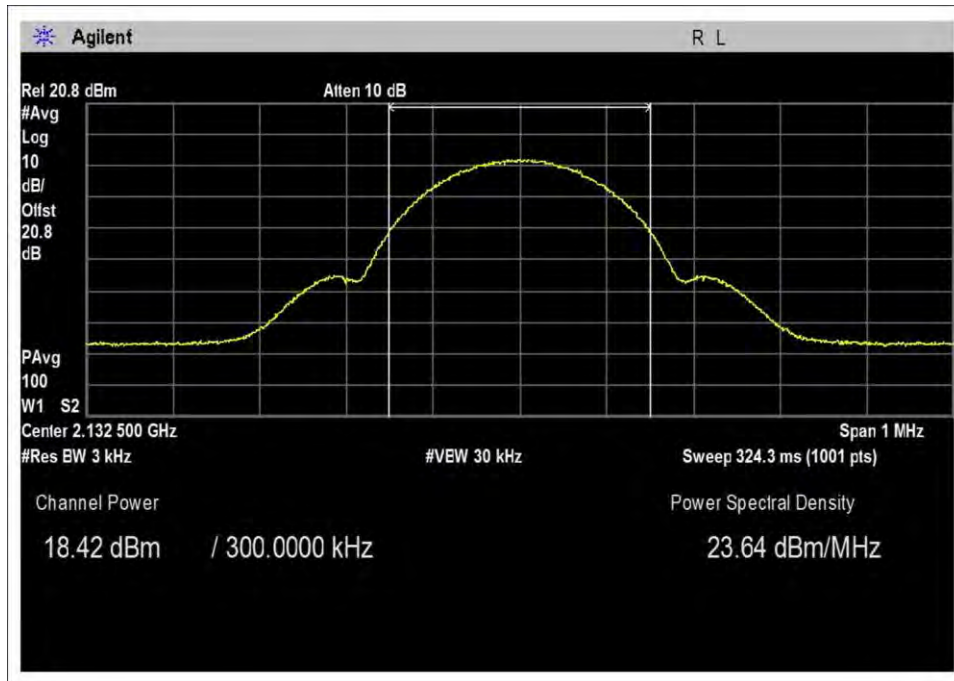
DL-746-757M-Out-AGC+3



DL-2110-2155M-Input

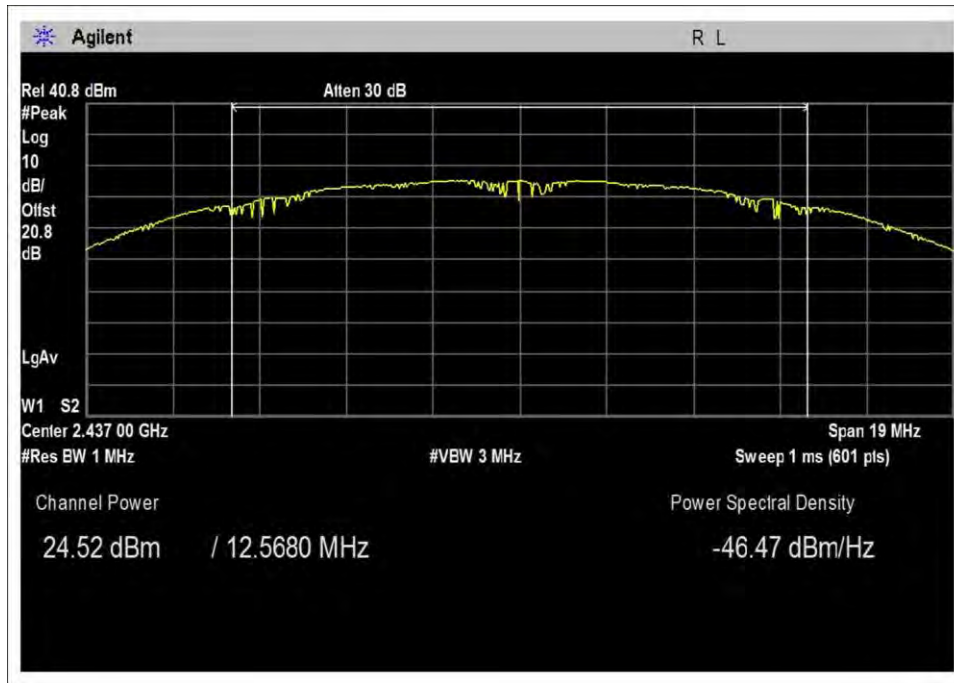


DL-2110-2155M-Out-46.2

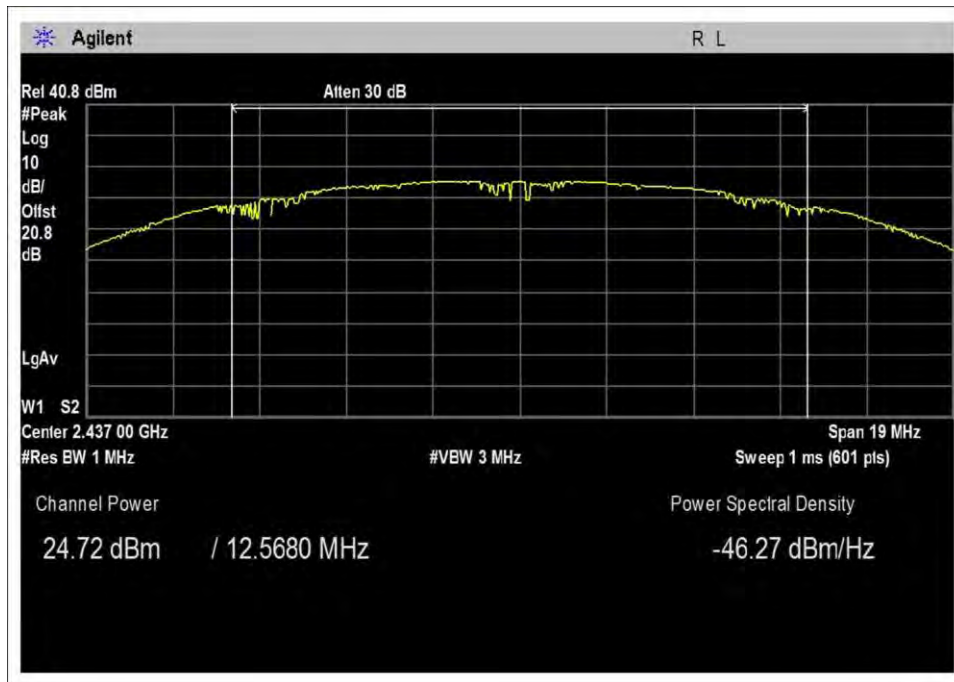


DL-2110-2155M-Out-AGC+3

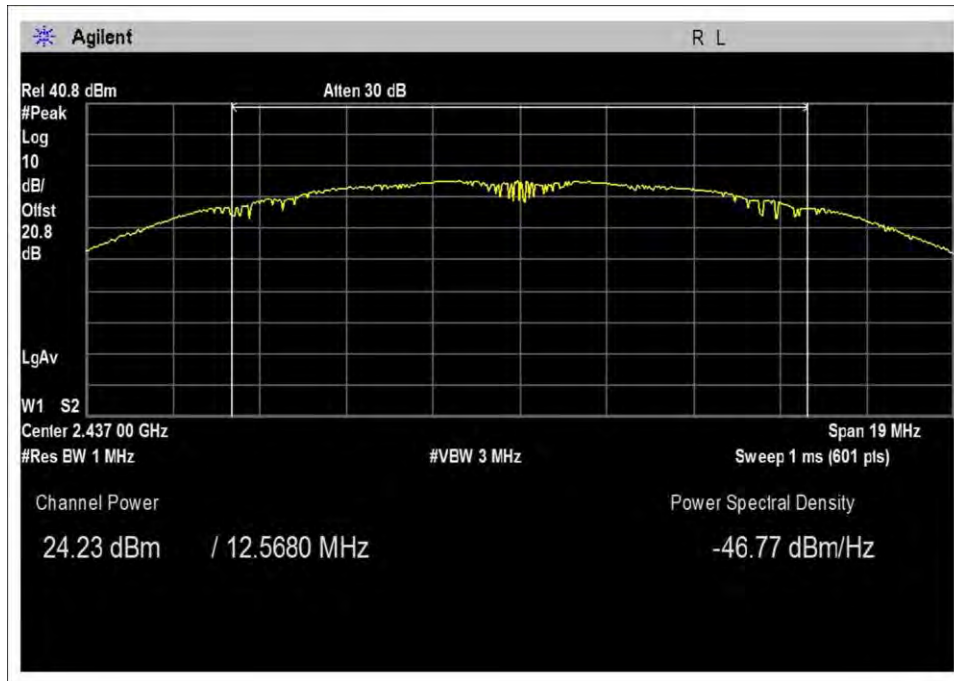
Out Power / M-b



OutPwr-M-b-AWGN-2132.5-on-AGC+3

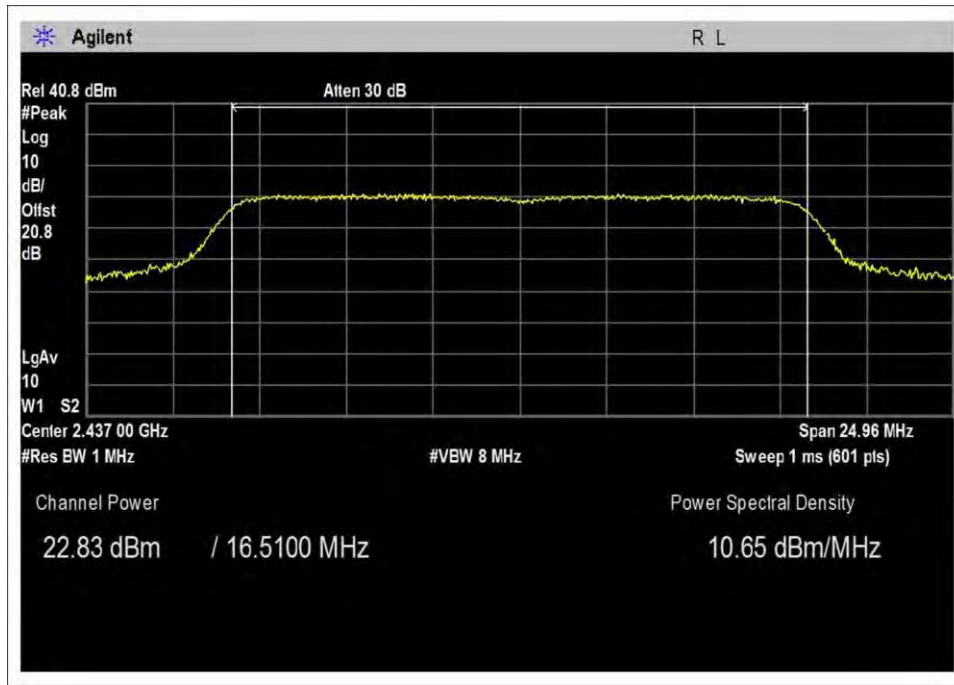


OutPwr-M-b-AWGN-GSM-off

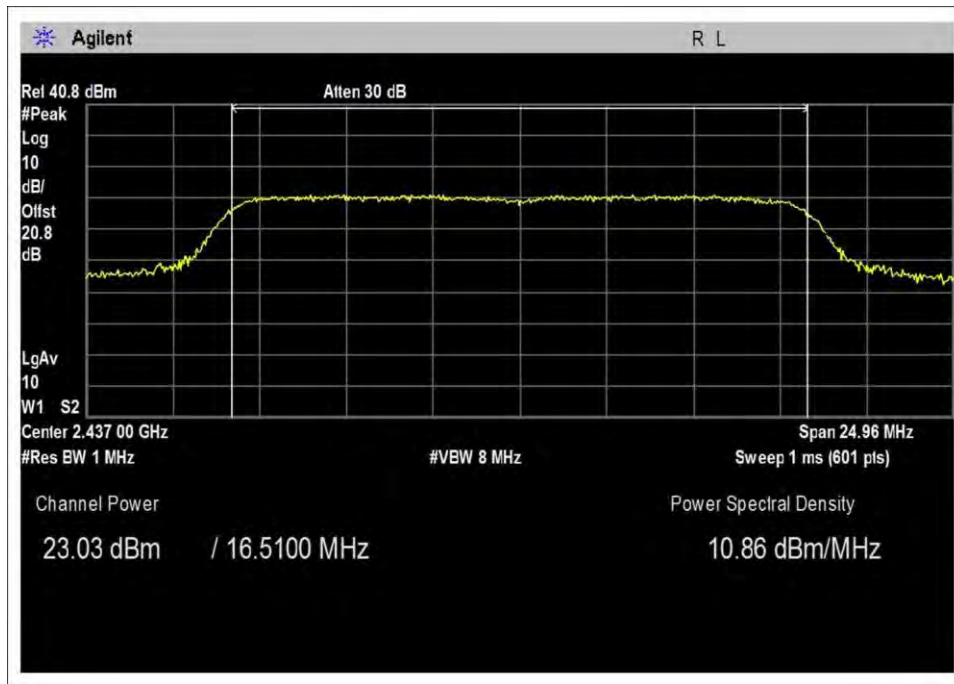


OutPwr-M-b-GSM-2132.5-on-AGC+3

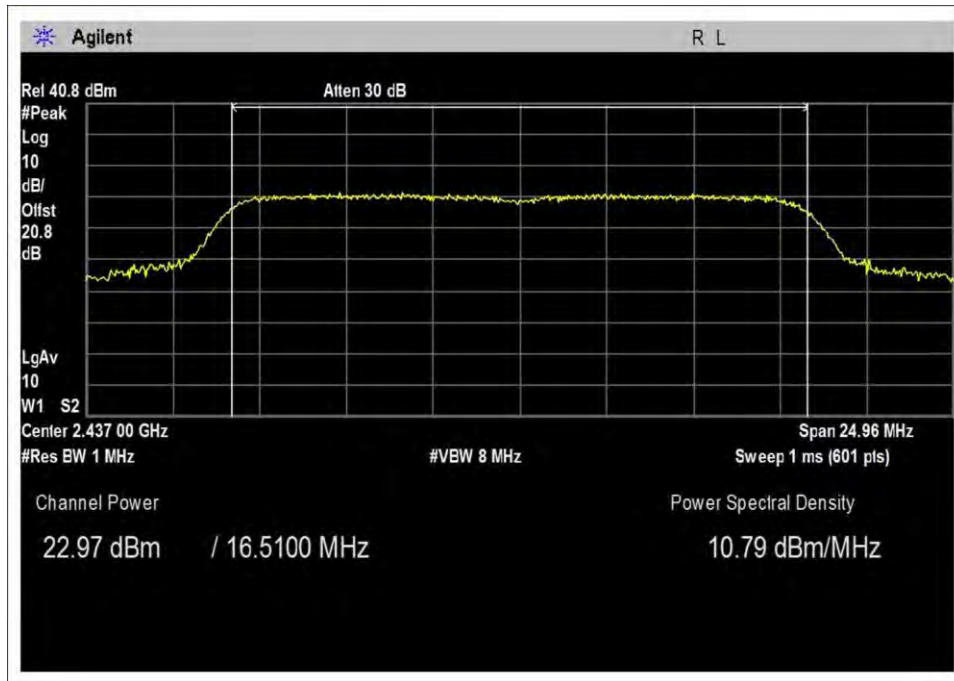
Out Power / M-g



OutPwr-M-g-AWGN-2132.5-on-AGC+3

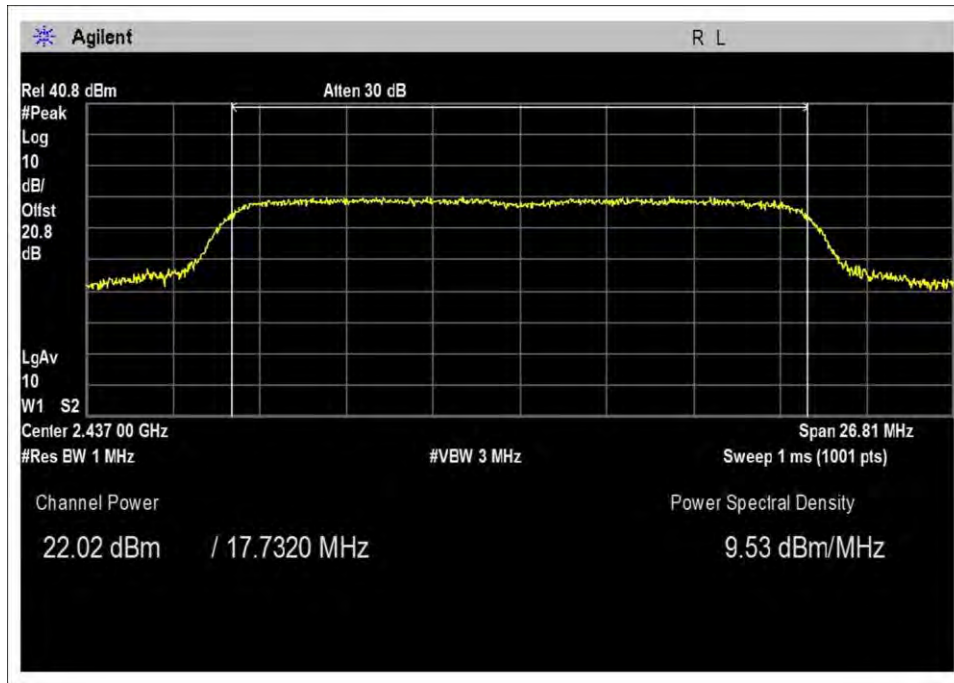


OutPwr-M-g-AWGN-GSM-off

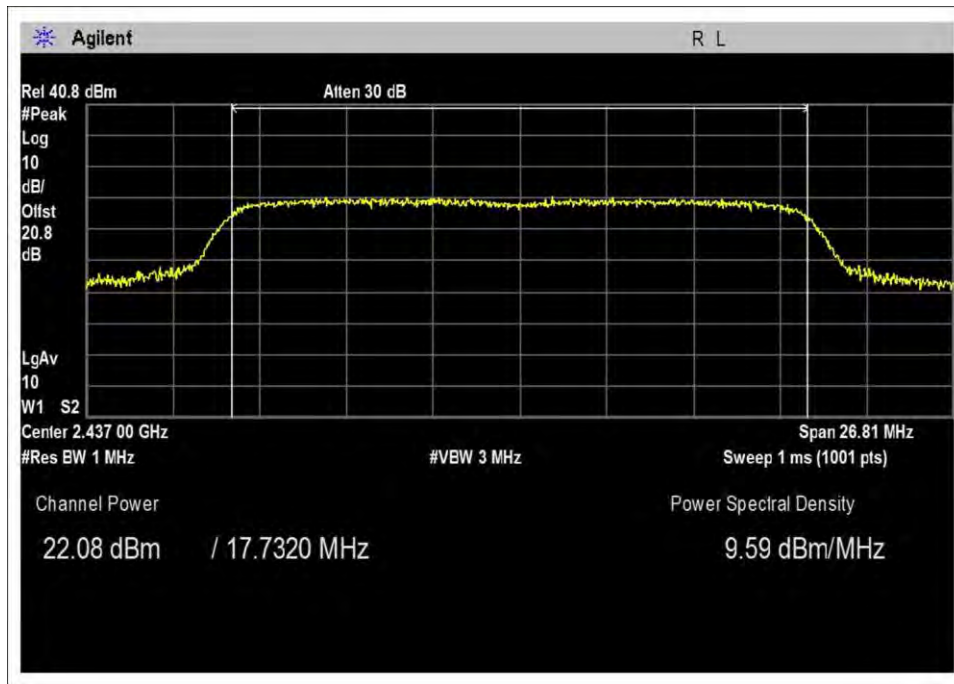


OutPwr-M-g-GSM-2132.5-on-AGC+3

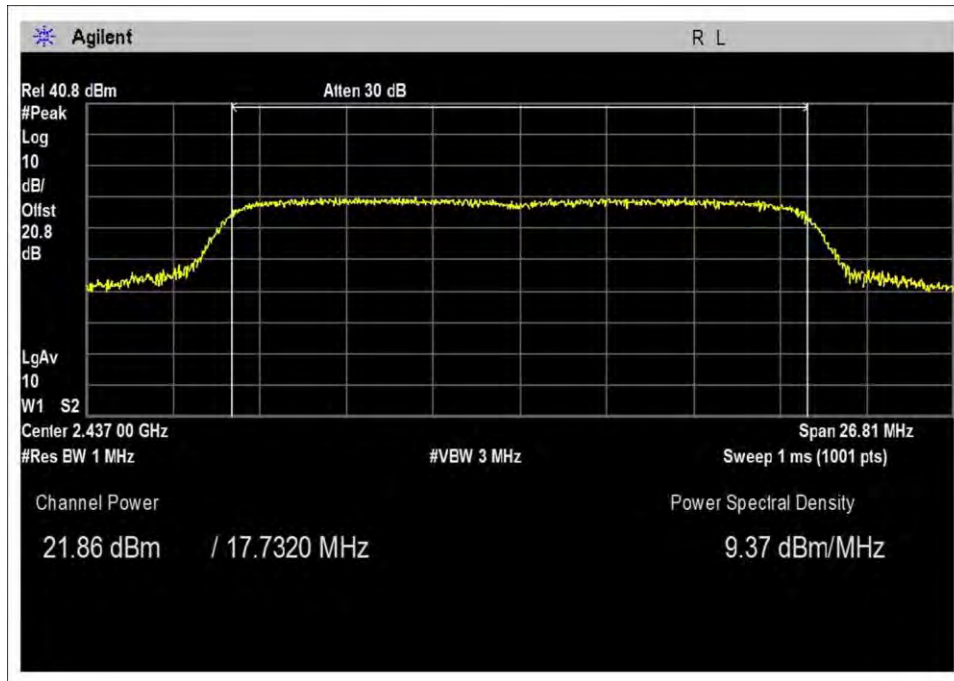
Out Power / M-n20



OutPwr-M-n20-AWGN-2132.5-on-AGC+3

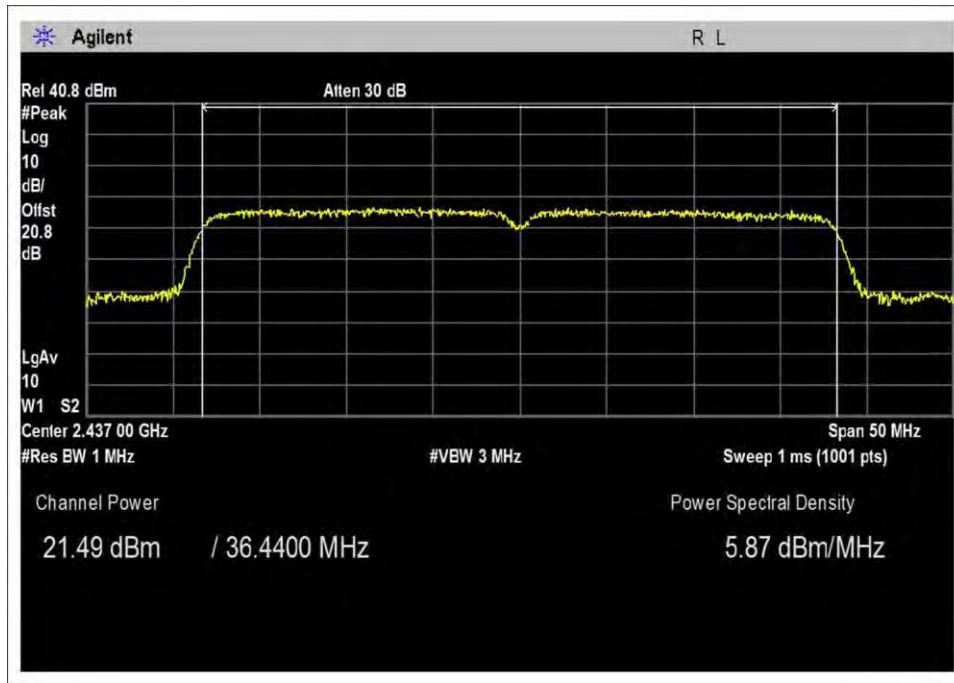


OutPwr-M-n20-AWGN-GSM-off

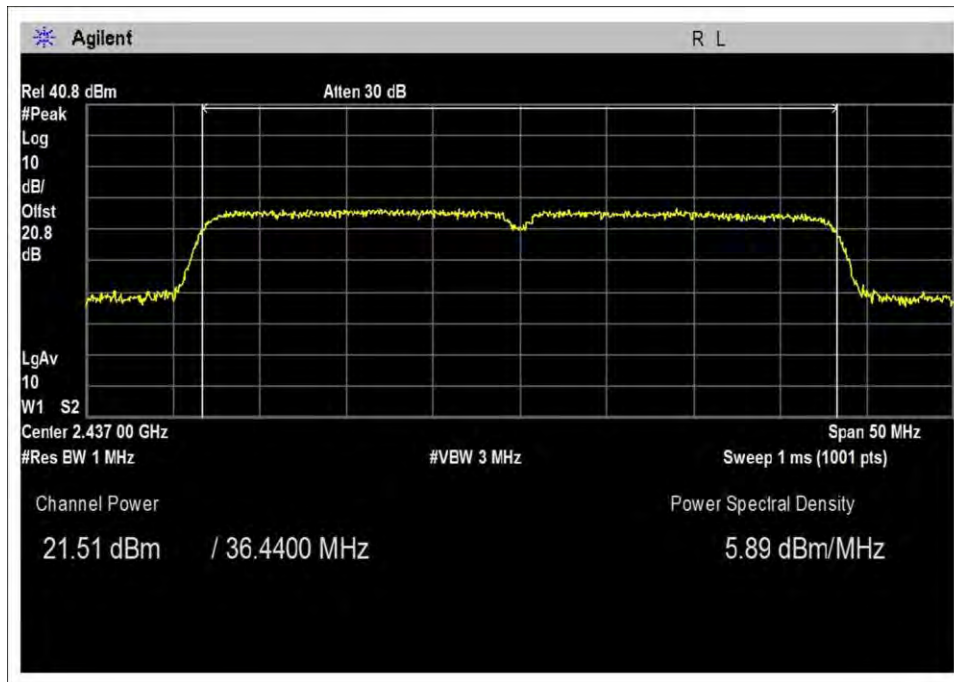


OutPwr-M-n20-GSM-2132.5-on-AGC+3

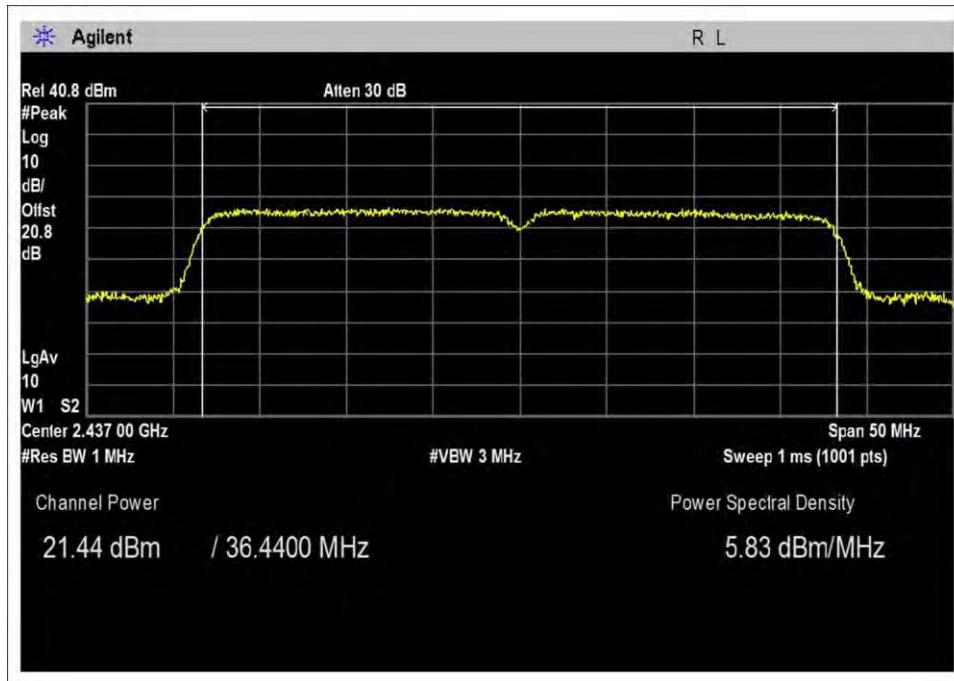
Out Power / M-n40



OutPwr-M-n40-AWGN-2132.5-on-AGC+3



OutPwr-M-n40-AWGN-GSM-off



OutPwr-M-n40-GSM-2132.5-on-AGC+3

3.6.2 Out of Band / Block Emissions (Including Intermodulation) Conducted Measurement

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: Cellphone-Mate, Inc.
 Specification: **3.6.2 Out of Band/Block emissions conducted measurement**
 Work Order #: **96950** Date: 5/19/2015
 Test Type: **Conducted Power Measurement** Time: 09:10:28
 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 single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna. The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port. The Industrial booster UL and DL power and gain parameters are initially measured with WiFi 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.

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.

Software: Force 7 V1.0

Firmware: V1.0

Application: MP_TEST MFC version 1.3.8.0

Test environment conditions: 21°C, 40% Relative Humidity, 101.5kPa

Test procedure: The test was performed in accordance with section 3.6.2 of the FCC document: D05 Industrial Booster Basic Measurements v01 935210 Dated June 05, 2015

Note: For frequencies above 1GHz on the uplink path, stop frequency of the spectrum analyzer is set to the upper block edge frequency plus 1MHz.

For frequencies above 1GHz on the uplink path, start frequency of the spectrum analyzer is set to the lower block edge frequency minus 1MHz.

Emissions beyond this 1MHz Span are covered by section 3.6.3 spurious emissions conducted measurement test.

UL-1710-1755L-**Sn**-preAGC: **Single** Test Signal. Denotes Left part of the lower band/block edge frequency using a signal tuned at Low Channel of the operational band.

UL-1710-1755L-**Cm**-preAGC: **Composite** Test Signal. Denotes Left part of the lower band/block edge frequency using one signal tuned at Low Channel of the operational band and a second signal tuned at the Low Channel plus 0.4MHz or 5MHz for narrowband/broadband signal respectively.

