

Cellphone-Mate, Inc.

REVISED TEST REPORT TO 102430-11A

Force 8

Tested to The Following Standard:

FCC Part 20.21 / 22H / 24E / 27

Report No.: 102430-11B

Date of issue: November 7, 2019



Test Certificate # 803.01

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 testing for CKC Laboratories, Inc.

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

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TABLE OF CONTENTS

Administrative Information	3
Test Report Information	3
Revision History	3
Report Authorization	3
Test Facility Information	4
Software Versions	4
Site Registration & Accreditation Information	4
Summary of Results	5
Modifications During Testing	6
Conditions During Testing	6
Equipment Under Test	6
General Product Information	7
FCC Part 20.21/22H/24E/27	8
General Test Setup	8
3.3 Out of Band Rejection	9
Summary of Results	9
3.4 Input-Versus-Output Signal Comparison	17
Summary of Results	18
3.5 Mean Output Power and Amplifier	125
Summary of Results	126
3.6.2 Out of Band / Out of Block Emission Conducted Emission	170
Summary of Results	172
3.6.3 Conducted Spurious Emissions	286
Summary of Results	287
3.8 Radiated Spurious Emissions	495
Summary of Results	496
Exhibit A: Test Setup Photos	499
Supplemental Information	502
Measurement Uncertainty	502

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Dennis Findley
Customer Reference Number: CKC04112019

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

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

Project Number: 102430

April 17, 2019

April 17 – May 1, 2019 and October 18, 2019

Revision History

Original: Testing of the Force8 to FCC Part 20.21 / 22H / 24E / 27.

Revision A: To add new data to sections 3.3, 3.4, 3.5, 3.6.2, and 3.6.3 because the Bandwidth needed to be adjusted to 1710-1755MHz and 2110-2155MHz. For section 3.8 we have added a statement in the test conditions.

Revision B: Replaced data plots in sections 3.3, 3.5, 3.6.2 and 3.6.3 due to new information provided by the customer for the band 1710-1755MHz.

Report Authorization

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



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

Test Facility Information



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

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

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.11
EMITest Immunity	5.03.10

Site Registration & Accreditation Information

Location	*NIST CB #	FCC	Japan
Canyon Park, Bothell, WA	US0081	US1022	A-0136
Brea, CA	US0060	US1025	A-0136
Fremont, CA	US0082	US1023	A-0136
Mariposa, CA	US0103	US1024	A-0136

*CKC's list of NIST designated countries can be found at: <https://standards.gov/cabs/designations.html>

SUMMARY OF RESULTS

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

Industrial and Non-Consumer Signal Booster, Repeater, and Amplifier Devices Measurement

Guidance: KDB 935210 D05, April 15, 2019

Correlation Matrix & Results					
Guidance Section	Guidance Description	FCC Section	FCC Rule Description	Mods	Results
3.3 a)-j)	Out of band rejection	20.21(c)	Frequency Bands	NA	Pass
3.4 a)-q)	Input-versus-output signal comparison	2.1049	Occupied Band Width	NA	Pass
3.5 a)-j)	Mean Output power and amplifier/ booster gain	2.1046	Power Limit	NA	Pass
3.6.2 a)-t)	Out of Band/out of block emission conducted emission	2.1051/20.21(c)	Out of Band Emission	NA	Pass
3.6.3 a)-r)	Conducted Spurious Emission	2.1051/22H/24/27	Spurious emission	NA	Pass
3.7	Frequency Stability	NA	NA	NA	NA1
3.8	Radiated Spurious Emission	2.1053/22H/24E/27	Spurious Emission	NA	Pass

NA = Not applicable because no modifications were used during testing.

NA1 = Not applicable because the device does not alter the input signal in anyway.

ISO/IEC 17025 Decision Rule
The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

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

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

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

Configuration 1

Equipment Tested:

Device	Manufacturer	Model #	S/N
Force 8	Cellphone-Mate, Inc.	Force 8	1
AC/DC Adapter	SureCall	HKA09019546-6P	A90MAA16BV000693

Support Equipment:

Device	Manufacturer	Model #	S/N
None			

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Equipment	Wideband Non-Consumer booster/Zone Enhancer
Operating Frequency Range:	UL: 824-849MHz DL: 869-894MHz UL: 1850-1915MHz DL: 1930-1995MHz UL: 2305-2315MHz, 1710-1755MHz, 698-716MHz, 663-698MHz, 776-787MHz DL: 2350-2360MHz, 2110-2155MHz, 728-746MHz, 617-652MHz, 746-757MHz
OBW and Emissions Type(s):	GXW (GSM) F9W(CDMA) F9W(WCDMA) W7D (LTE)) See table below for OBW
Modulation Type(s):	0.3 GMSK (GSM) QPSK (CDMA) BPSK/QPSK (WCDMA) OFDM (LTE)
Number of TX Chains:	1
Antenna Type(s) and Gain:	NA
Beamforming Type:	NA
Antenna Connection Type:	Donor/Outdoor antenna/ UL: 50-ohm N-Type Server / indoor antenna/ DL: 50-ohm N-Type
Nominal Input Voltage:	100-240VAC
Firmware used for Test:	SC_S1_Force8 consumer_V2.0

FCC PART 20.21/22H/24E/27

General Test Setup

Summary of Conditions

The equipment under test (EUT) is a Wideband Non-Consumer Booster

The EUT is placed on the Styrofoam platform for radiated emission and a test bench for conducted emission measurement.

UL: 824-849MHz

DL: 869-894MHz

UL: 1850-1915MHz

DL: 1930-1995MHz

UL: 2305-2315MHz, 1710-1755MHz, 698-716MHz, 663-698MHz, 776-787MHz

DL: 2350-2360MHz, 2110-2155MHz, 728-746MHz, 617-652MHz, 746-757MHz

Test procedure:

The test was performed in accordance with the FCC document: 935210 D05 Industrial Booster Measurements v01r03, dated April, 15, 2019.

Firmware: SC_S1_Force8 consumer_V2.0

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 #: **102430** Date 04/17/19 and 10/18/2019
 Test Type: **Conducted Emissions**
 Tested By: **Hieu Song 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 for 4/17/2019:
 Temperature: 18.2°C
 Relative Humidity: 53.1%
 Atmospheric Pressure: 102.1 kPa

Test environment conditions for 10/18/2019:
 Temperature: 20.8°C
 Relative Humidity: 46%
 Atmospheric Pressure: 101.4 kPa

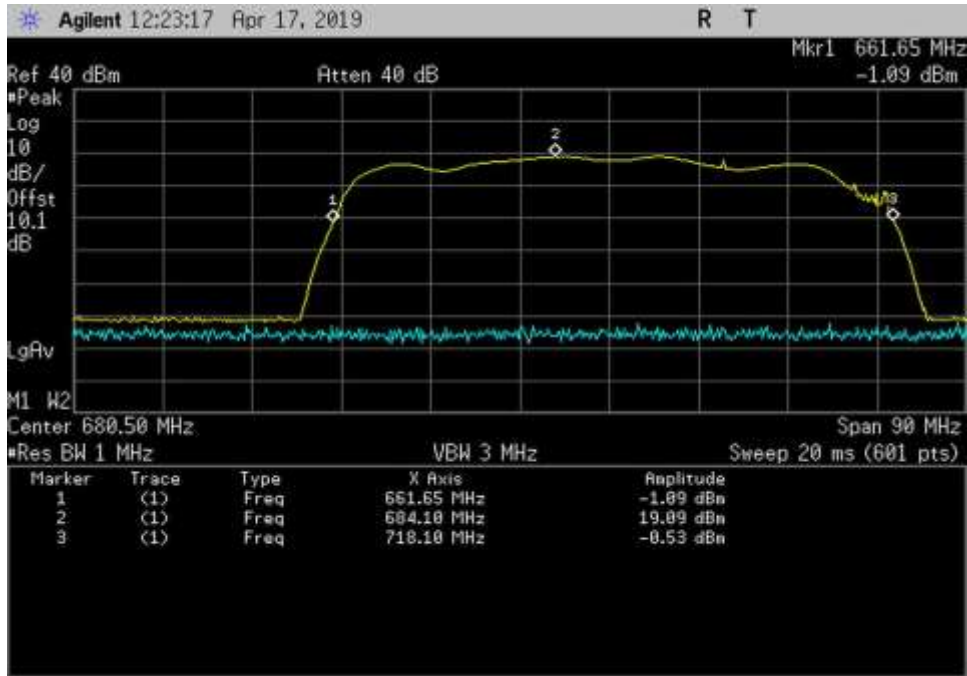
Test Equipment:

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

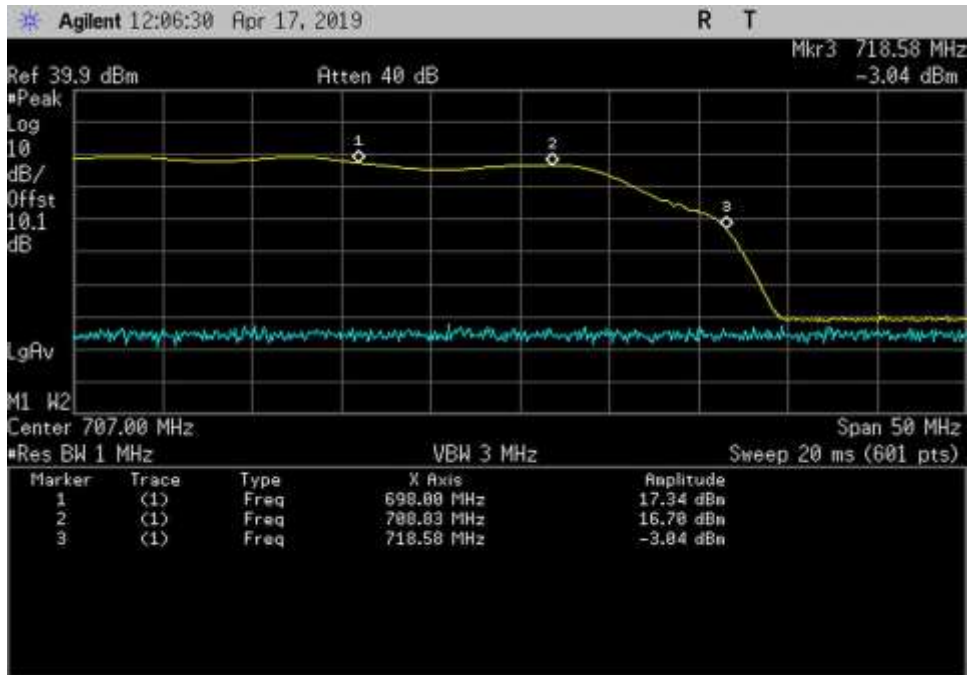
Summary of Results

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

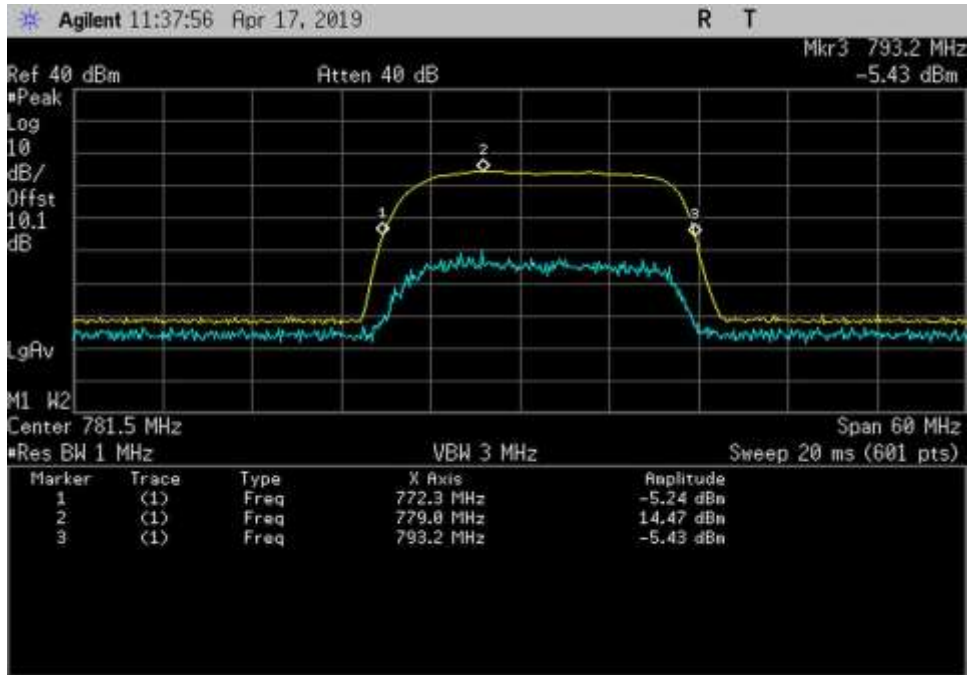
Plots



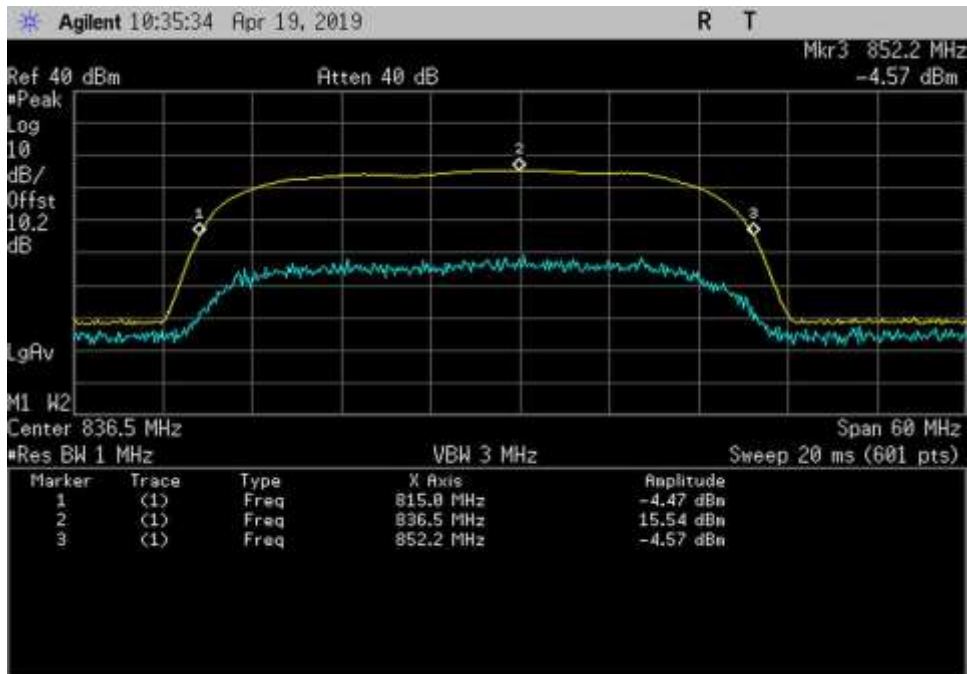
UL_663-698



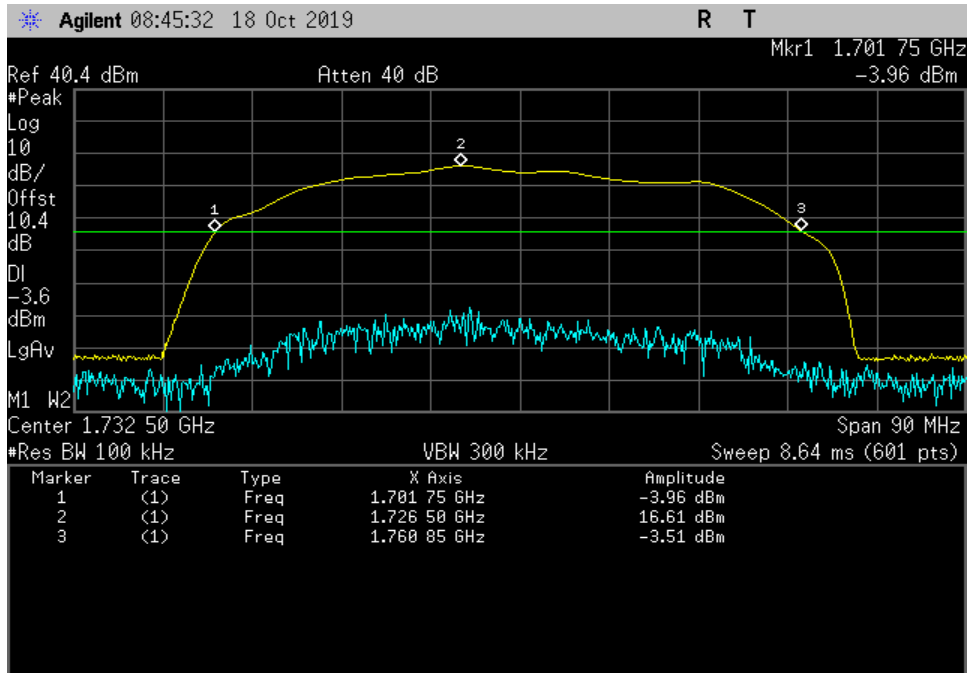
UL_698-716



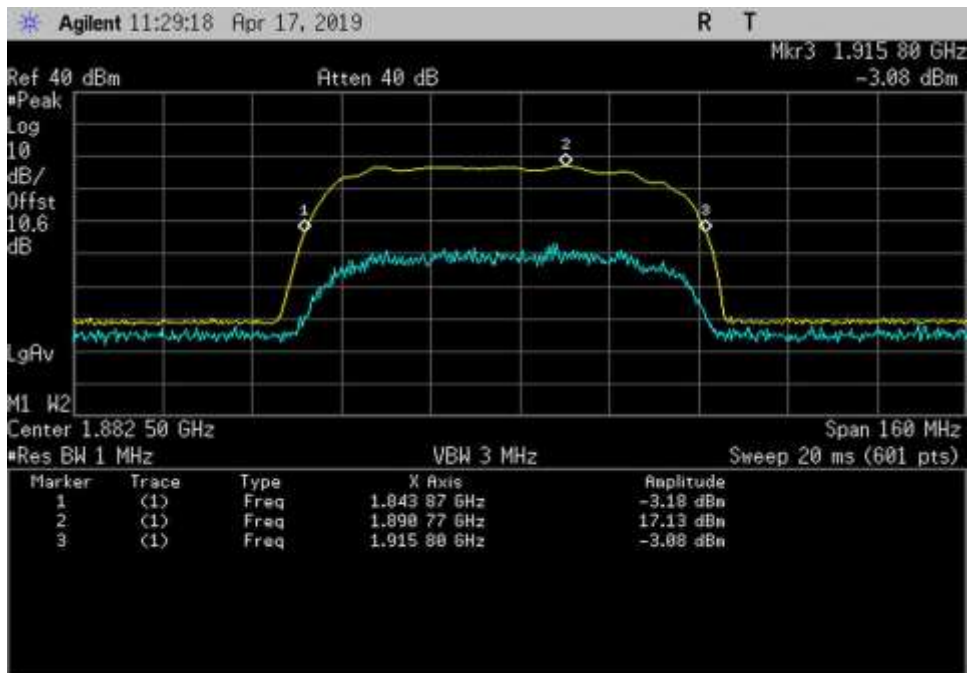
UL_776-787



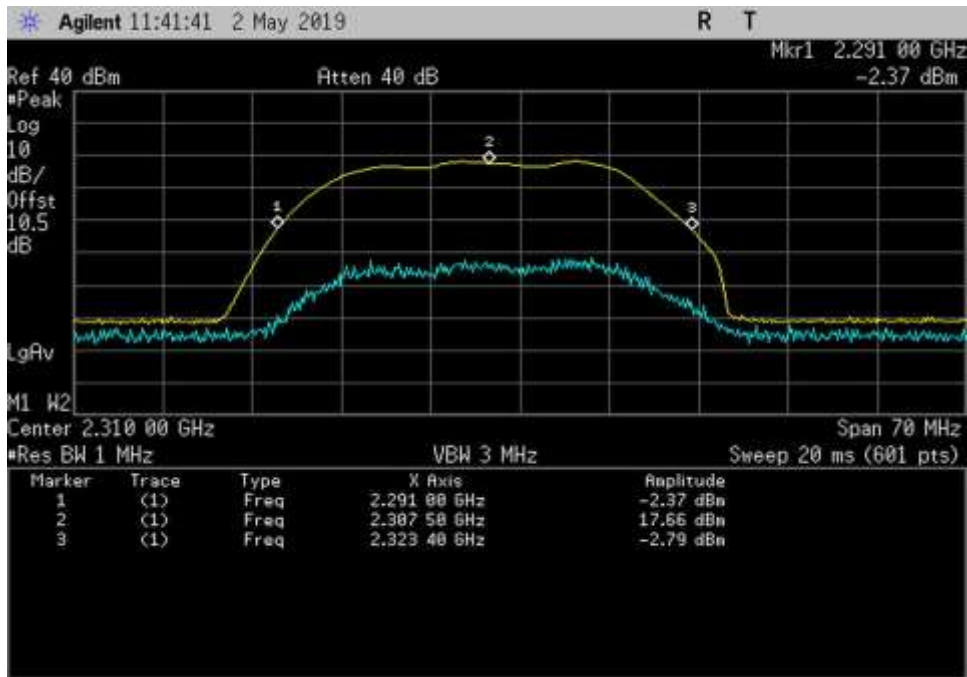
UL_824-849



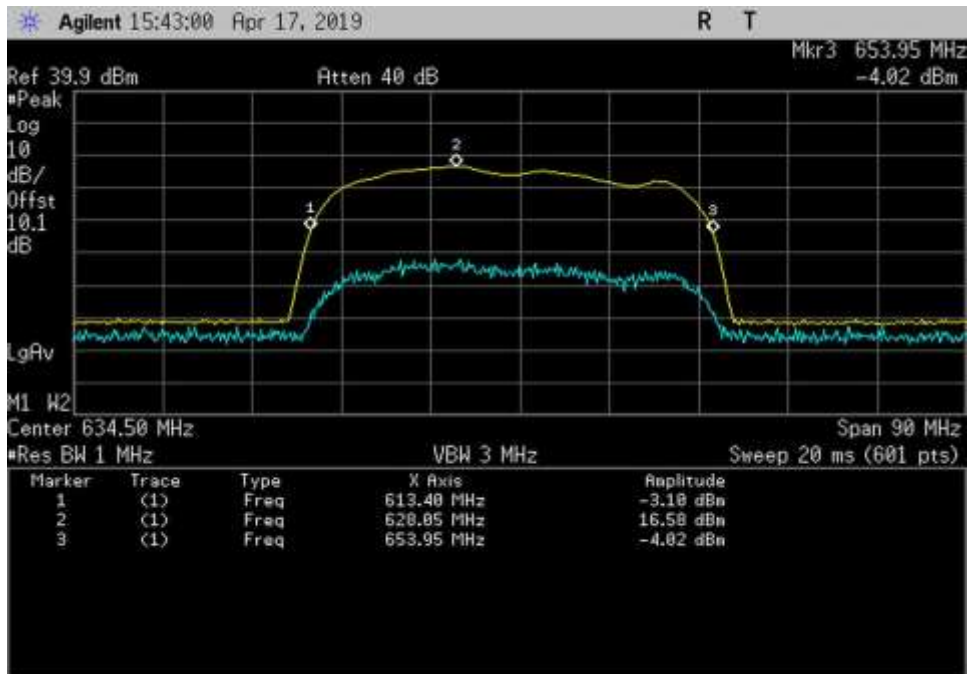
UL_1710-1755



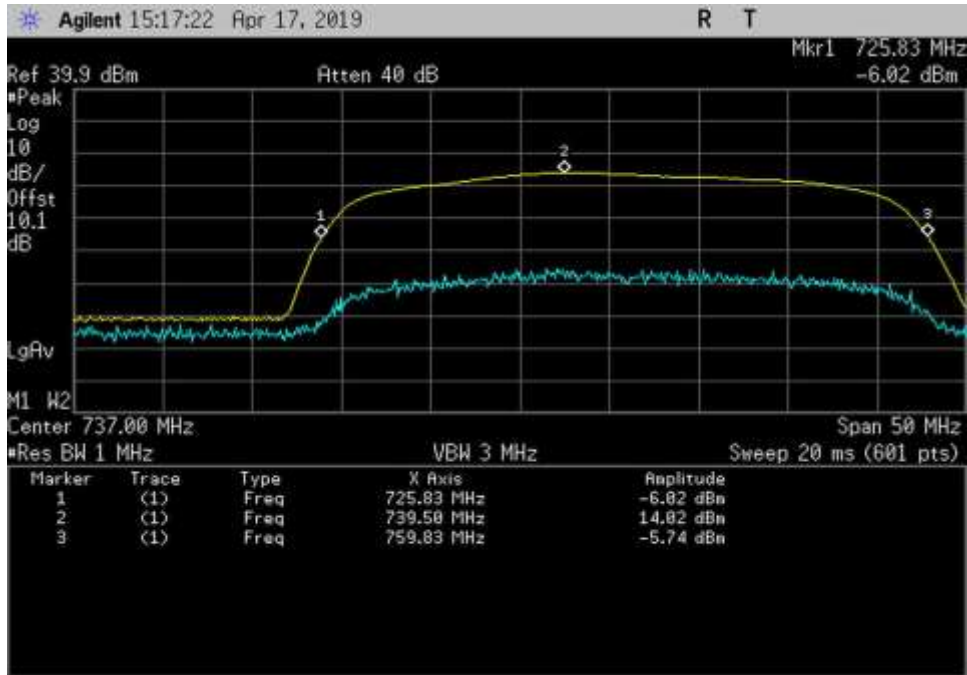
UL_1850-1915



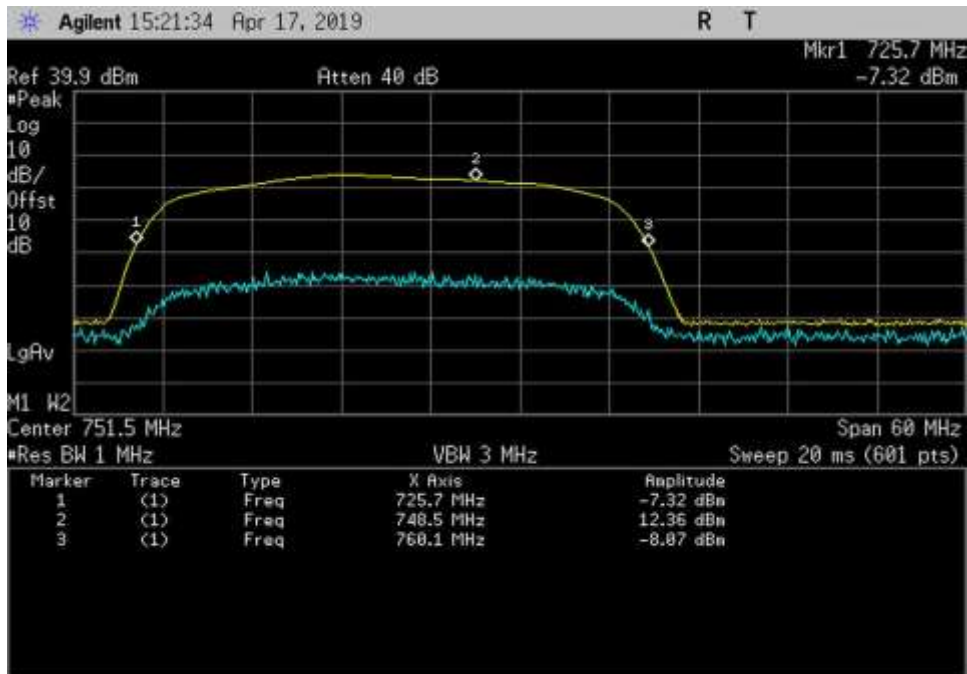
UL_2305-2315



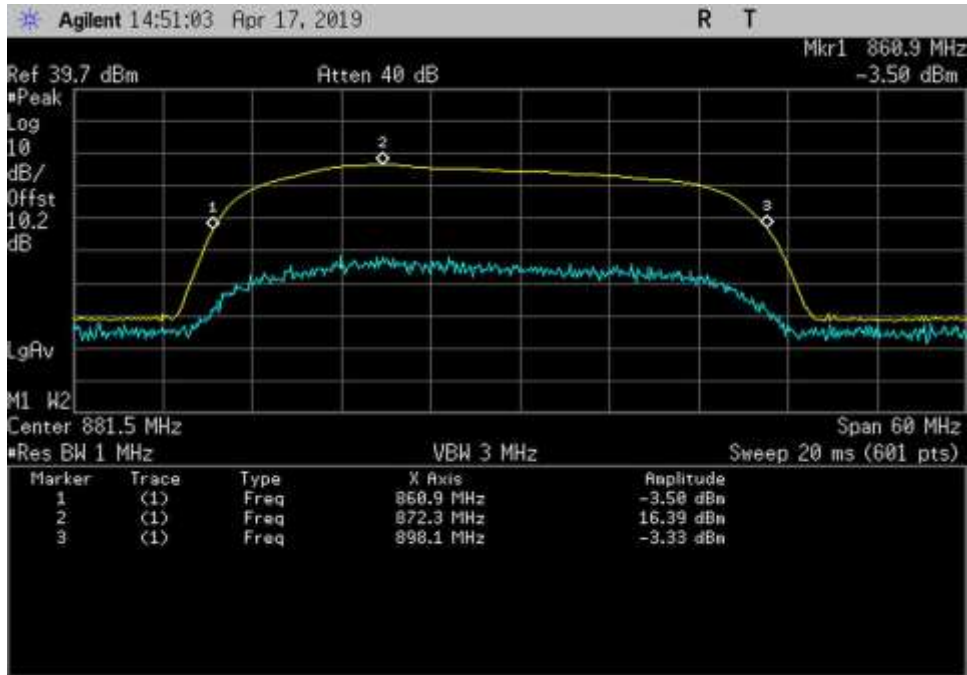
DL_617-652



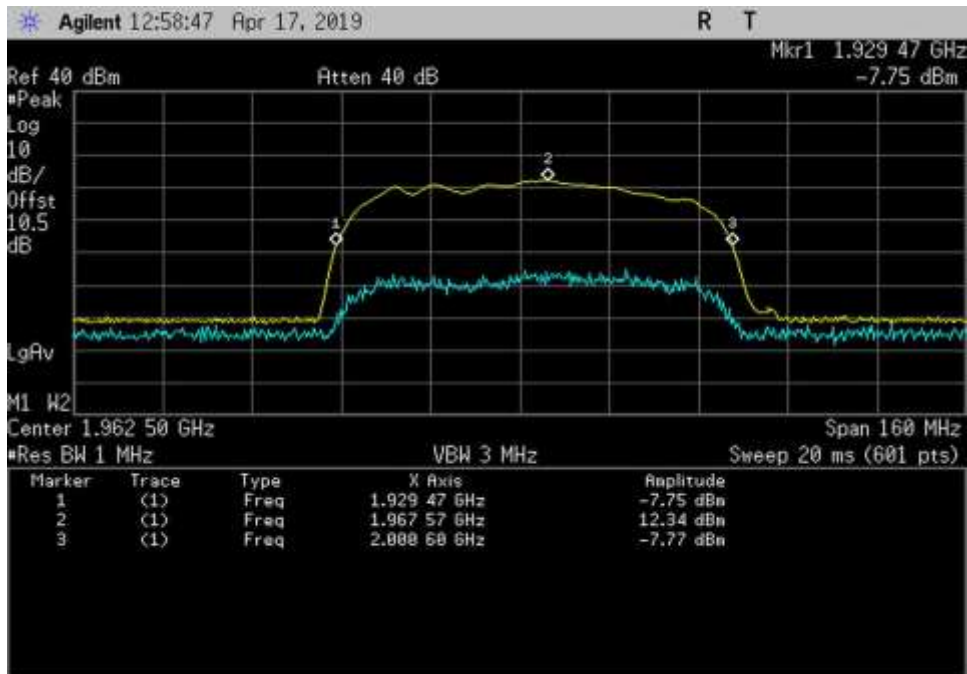
DL_728-746



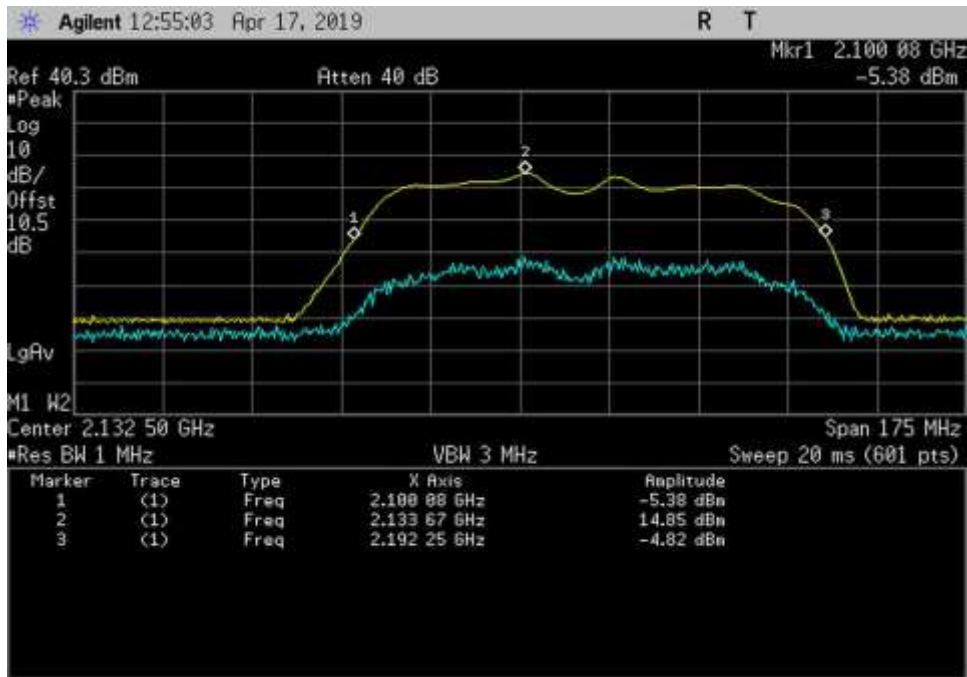
DL_746-757



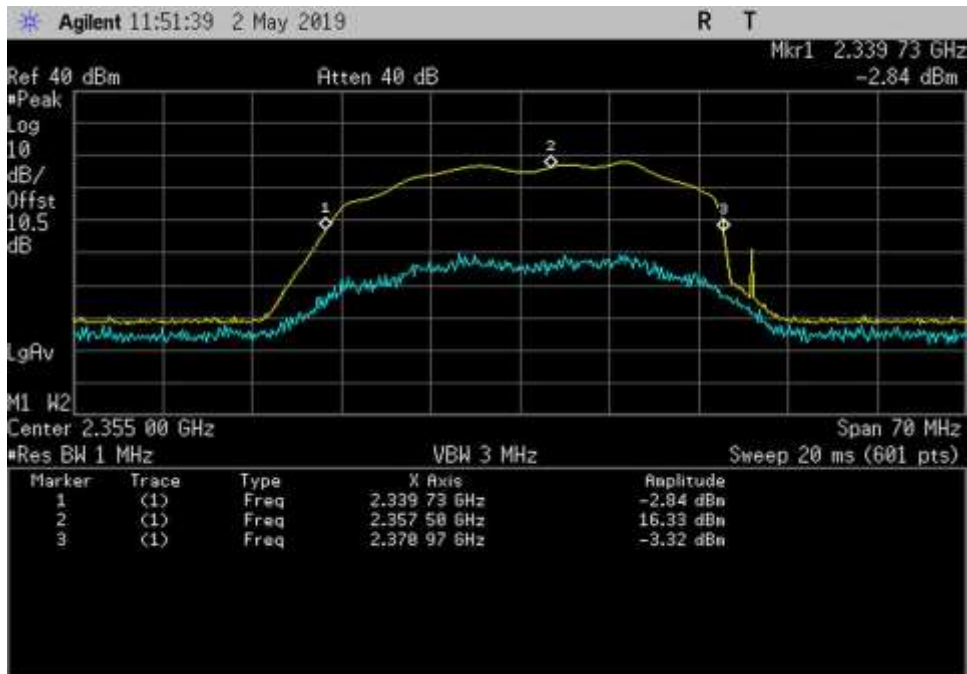
DL_869-894



DL_1930-1995



DL_2110-2155



DL_2350-2360

3.4 Input-Versus-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 Input versus output signal comparison**
 Work Order #: **102430**
 Test Type: **Conducted Emissions** Date 04/18-19/2019
 Tested By: **Hieu Song 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:

04/18/2019: Test environment conditions: Temperature: 20.1°C Relative Humidity: 46% Atmospheric Pressure: 102.3kPa 04/19/2019: Test environment conditions: Temperature: 23.5°C Relative Humidity: 47% Atmospheric Pressure: 101.6kPa
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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 summarized in plots and tables below, the uniformity of the output signal relative to the input signal are practically identical. Therefore, the comparison is within limits.

OBW-Input-Pre-AGC (Hz)					OBW-Output-Pre-AGC (Hz)				
AWGN	GSM	CDMA	WCDMA	LTE	AWGN	GSM	CDMA	WCDMA	LTE
4164655	243813	1254337	4180869	4445625	4160963	244673	1263944	4165013	4469557
4108443	244647	1259087	4158373	4454365	4103400	251194	1255831	4178968	4444845
4124012	244140	1255973	4164876	4434143	4110715	246307	1249266	4161185	4436697
4131256	246266	1262902	4145891	4443637	4112945	248136	1264659	4168565	4461835
4127675	244736	1257153	4154319	4434702	4124588	247745	1257437	4183214	4444378
4105220	245086	1269528	4167356	4438506	4106376	247470	1260400	4176004	4448162
4097281	247676	1243964	4147664	4454666	4120089	249292	1257518	4172814	4450060
4167095	245518	1259559	4176642	4460960	4147012	244827	1256850	4173585	4452529
4107376	244795	1255956	4166858	4448105	4122039	245599	1251836	4150768	4479221
4109375	245731	1249477	4155887	4433452	4140407	244279	1256689	4182423	4473296
4113861	246337	1252265	4140559	4441471	4153836	244440	1251380	4168982	4456980
4107699	245573	1260564	4144430	4453130	4148199	244598	1245728	4152985	4461409
4129397	244313	1269269	4161895	4456478	4168673	243310	1262633	4177655	4453822
4106378	244947	1248518	4183664	4463736	4139883	247872	1251659	4186003	4486476

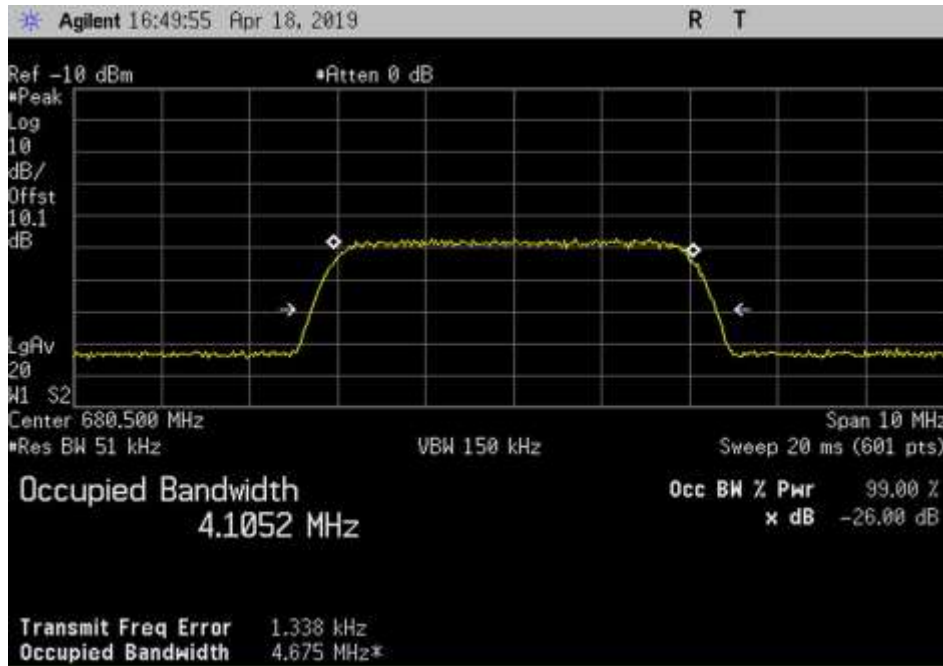
Max Difference In & Out Pre AGC OBW 99% PWR					
Frequency Range	AWGN	GSM	CDMA	WCDMA	LTE
UL_2305-2315MHz	0.09%	0.35%	0.77%	0.38%	0.54%
UL_1710-1755MHz	0.12%	2.68%	0.26%	0.50%	0.21%
UL_1850-1915MHz	0.32%	0.89%	0.53%	0.09%	0.06%
UL_824-849MHz	0.44%	0.76%	0.14%	0.55%	0.41%
UL_698-716MHz	0.07%	1.23%	0.02%	0.70%	0.22%
UL_663-698MHz	0.03%	0.97%	0.72%	0.21%	0.22%
UL_776-787MHz	0.56%	0.65%	1.09%	0.61%	0.10%
DL_2350-2360MHz	0.48%	0.28%	0.22%	0.07%	0.19%
DL_2110-2155MHz	0.36%	0.33%	0.33%	0.39%	0.70%
DL_1930-1995MHz	0.76%	0.59%	0.58%	0.64%	0.90%
DL_869-894MHz	0.97%	0.77%	0.07%	0.69%	0.35%
DL_728-746MHz	0.99%	0.40%	1.18%	0.21%	0.19%
DL_617-652MHz	0.95%	0.41%	0.52%	0.38%	0.06%
DL_746-757MHz	0.82%	1.19%	0.25%	0.06%	0.51%

OBW-Input-AGC+3dB (Hz)					OBW-Output-AGC+3dB (Hz)				
AWGN	GSM	CDMA	WCDMA	LTE	AWGN	GSM	CDMA	WCDMA	LTE
4164655	243813	1254337	4180869	4445625	4188110	246612	1264000	4167108	4467435
4108443	244647	1259087	4158373	4454365	4117700	248702	1258221	4173982	4441906
4124012	244140	1255973	4164876	4434143	4112845	251570	1252390	4163497	4453719
4131256	246266	1262902	4145891	4443637	4126069	250341	1258332	4168067	4450973
4127675	244736	1257153	4154319	4434702	4116271	246307	1253352	4162410	4450927
4105220	245086	1269528	4167356	4438506	4129940	251866	1254409	4180727	4449920
4097281	247676	1243964	4147664	4454666	4129241	249527	1250383	4153666	4459852
4167095	245518	1259559	4176642	4460960	4162653	245326	1259458	4164229	4460603
4107376	244795	1255956	4166858	4448105	4146741	244275	1259089	4181417	4474471
4109375	245731	1249477	4155887	4433452	4140123	246381	1252993	4160327	4464736
4113861	246337	1252265	4140559	4441471	4130656	244250	1255714	4186299	4473692
4107699	245573	1260564	4144430	4453130	4127726	245684	1253154	4146023	4458617
4129397	244313	1269269	4161895	4456478	4157841	244337	1267236	4184000	4452831
4106378	244947	1248518	4183664	4463736	4129096	244367	1246051	4184546	4455553

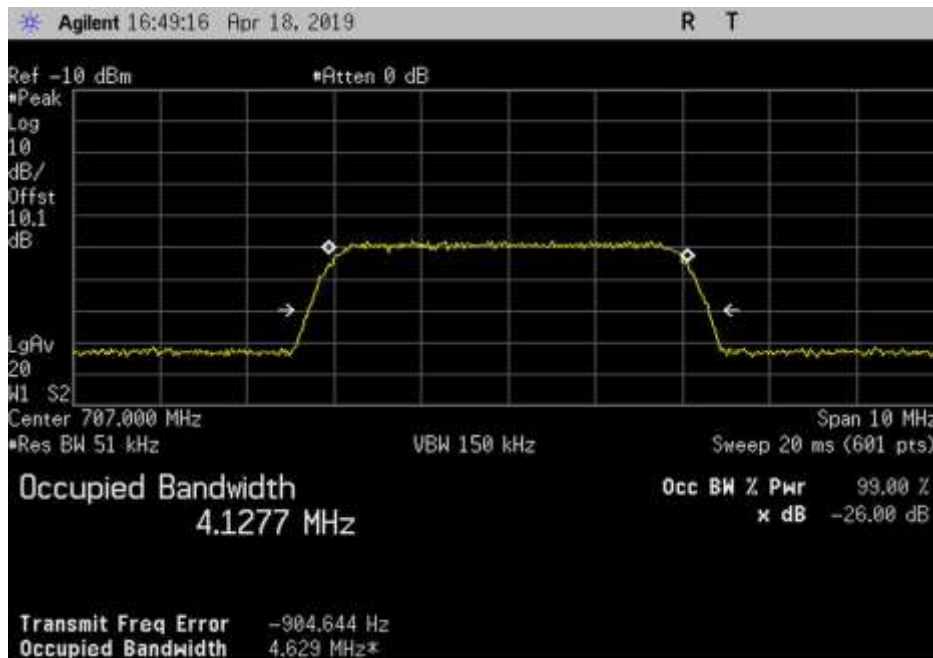
Max Difference In & Out Pre AGC +3dB OBW 99% PWR					
Frequency Range	AWGN	GSM	CDMA	WCDMA	LTE
UL_2305-2315MHz	0.56%	1.15%	0.77%	0.33%	0.49%
UL_1710-1755MHz	0.23%	1.66%	0.07%	0.38%	0.28%
UL_1850-1915MHz	0.27%	3.04%	0.29%	0.03%	0.44%
UL_824-849MHz	0.13%	1.65%	0.36%	0.53%	0.17%
UL_698-716MHz	0.28%	0.55%	0.30%	0.19%	0.37%
UL_663-698MHz	0.60%	2.77%	1.19%	0.32%	0.26%
UL_776-787MHz	0.78%	0.75%	0.52%	0.14%	0.12%
DL-2350-2360MHz	0.11%	0.08%	0.01%	0.30%	0.01%
DL_2110-2155MHz	0.96%	0.21%	0.25%	0.35%	0.59%
DL_1930-1995MHz	0.75%	0.26%	0.28%	0.11%	0.71%
DL_869-894MHz	0.41%	0.85%	0.28%	1.10%	0.73%
DL_728-746MHz	0.49%	0.05%	0.59%	0.04%	0.12%
DL_617-652MHz	0.69%	0.01%	0.16%	0.53%	0.08%
DL_746-757MHz	0.60%	2.77%	1.19%	0.32%	0.26%