Test Equipment					
Asset #	Description	Model	Manufacturer	Cal Date	Cal Due
ANP06131	Attenuator	18N20W-20	Inmet	2/27/2014	2/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	3/24/2015	3/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/2/2013	12/2/2015
C00087	Combiner	44000		1/9/2014	1/9/2016
AN03471	Spectrum Analyzer	E4440A	Agilent	12/19/2013	12/19/2015

3.6.2 Summary of Results

Pass: As indicated in plots below, all out-of-band/block emissions are under the limit of -13dBm.

BB Signal (4.1MHz AWGN)

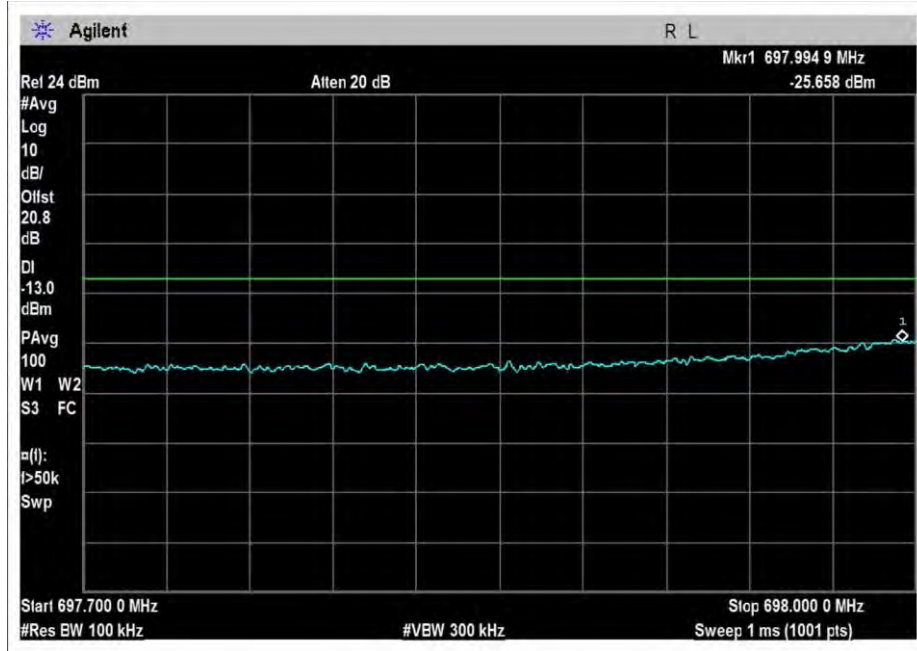
Operational Frequencies (MHz)	Link	CH	Freq1 (MHz)	Freq2 (MHz)	OOB Cm	OOB Cm	OOB Sn	OOB Sn	OOB Limit	Margin
					PreAGC (dBm)	AGC+3dB (dBm)	PreAGC (dBm)	AGC+3dB (dBm)	(dBm)	(dB)
1710-1755	UL	H	1752.5	1747.5	-27.67	-25.90	-23.29	-21.78	-13	-12.90
1710-1755	UL	L	1712.5	1717.5	-25.56	-26.01	-25.85	-23.59	-13	-12.56
698-716	UL	L	700.5	705.5	-25.01	-25.66	-24.34	-22.55	-13	-12.01
698-716	UL	H	713.5	708.5	-26.95	-27.41	-25.45	-23.91	-13	-13.95
776-787	UL	H	784.5	779.5	-27.04	-27.19	-24.47	-24.18	-13	-14.04
776-787	UL	L	778.5	783.5	-23.33	-24.02	-23.99	-21.24	-13	-10.33
2110-2155	DL	H	2152.5	2147.5	-23.09	-23.76	-25.41	-19.99	-13	-10.09
2110-2155	DL	L	2112.5	2117.5	-21.95	-22.67	-21.97	-19.87	-13	-8.95
728-746	DL	L	730.5	735.5	-28.92	-30.01	-26.69	-27.73	-13	-15.92
728-746	DL	H	743.5	738.5	-26.37	-26.77	-22.17	-23.00	-13	-13.37
746-757	DL	L	748.5	753.5	-24.08	-25.48	-22.86	-23.12	-13	-11.08
746-757	DL	H	754.5	749.5	-27.96	-28.64	-25.43	-26.26	-13	-14.96

NB Signal (GSM)

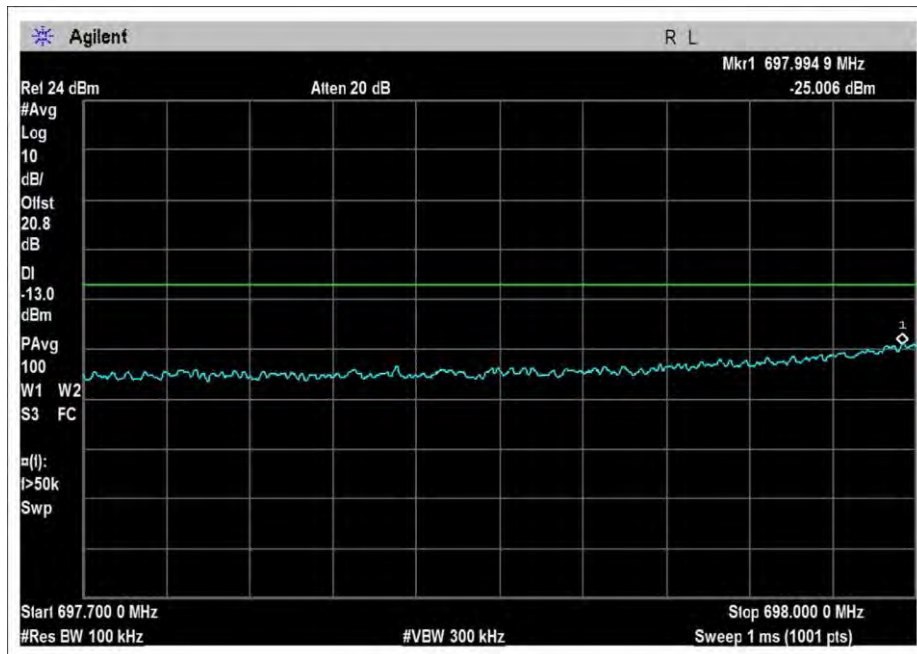
Operational Frequencies (MHz)	Link	CH	Freq1 (MHz)	Freq2 (MHz)	OOB Cm PreAGC (dBm)	OOB Cm AGC+3dB (dBm)	OOB Sn PreAGC (dBm)	OOB Sn AGC+3dB (dBm)	OOB Limit (dBm)	Margin (dB)
1710-1755	UL	L	1710.2	1710.6	-26.96	-28.56	-25.97	-25.74	-13	-13.96
1710-1755	UL	H	1754.8	1754.4	-27.78	-26.89	-24.85	-25.68	-13	-13.89
698-716	UL	L	698.2	698.6	-28.63	-28.23	-24.81	-24.89	-13	-15.23
698-716	UL	H	715.8	715.4	-27.09	-27.63	-24.05	-24.35	-13	-14.09
776-787	UL	L	776.2	776.6	-26.43	-25.94	-23.27	-24.62	-13	-12.94
776-787	UL	H	786.8	786.4	-27.88	-28.26	-24.77	-24.57	-13	-14.88
2110-2155	DL	H	2154.8	2154.4	-25.64	-25.44	-25.35	-23.55	-13	-12.44
2110-2155	DL	L	2110.2	2110.6	-25.87	-28.37	-25.43	-25.78	-13	-12.87
728-746	DL	H	745.8	745.4	-25.44	-25.79	-23.97	-23.21	-13	-12.44
728-746	DL	L	728.2	728.6	-31.16	-30.38	-28.27	-28.77	-13	-17.38
746-757	DL	H	756.8	756.4	-27.38	-27.68	-27.15	-25.31	-13	-14.38
746-757	DL	L	746.2	746.6	-25.07	-27.55	-23.54	-23.95	-13	-12.07

Test Data

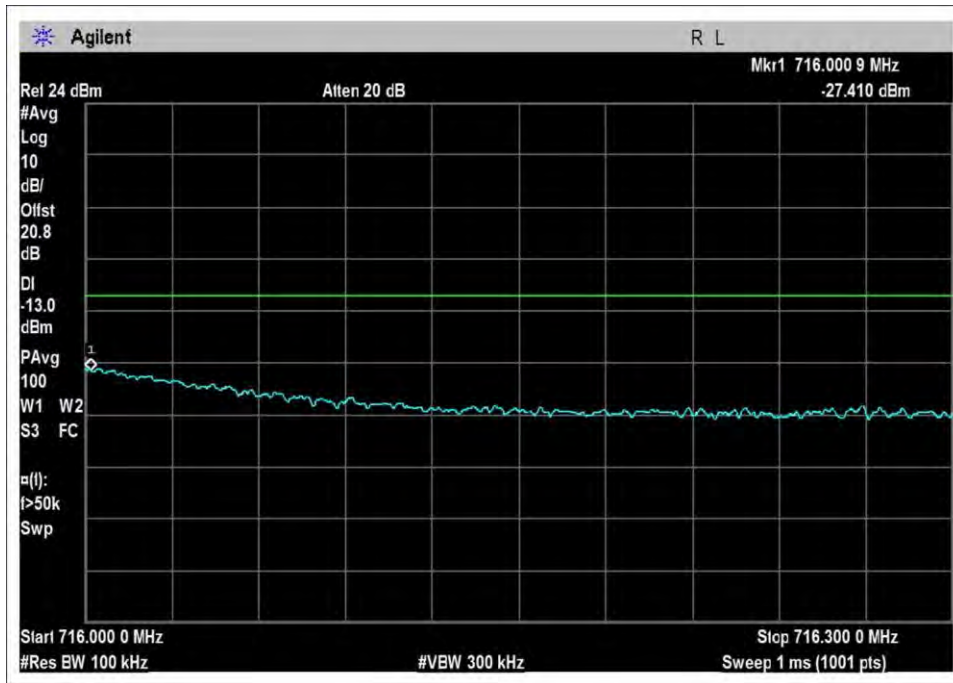
AWGN – UL-Cm



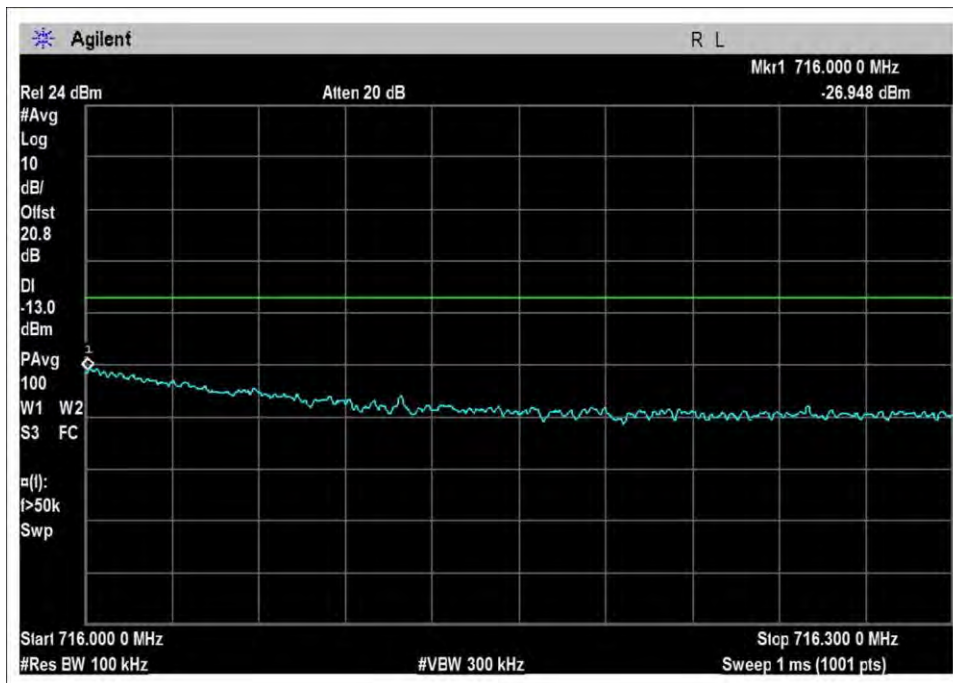
UL-698-716L-Cm-AGC+3



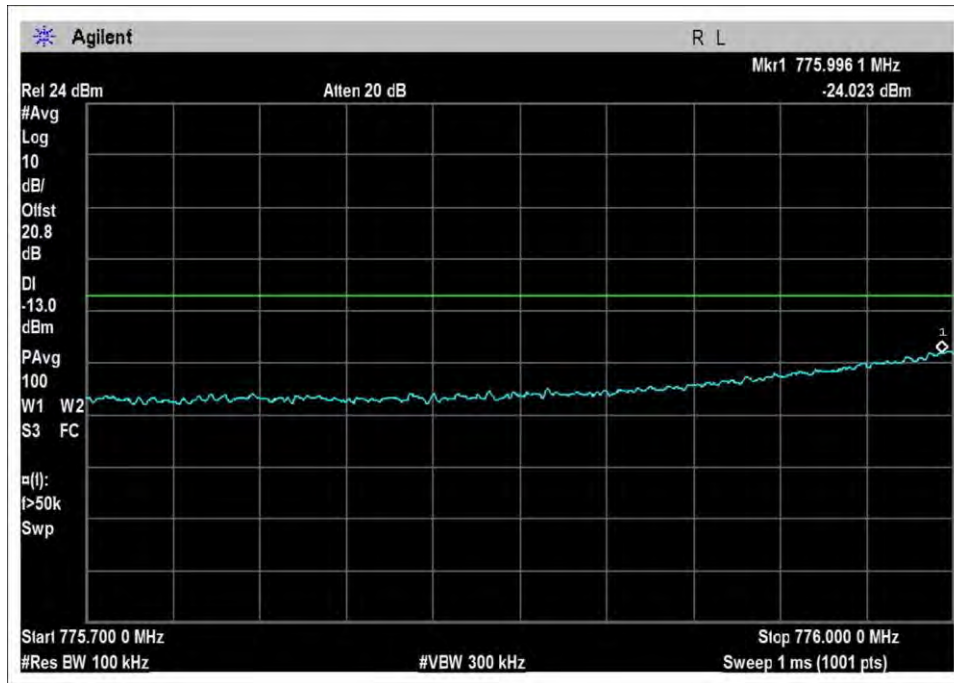
UL-698-716L-Cm-preAGC



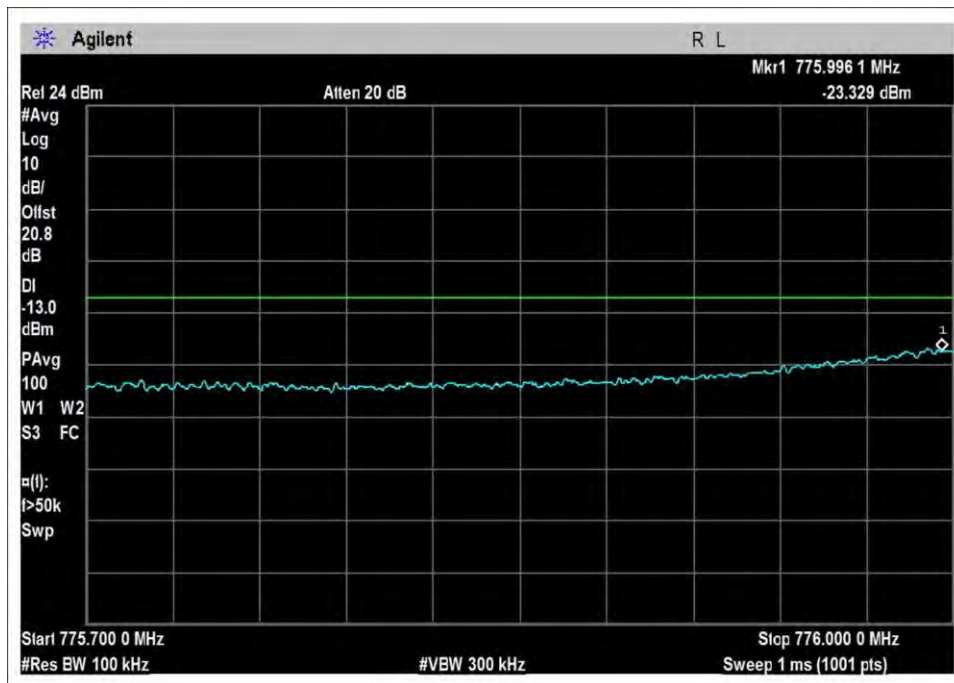
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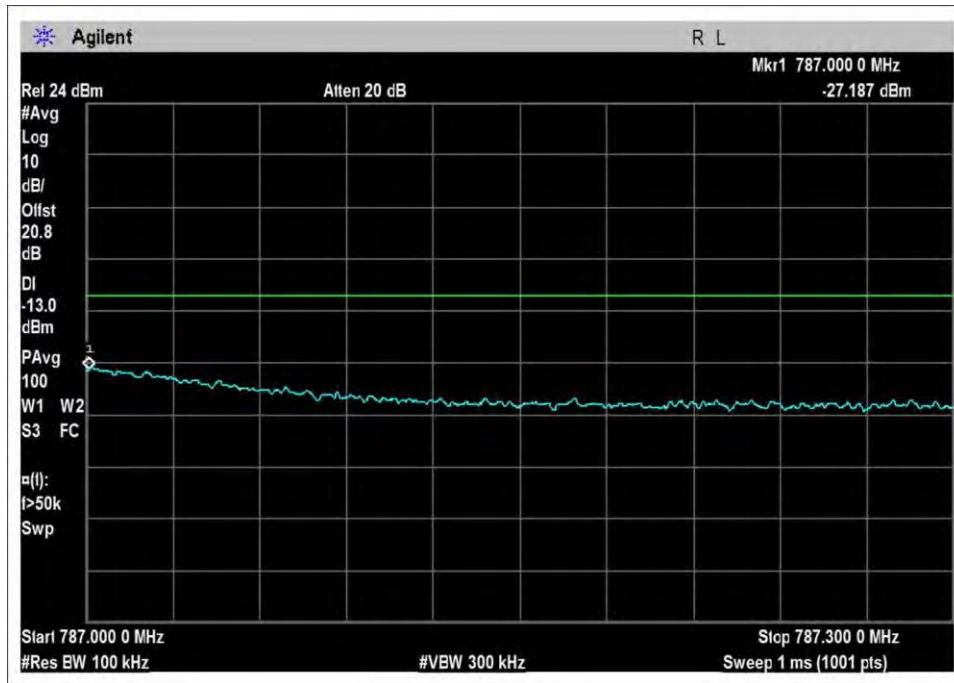
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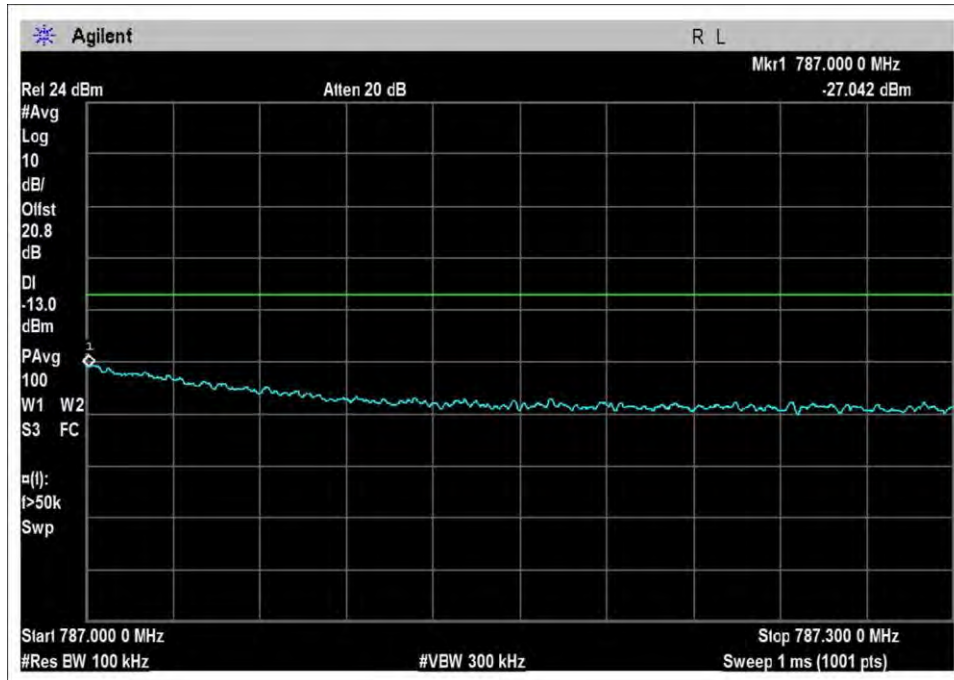
UL-776-787L-Cm-AGC+3