Plots

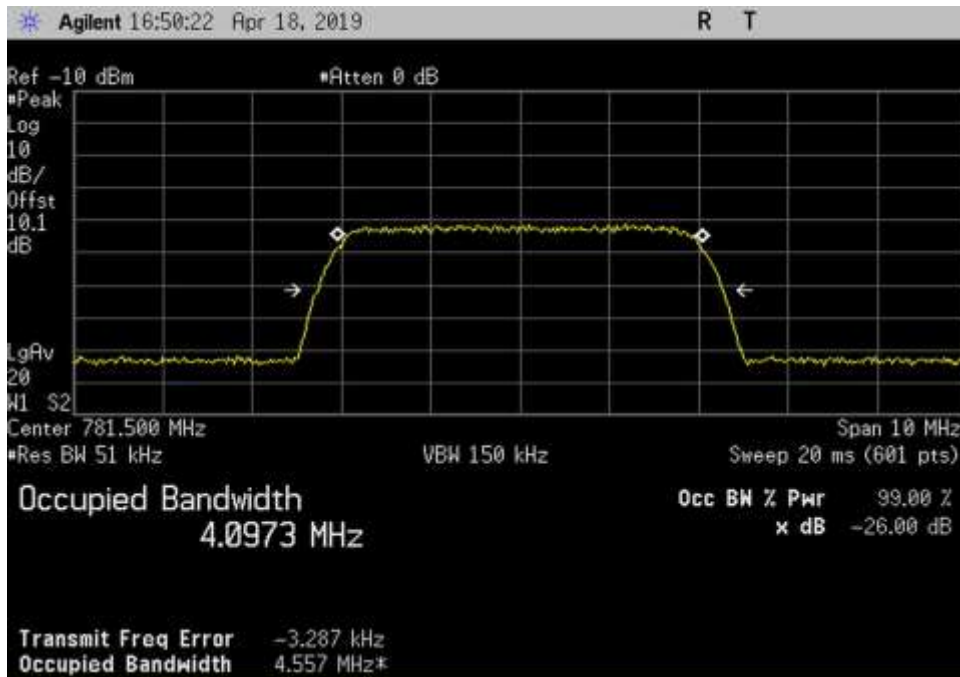
AWGN



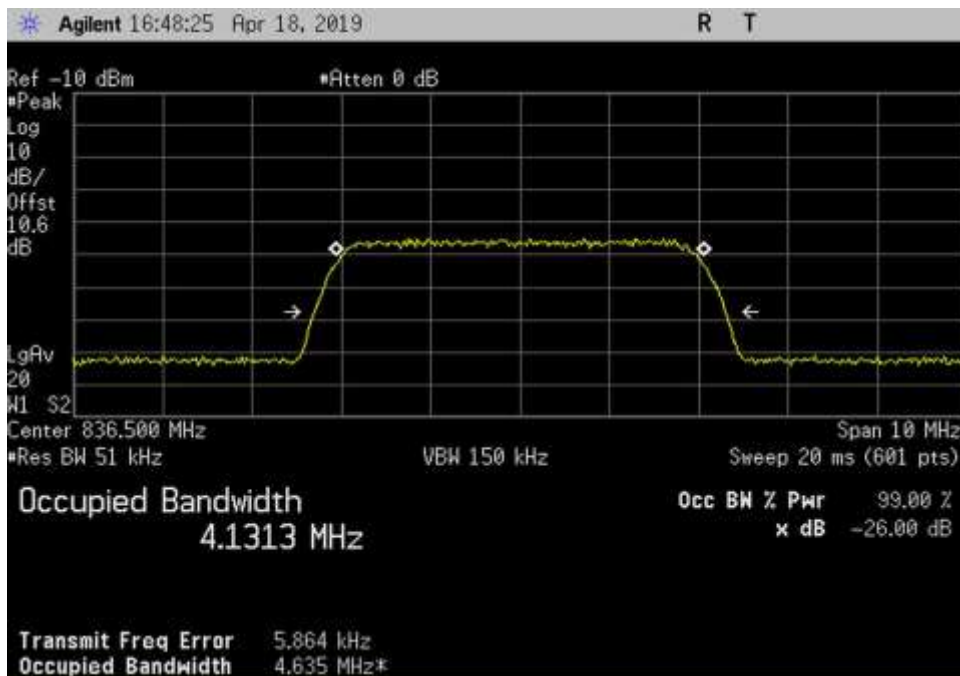
In_UL_663-698_AWGN_ 680.5MHz



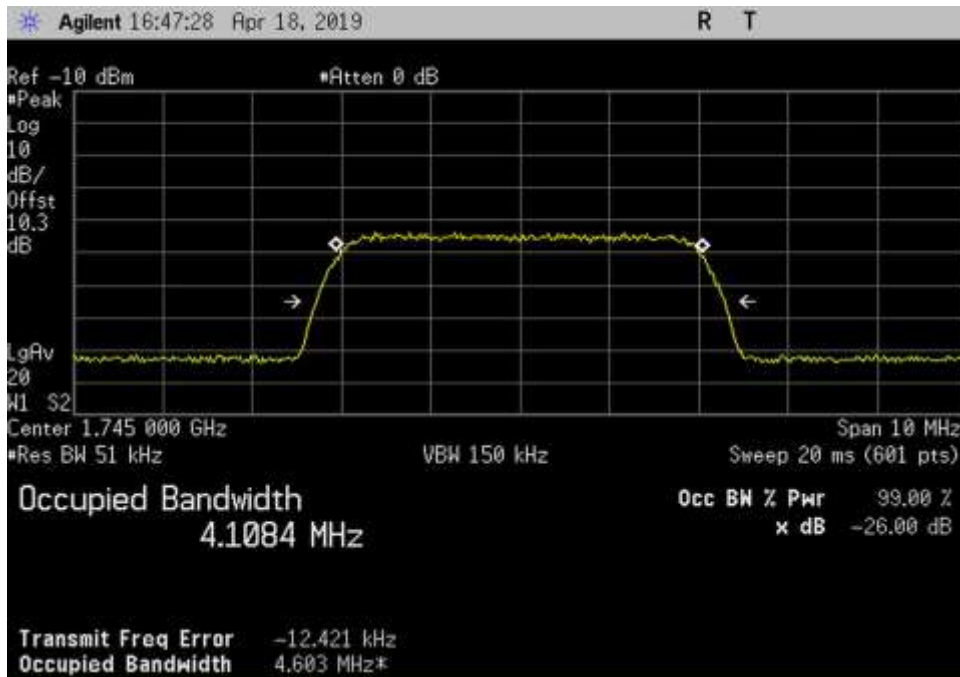
In_UL_698-716_AWGN_ 707MHz



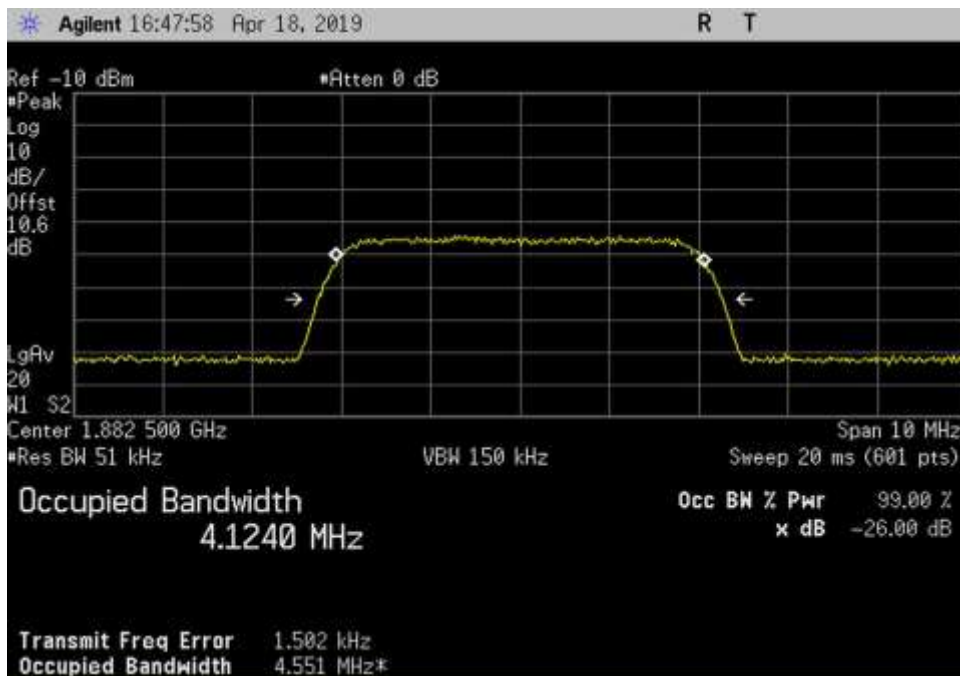
In_UL_776-787_AWGN_781.5MHz



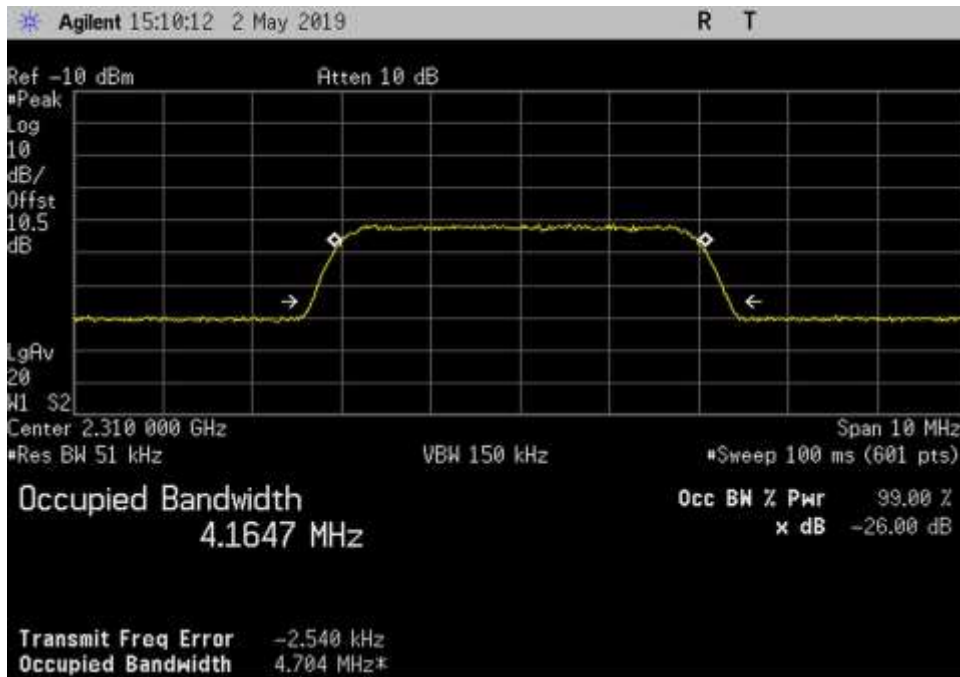
In_UL_824-849_AWGN_836.5MHz



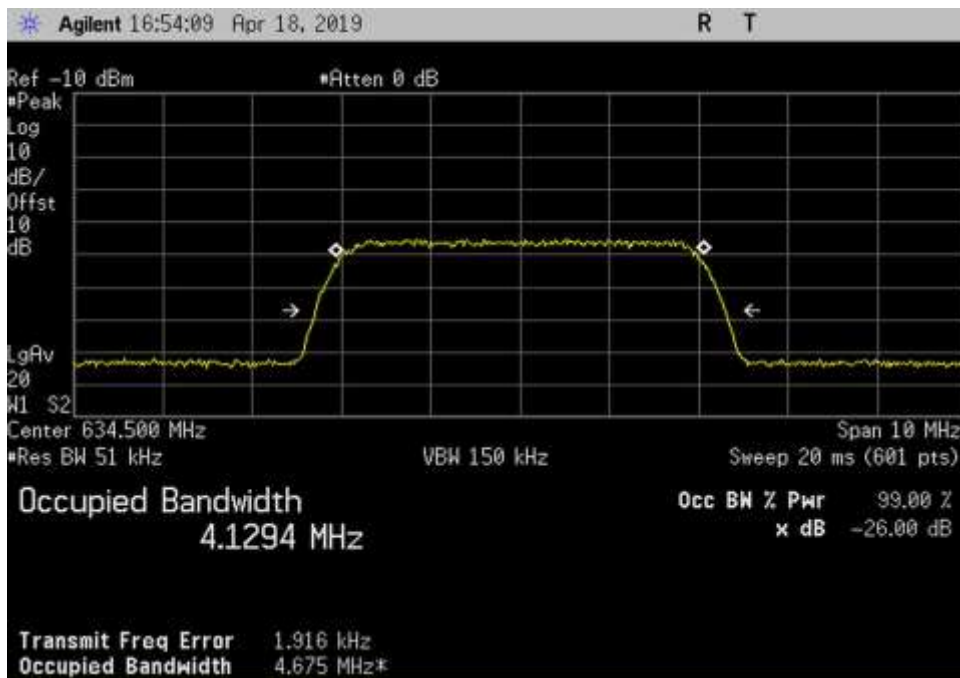
In_UL_1710-1755_AWGN_1745MHz



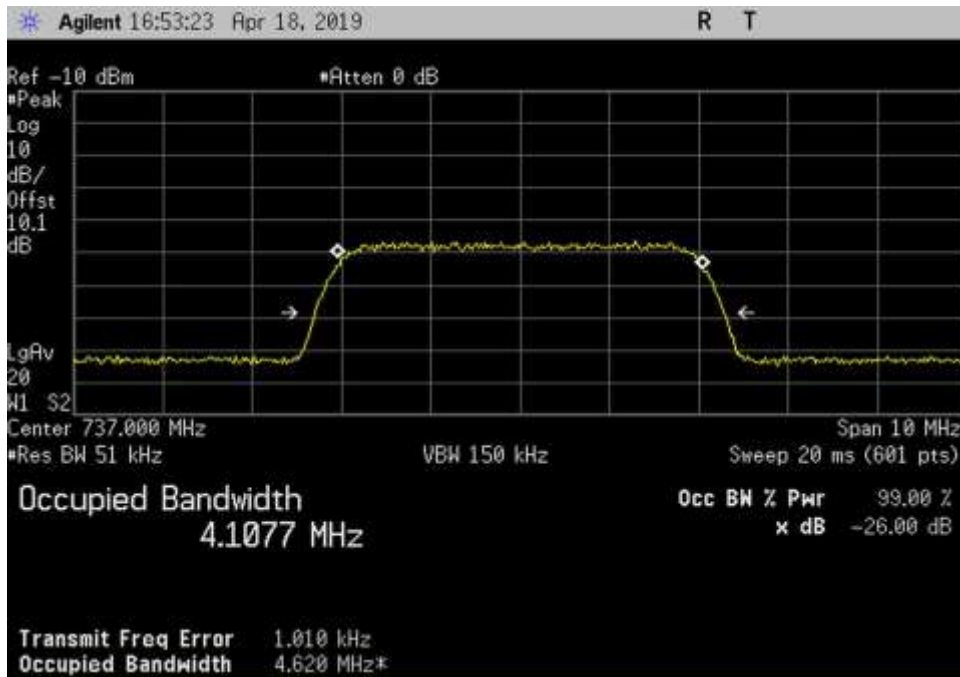
In_UL_1850-1915_AWGN_1882.5MHz



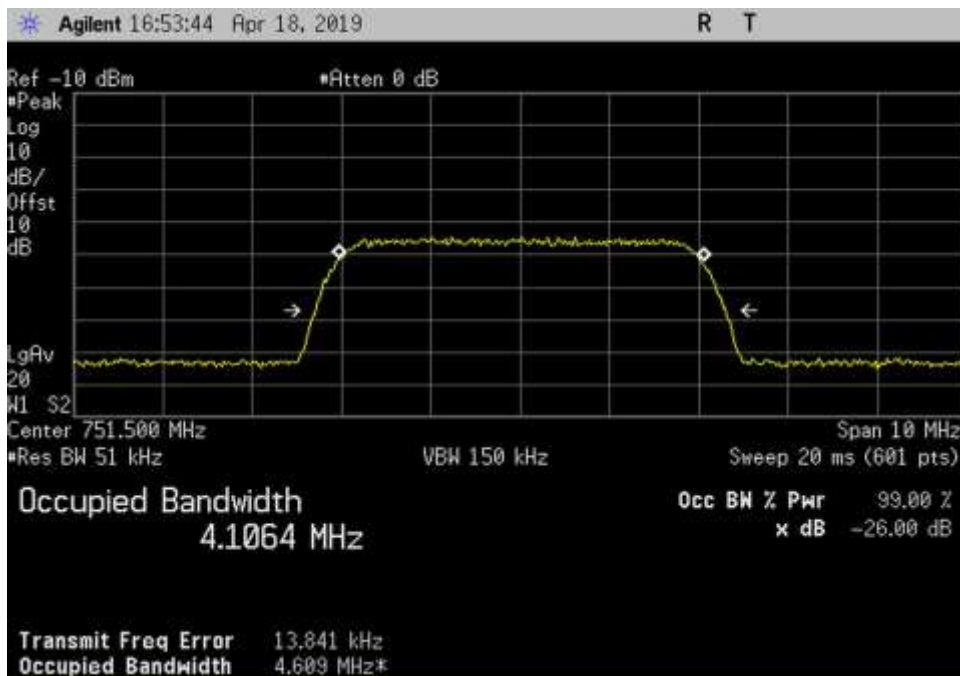
In_UL_2305-2315_AWGN_ 2310MHz



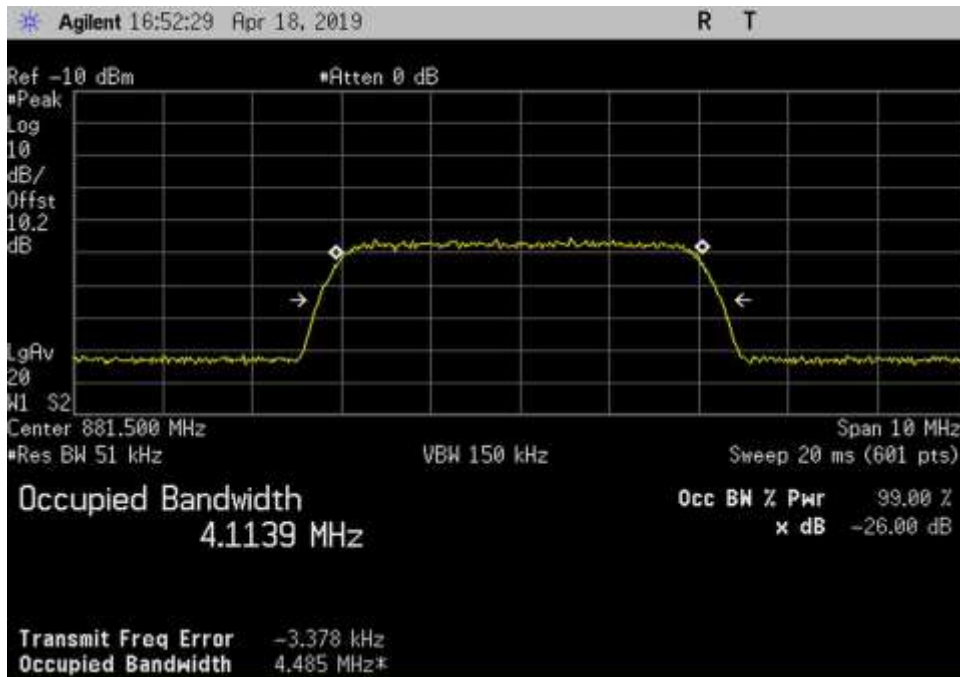
In_DL_617-652_AWGN_ 634.5MHz



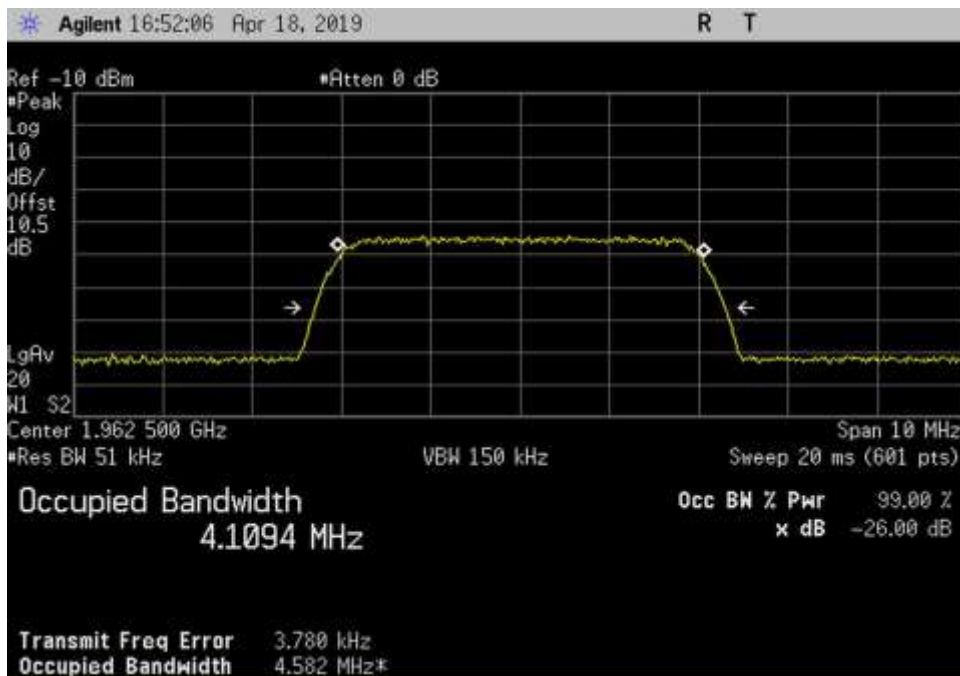
In_DL_728-746_AWGN_737MHz



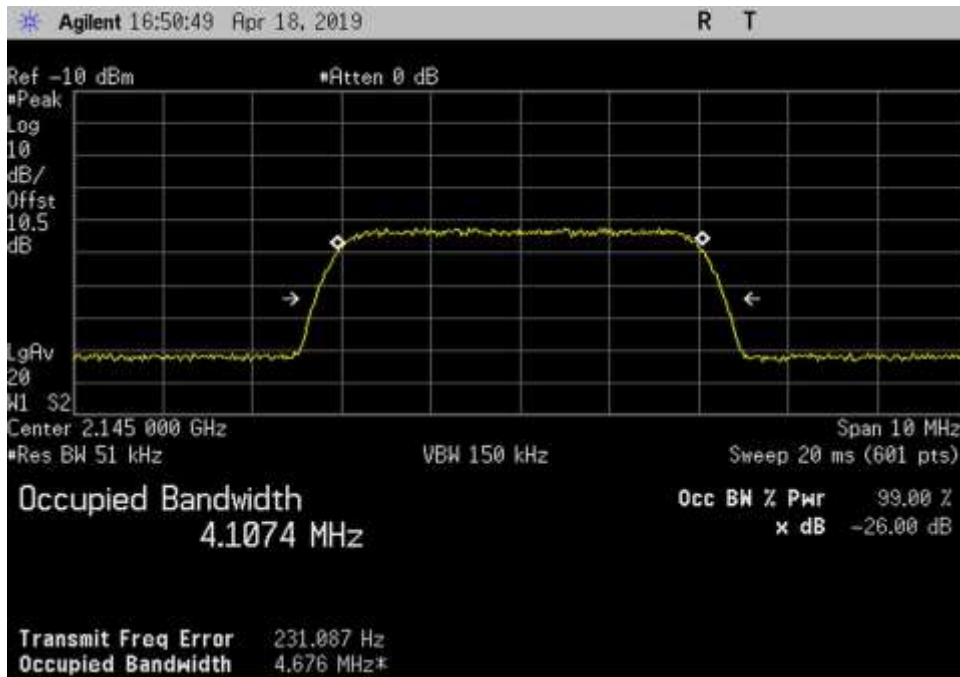
In_DL_746-757_AWGN_751.5MHz



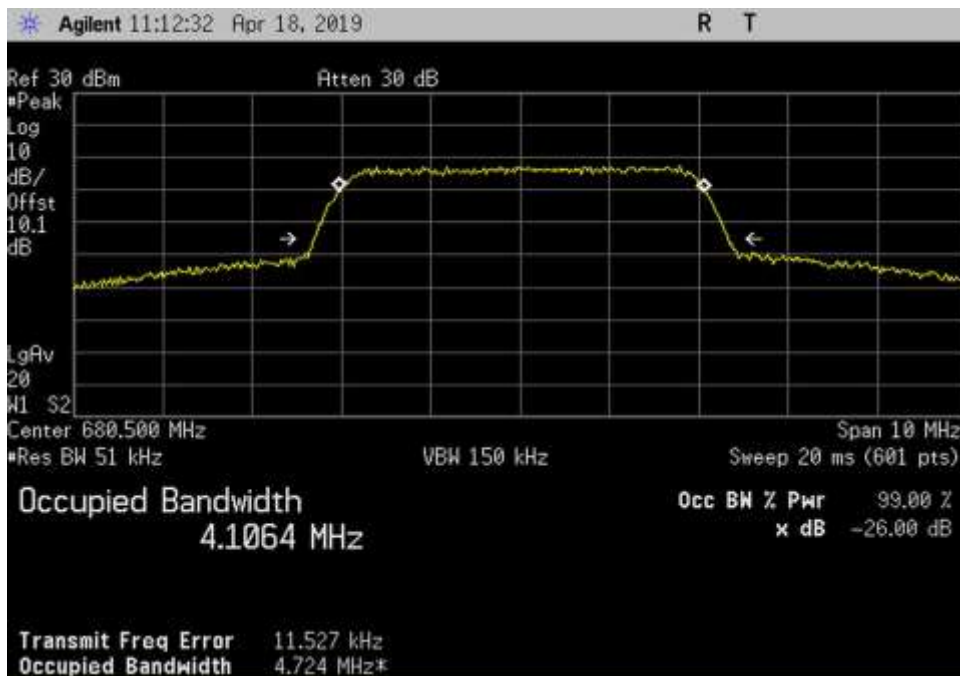
In_DL_869-894_AWGN_881.5MHz



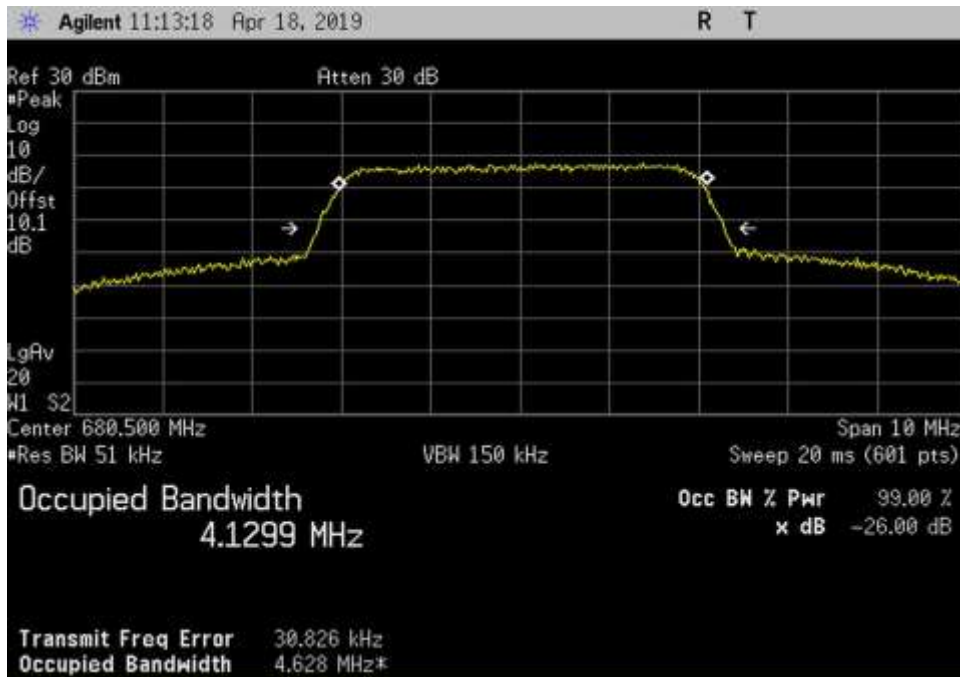
In_DL_1930-1995_AWGN_1962.5MHz



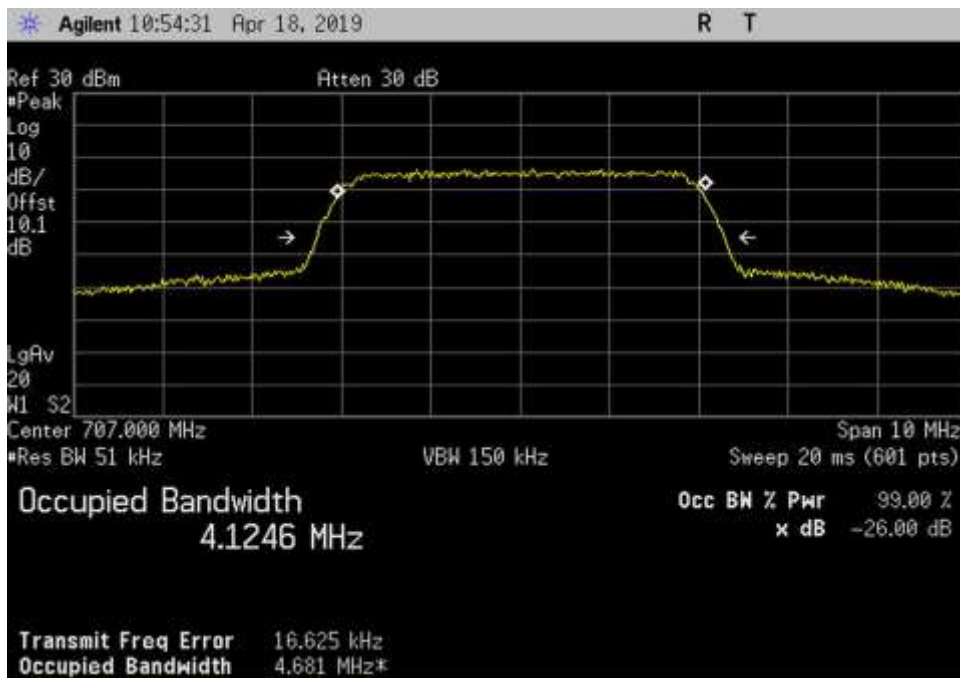
In_DL_2110-2155_AWGN_2145MHz



Out_UL_663-698_AWGN_680.5MHz



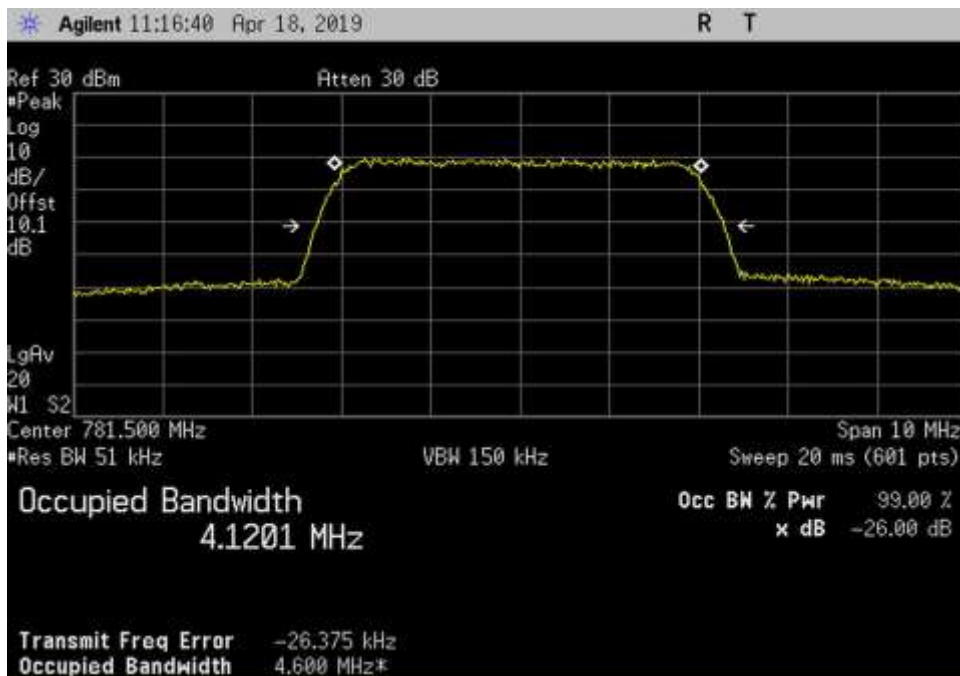
Out_UL_663-698_AWGN_680.5MHz_3dB



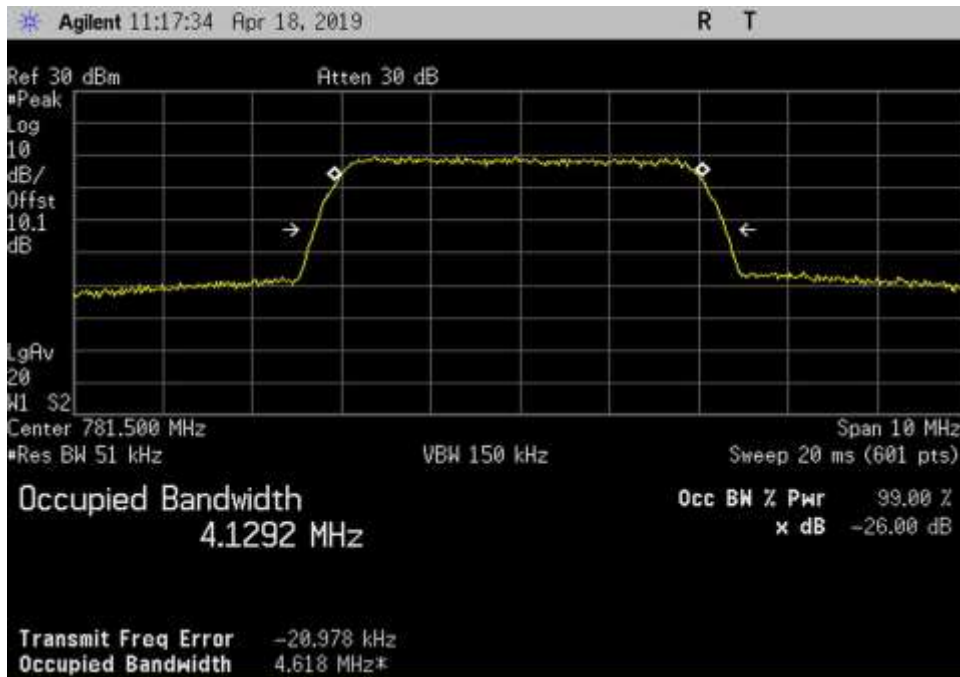
Out_UL_698-716_AWGN_707MHz



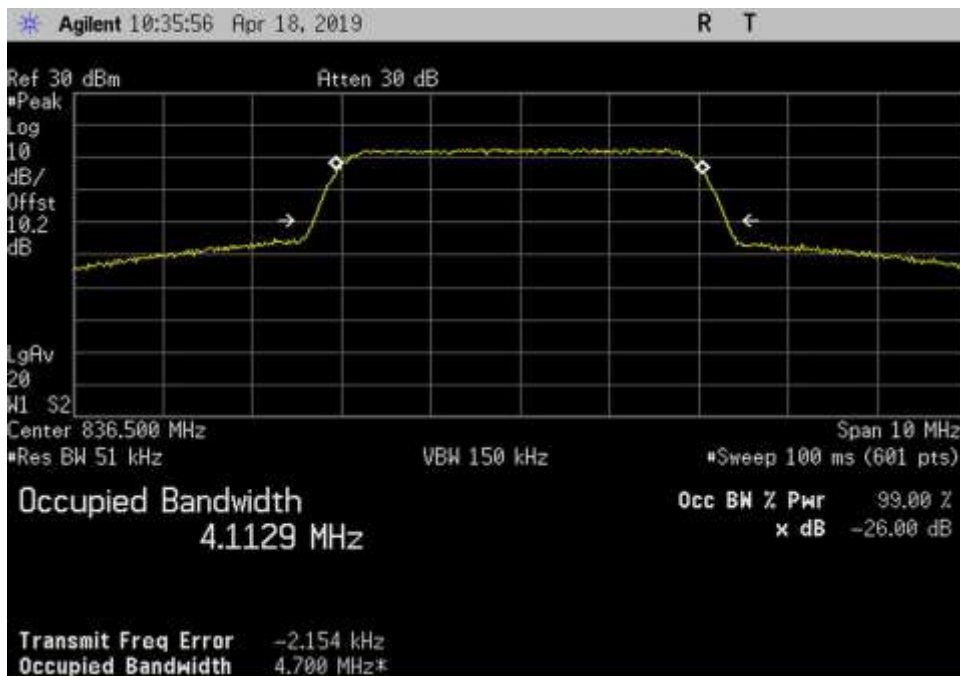
Out_UL_698-716_AWGN_707MHz_3dB



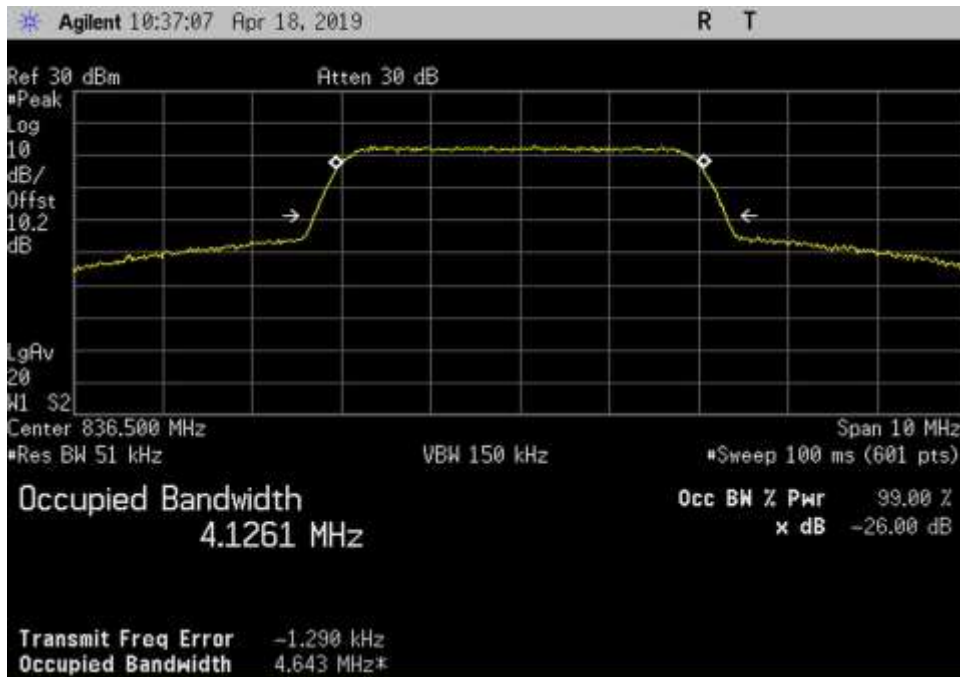
Out_UL_776-787_AWGN_781.5MHz



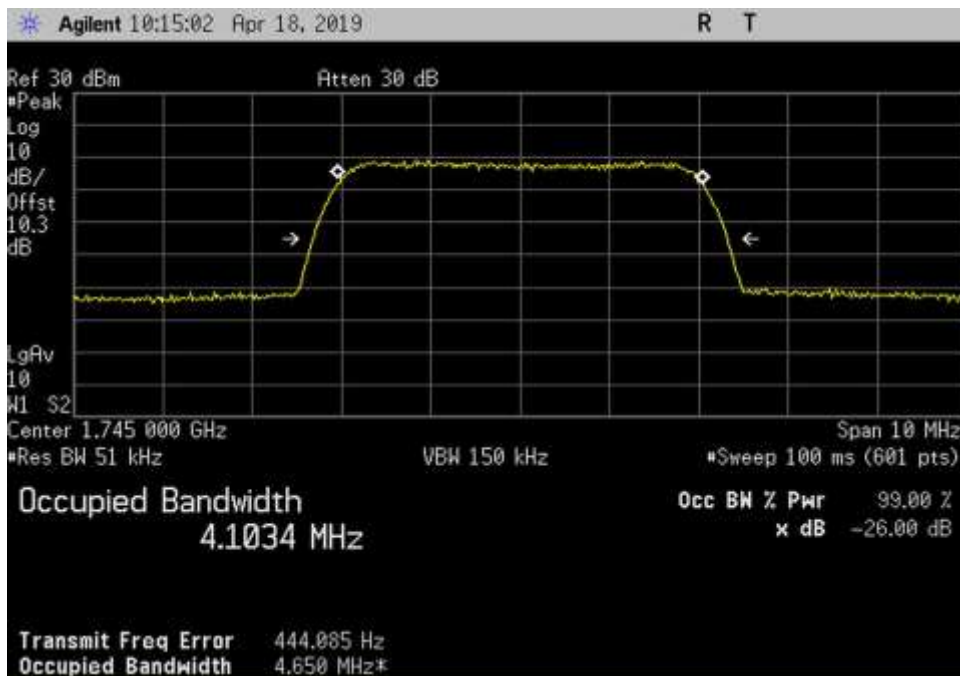
Out_UL_776-787_AWGN_781.5MHz_3dB



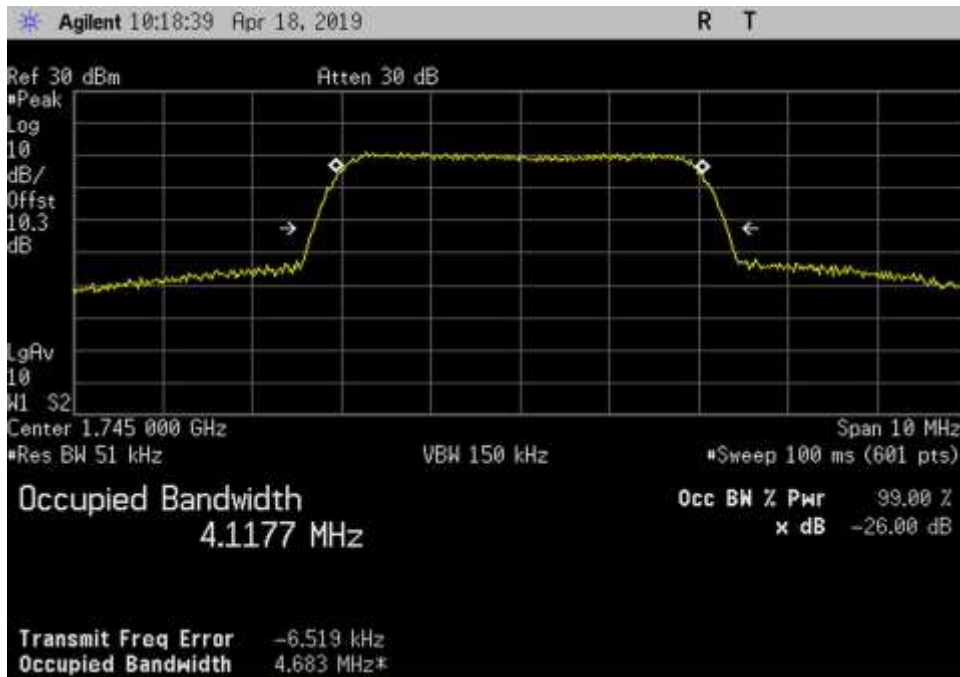
Out_UL_824-849_AWGN_836.5MHz



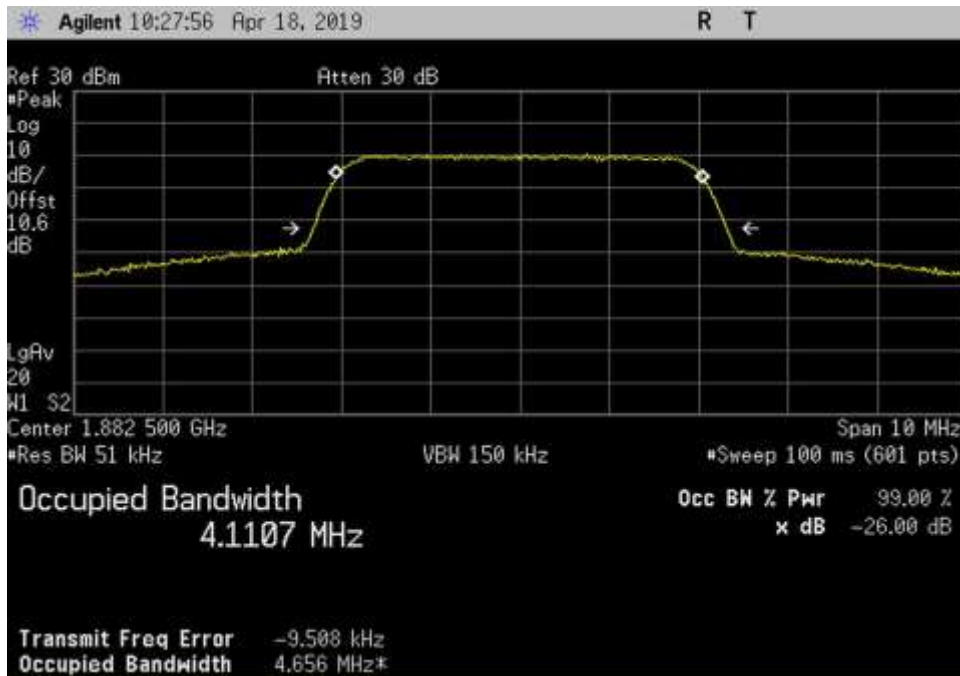
Out_UL_824-849_AWGN_836.5MHz_3dB



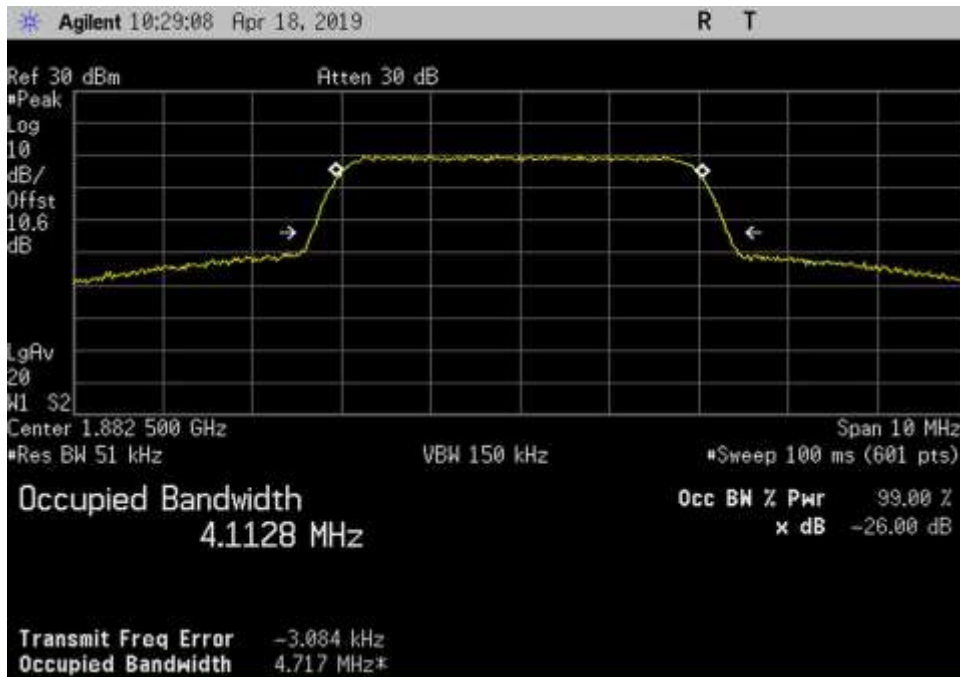
Out_UL_1710-1755_AWGN_1745MHz



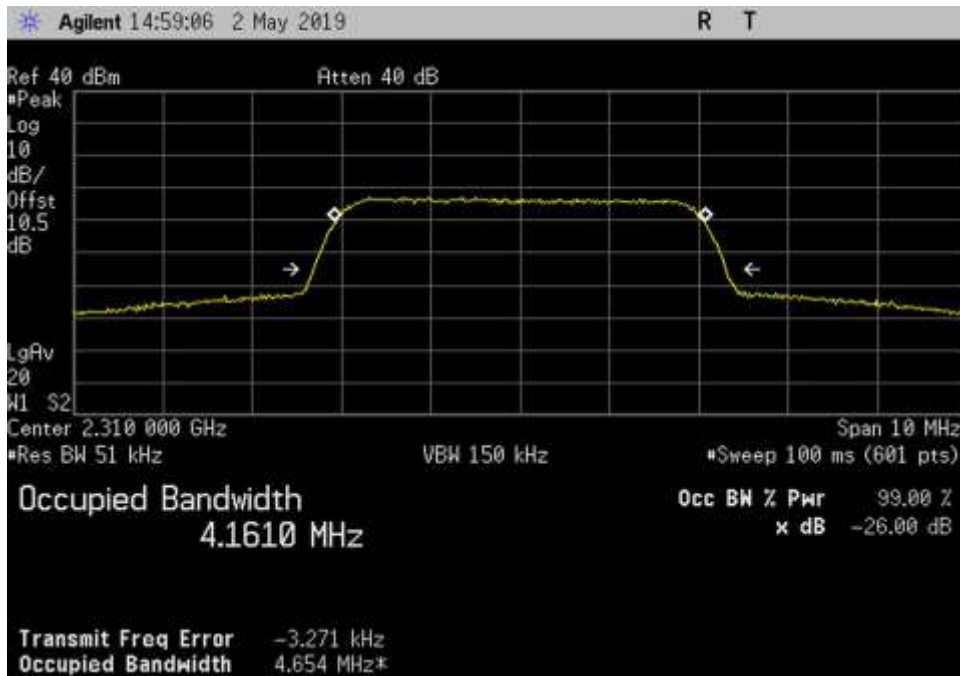
Out_UL_1710-1755_AWGN_1745MHz_3dB



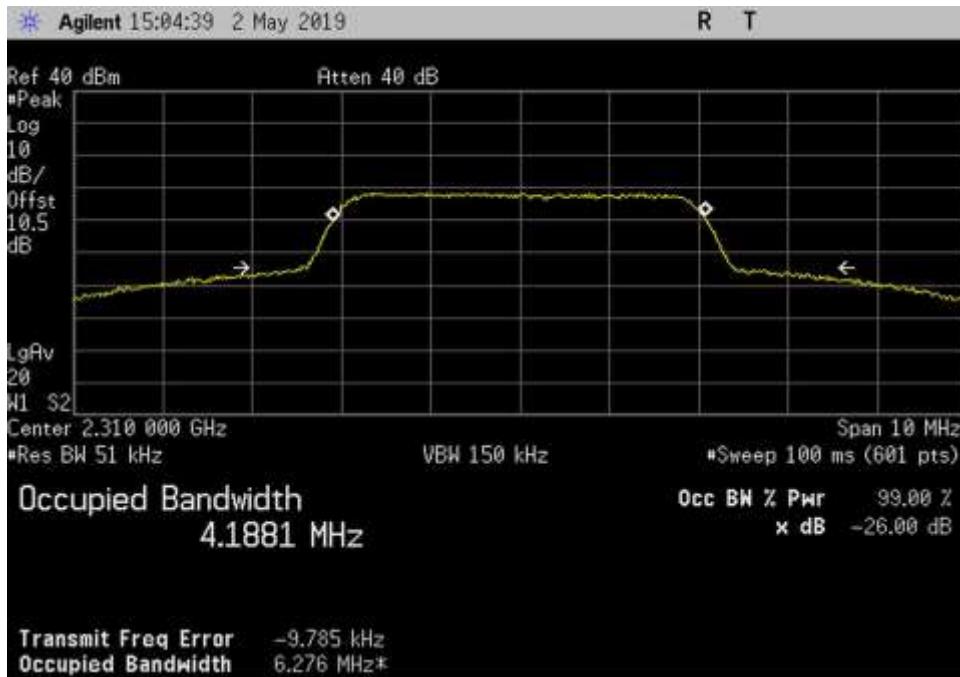
Out_UL_1850-1915_AWGN_1882.5MHz



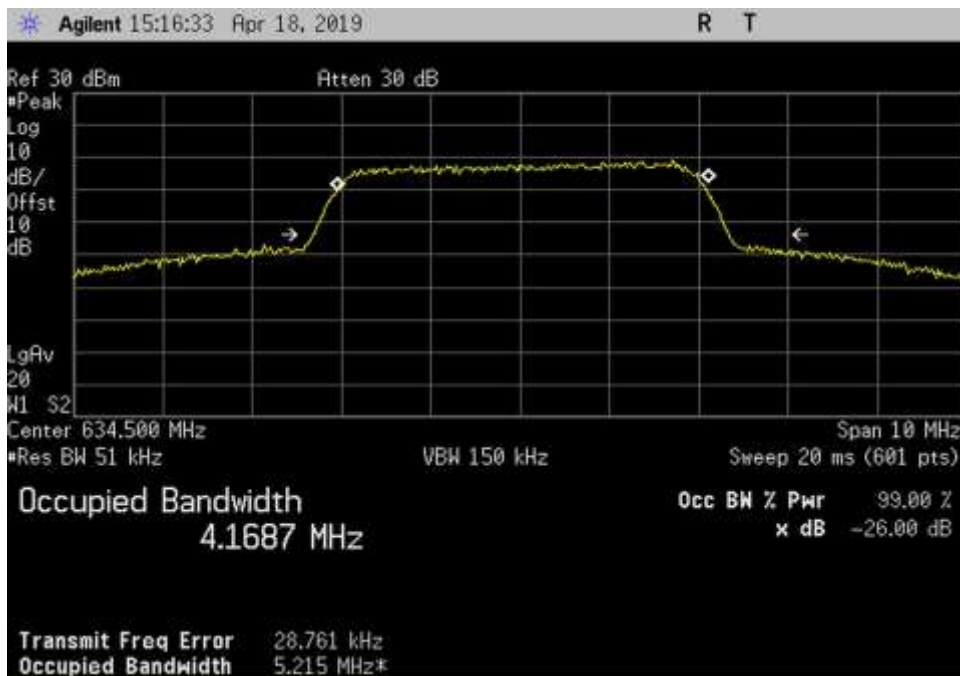
Out_UL_1850-1915_AWGN_1882.5MHz_3dB



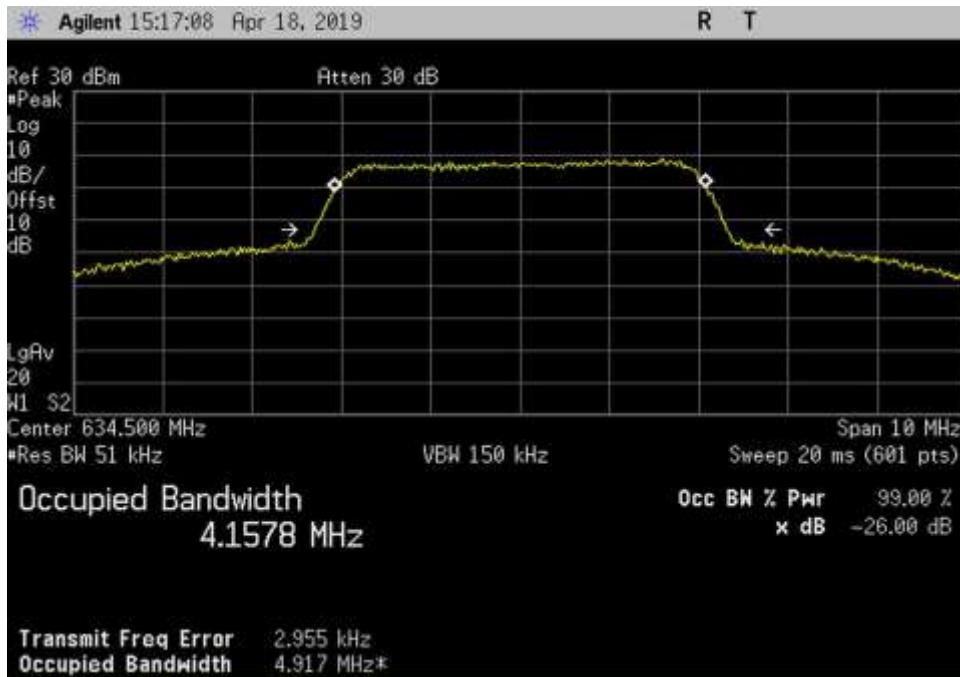
Out_UL_2305-2315_AWGN_2310MHz



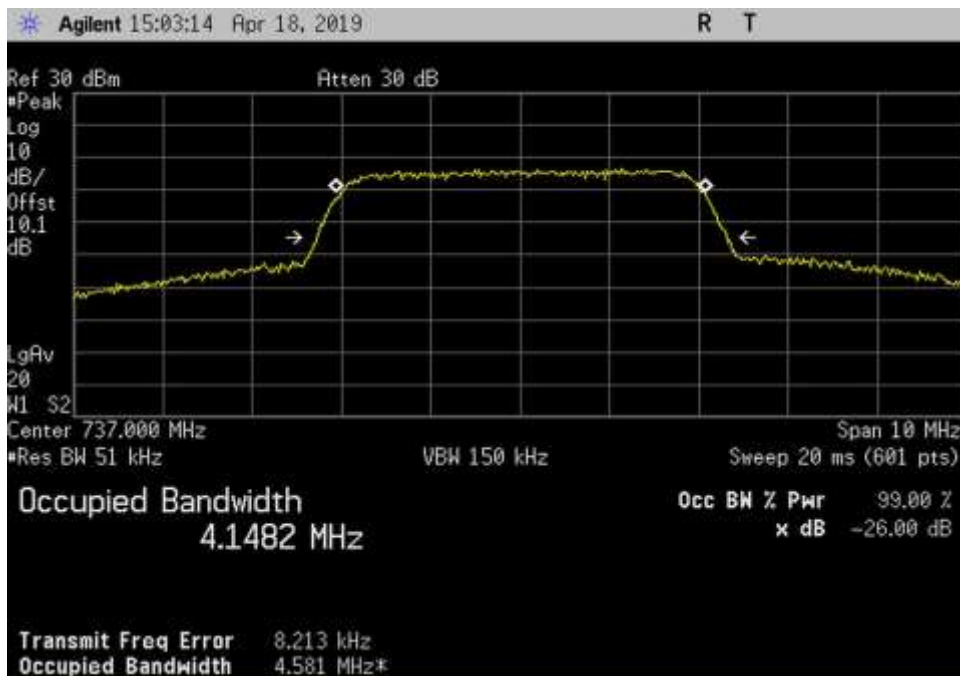
Out_UL_2305-2315_AWGN_2310MHz_3dB



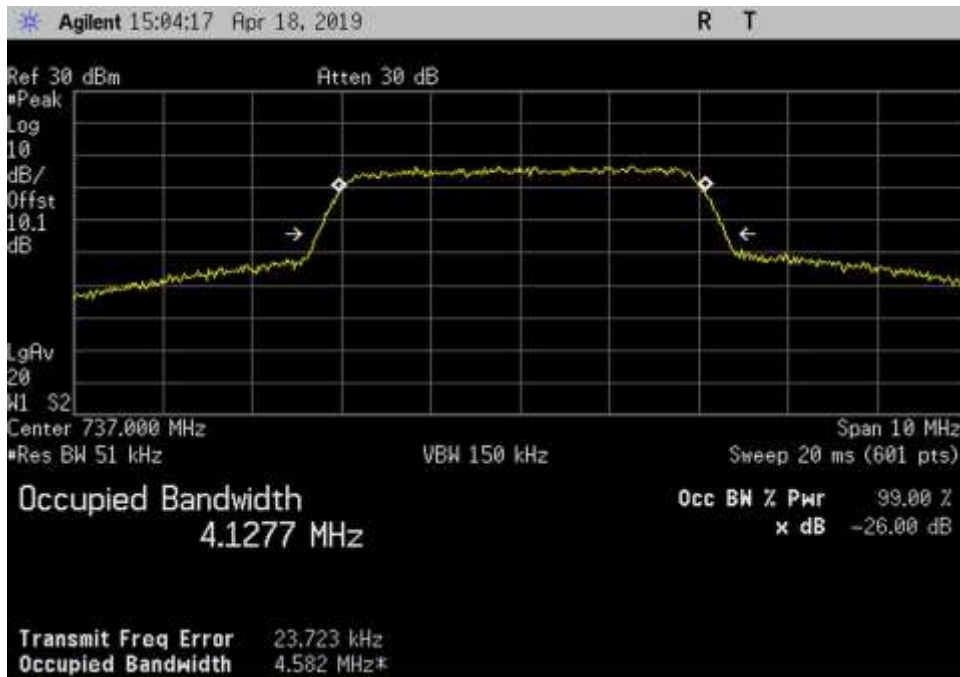
Out_DL_617-652_AWGN_634.5MHz



Out_DL_617-652_AWGN_634.5MHz_3dB