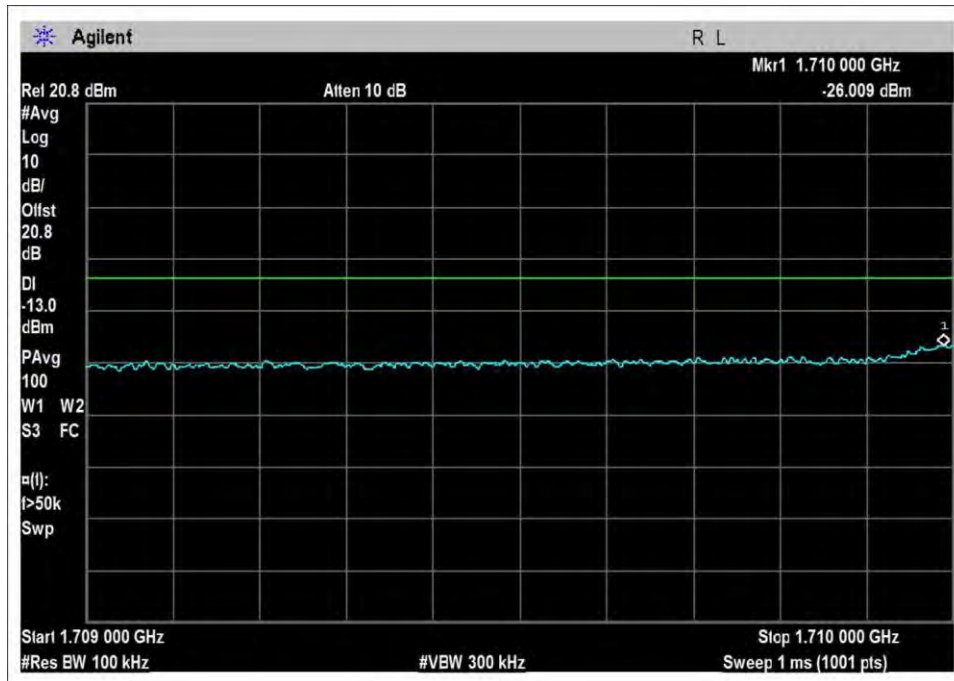
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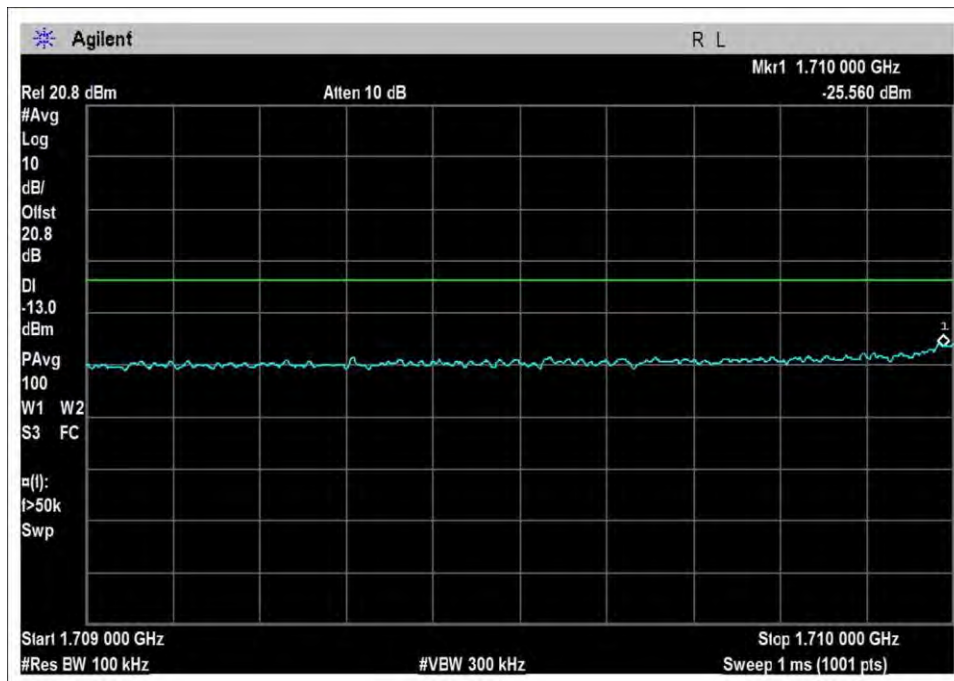
UL-776-787H-Cm-AGC+3dB



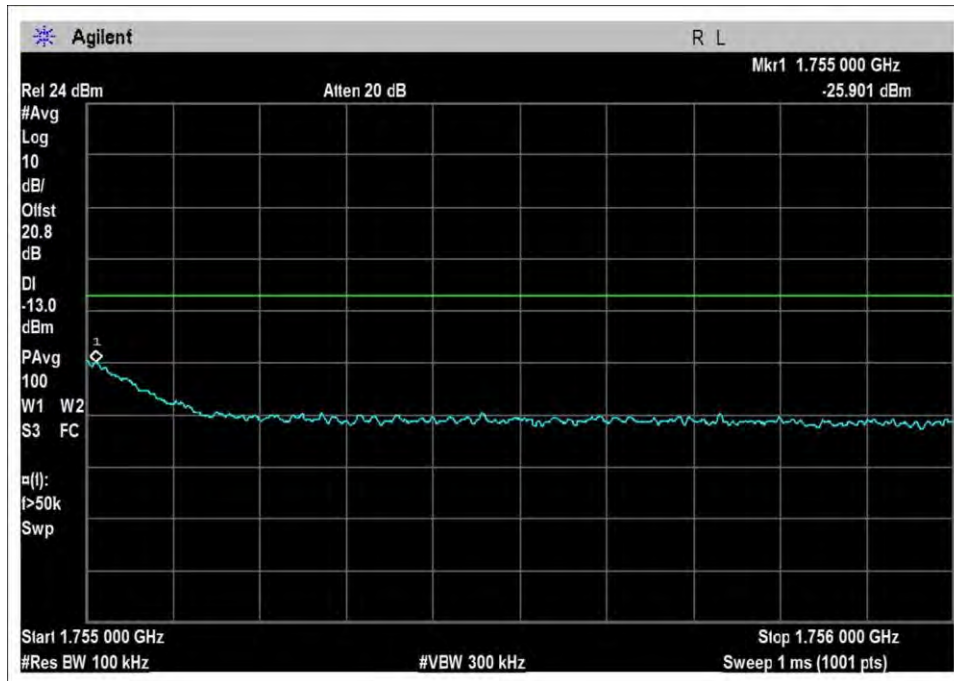
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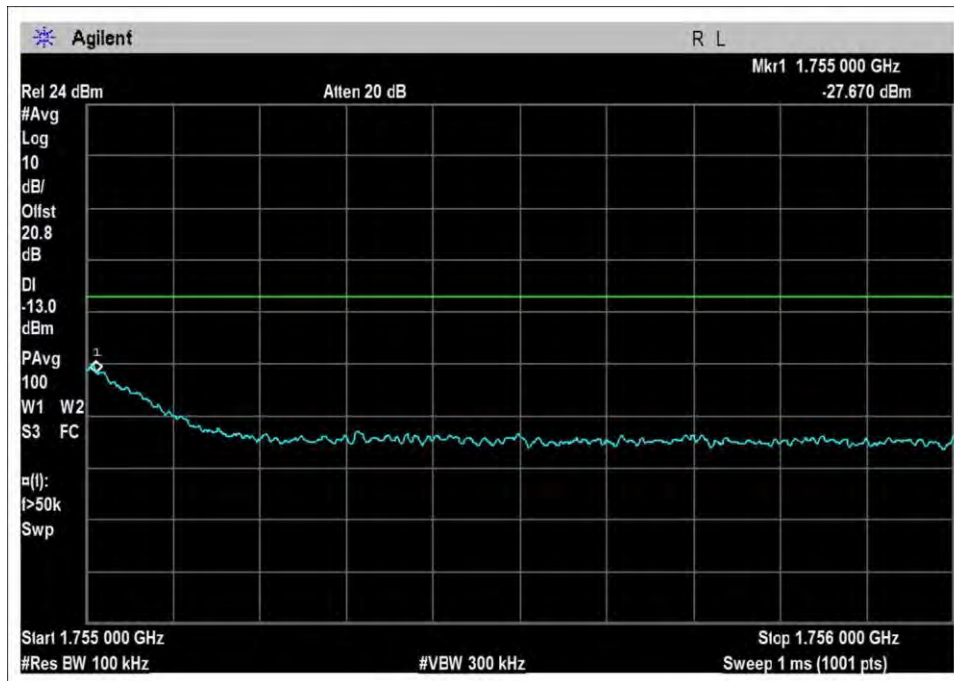
UL-1710-1755L-Cm-AGC+3dB



UL-1710-1755L-Cm-preAGC

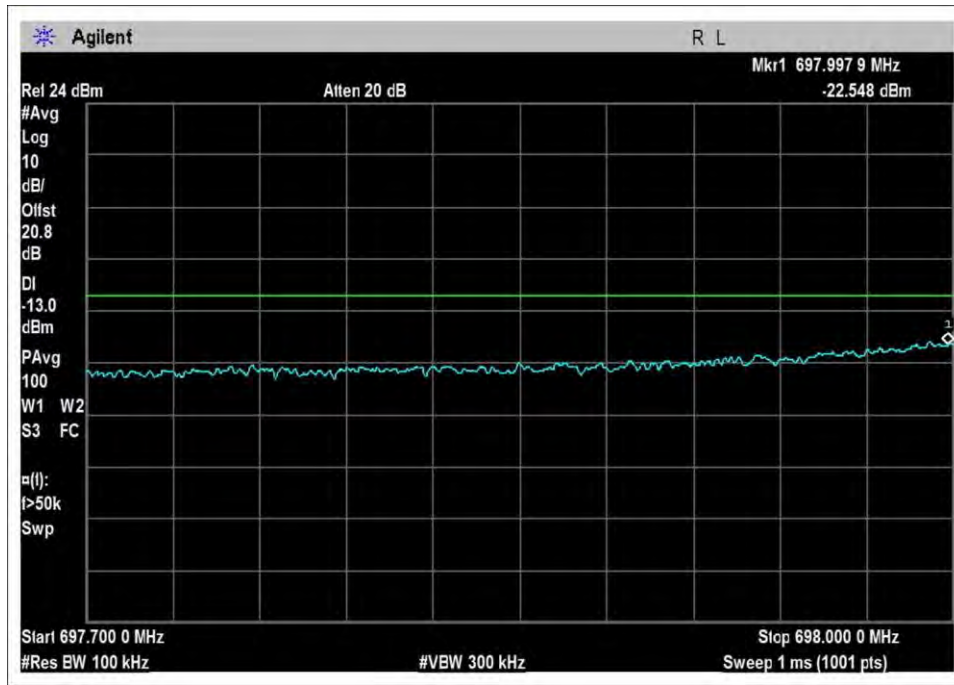


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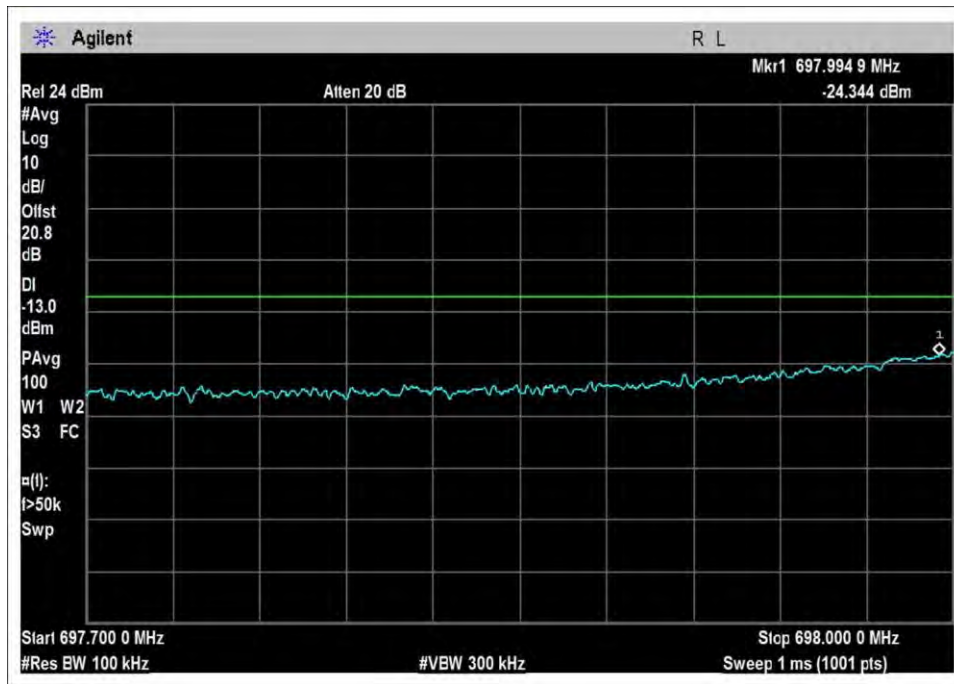


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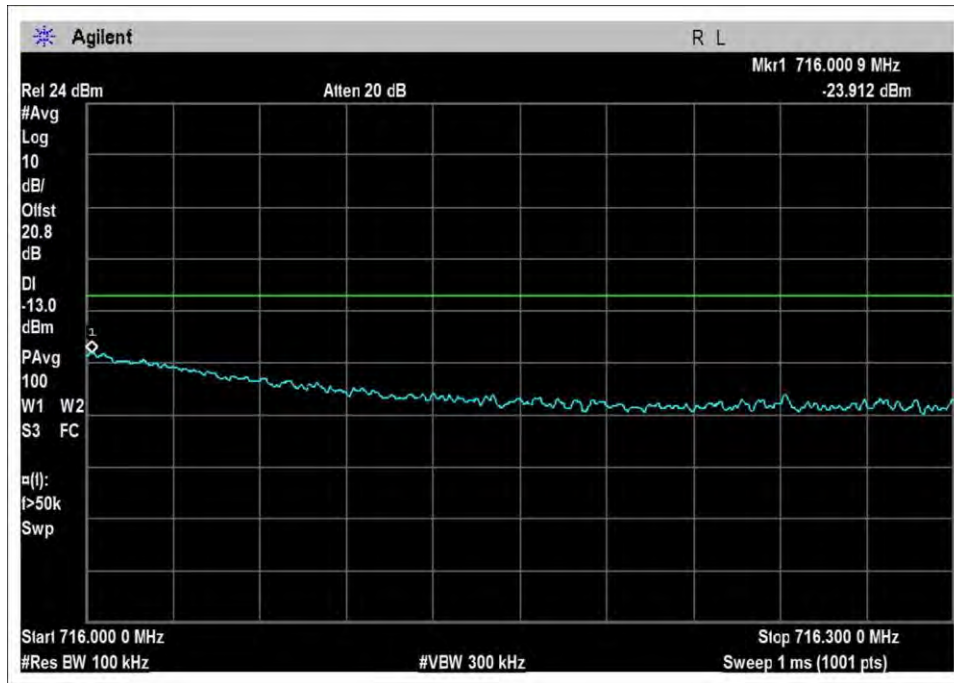
AWGN – UL-Sn