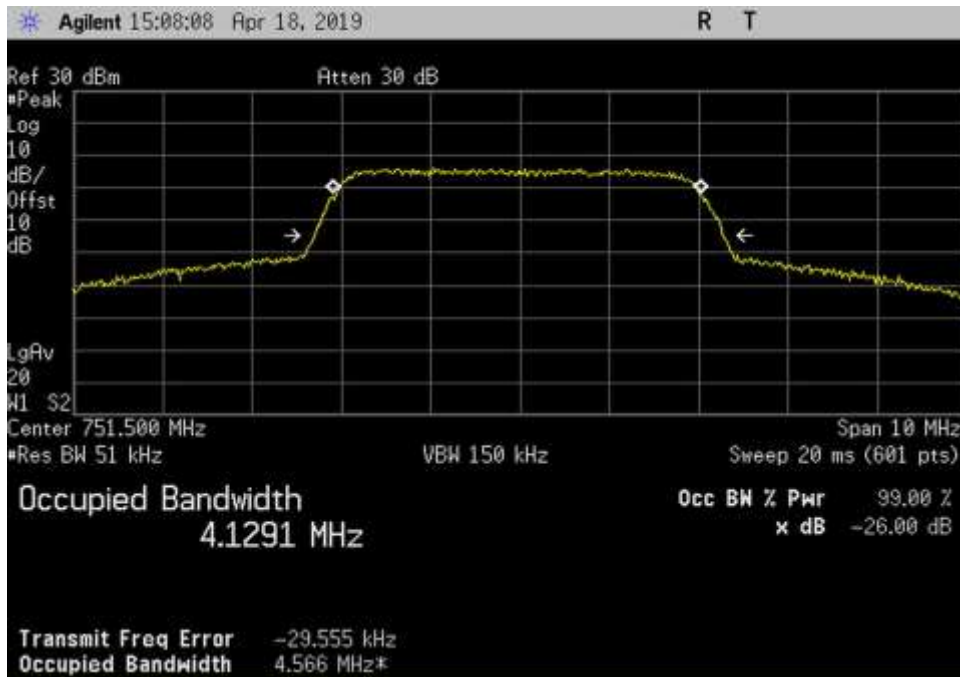
Out_DL_728-746_AWGN_737MHz



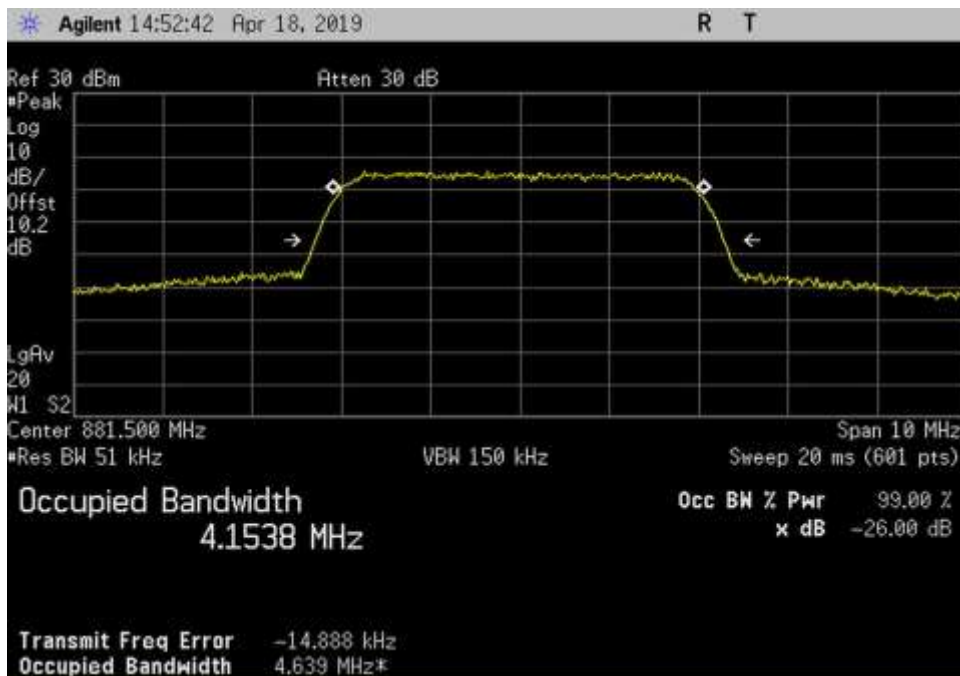
Out_DL_728-746_AWGN_737MHz_3dB



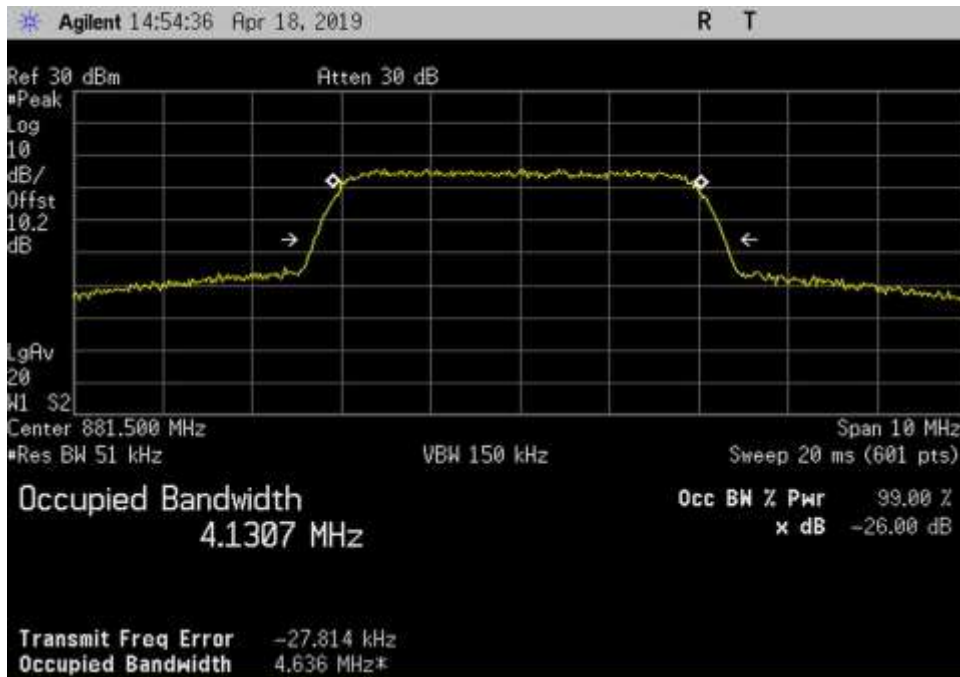
Out_DL_746-757_AWGN_751.5MHz



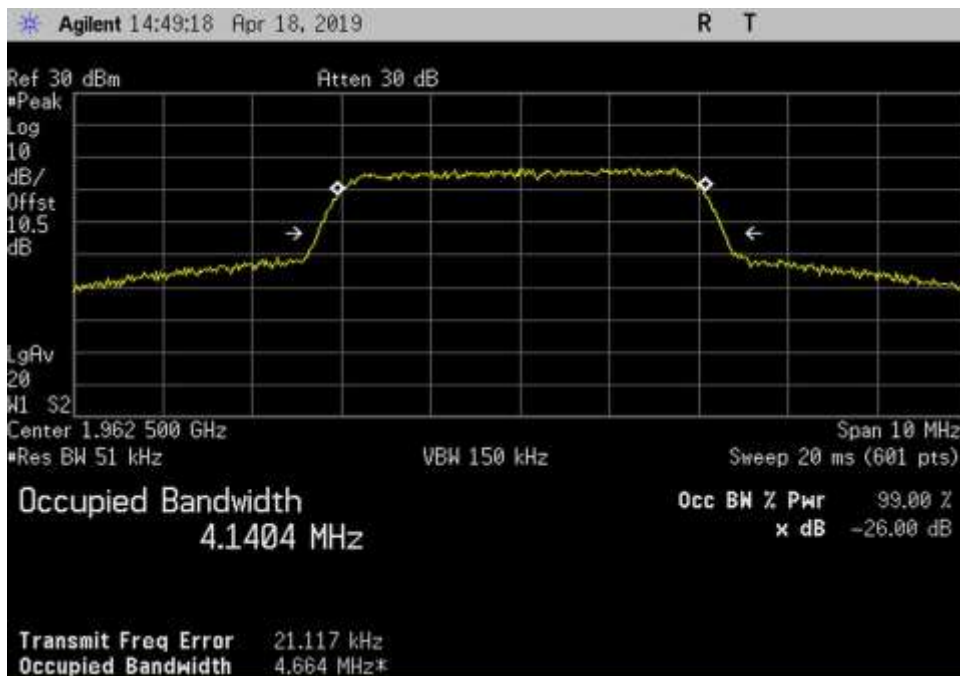
Out_DL_746-757_AWGN_751.5MHz_3dB



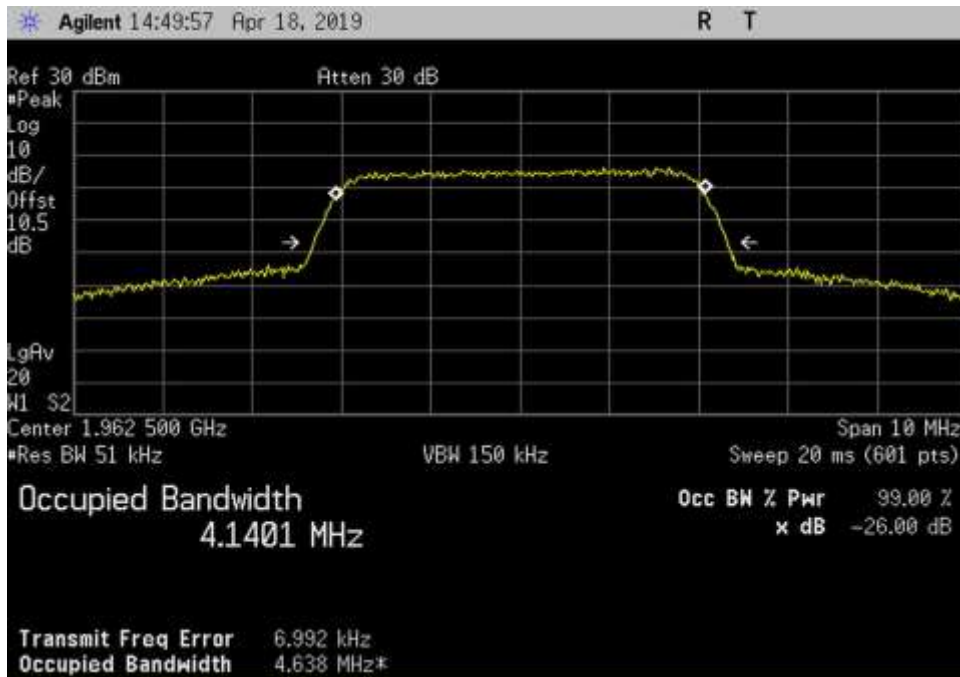
Out_DL_869-894_AWGN_881.5MHz



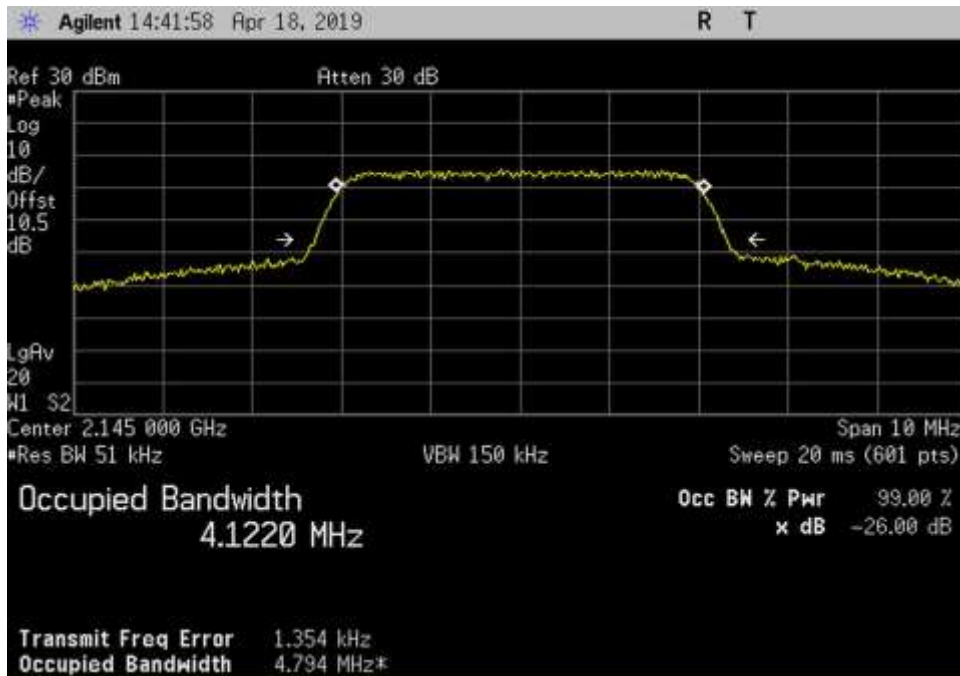
Out_DL_869-894_AWGN_881.5MHz_3dB



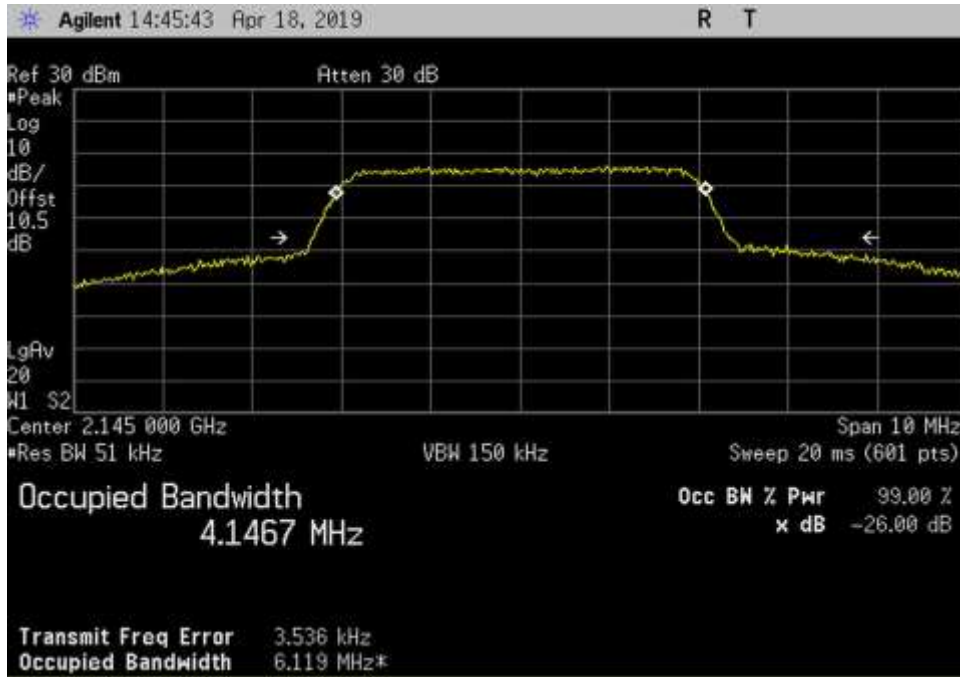
Out_DL_1930-1995_AWGN_1962.5MHz



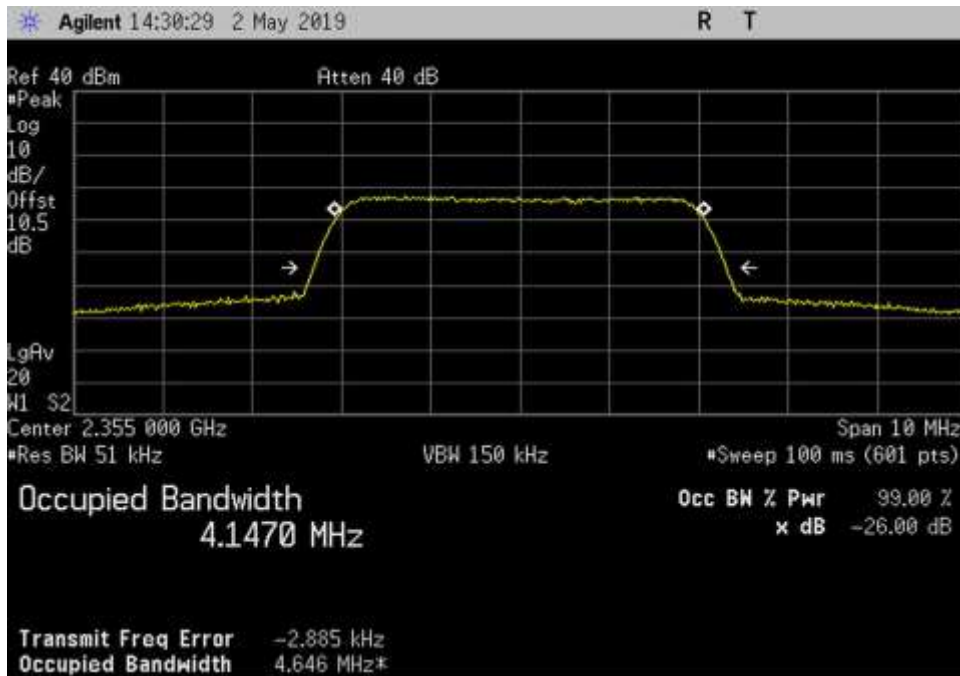
Out_DL_1930-1995_AWGN_1962.5MHz_3dB



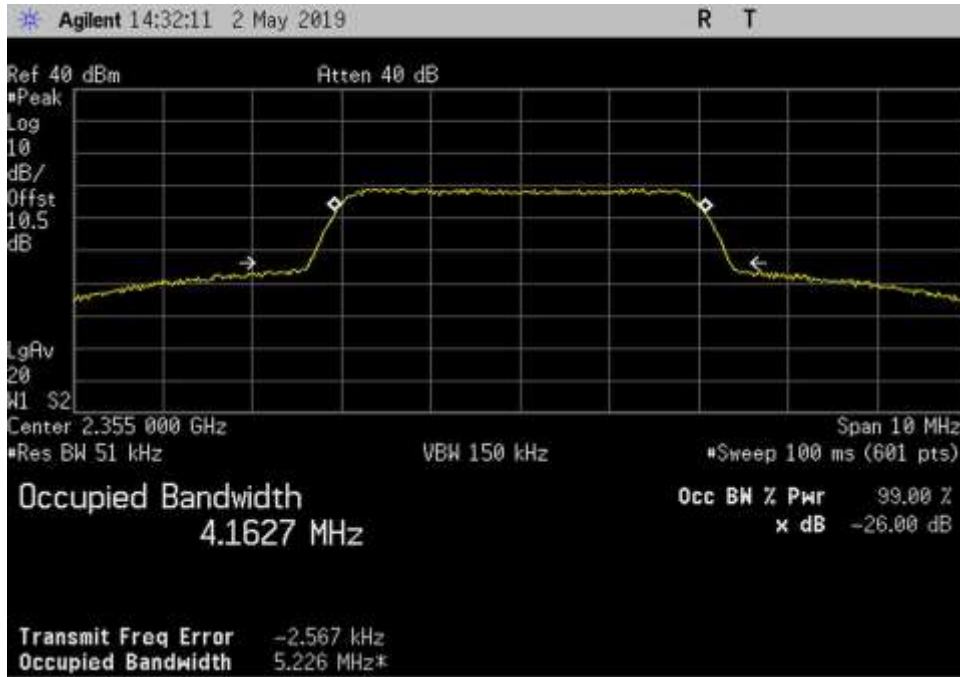
Out_DL_2110-2155_AWGN_2145MHz



Out_DL_2110-2155_AWGN_2145MHz_3dB

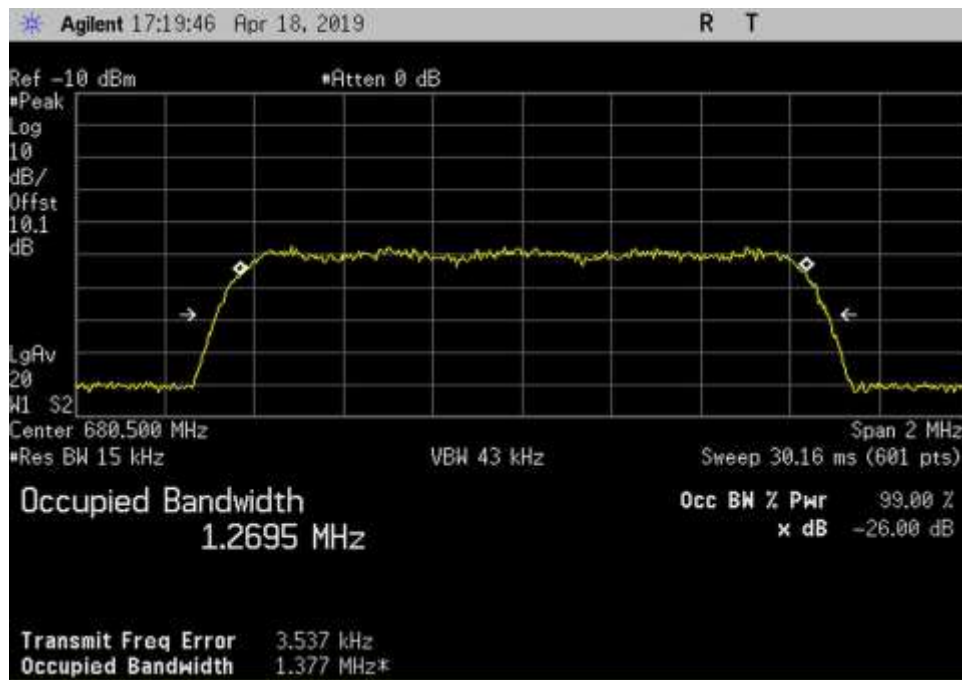


Out_DL_2350-2360_AWGN_2355MHz

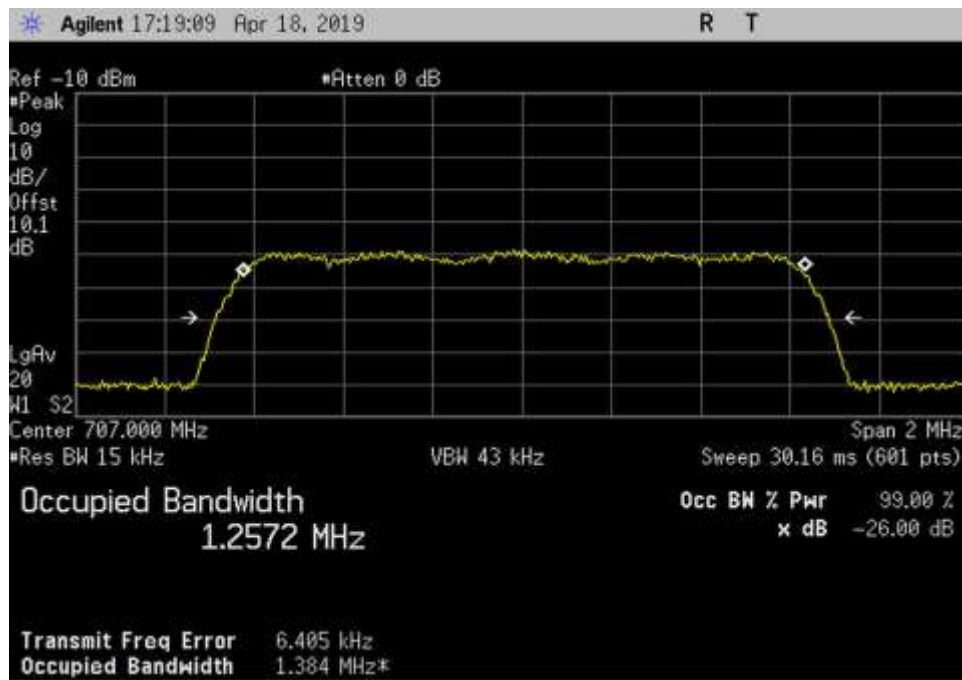


Out_DL_2350-2360_AWGN_2355MHz_3dB

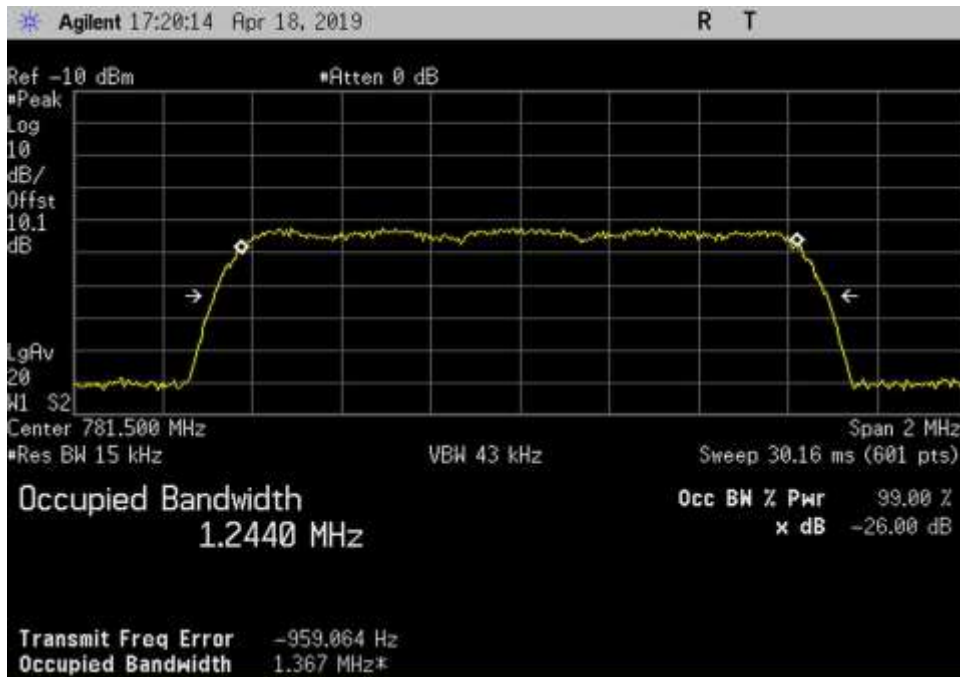
CDMA



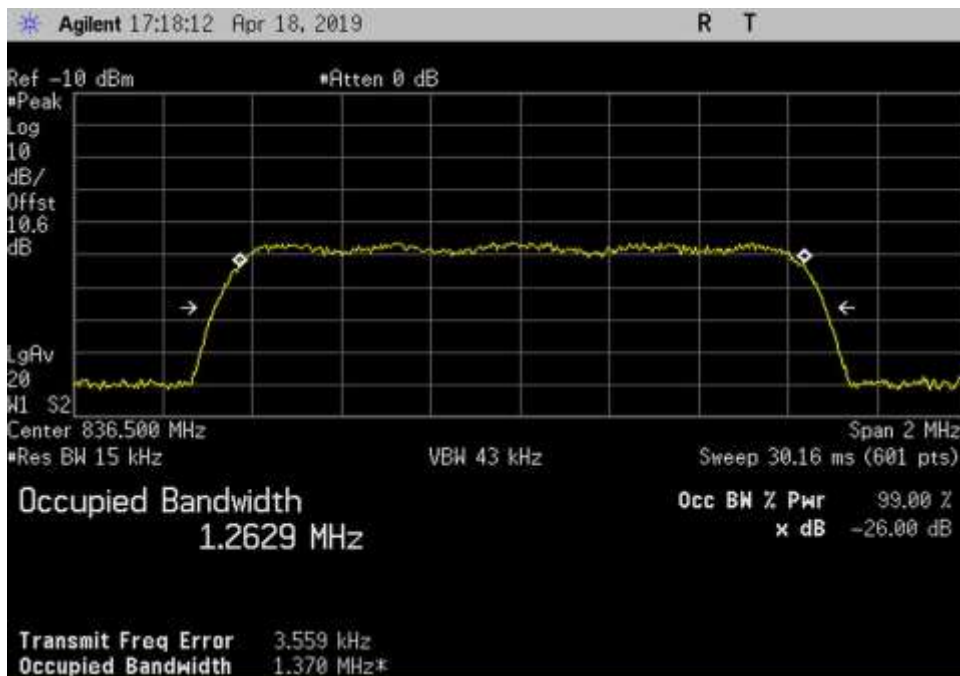
In_UL_663-698_CDMA_680.5MHz



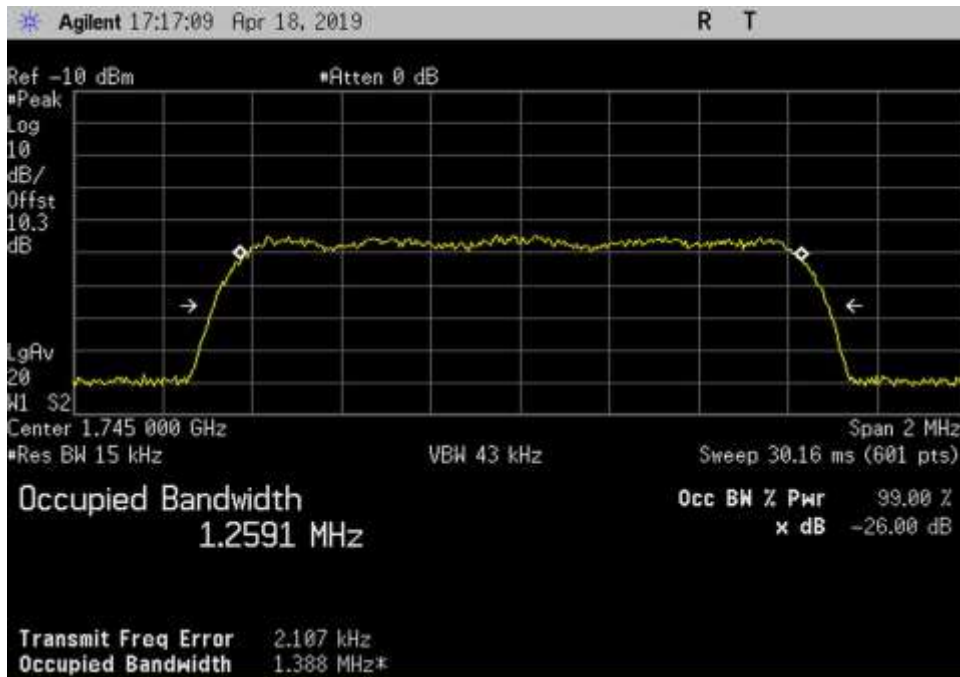
In_UL_698-716_CDMA_707MHz.