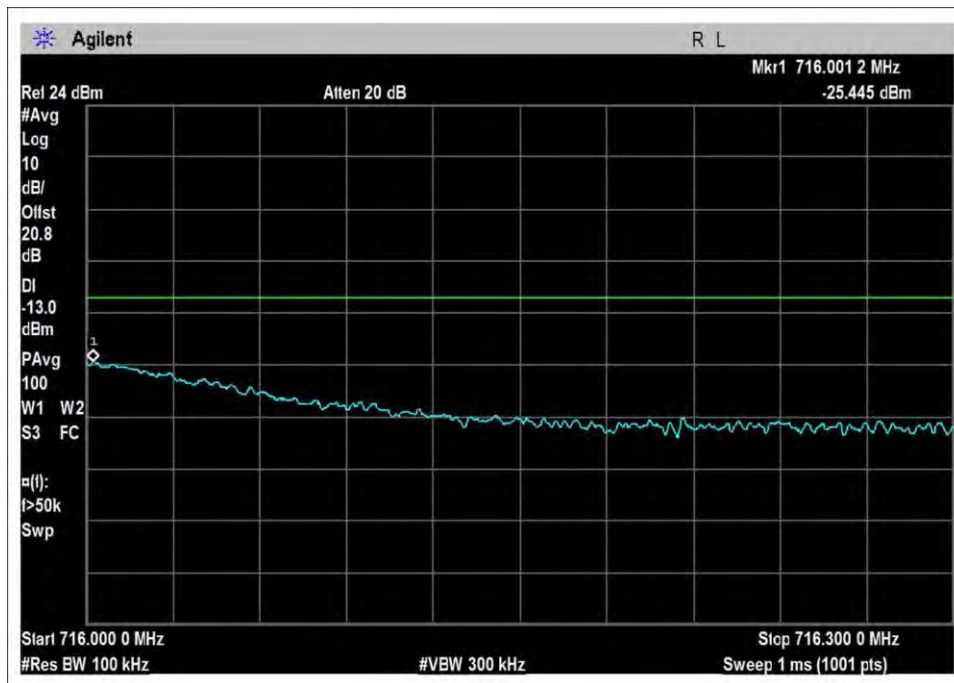
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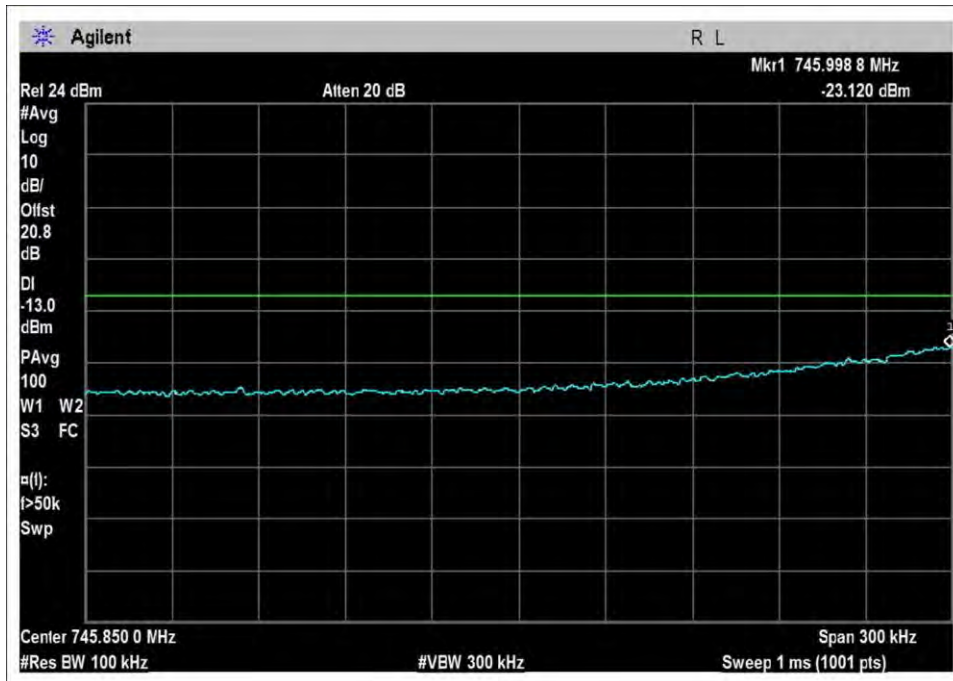
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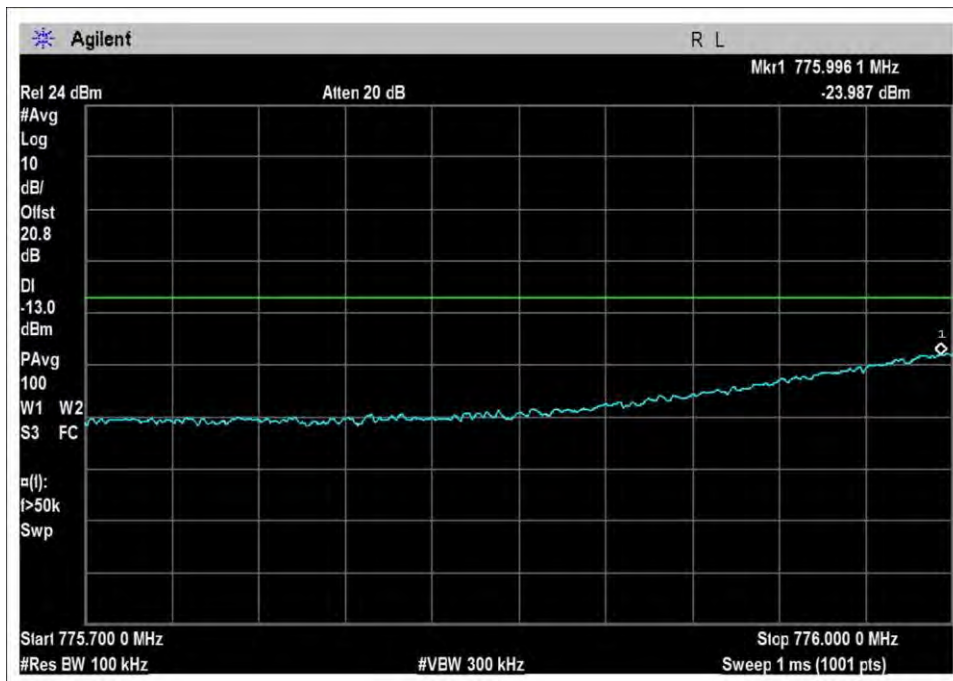
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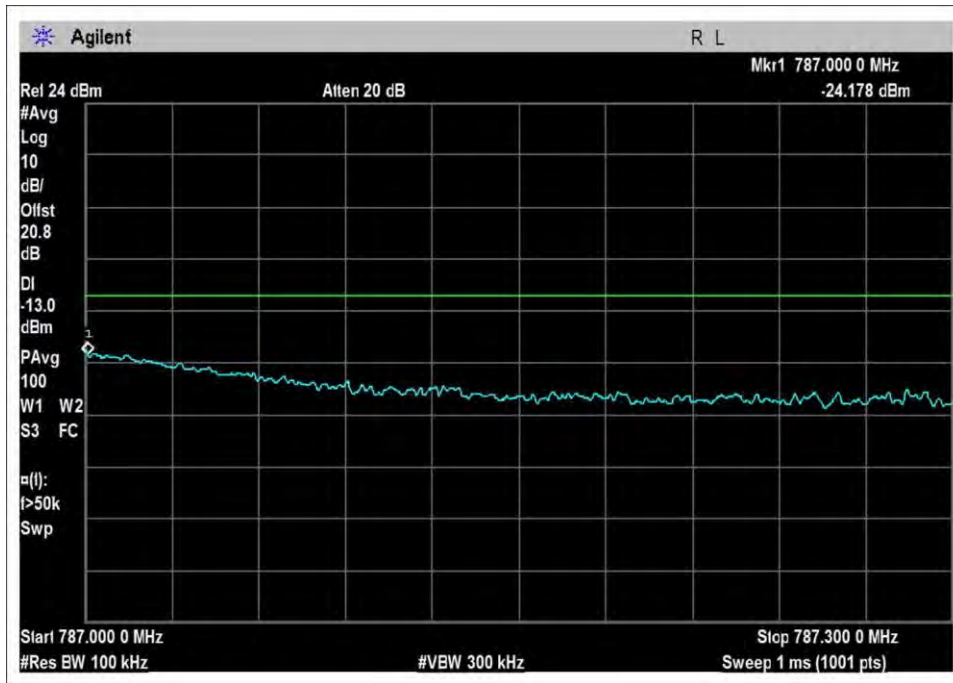
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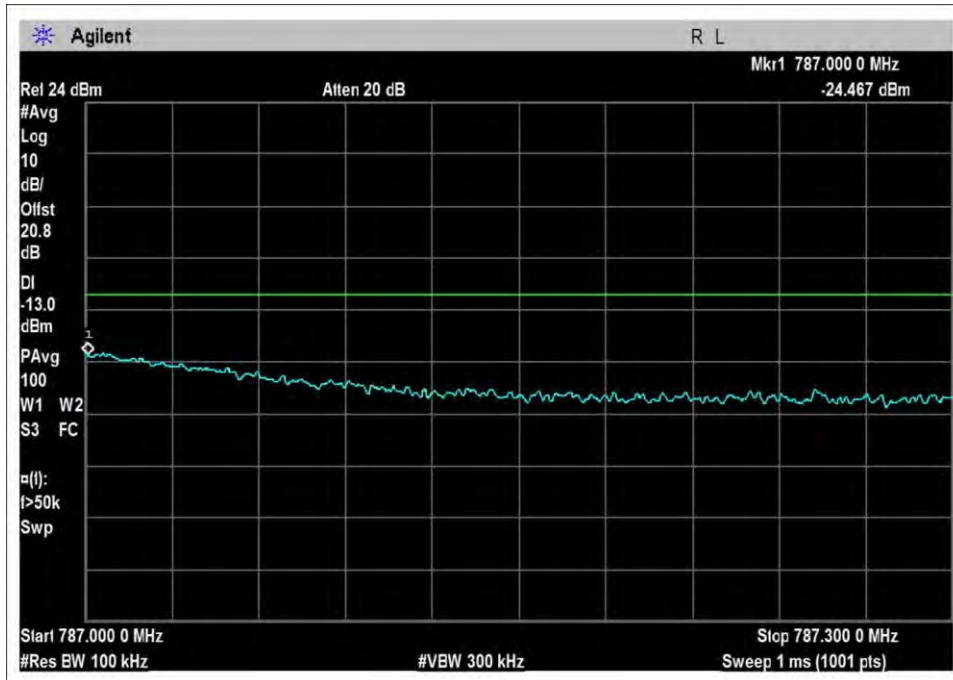
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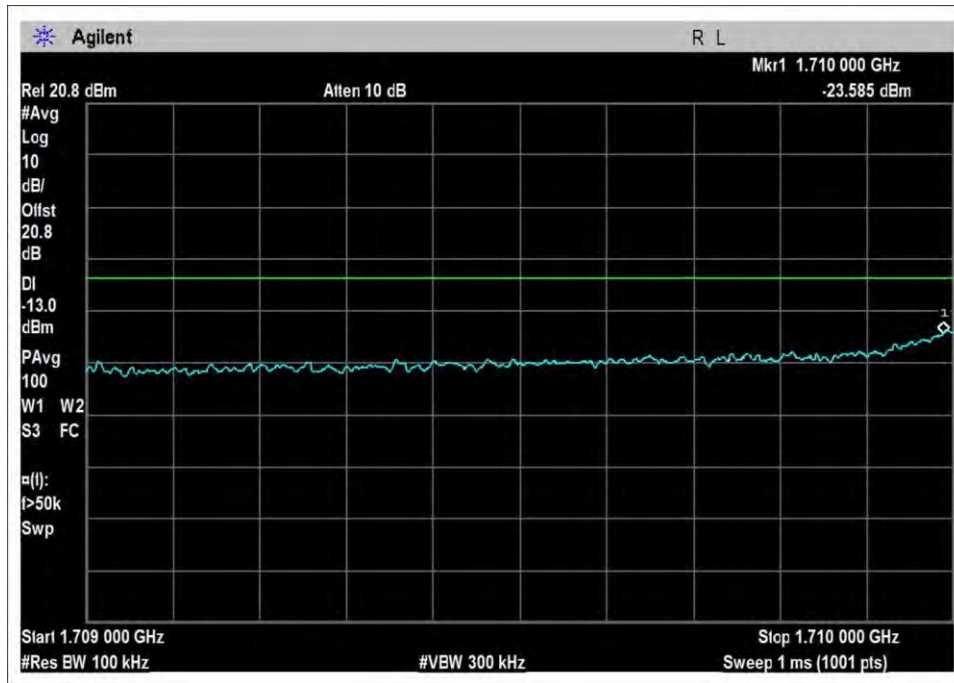
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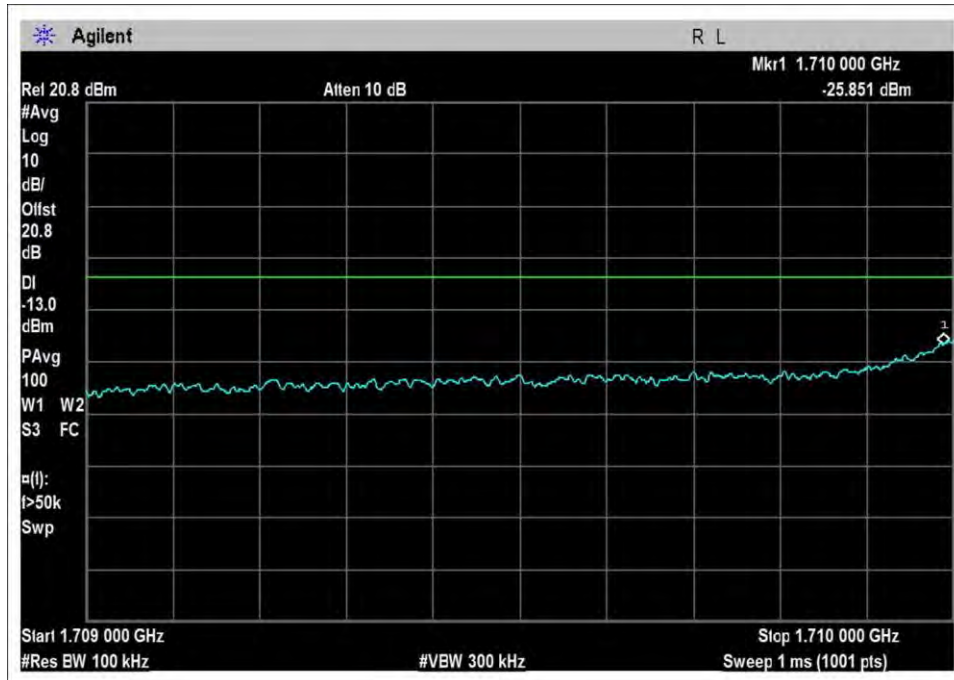
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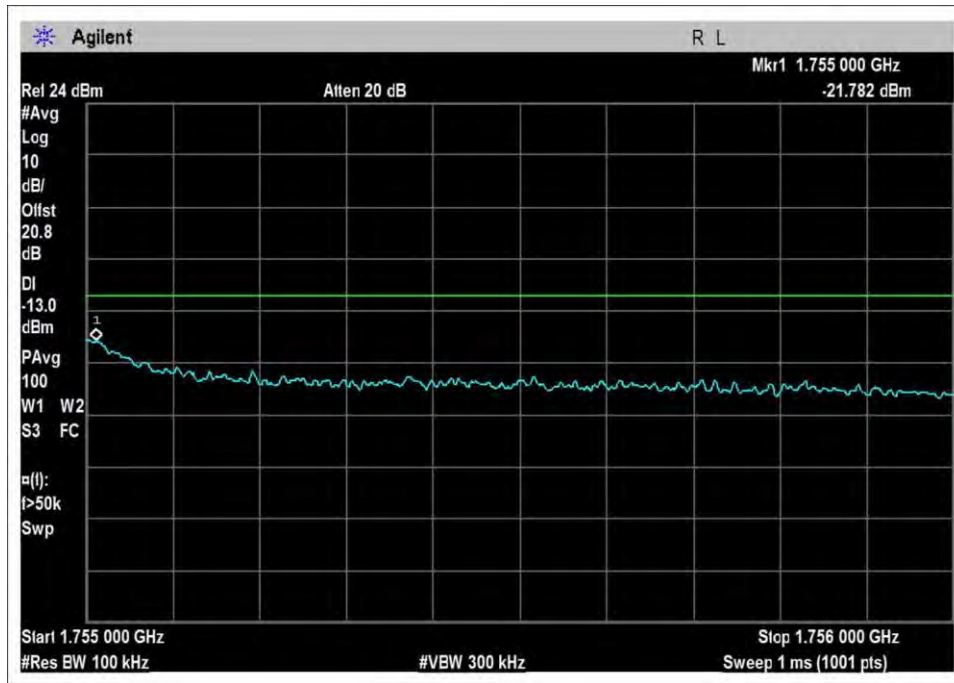
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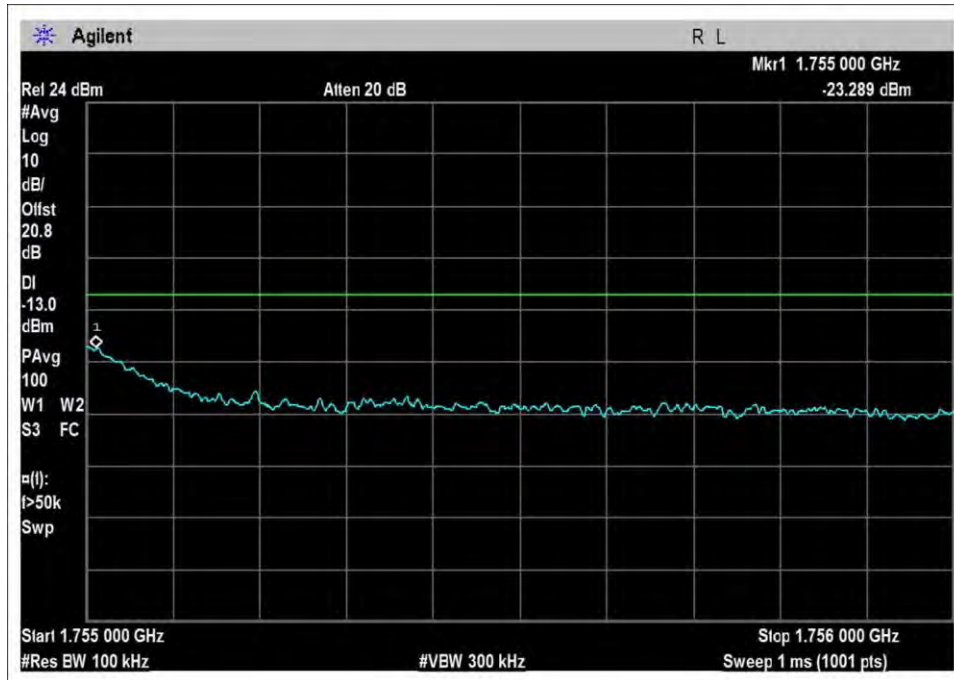
UL-1710-1755L-Sn-AGC+3



UL-1710-1755L-Sn-preAGC

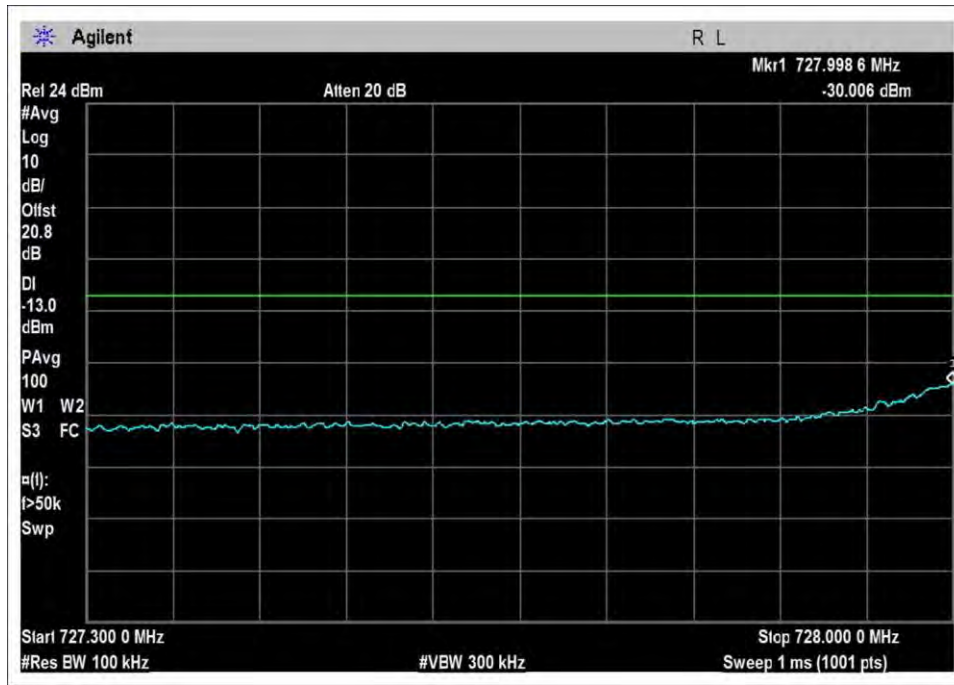


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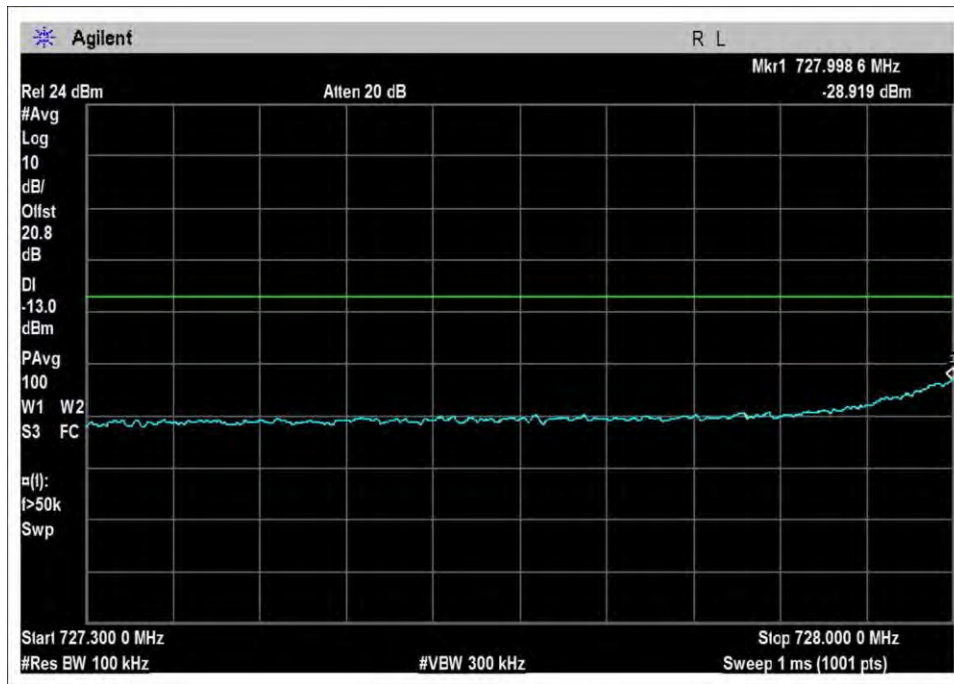


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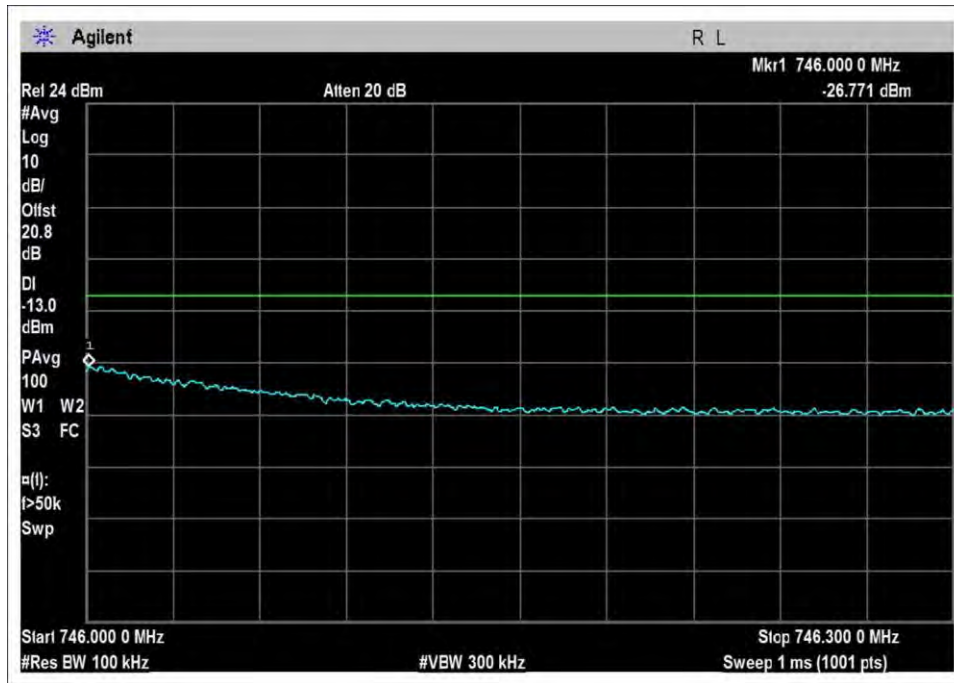
AWGN – DL - Cm



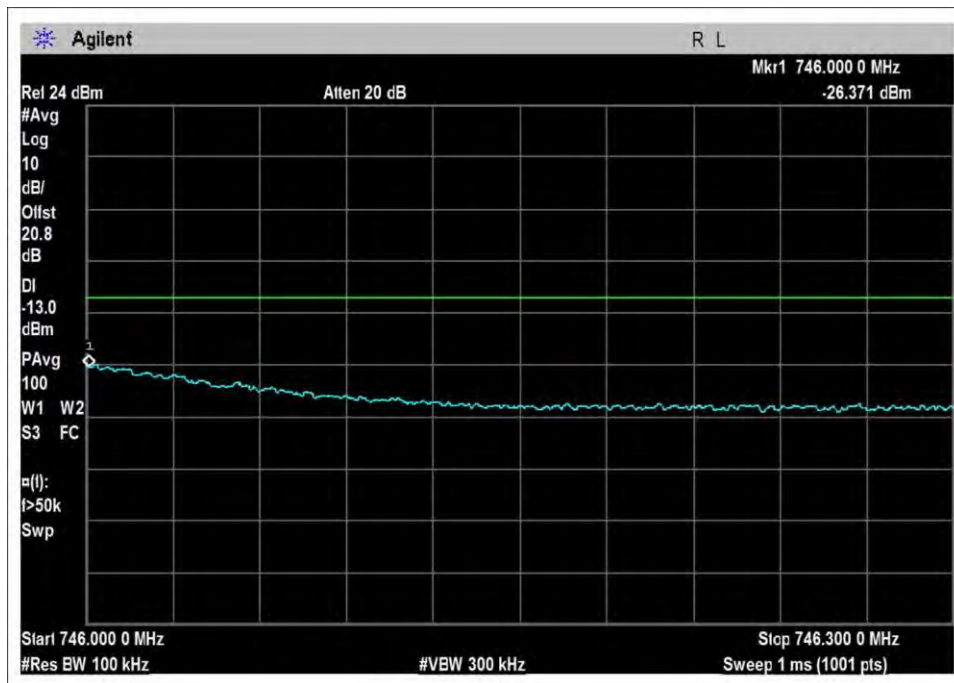
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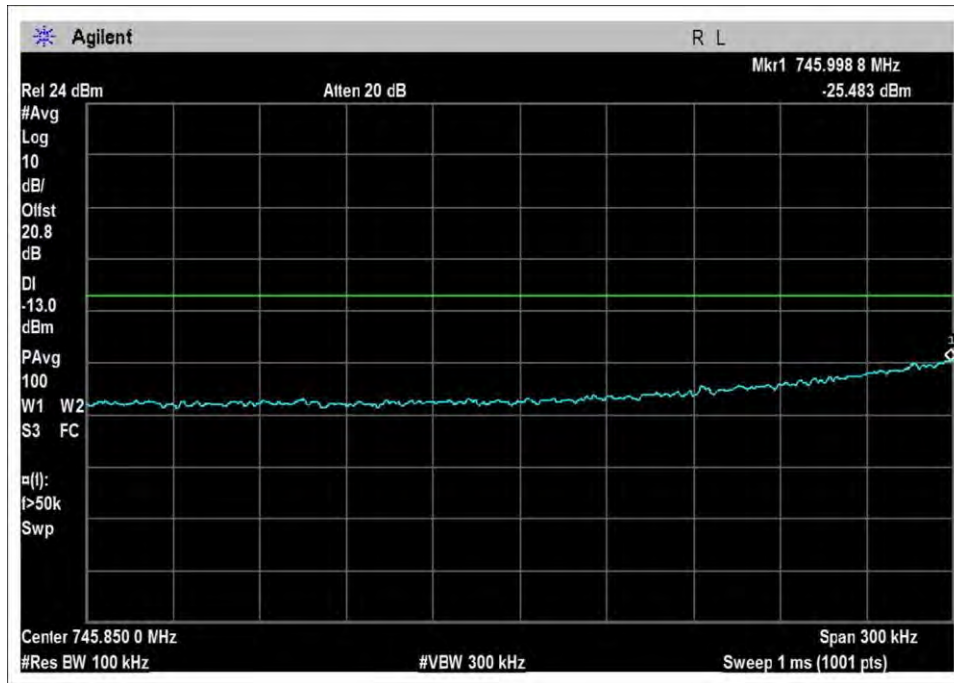
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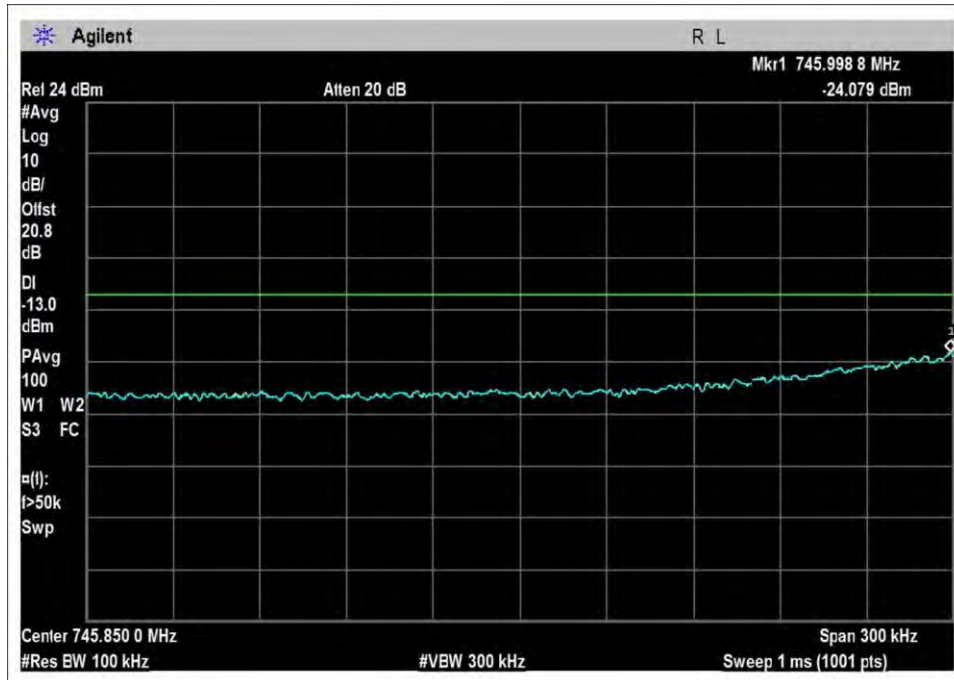
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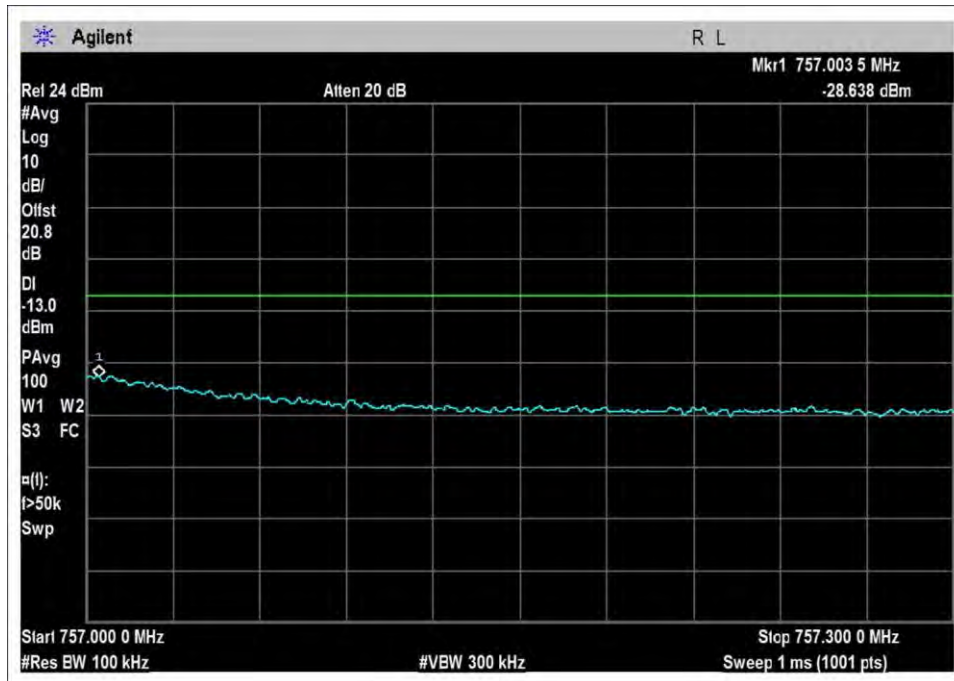
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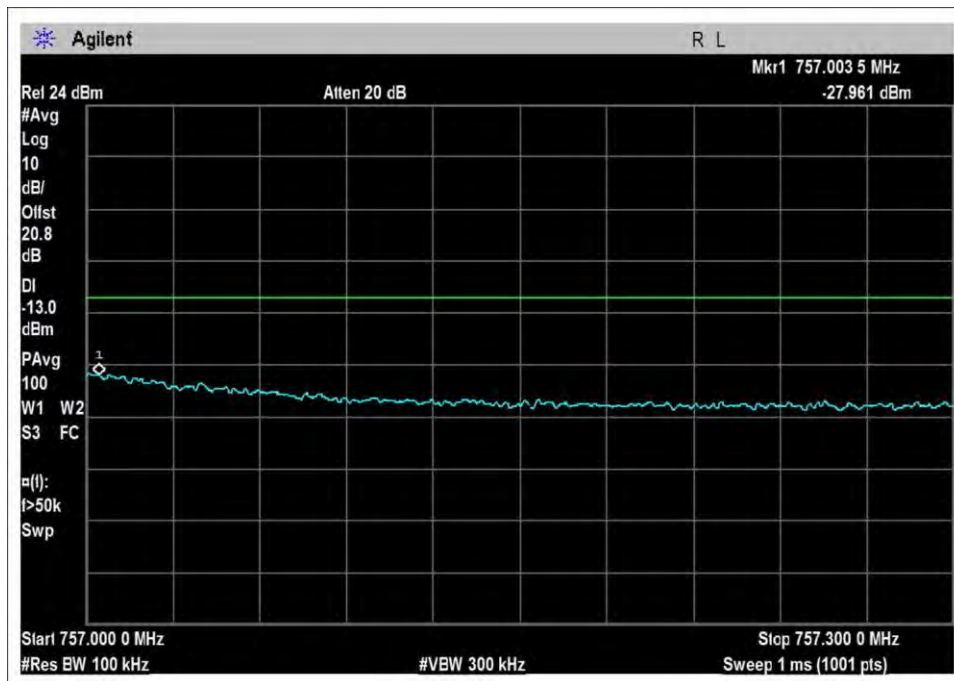
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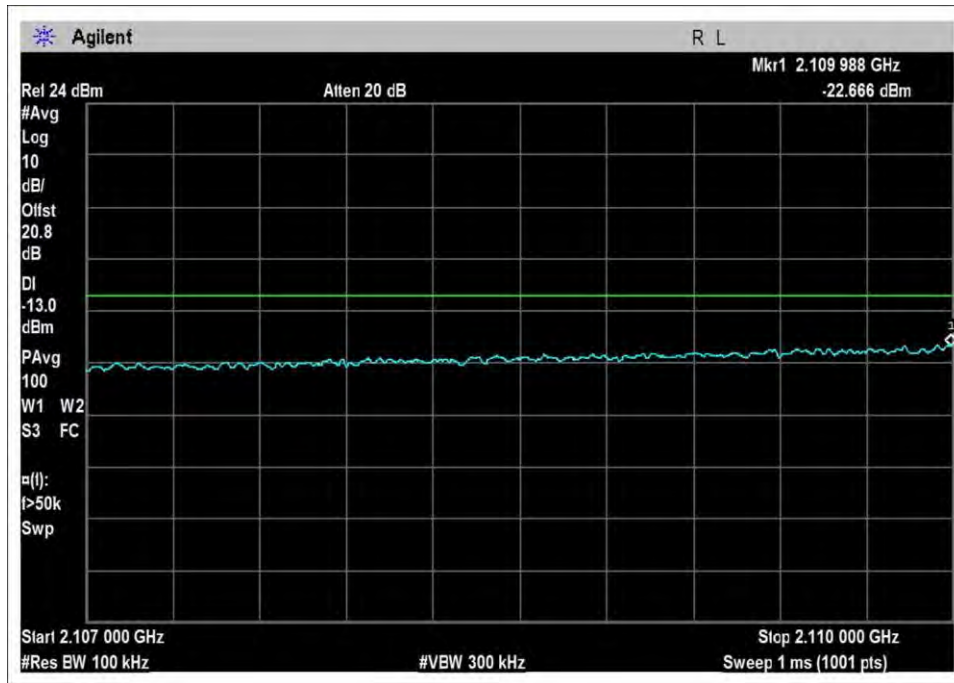
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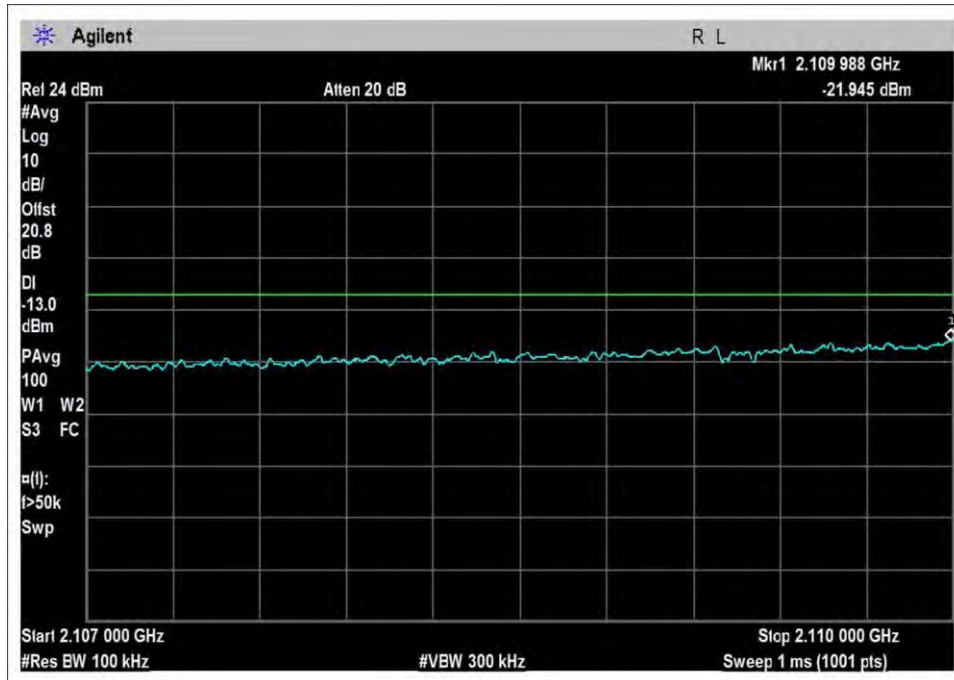
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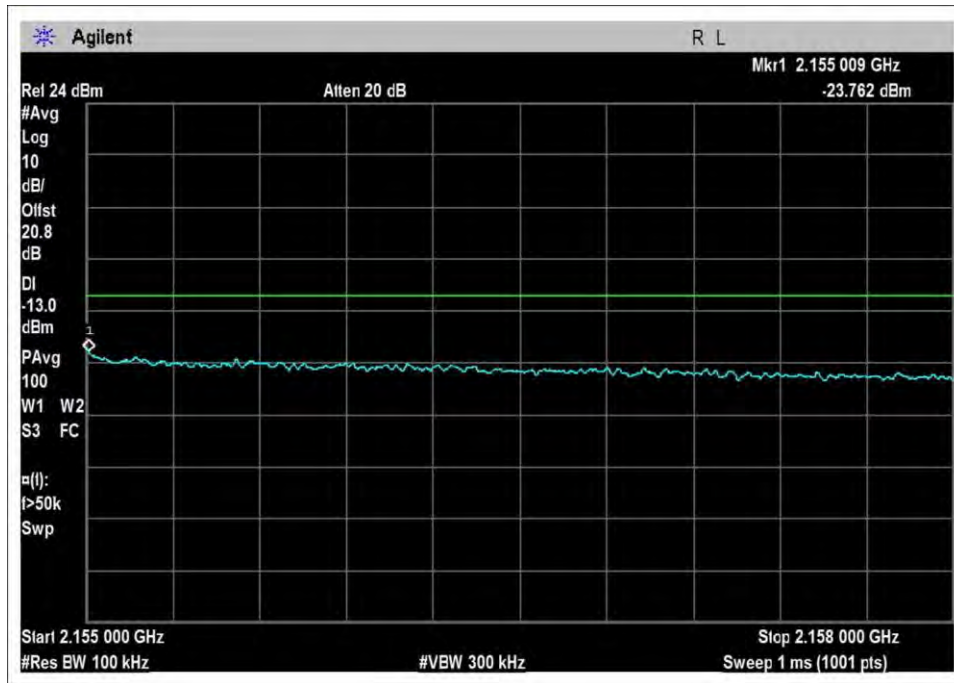
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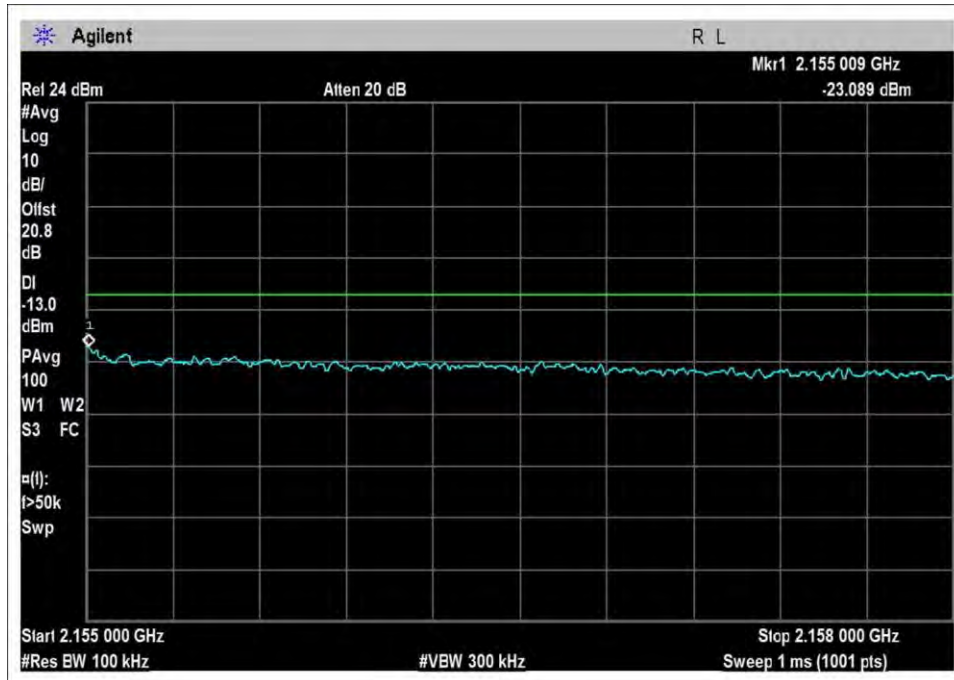
DL-2110-2155L-Cm-AGC+3



DL-2110-2155L-Cm-preAGC

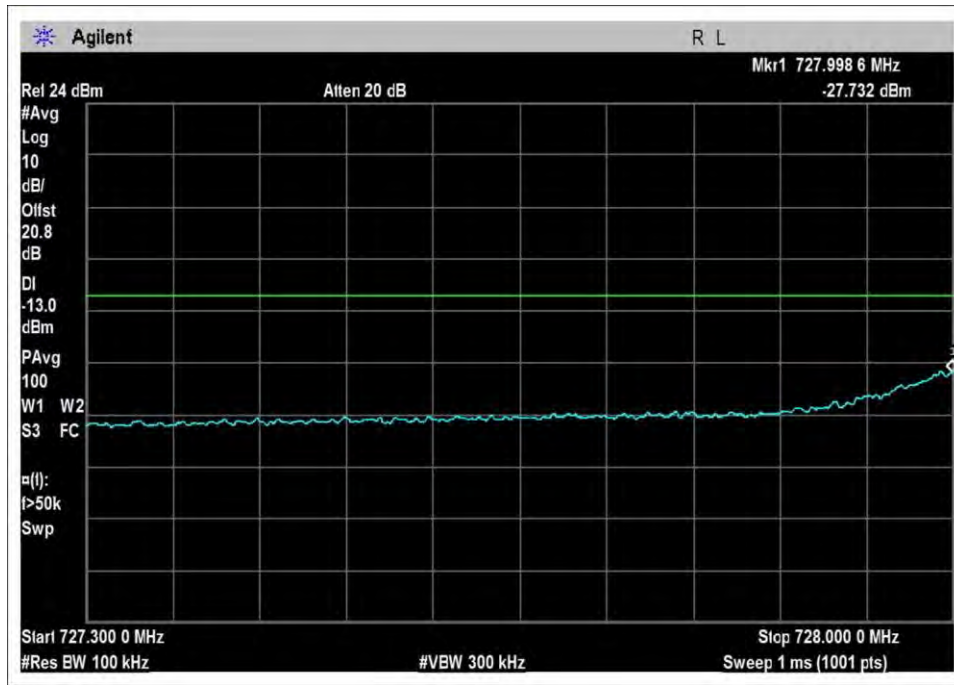


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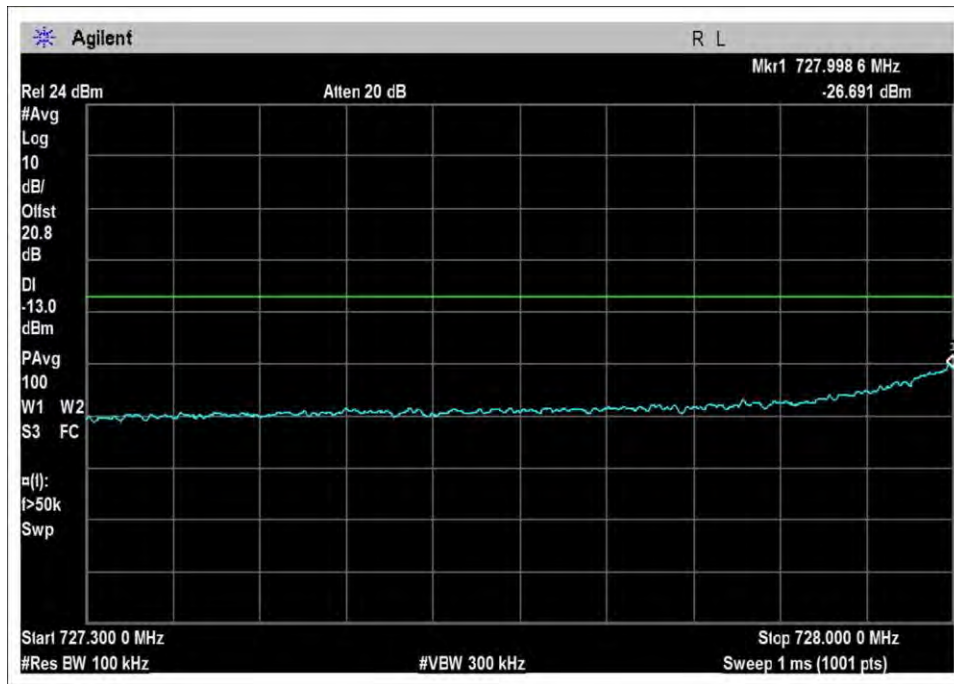