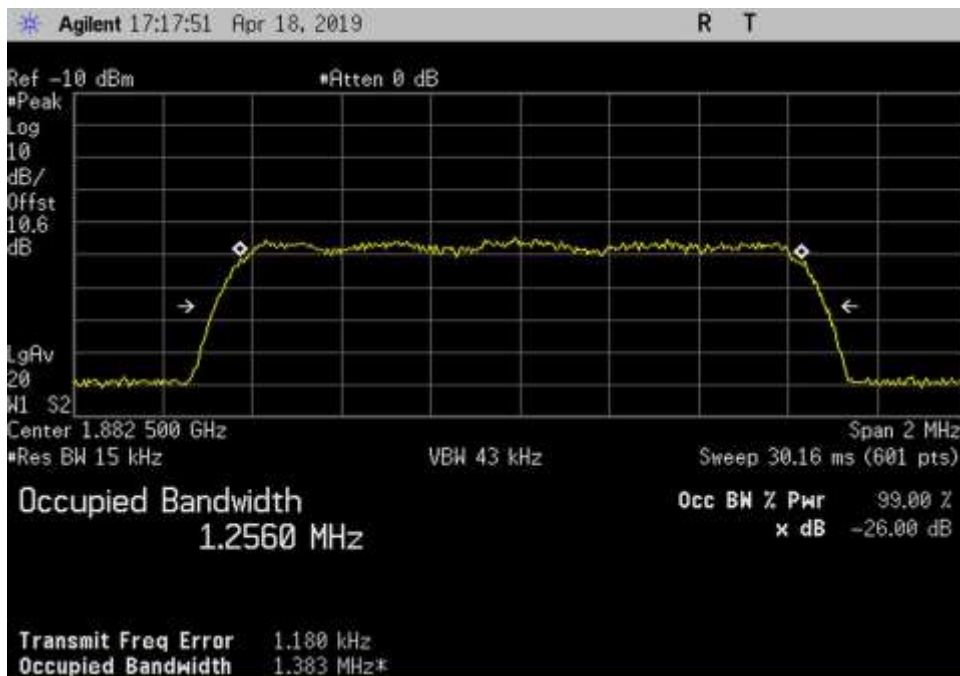
In_UL_776-787_CDMA_781.5MHz



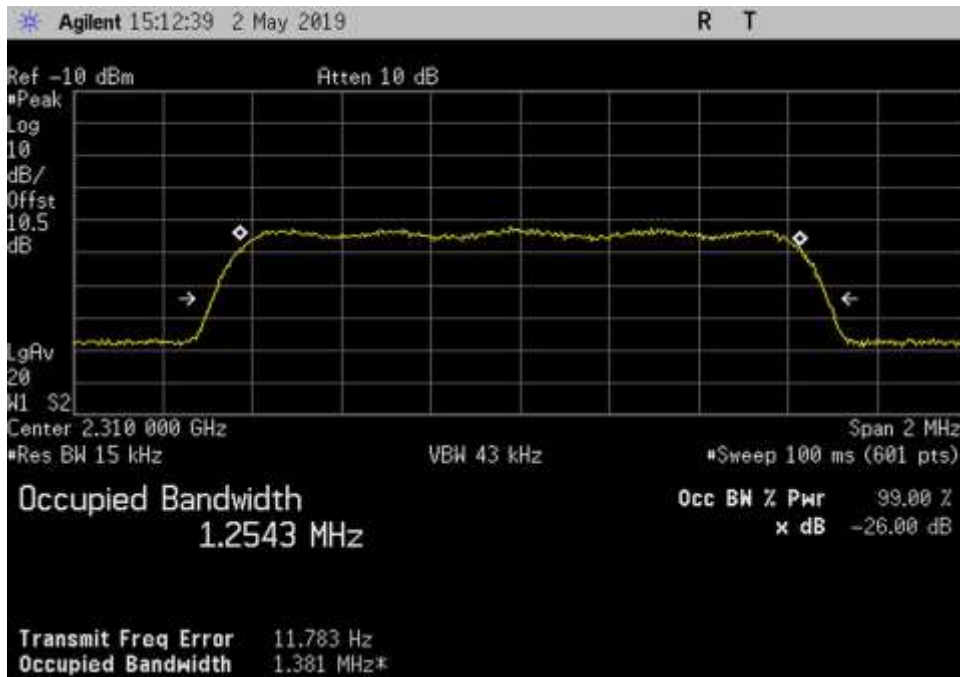
In_UL_824-849_CDMA_836.5MHz



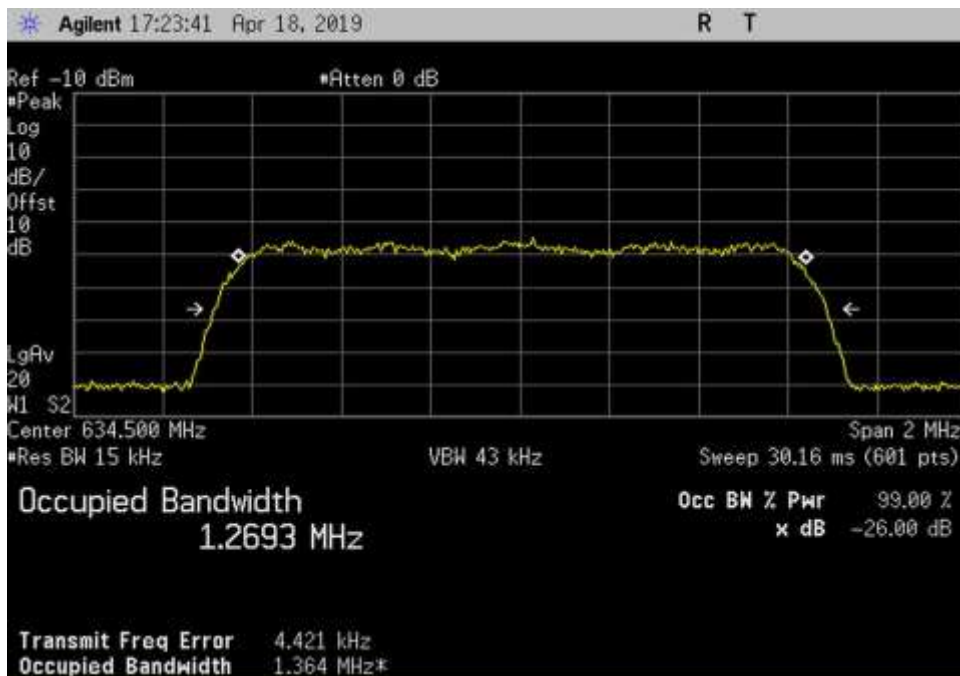
In_UL_1710-1755_CDMA_1745MHz



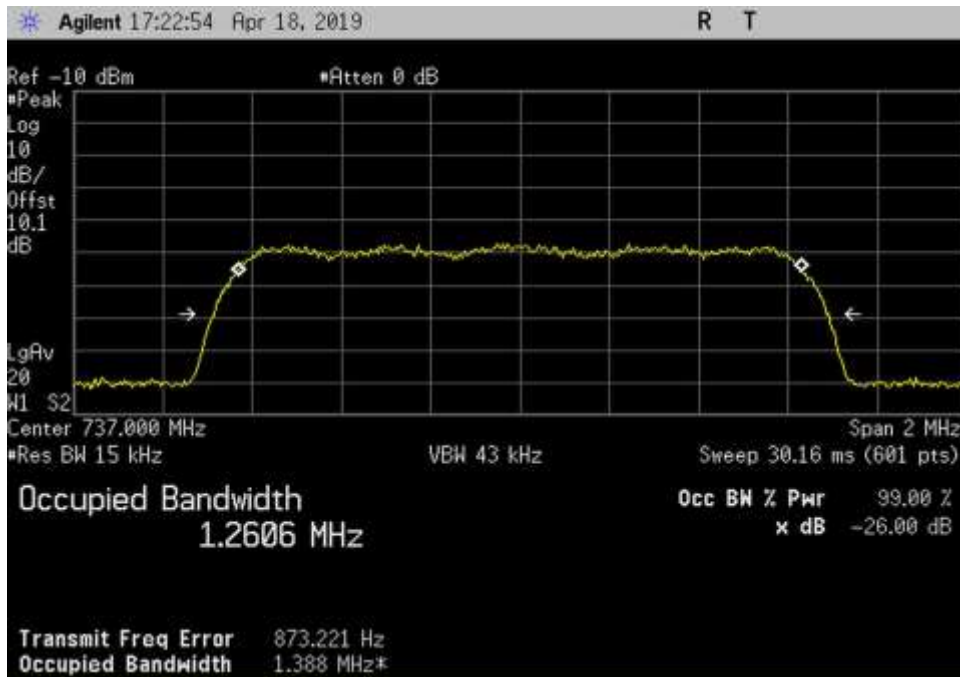
In_UL_1850-1915_CDMA_1882.5MHz



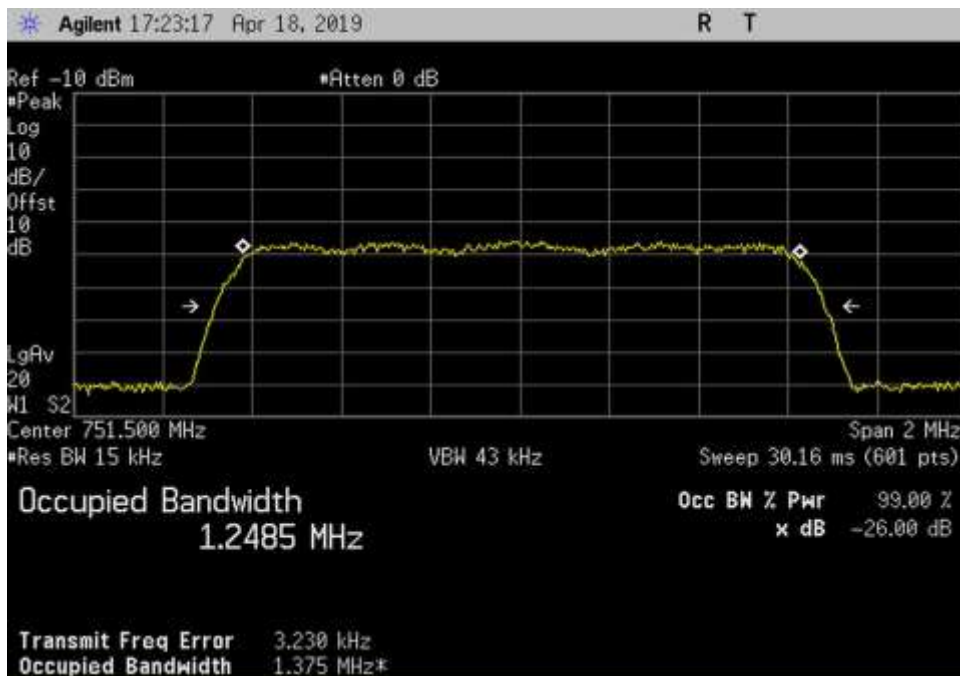
UL_2305-2315_CDMA_2310MHz



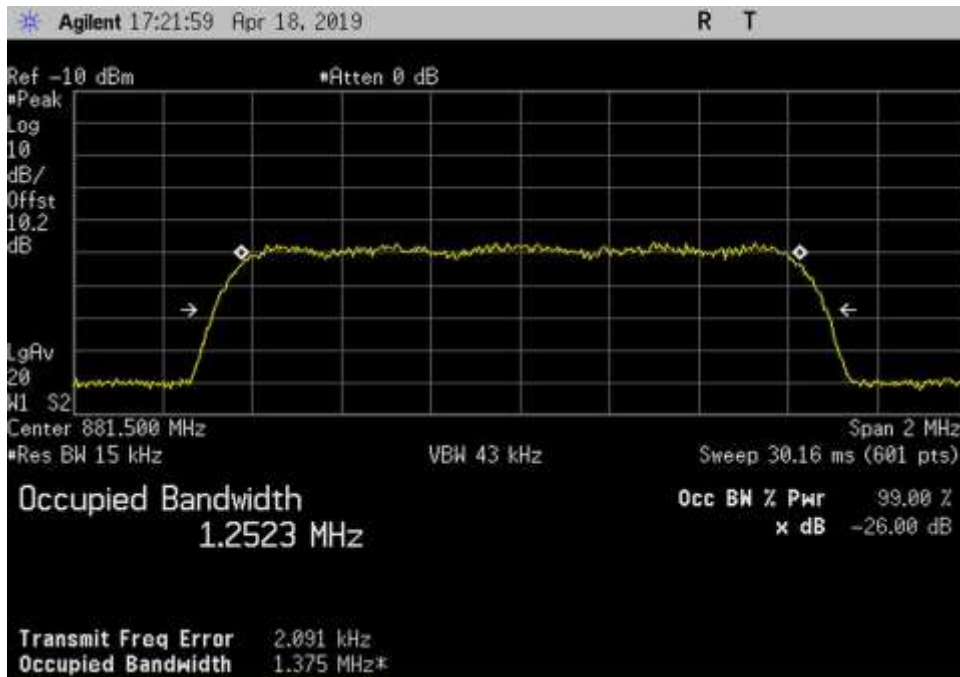
In_DL_617-652_CDMA_634.5MHz



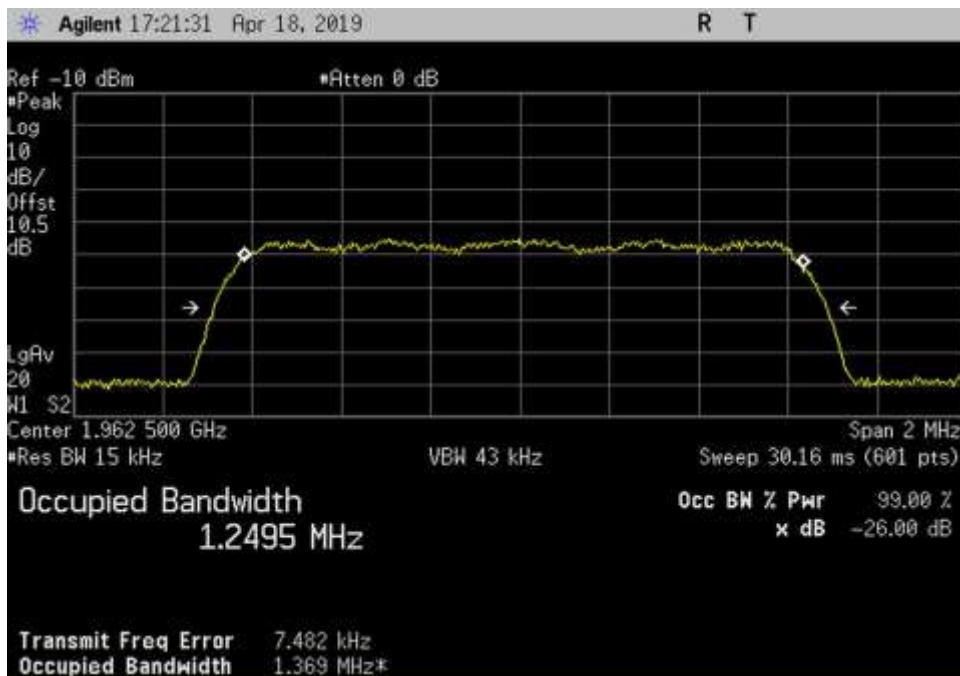
In_DL_728-746_CDMA_737MHz



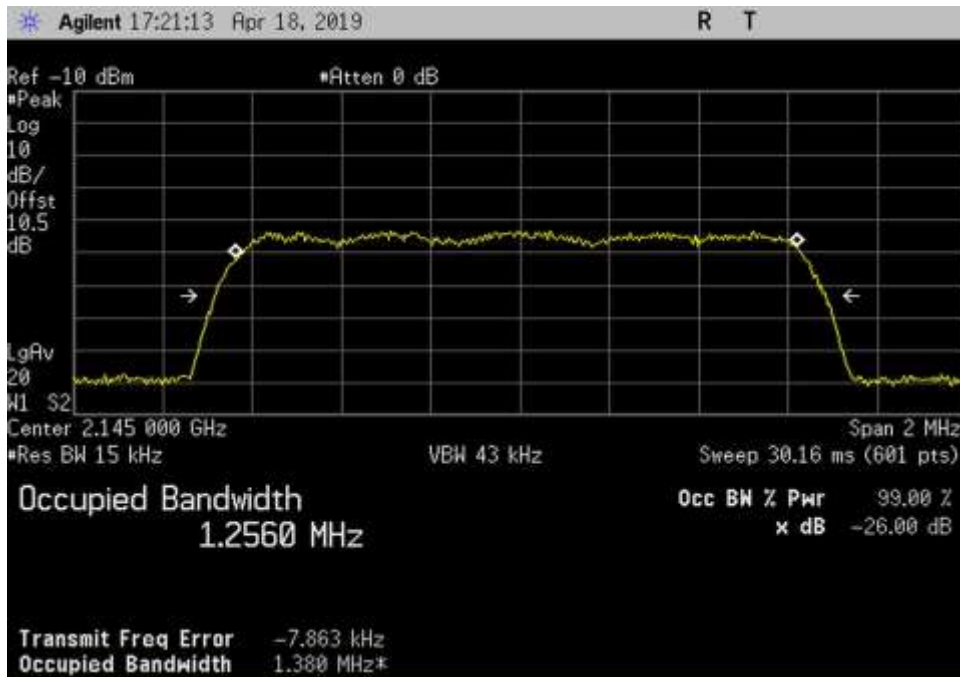
In_DL_728-746_CDMA_751.5MHz



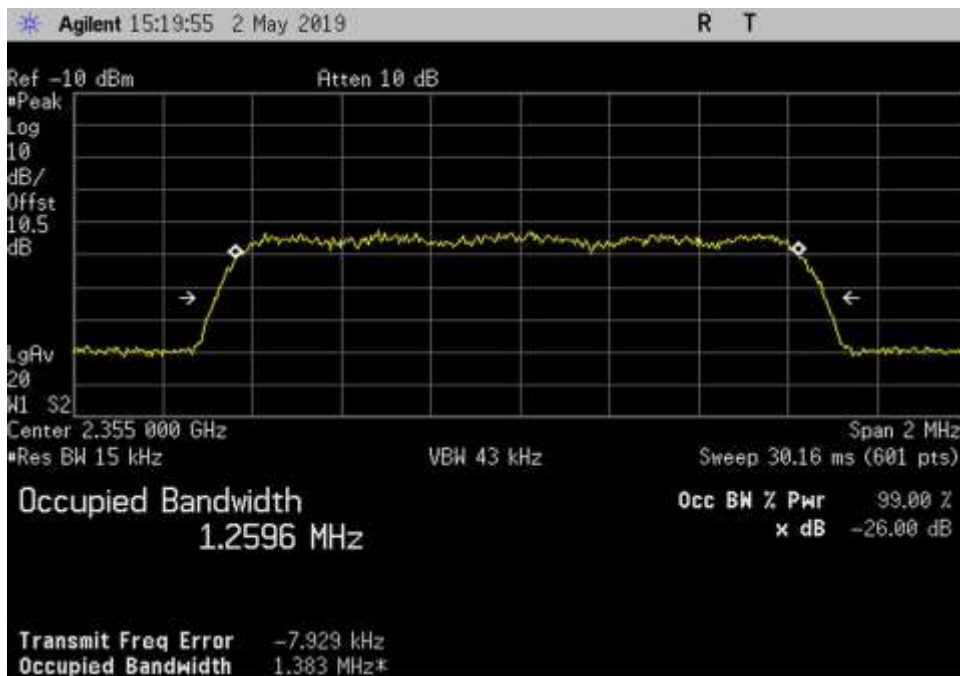
In_DL_869-894_CDMA_881.5MHz



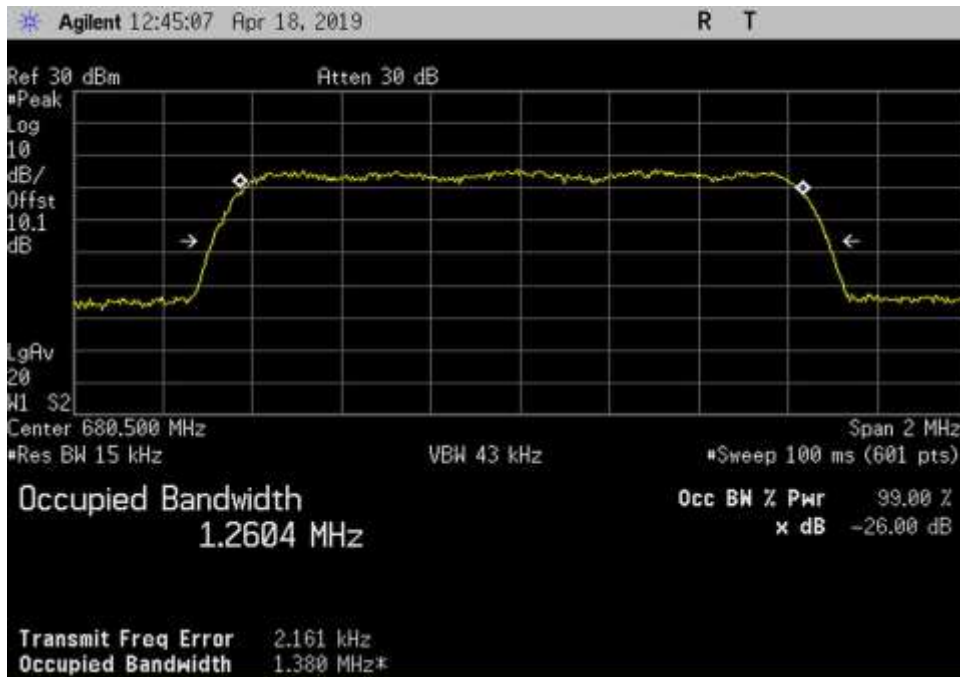
In_DL_1930-1995_CDMA_1962.5MHz



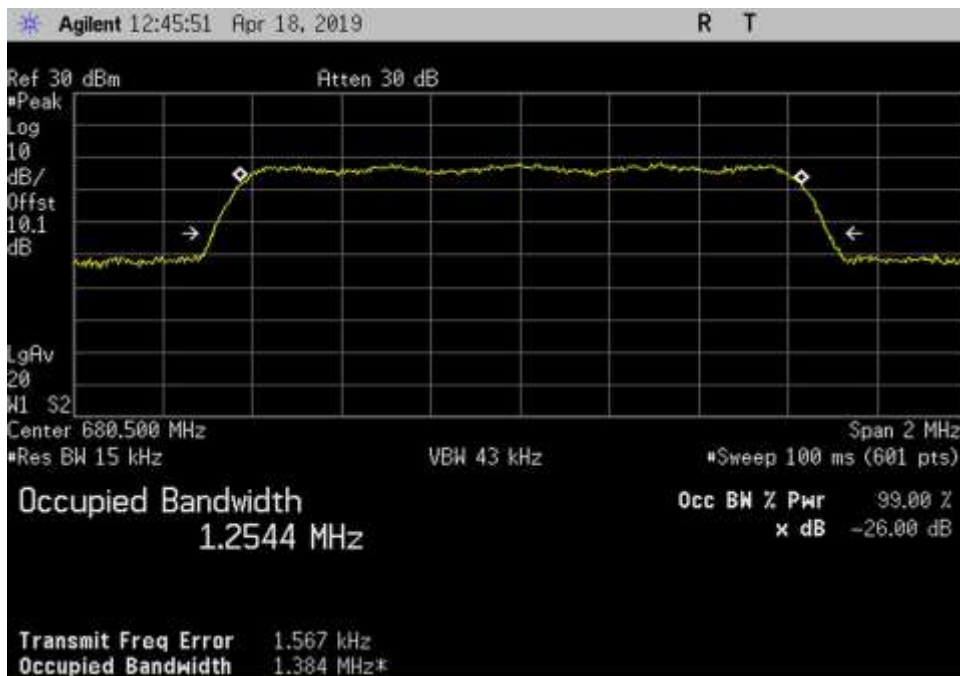
In_DL_2110-2155_CDMA_2145MHz



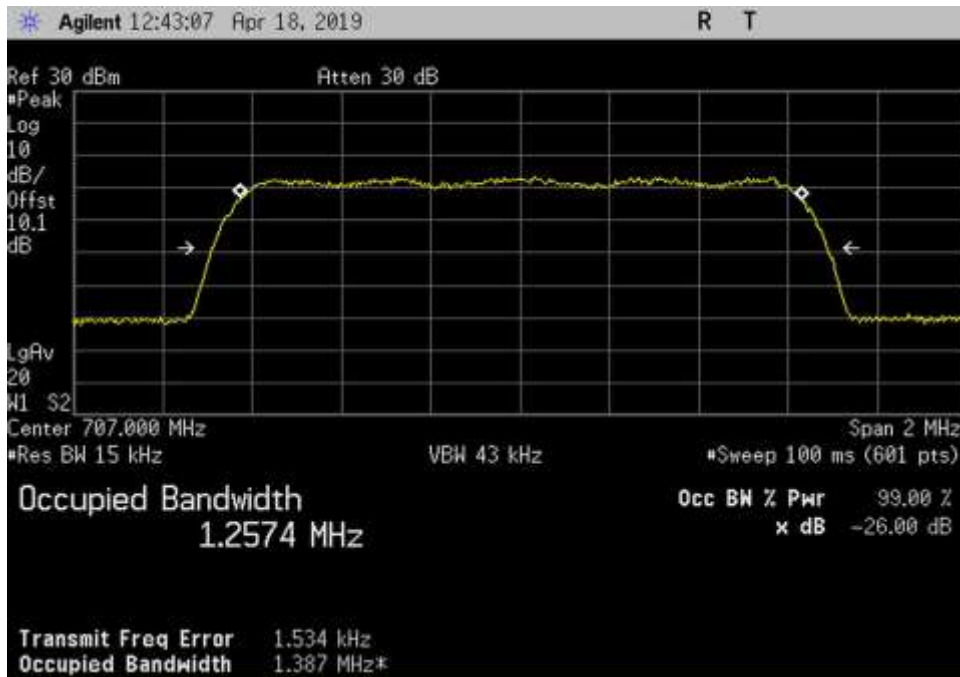
In_DL_2350-2360_CDMA_2355MHz



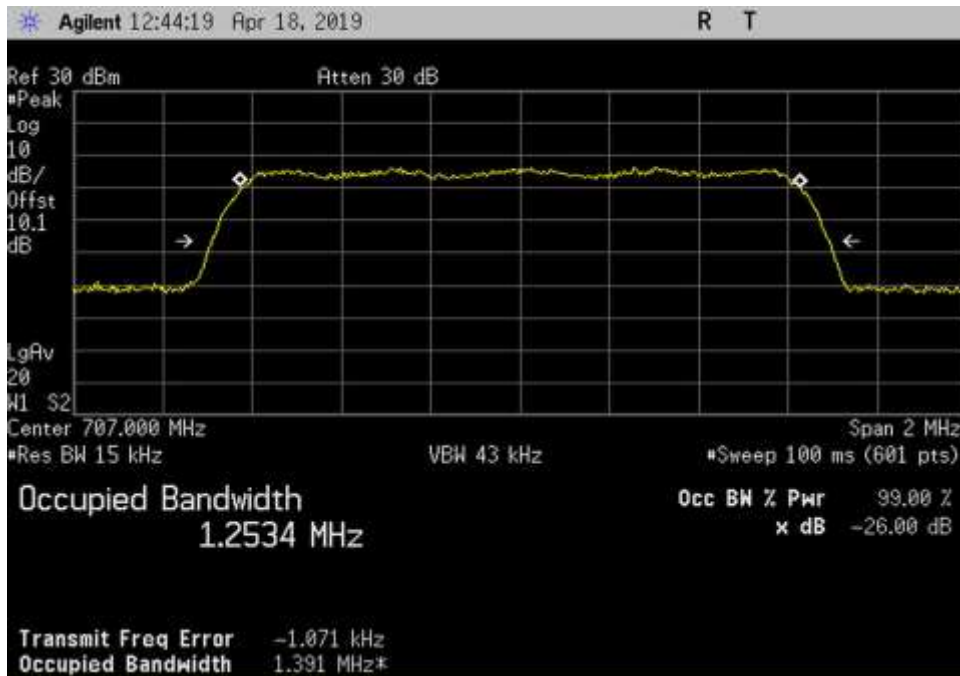
Out_UL_663-698_CDMA_680.5MHz



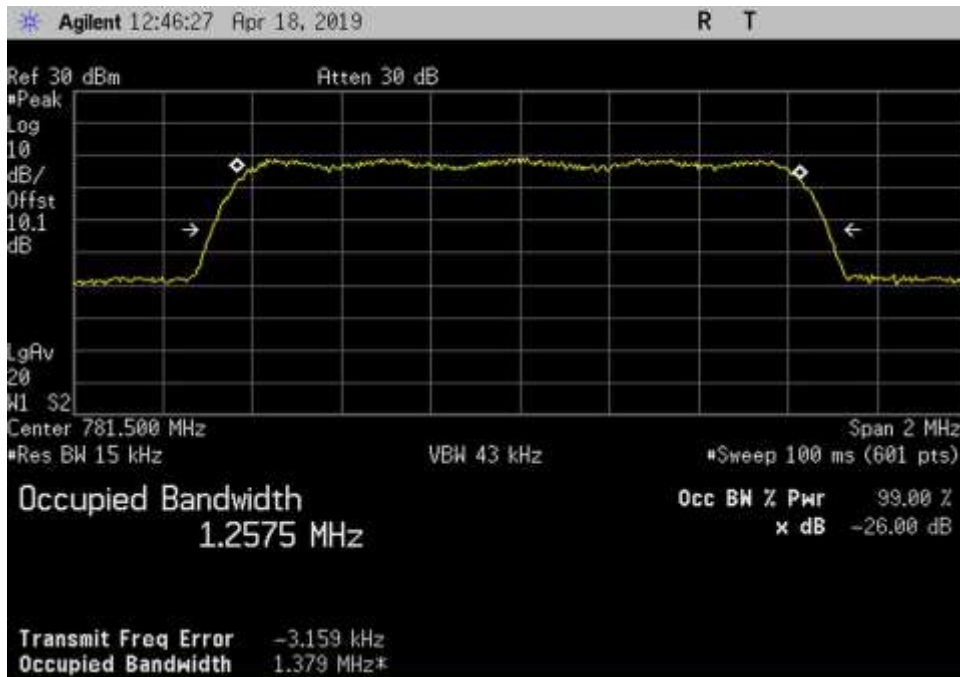
Out_UL_663-698_CDMA_680.5MHz_3dB



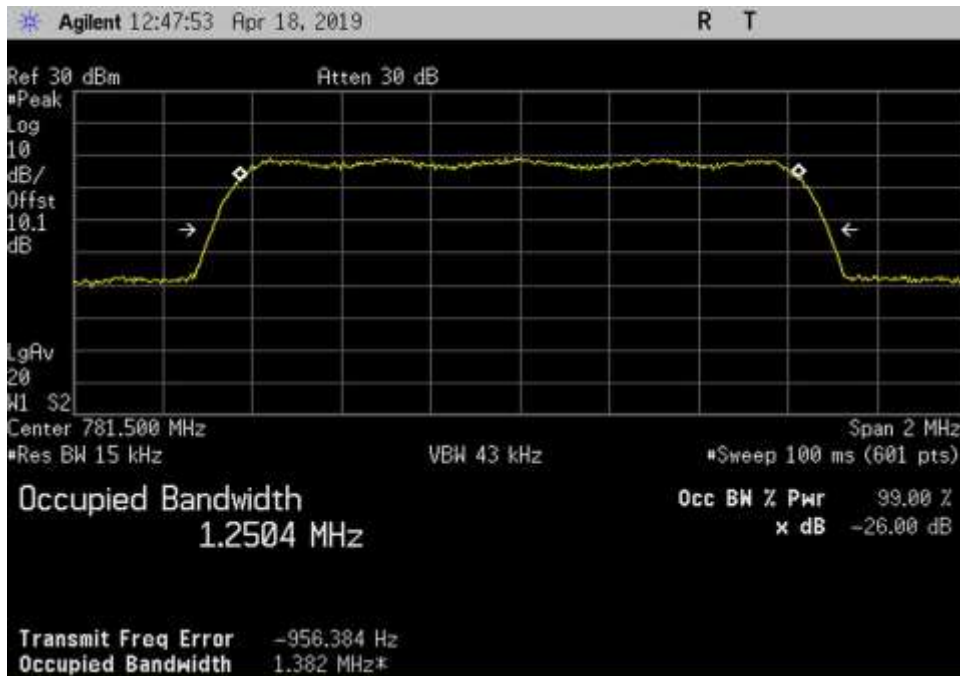
Out_UL_698-716_CDMA_707MHz



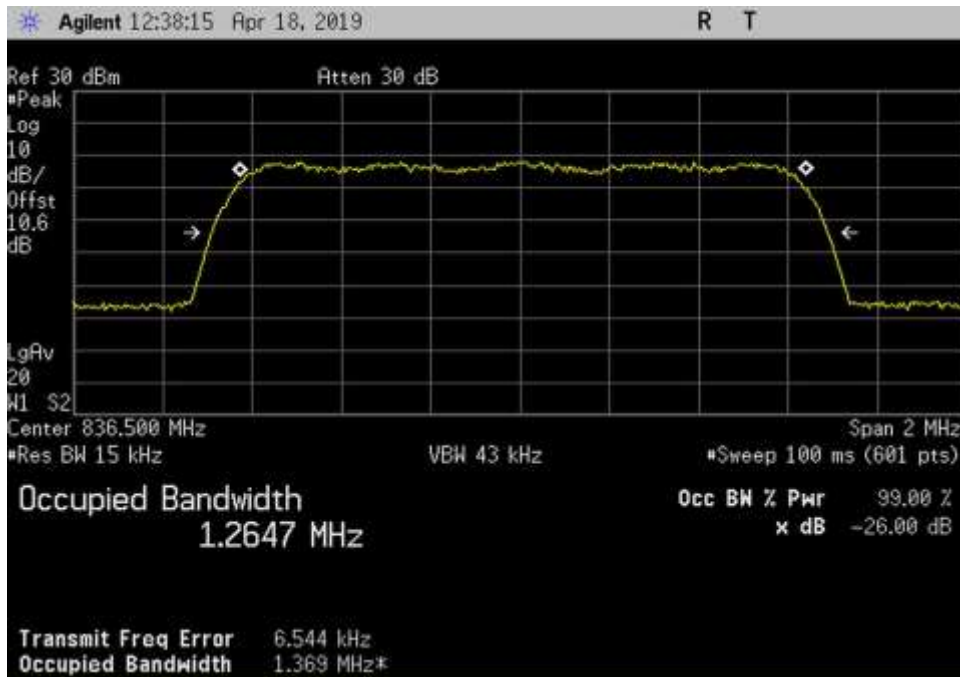
Out_UL_698-716_CDMA_707MHz_3dB



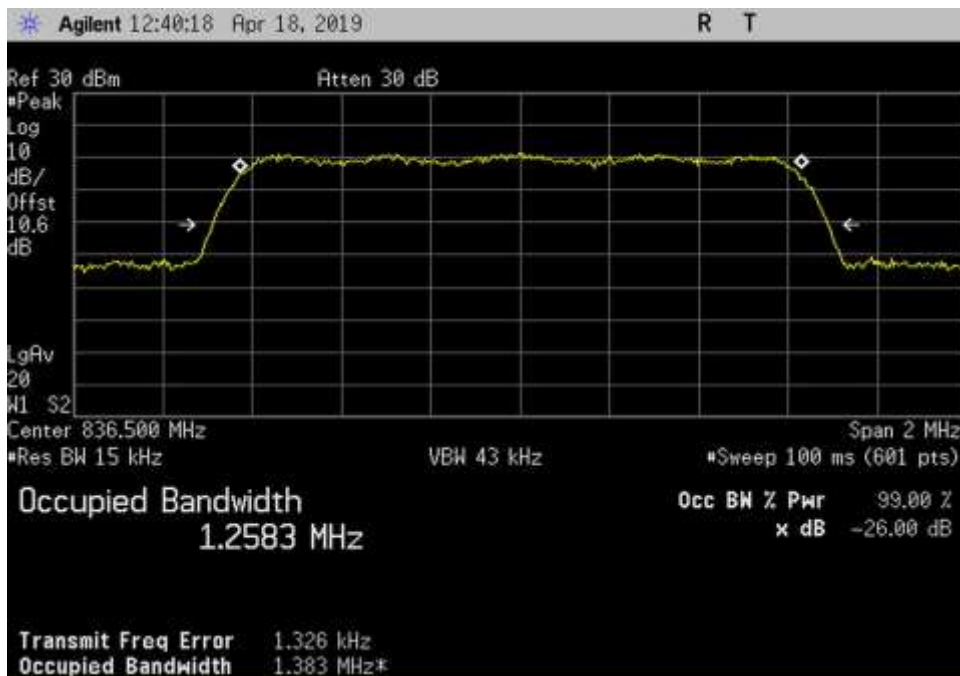
Out_UL_776-787_CDMA_781.5MHz



Out_UL_776-787_CDMA_781.5MHz_3dB



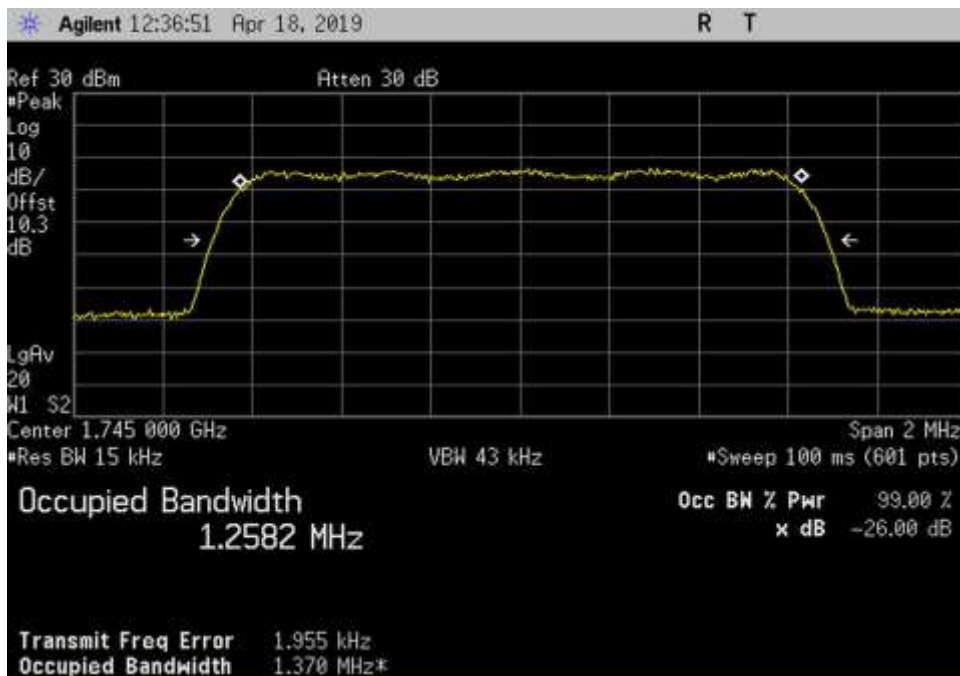
Out_UL_824-849_CDMA_836.5MHz



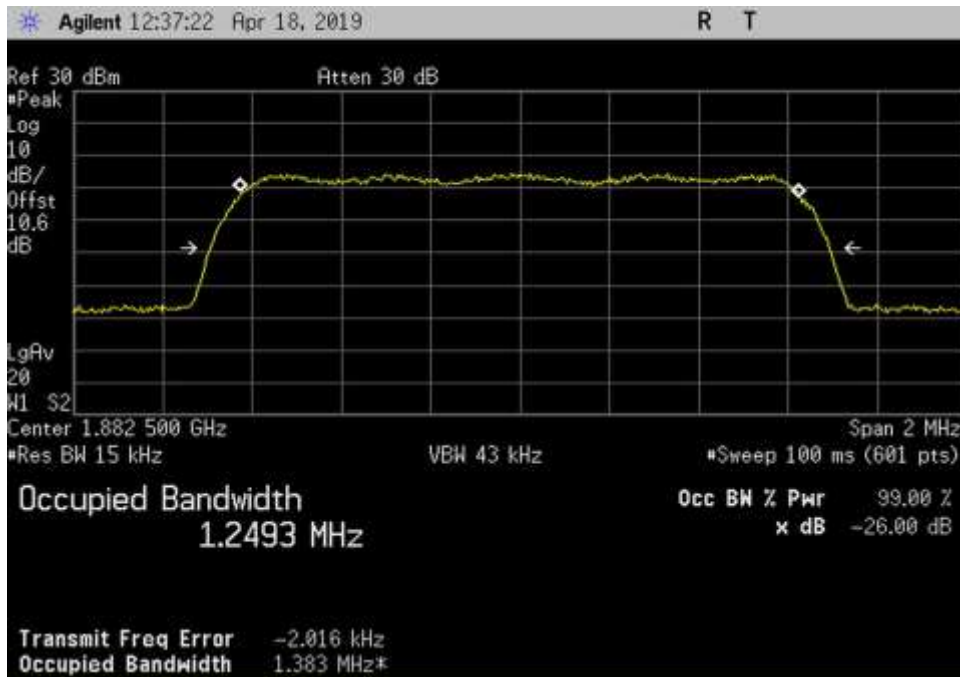
Out_UL_824-849_CDMA_836.5MHz_3dB



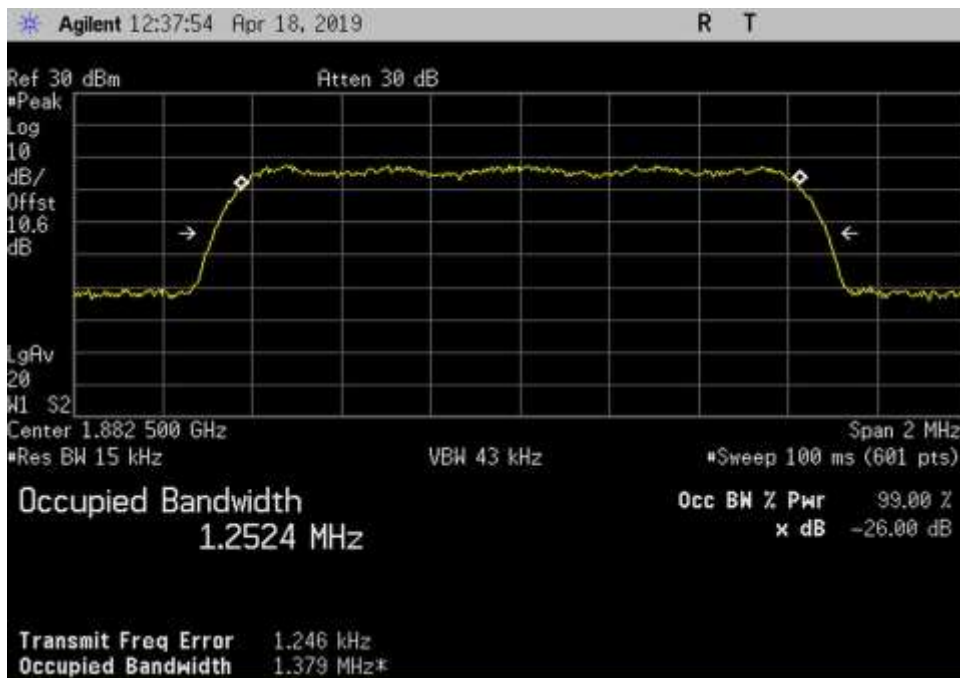
Out_UL_1710-1755_CDMA_1745MHz



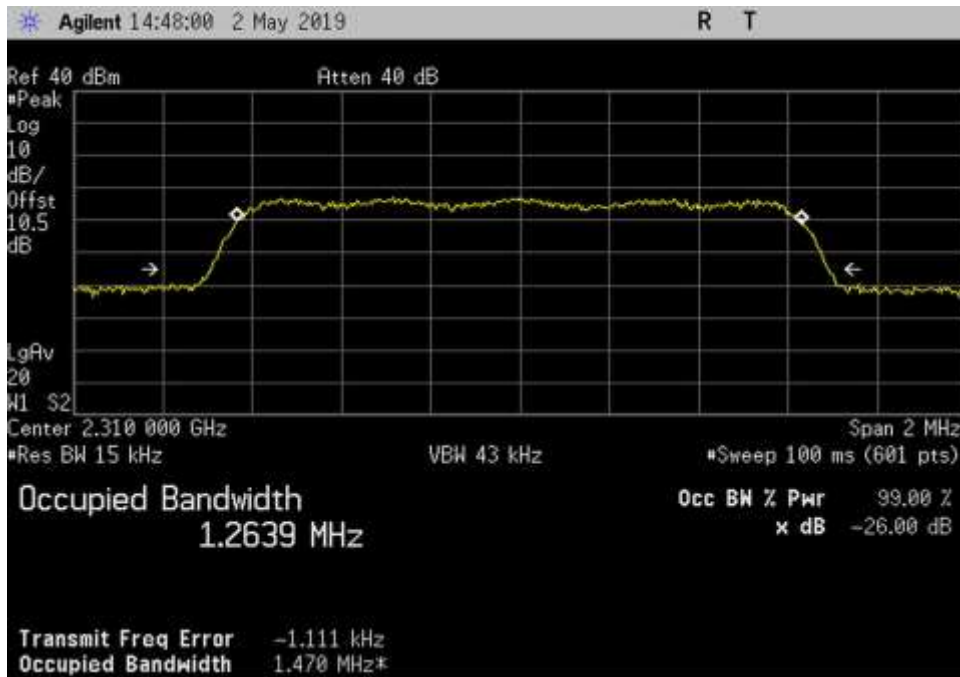
Out_UL_1710-1755_CDMA_1745MHz_3dB



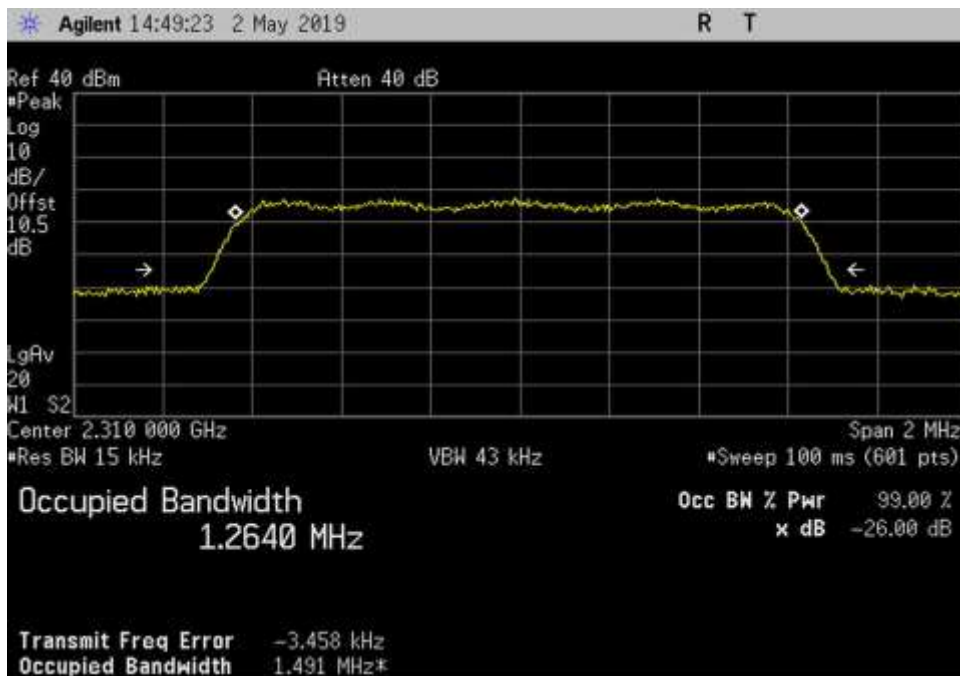
Out_UL_1850-1915_CDMA_1882.5MHz



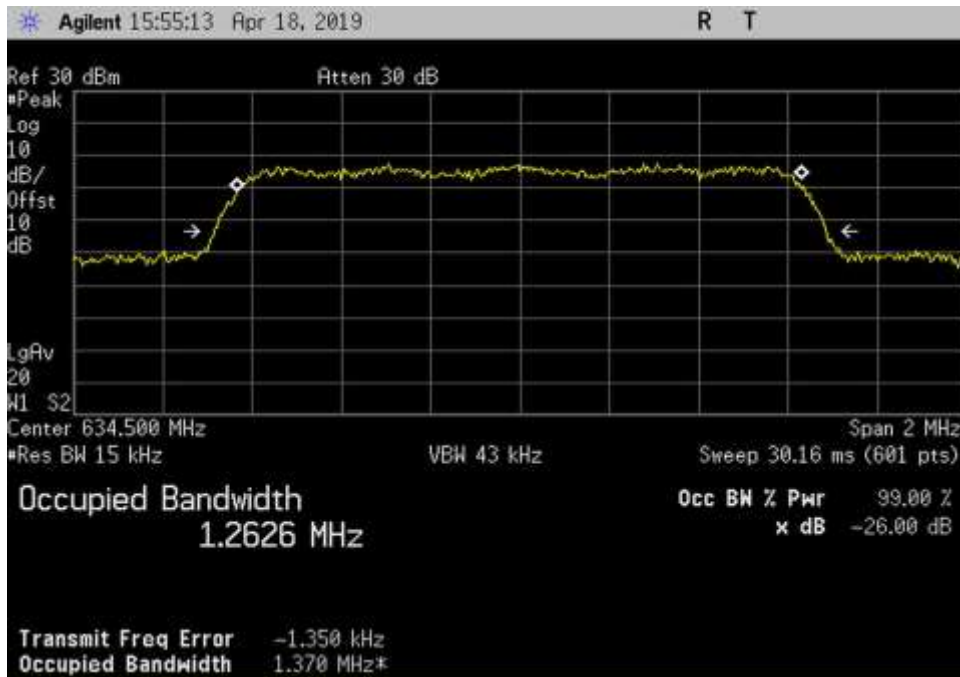
Out_UL_1850-1915_CDMA_1882.5MHz_3dB



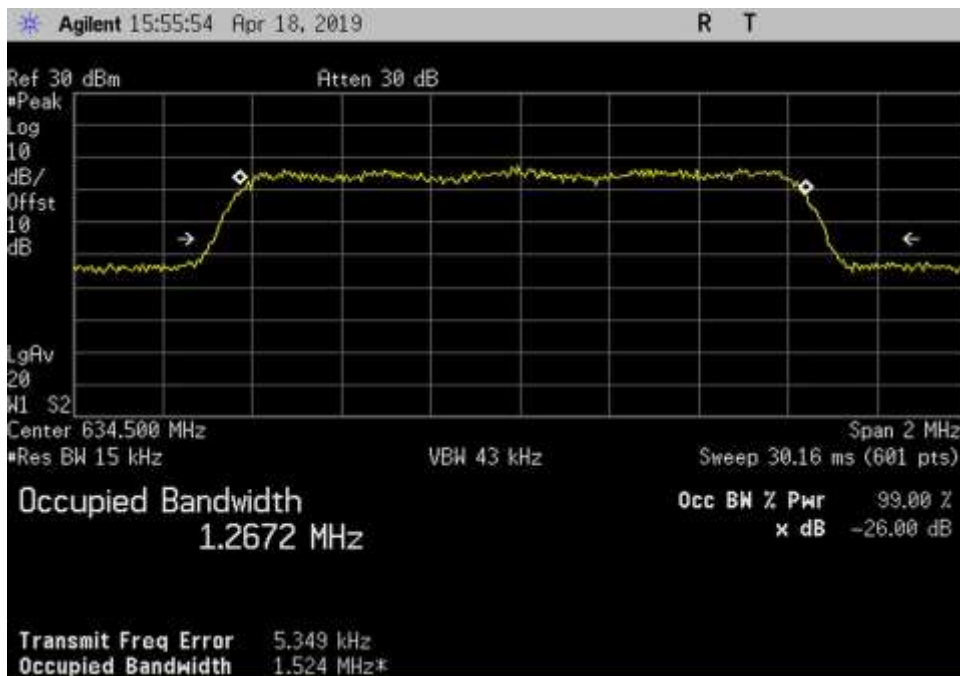
Out_UL_2305-2315_CDMA_2310MHz



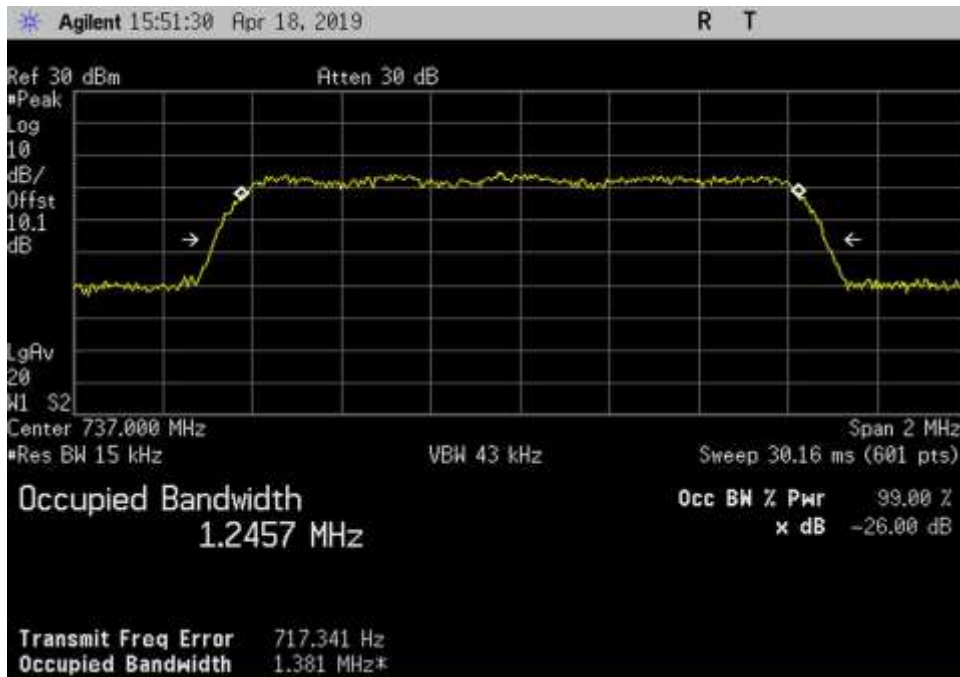
Out_UL_2305-2315_CDMA_2310MHz_3dB



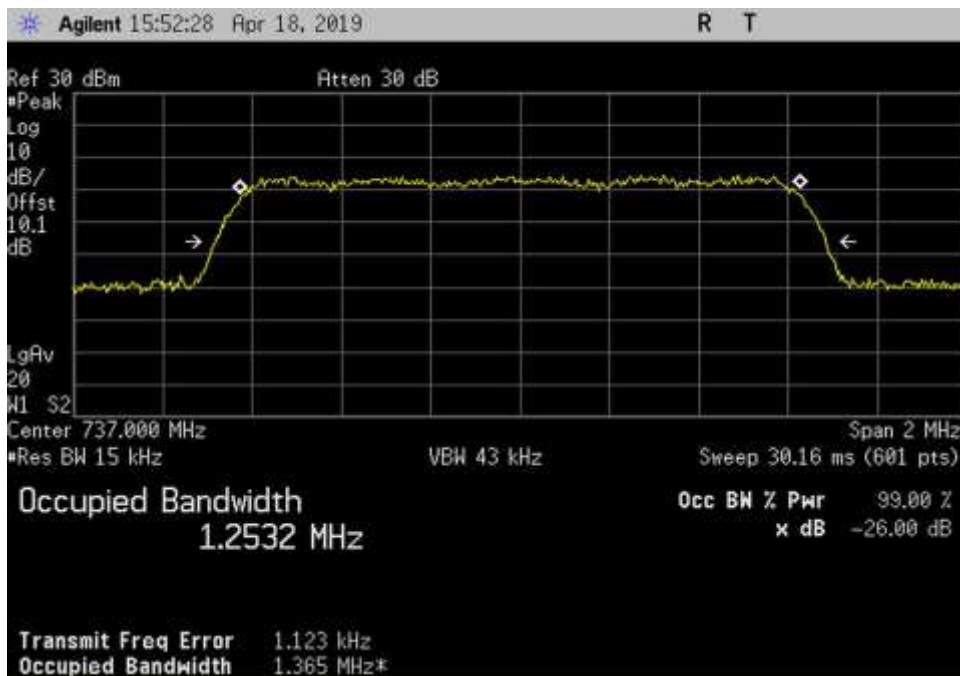
Out_DL_617-652_CDMA_ 634.5MHz



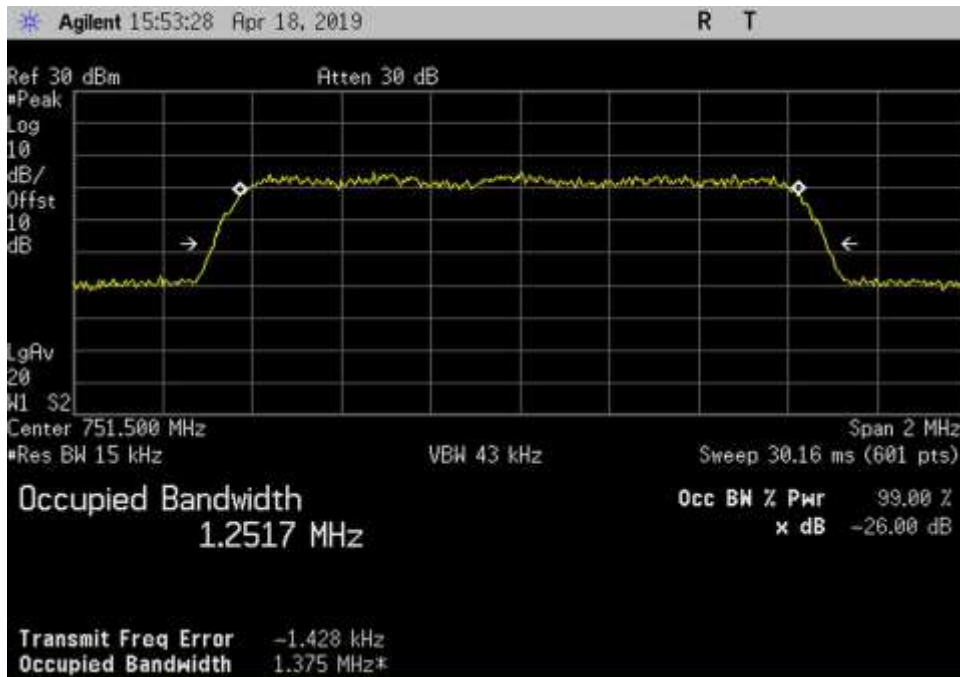
Out_DL_617-652_CDMA_ 634.5MHz_3dB



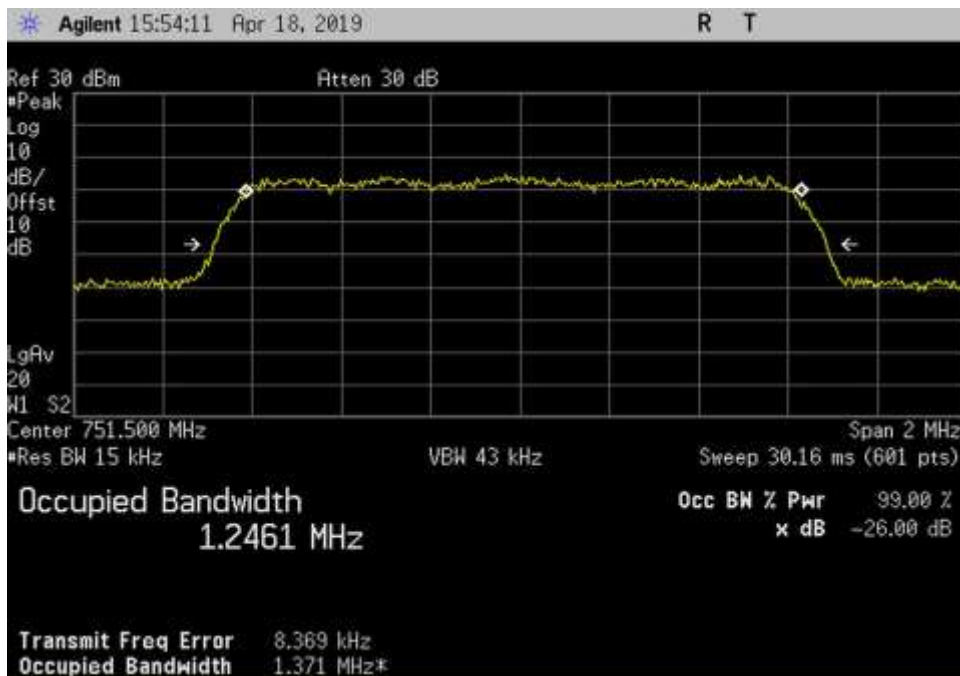