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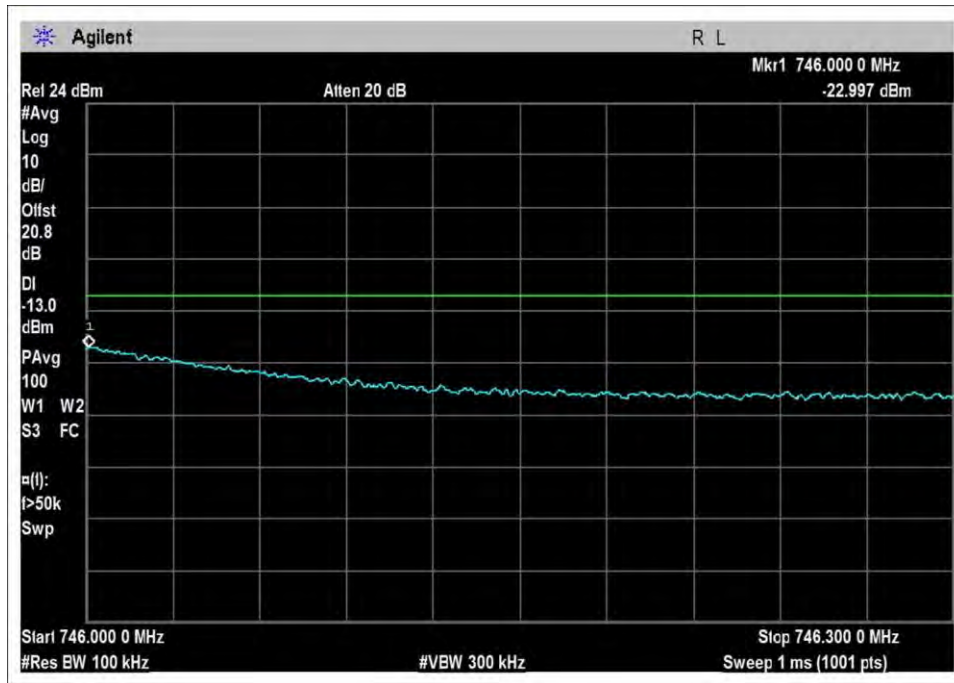
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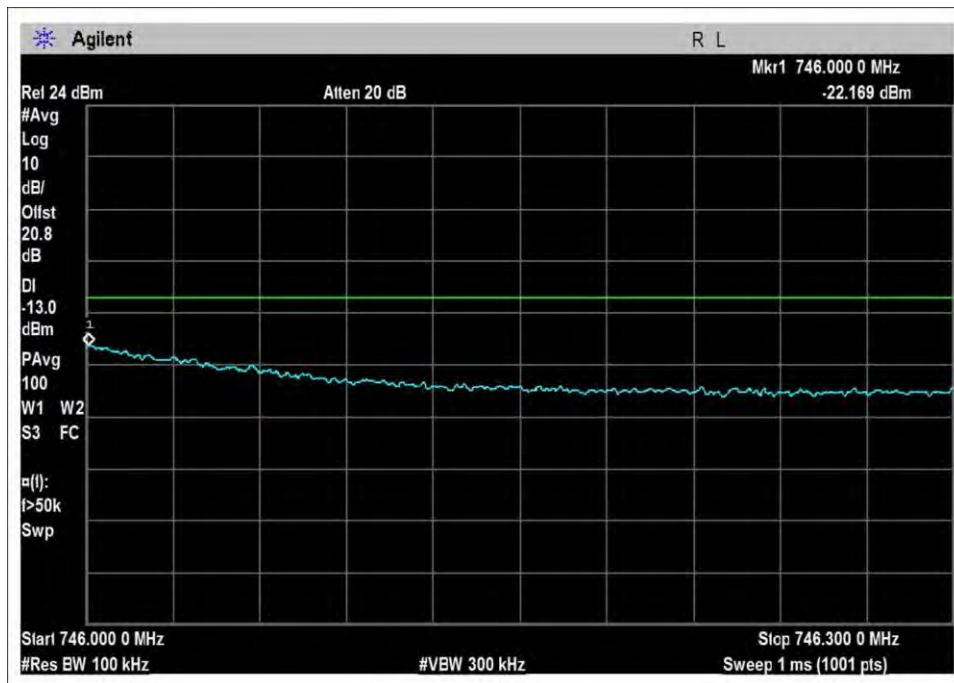
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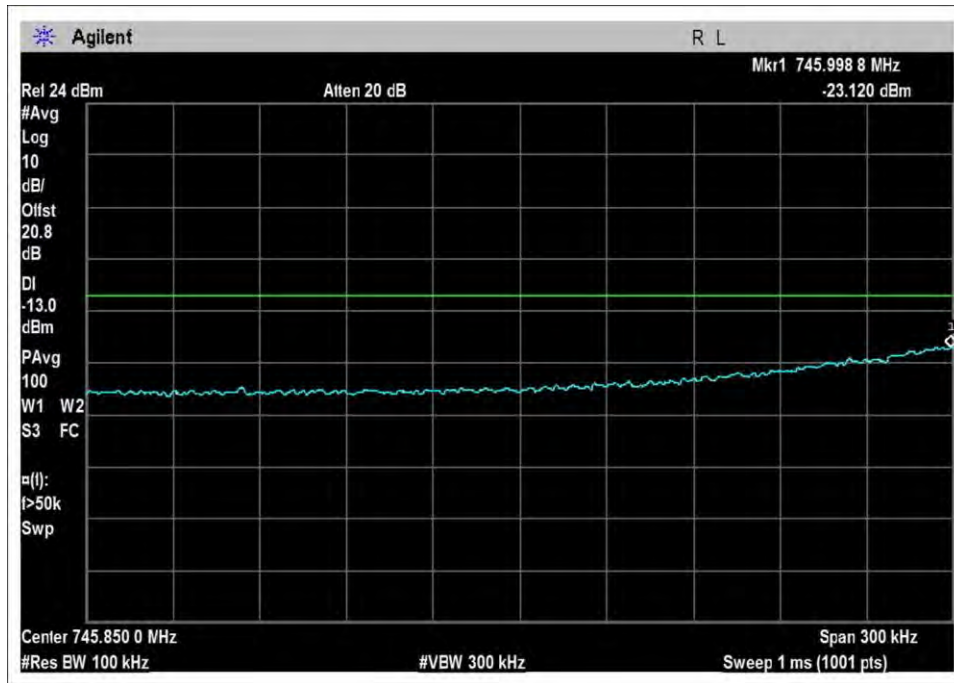
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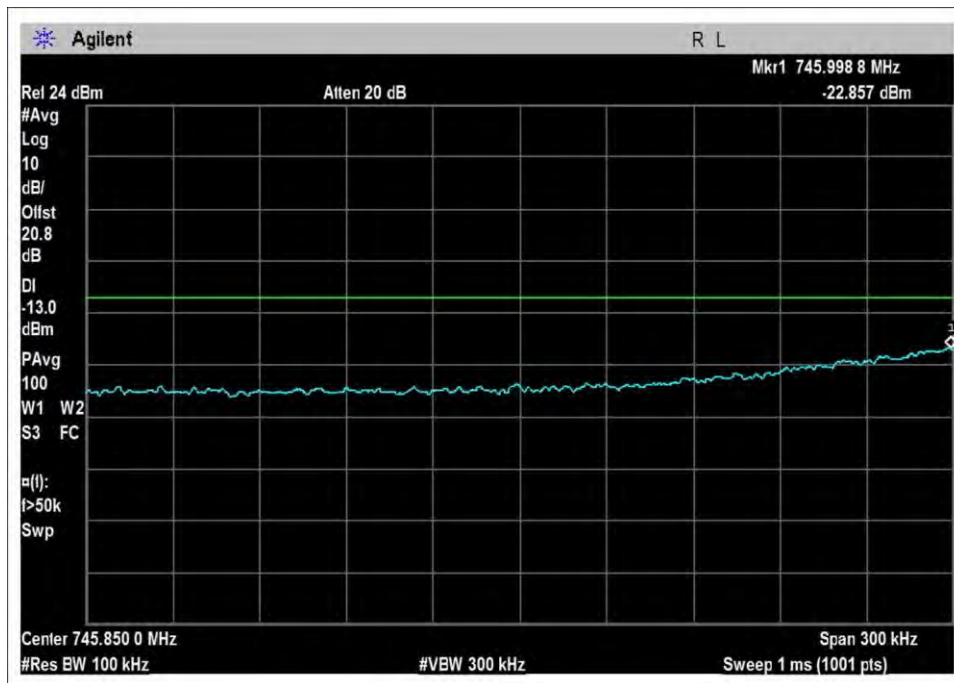
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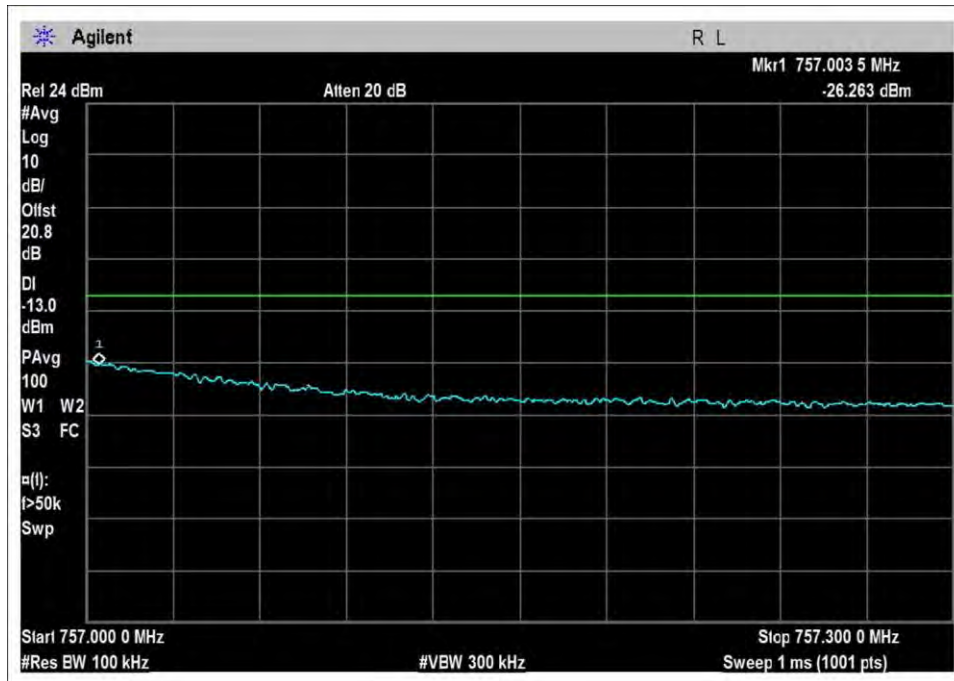
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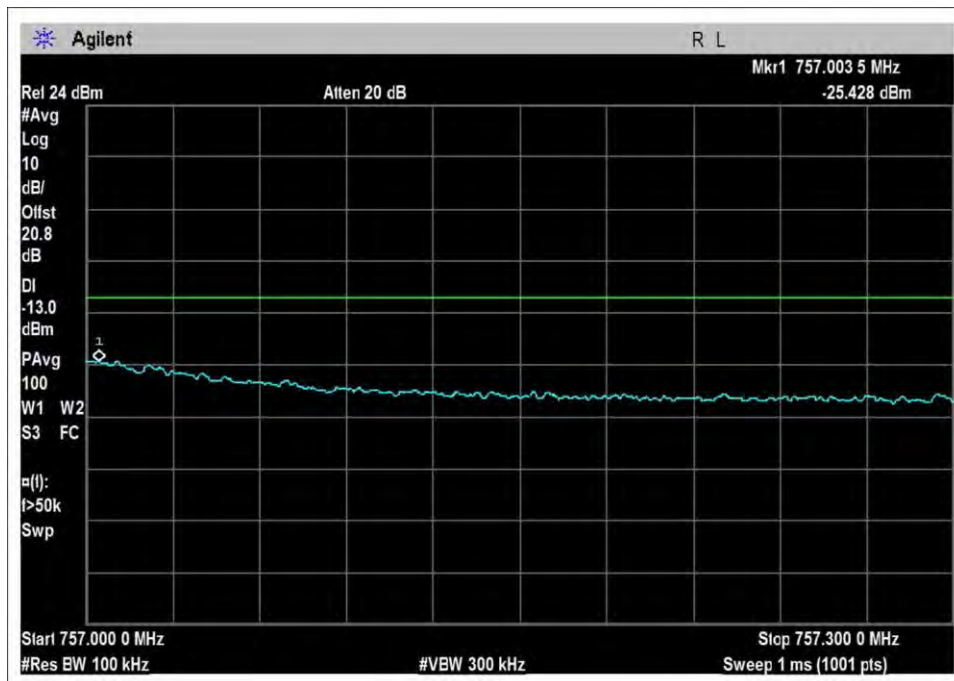
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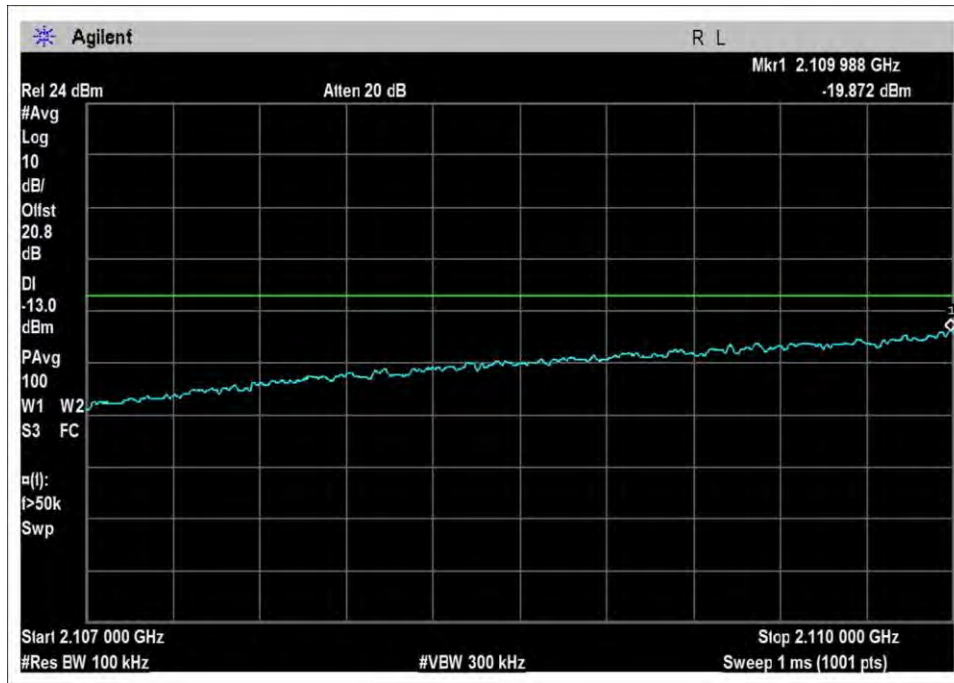
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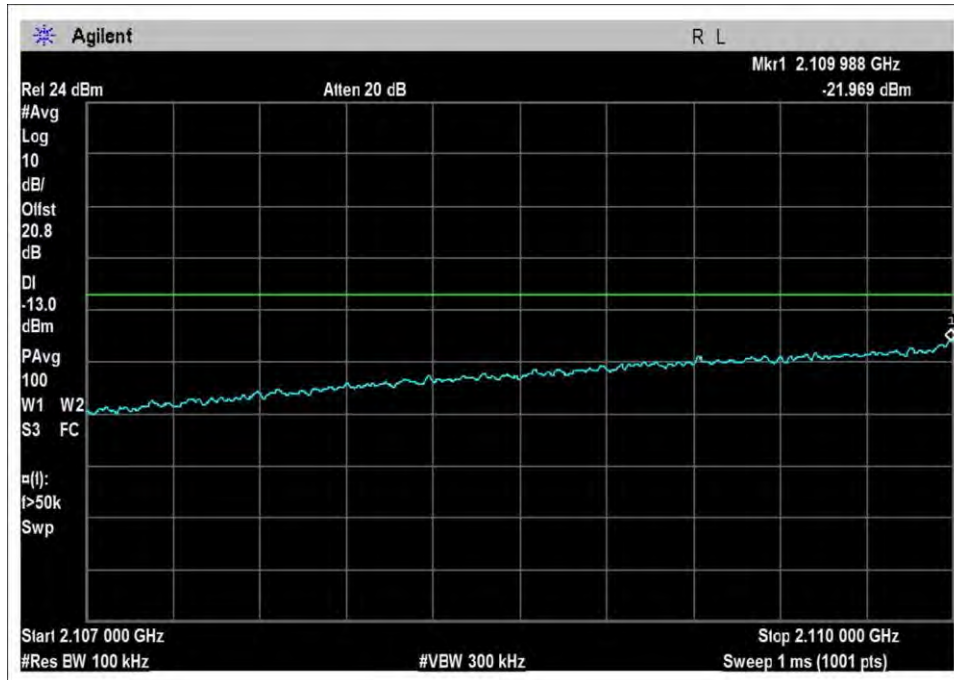
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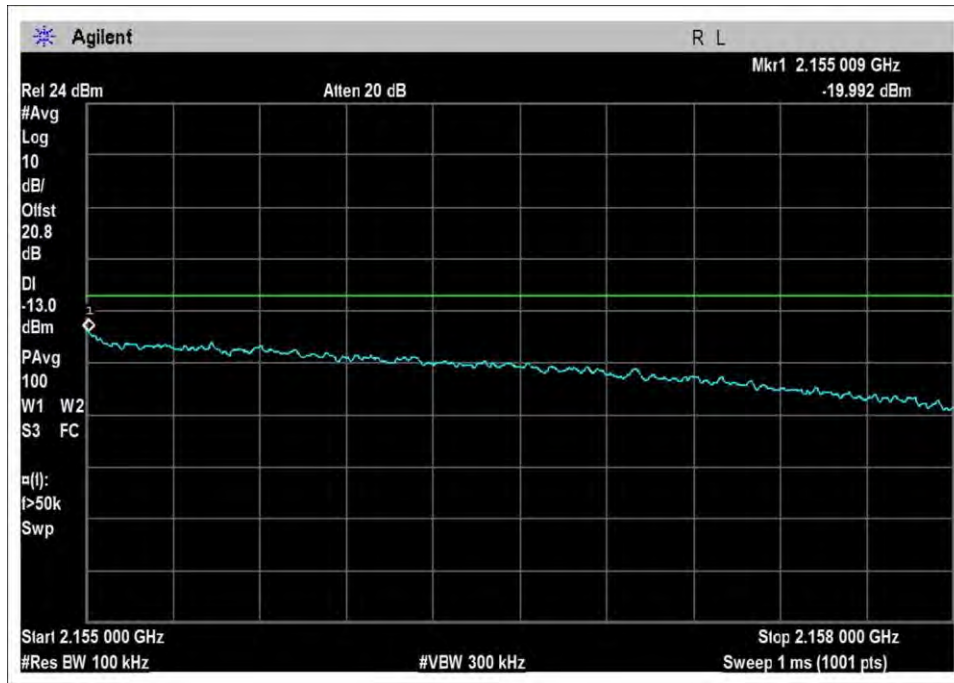
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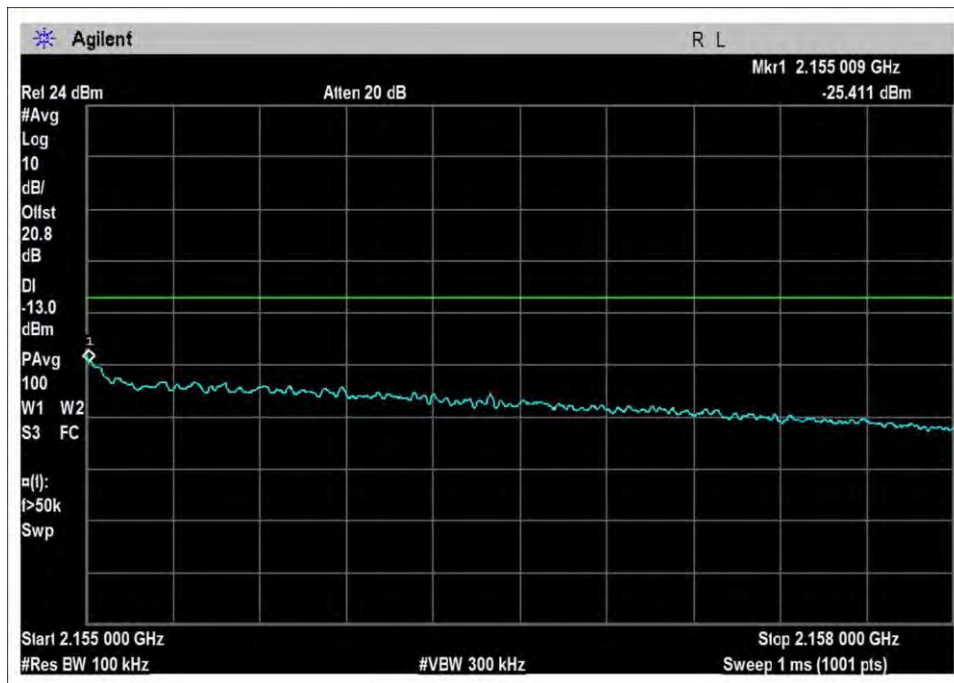
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DL-2110-2155L-Sn-preAGC

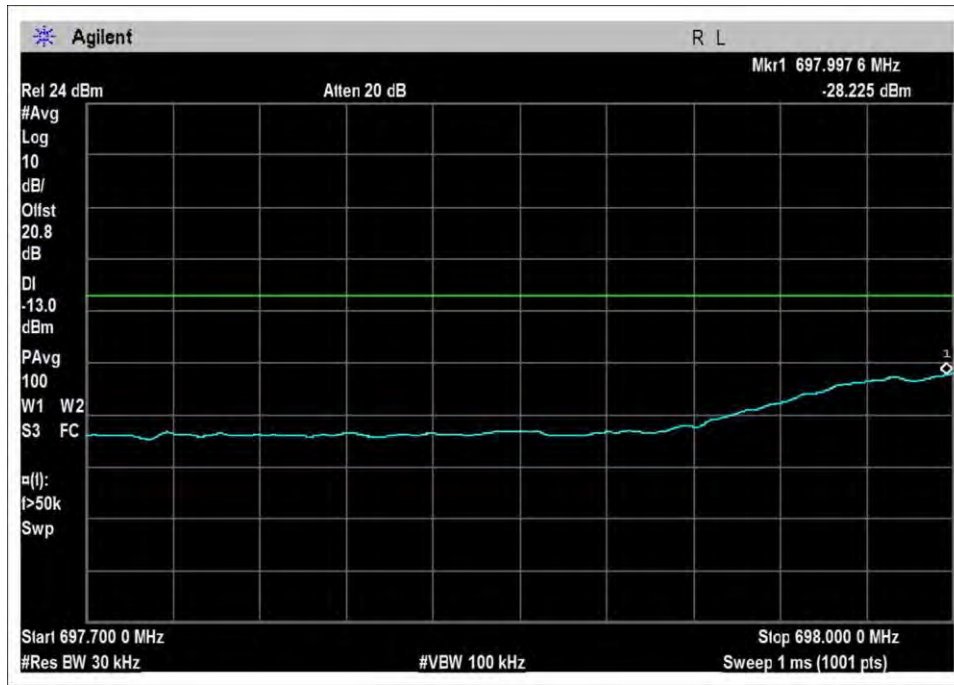


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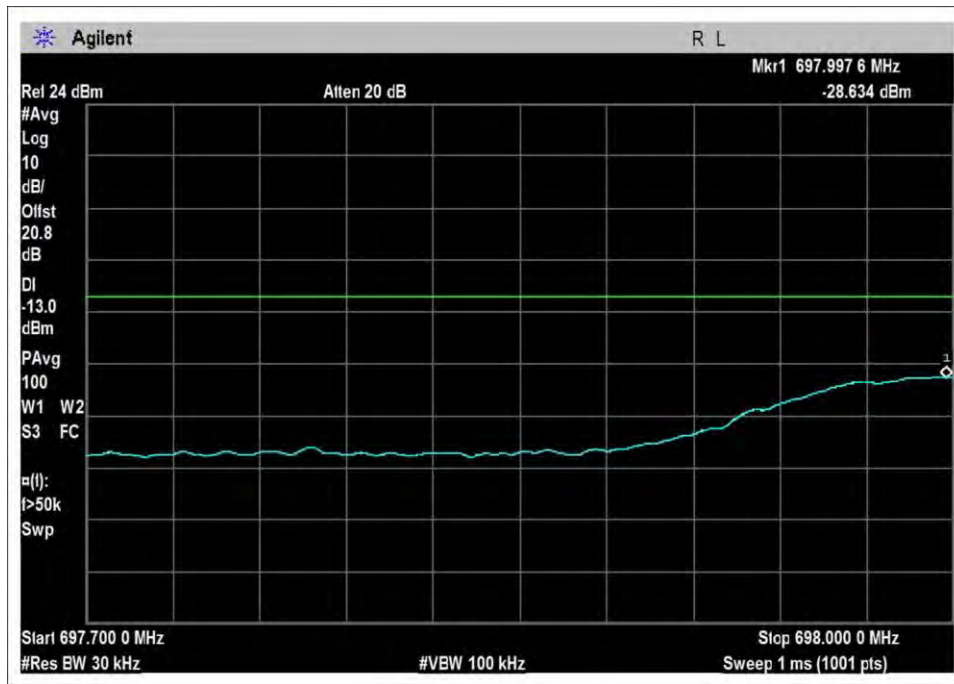


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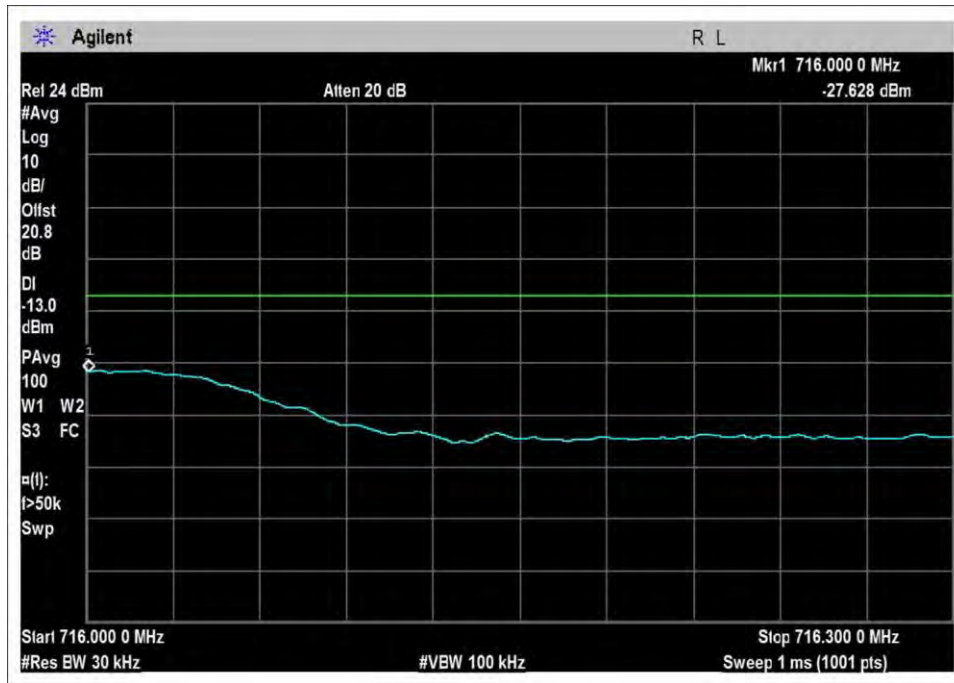
GSM – UL - Cm



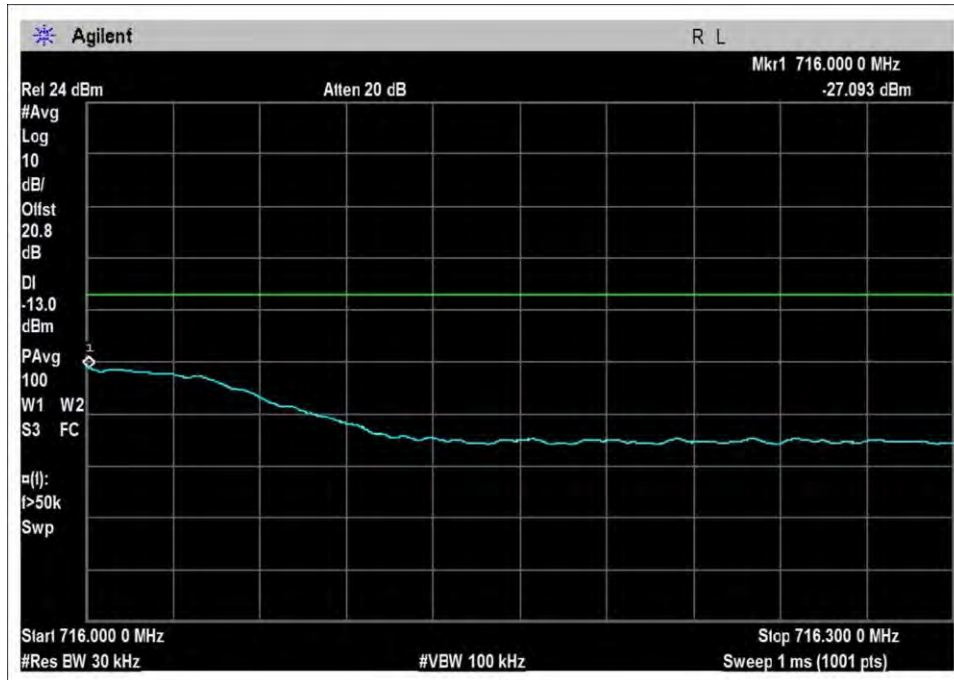
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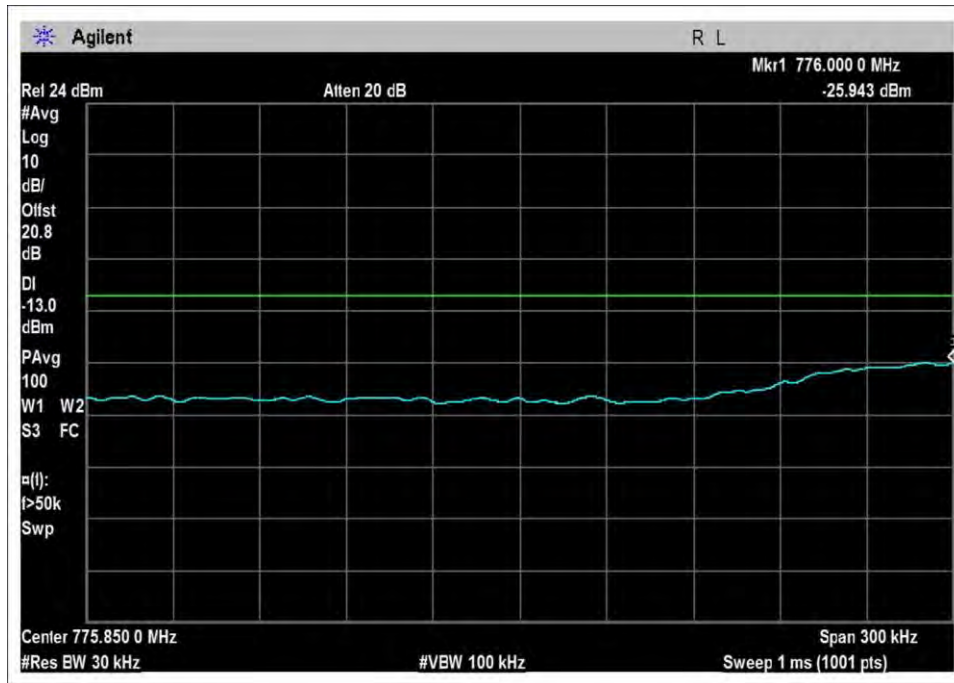
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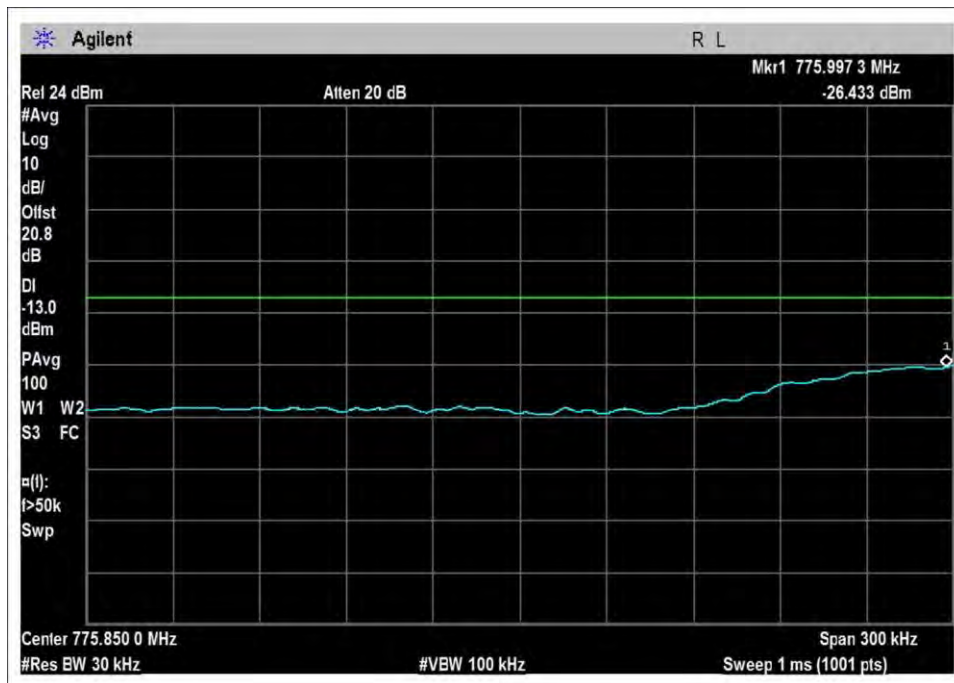
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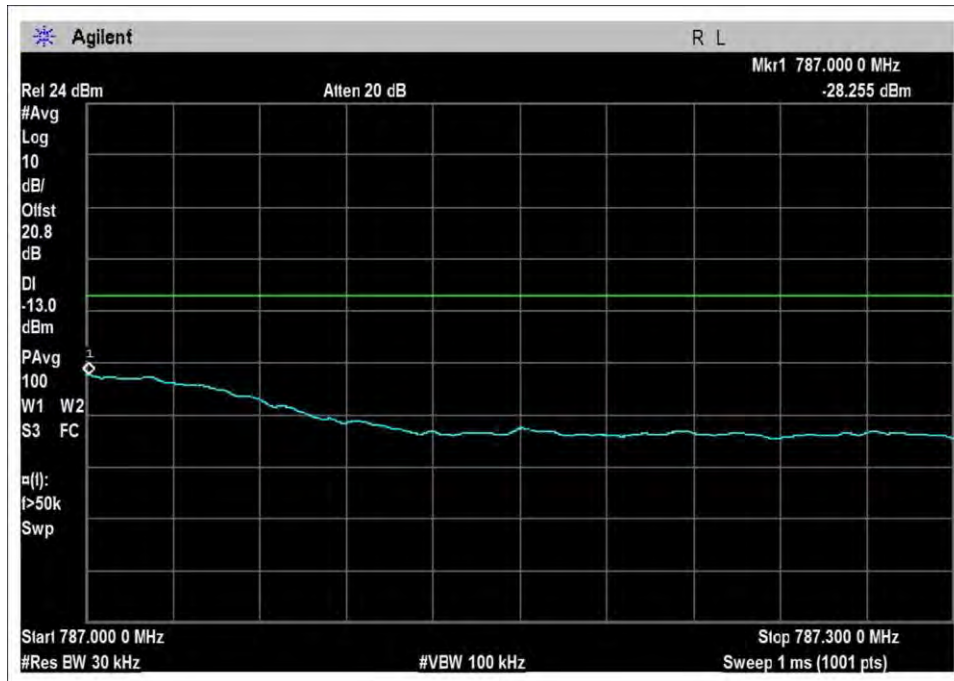
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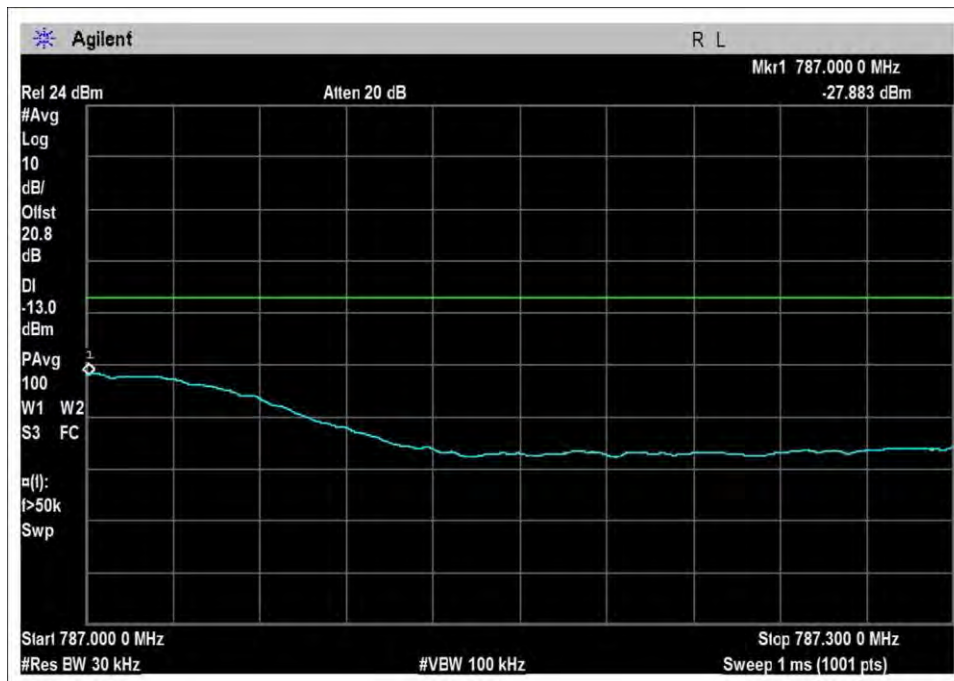
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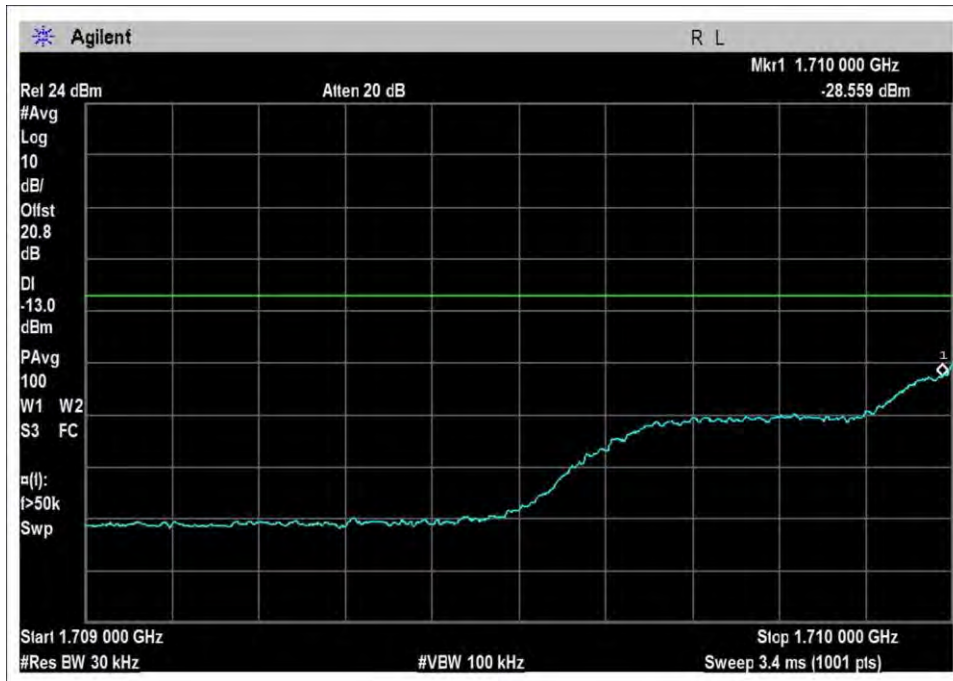
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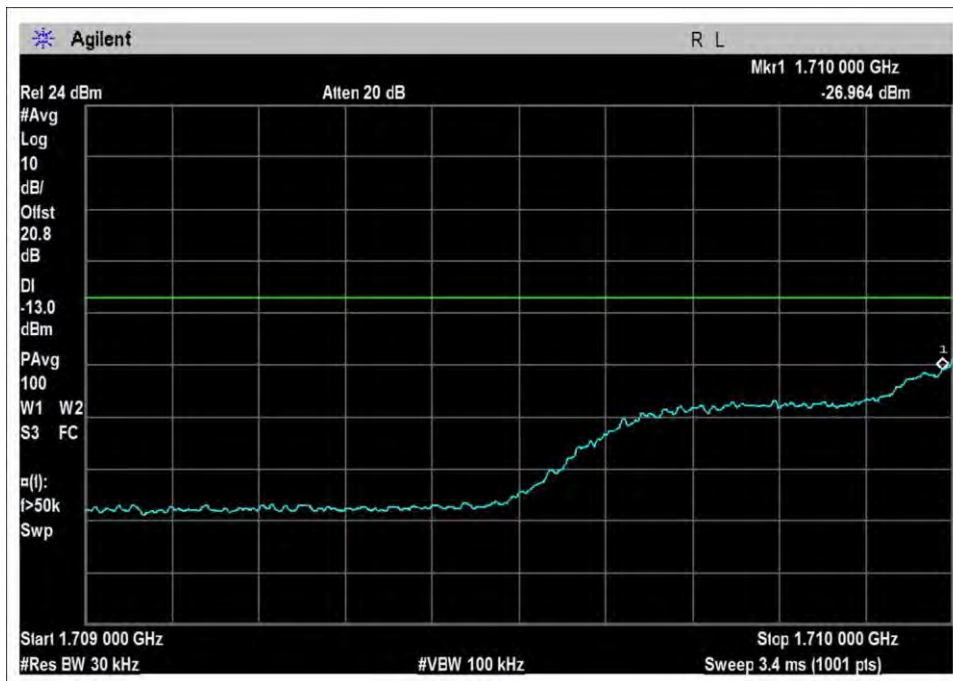
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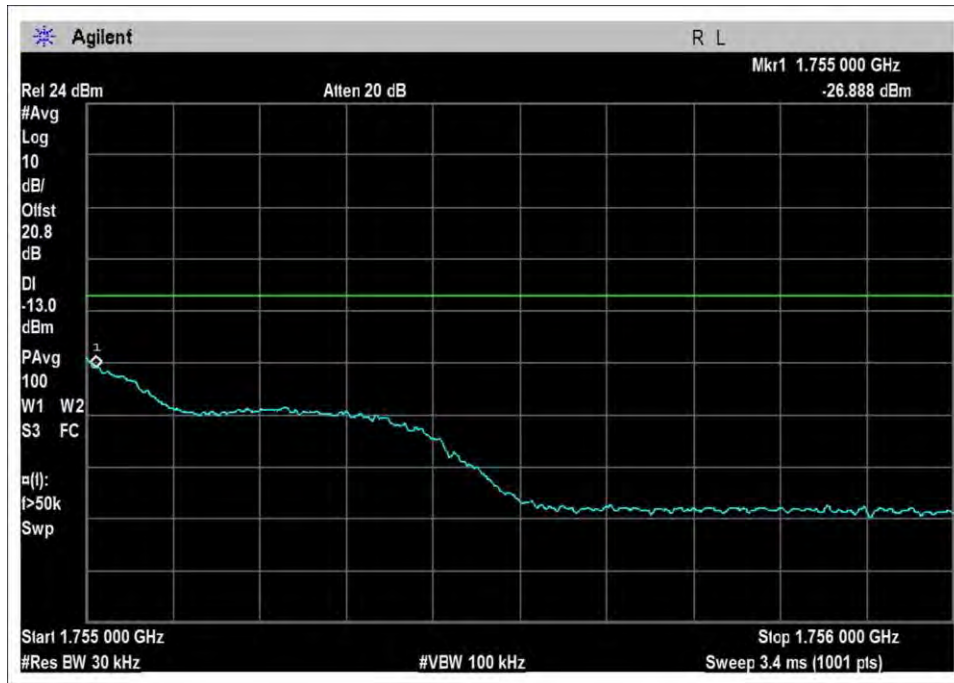
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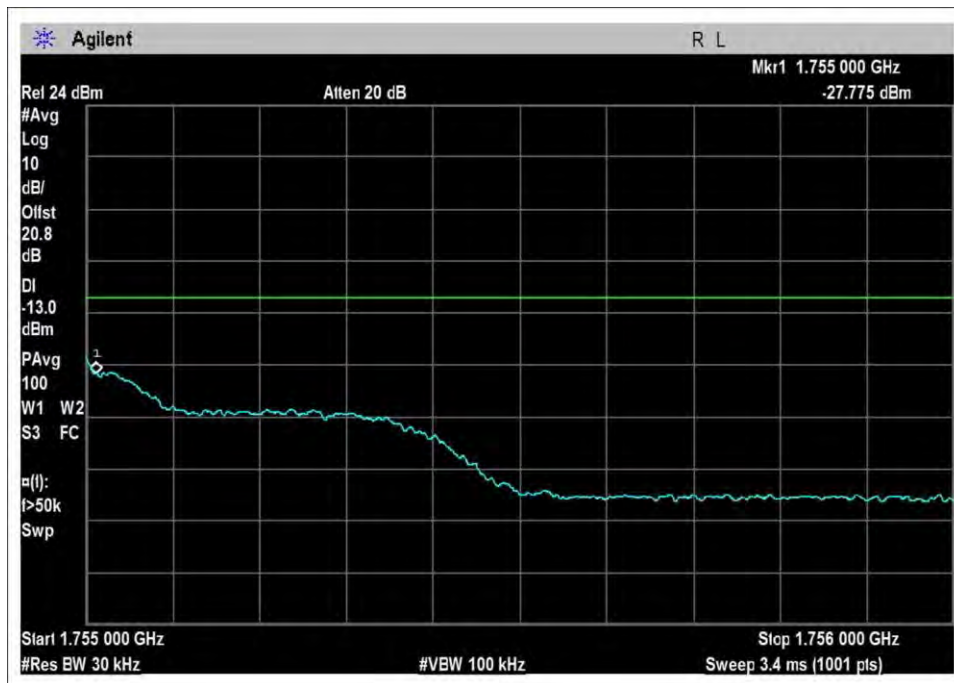
UL-1710-1755L-Cm-AGC+3



UL-1710-1755L-Cm-preAGC

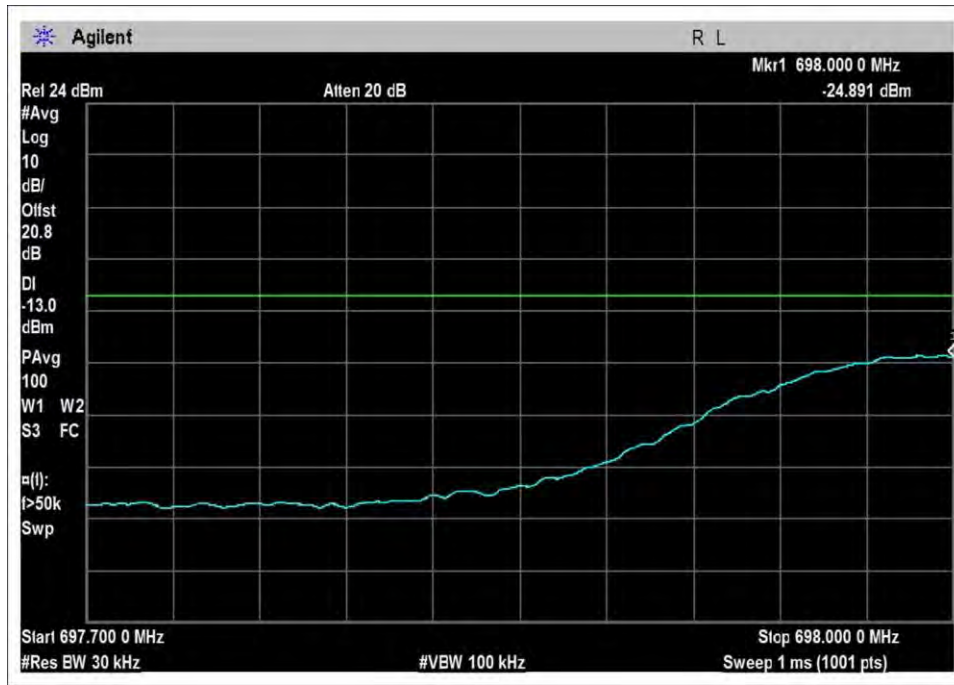


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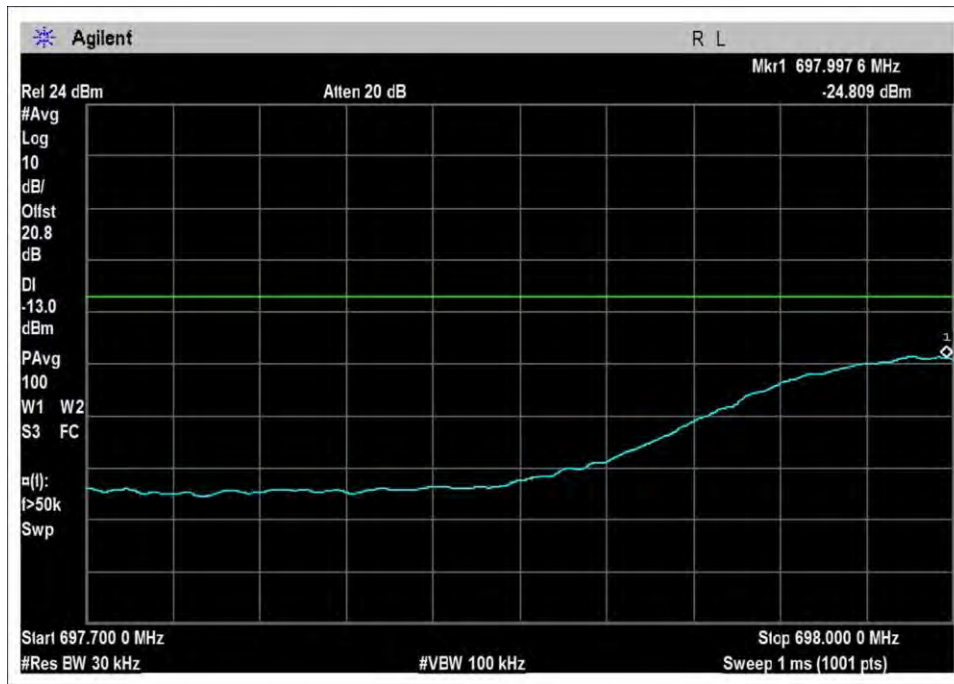


UL-1710-1755H-Cm-preAGC

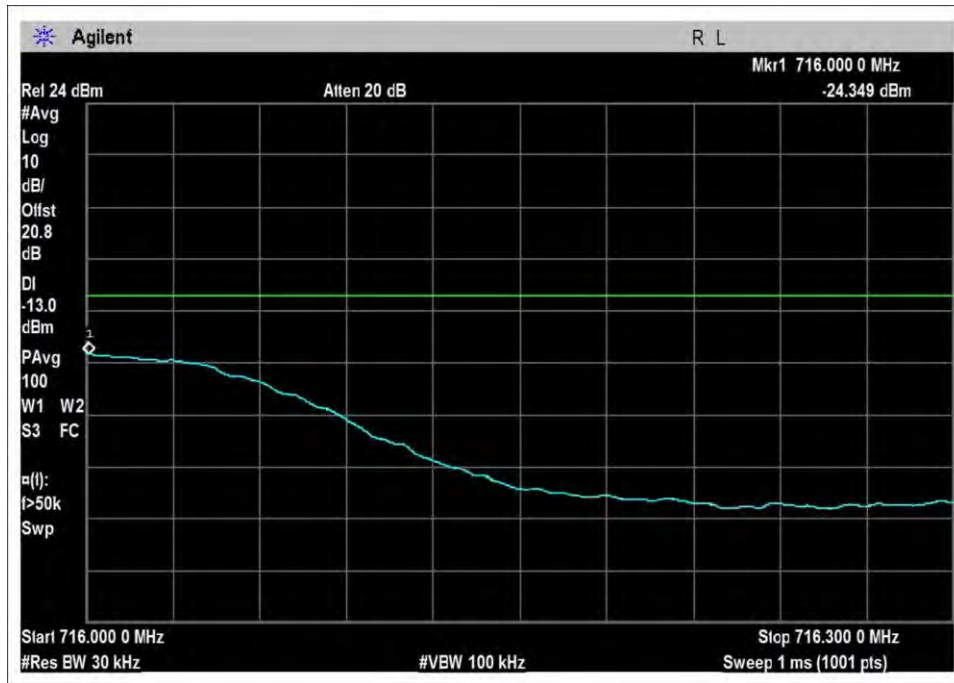
GSM – UL - Sn



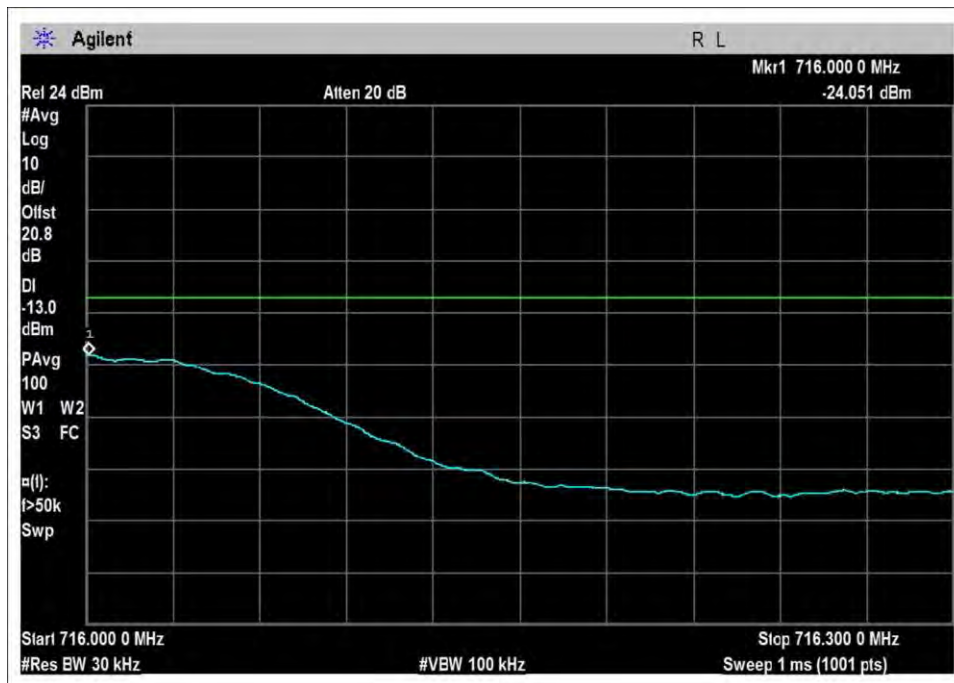
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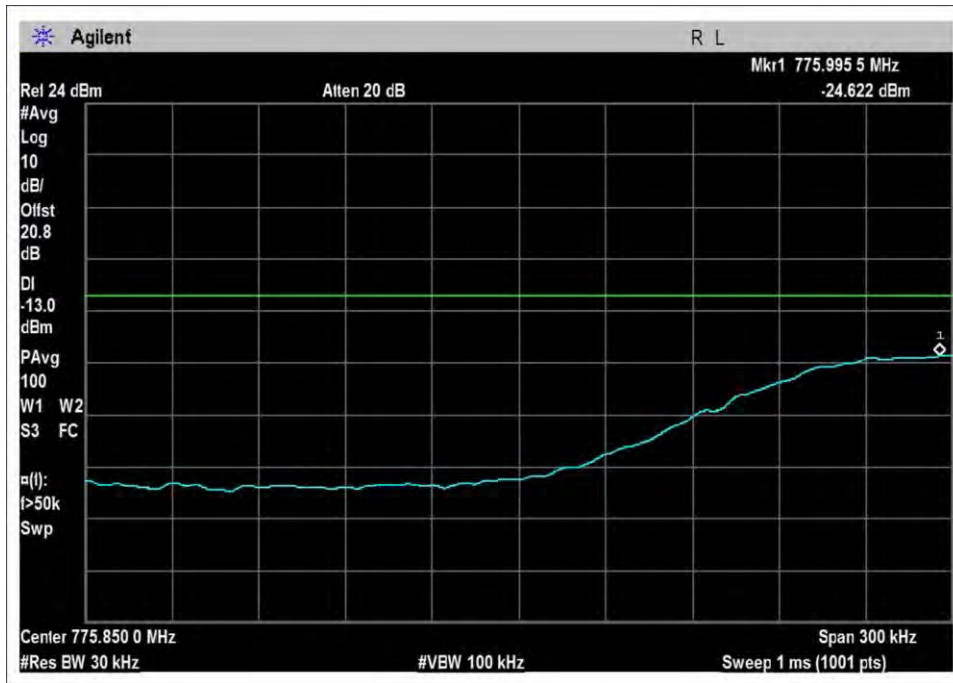
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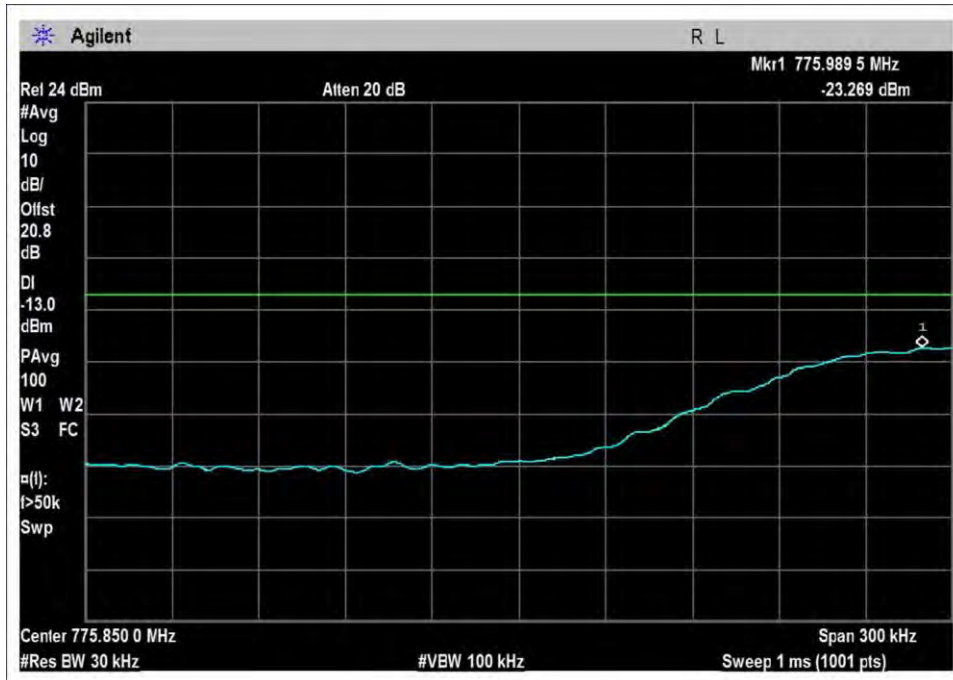
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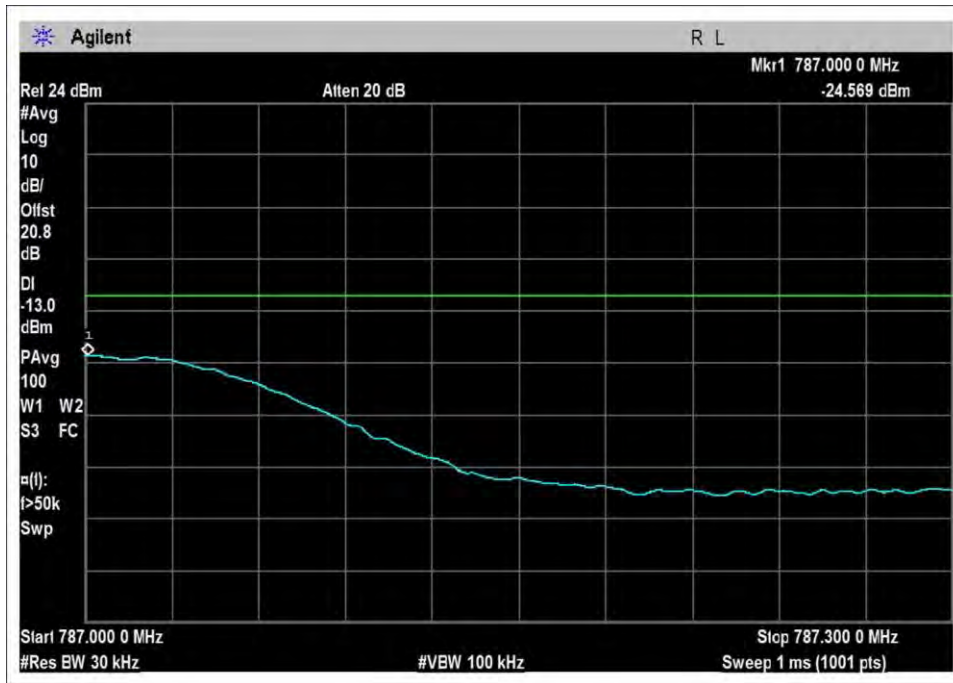
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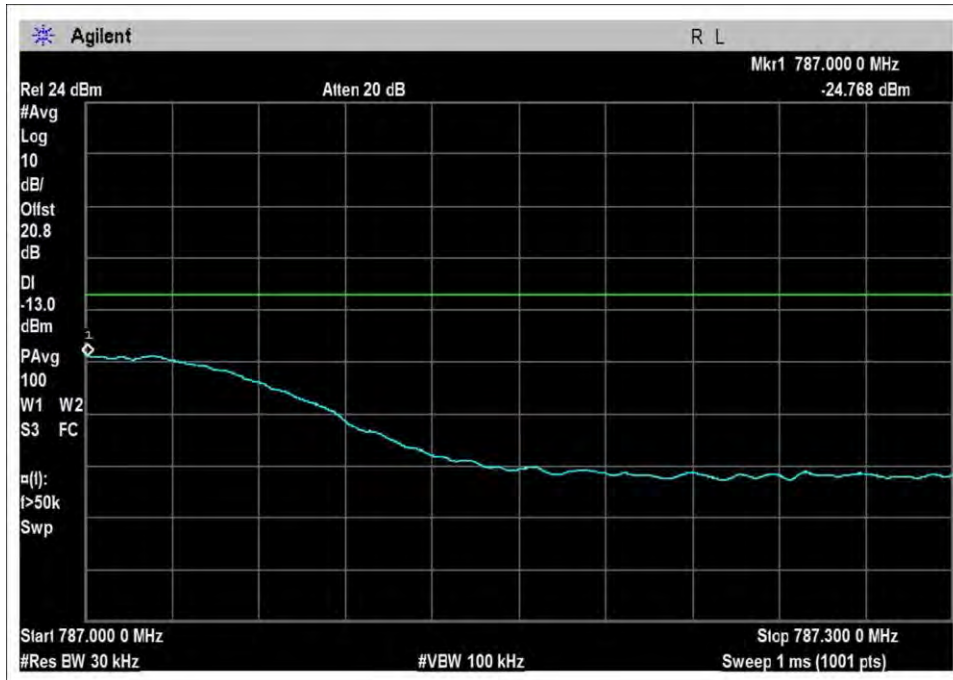
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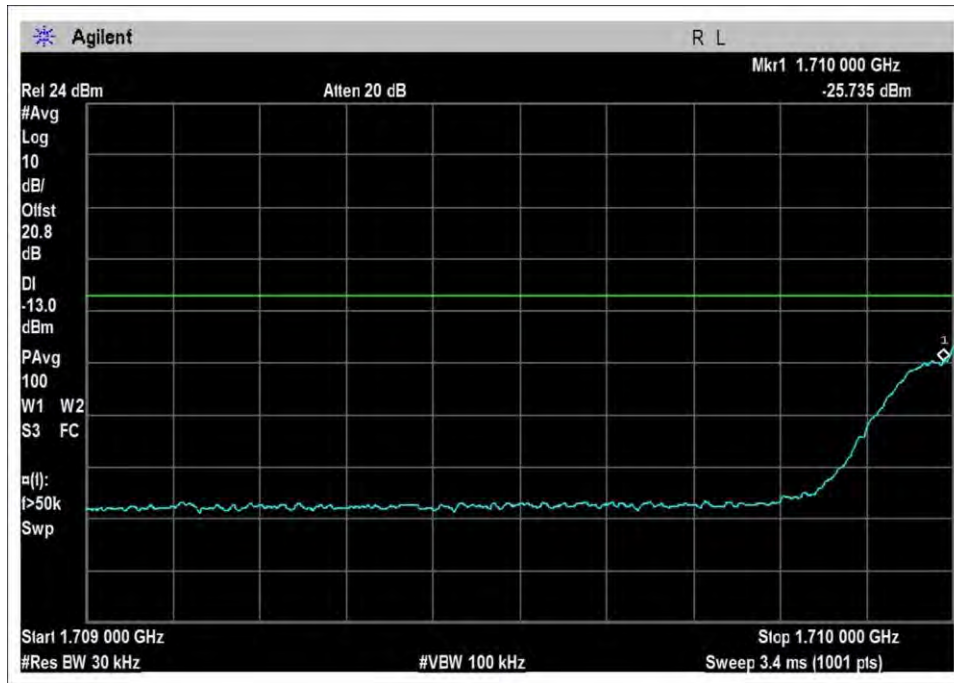
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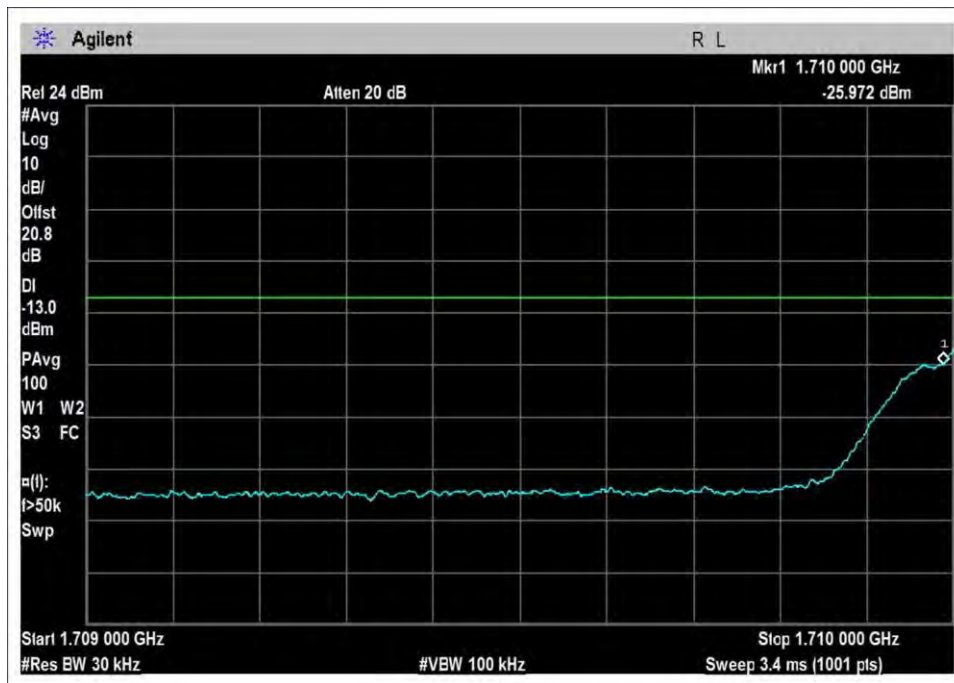
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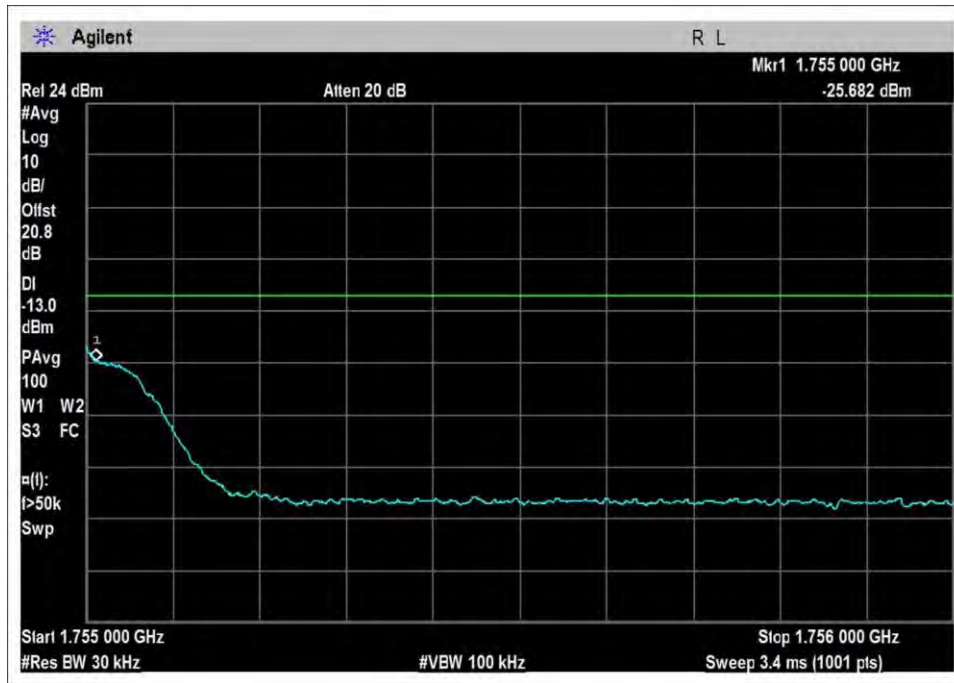
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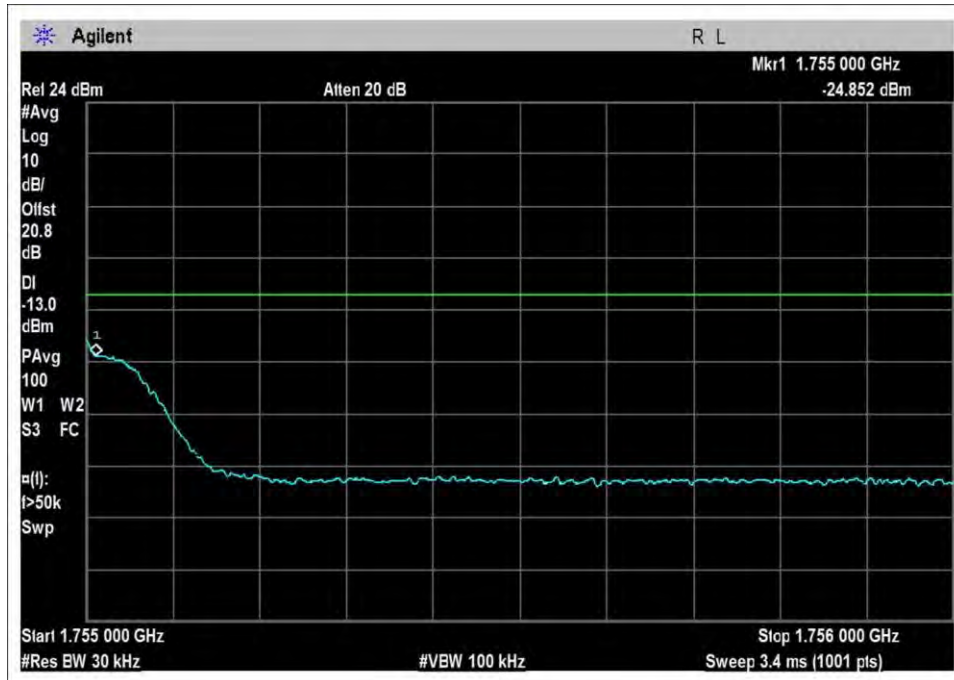
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UL-1710-1755L-Sn-preAGC

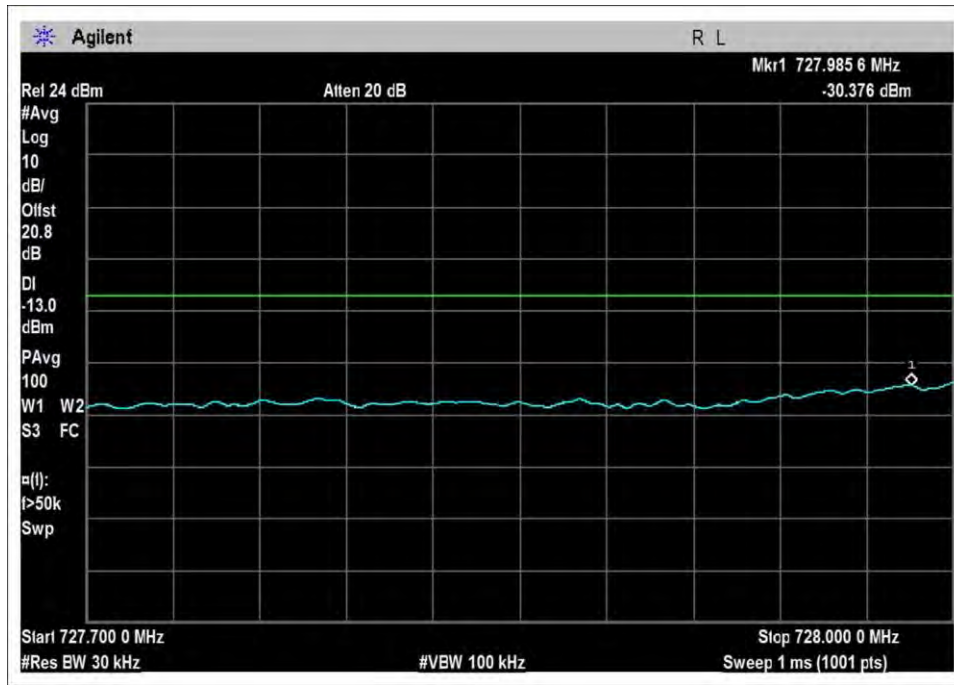


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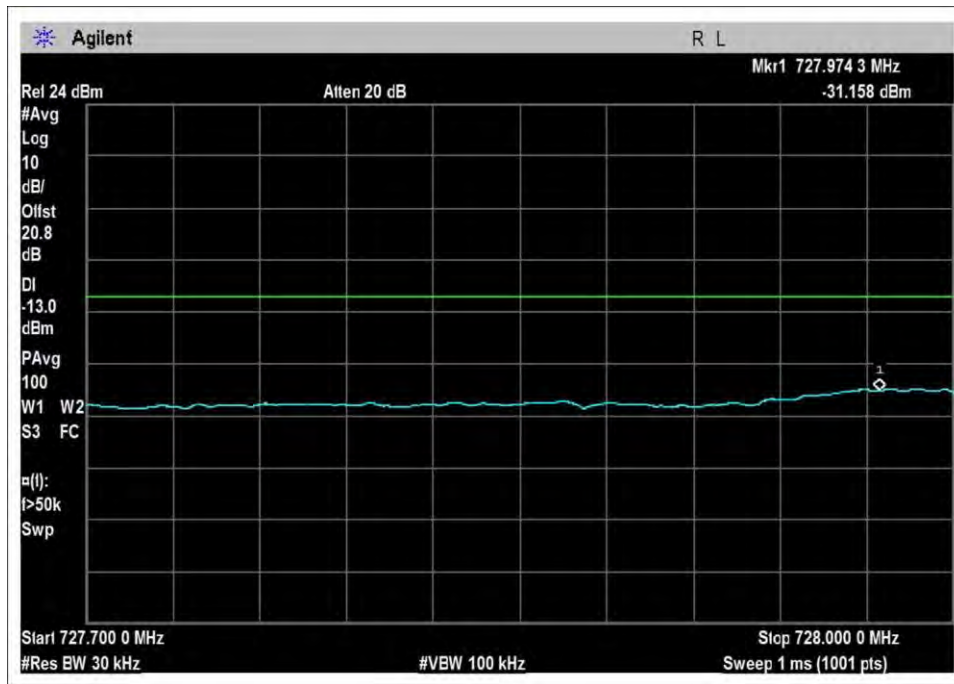


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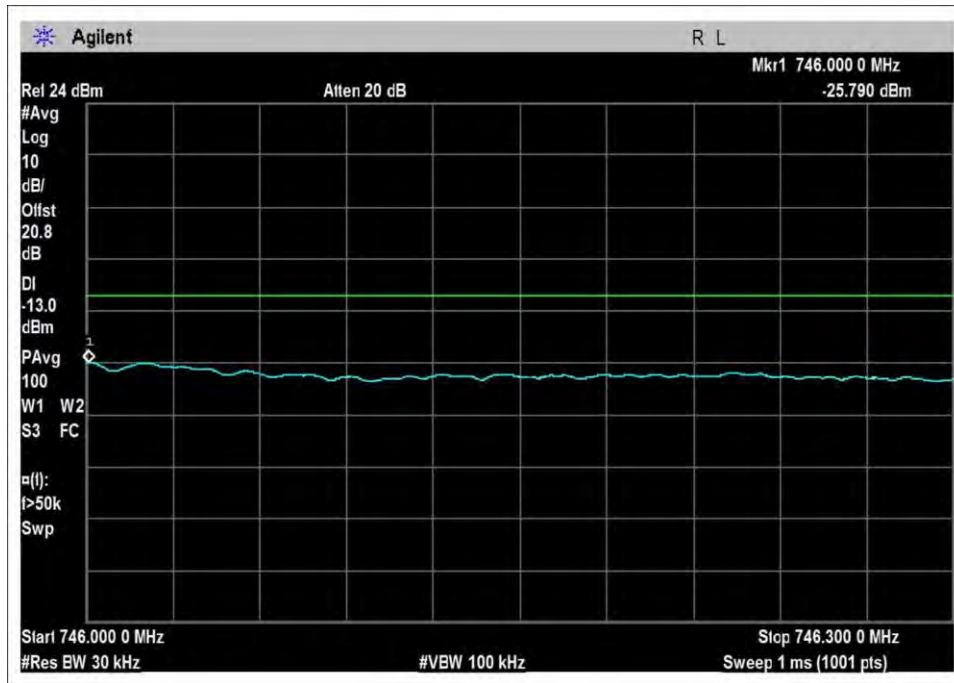
GSM – DL - Cm



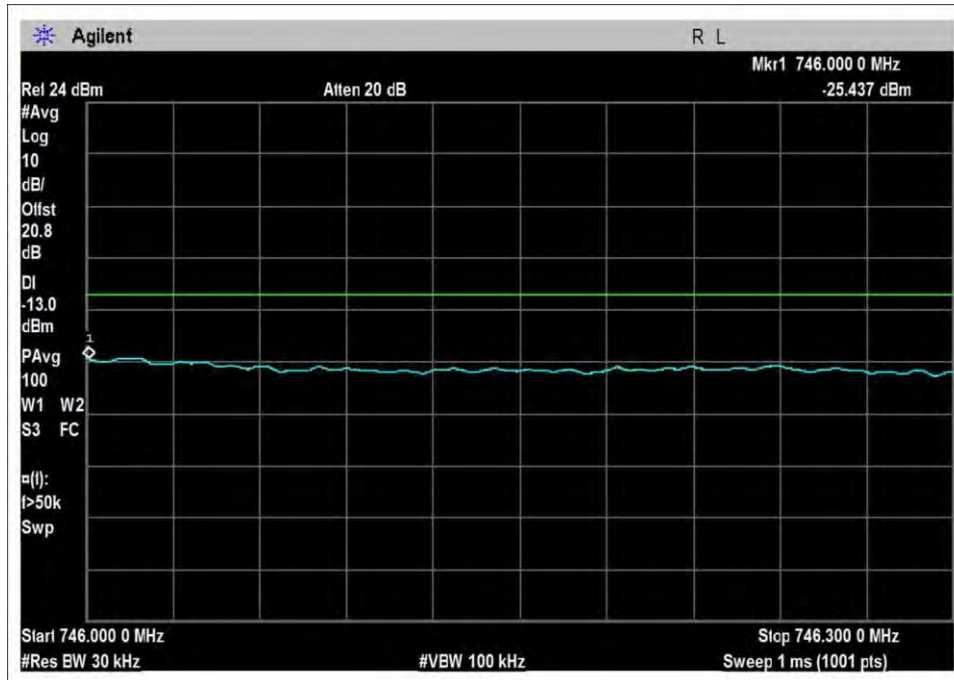
DL-728-746L-Cm-AGC+3



DL-728-746L-Cm-preAGC



DL-728-746H-Cm-AGC+3



DL-728-746H-Cm-preAGC