Out_DL_728-746_CDMA_737MHz



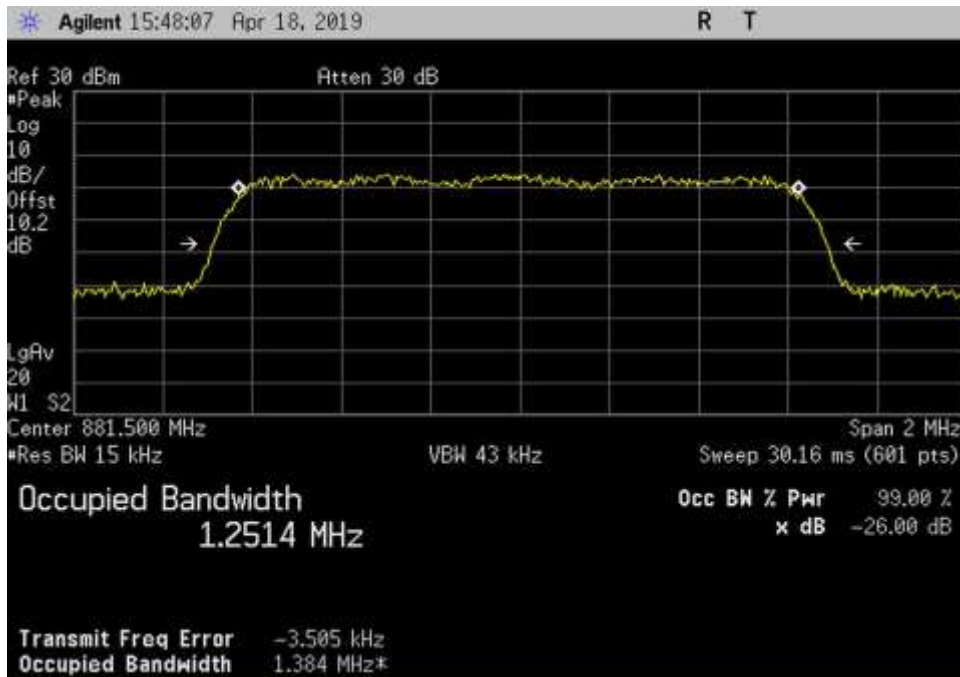
Out_DL_728-746_CDMA_737MHz_3dB



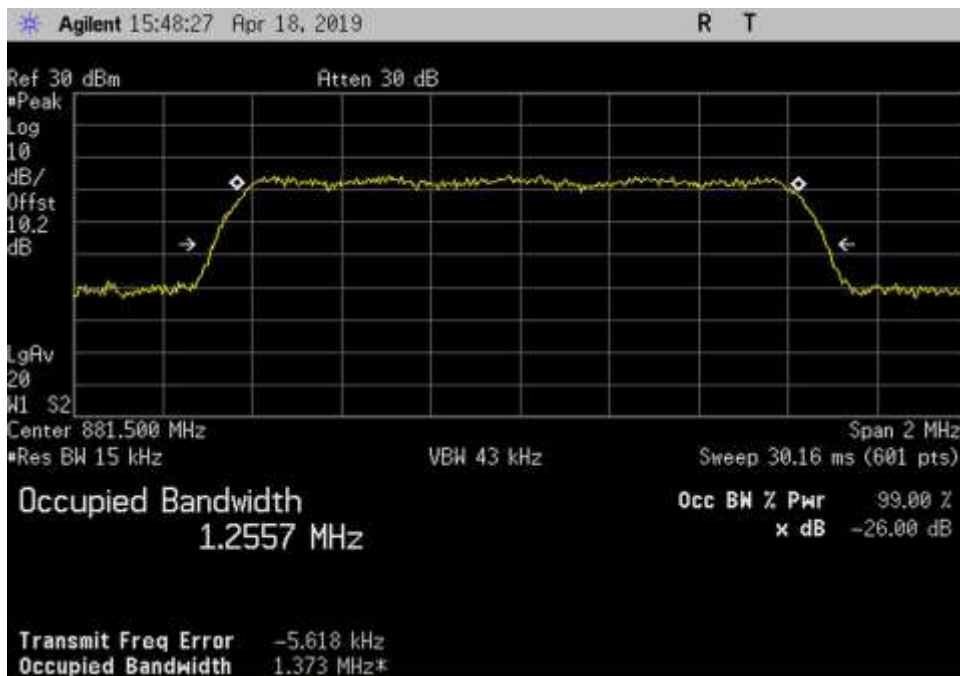
Out_DL_746-757_CDMA_751.5MHz



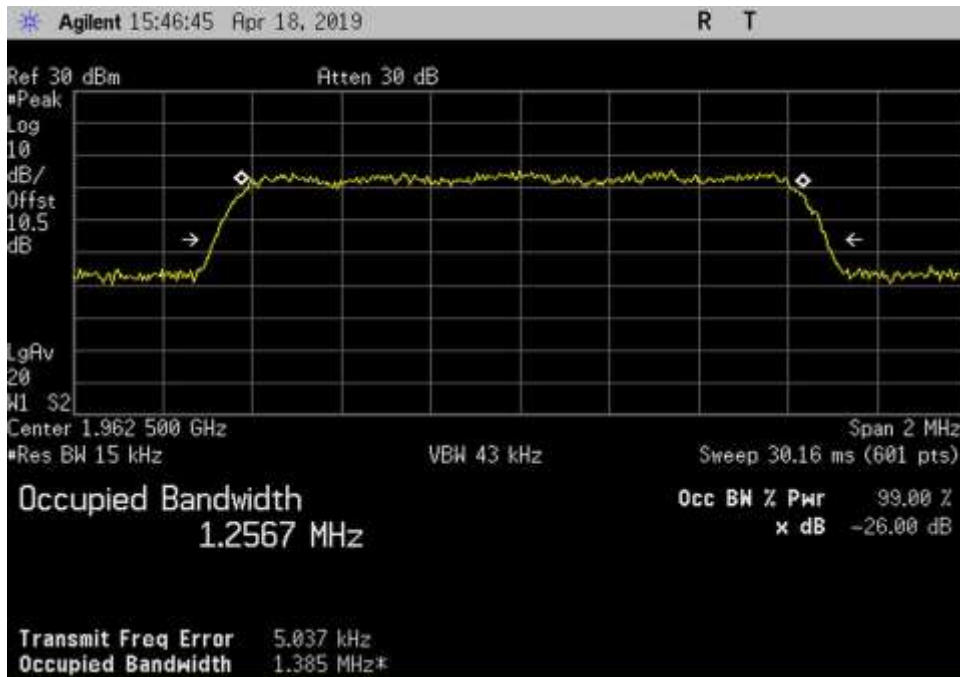
Out_DL_746-757_CDMA_751.5MHz_3dB



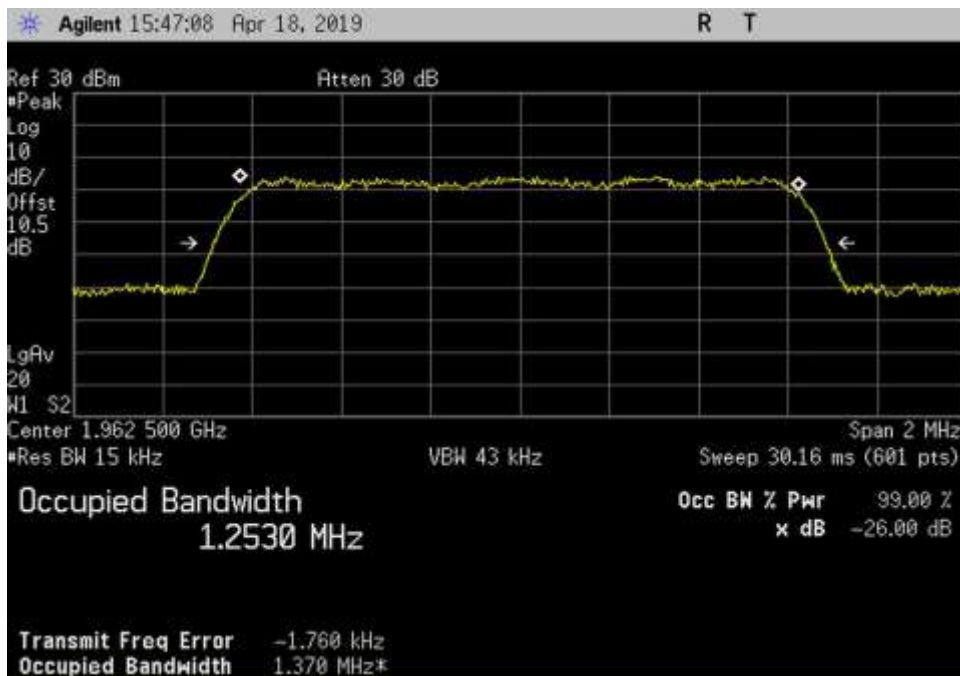
Out_DL_869-894_CDMA_ 881.5MHz



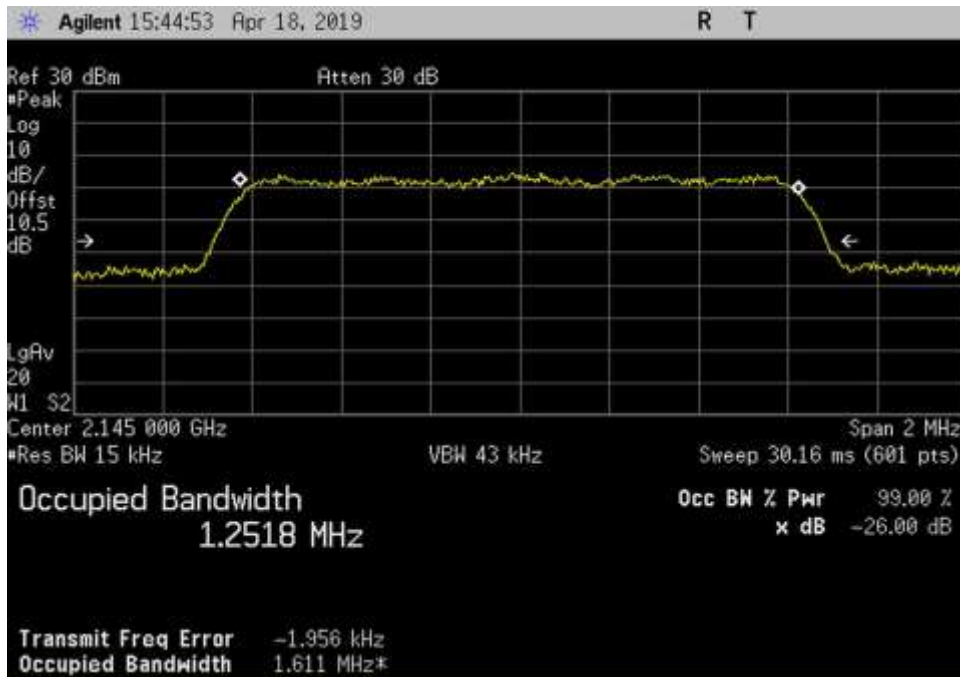
Out_DL_869-894_CDMA_ 881.5MHz_3dB



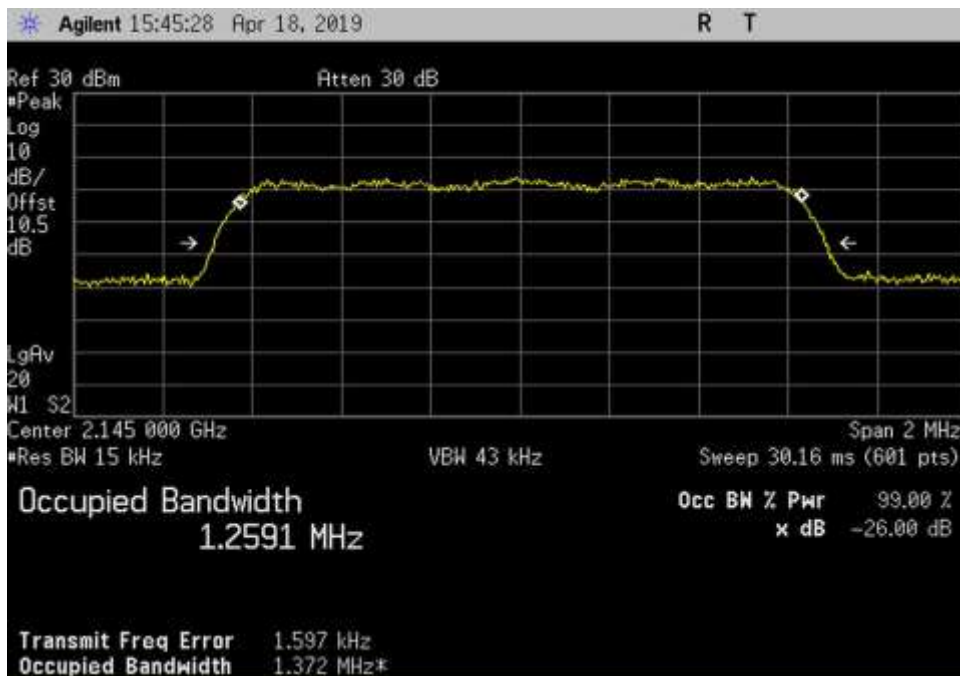
Out_DL_1930-1995_CDMA_1962.5MHz



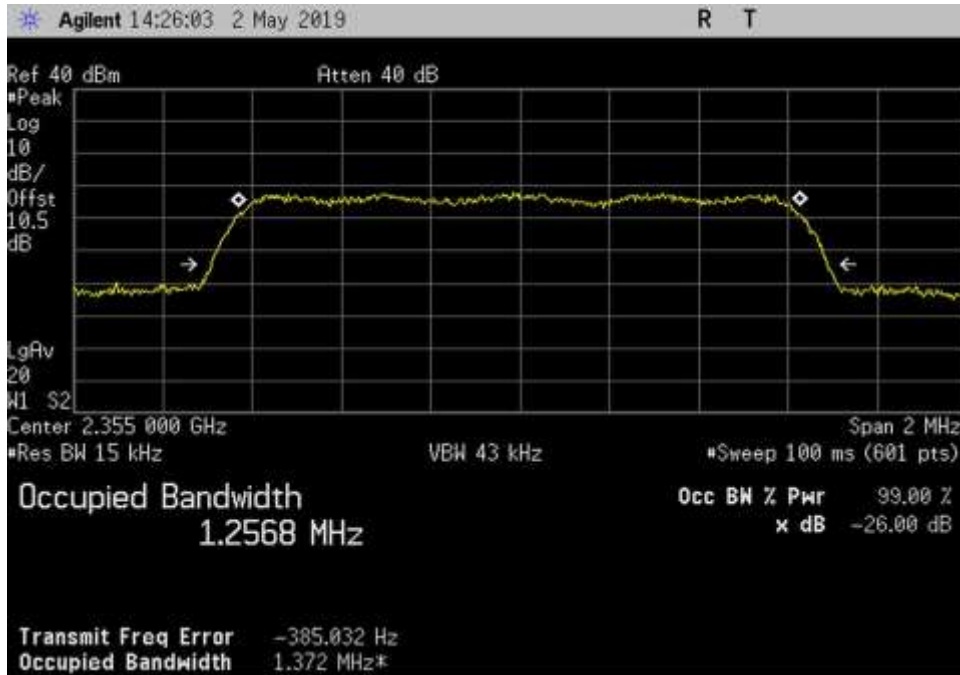
Out_DL_1930-1995_CDMA_1962.5MHz_3dB



Out_DL_2110-2155_CDMA_2145MHz



Out_DL_2110-2155_CDMA_2145MHz_3dB

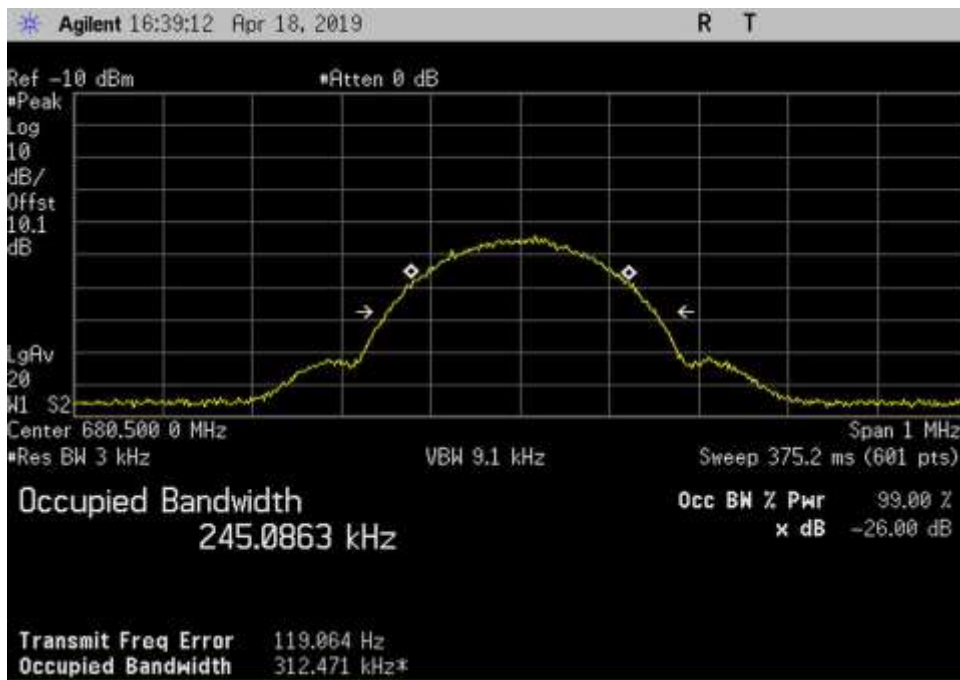


Out_DL_2350-2360_CDMA_2355MHz

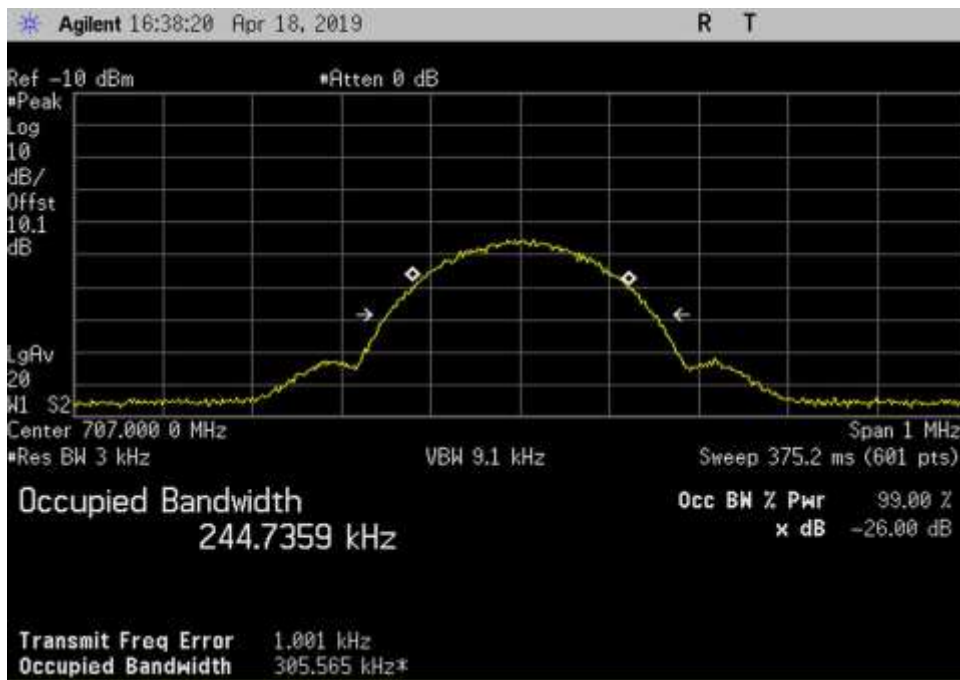


Out_DL_2350-2360_CDMA_2355MHz_3dB

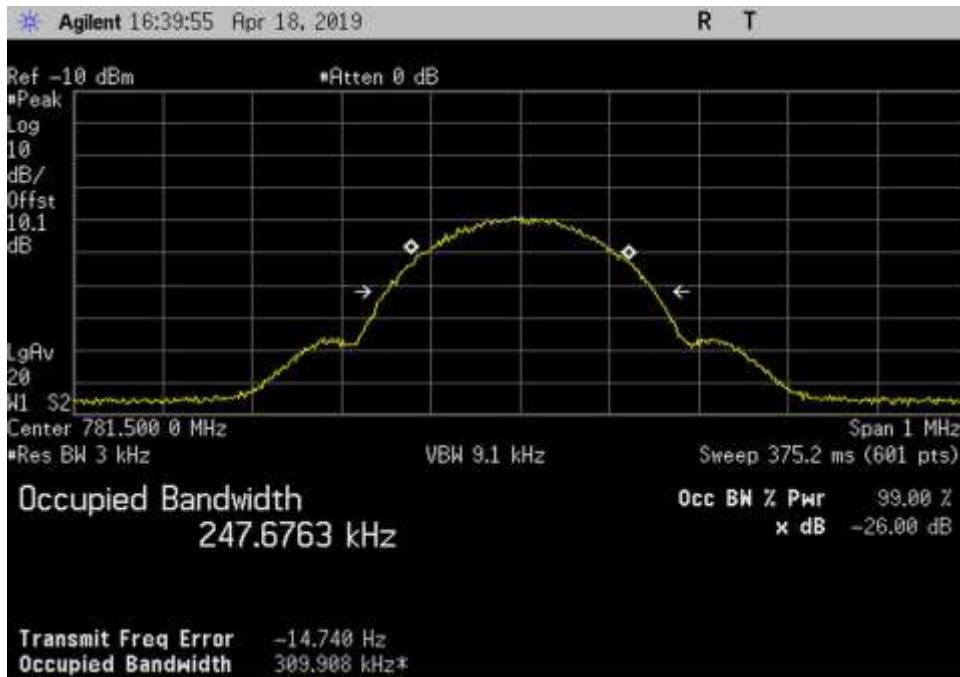
GSM



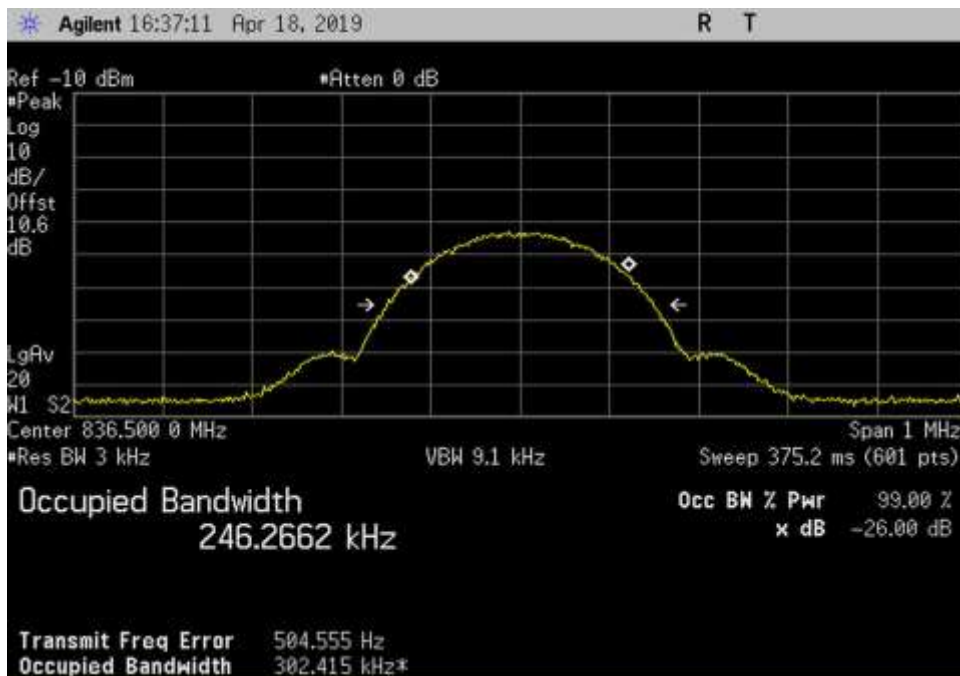
In_UL_663-698_GSM_680.5MHz



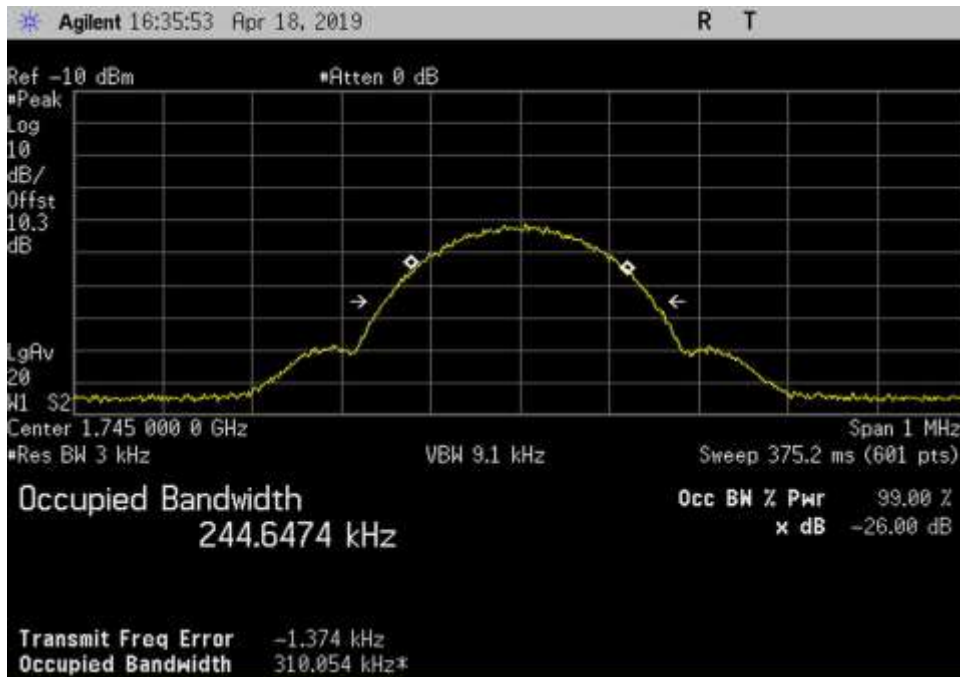
In_UL_698-716_GSM_707MHz



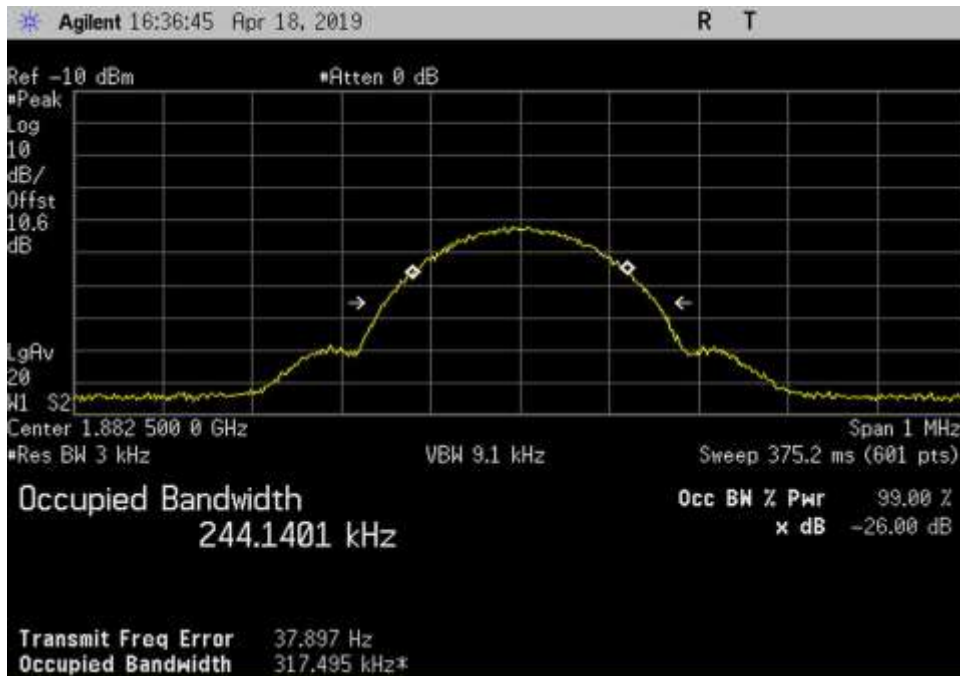
In_UL_776-787_GSM_781.5MHz



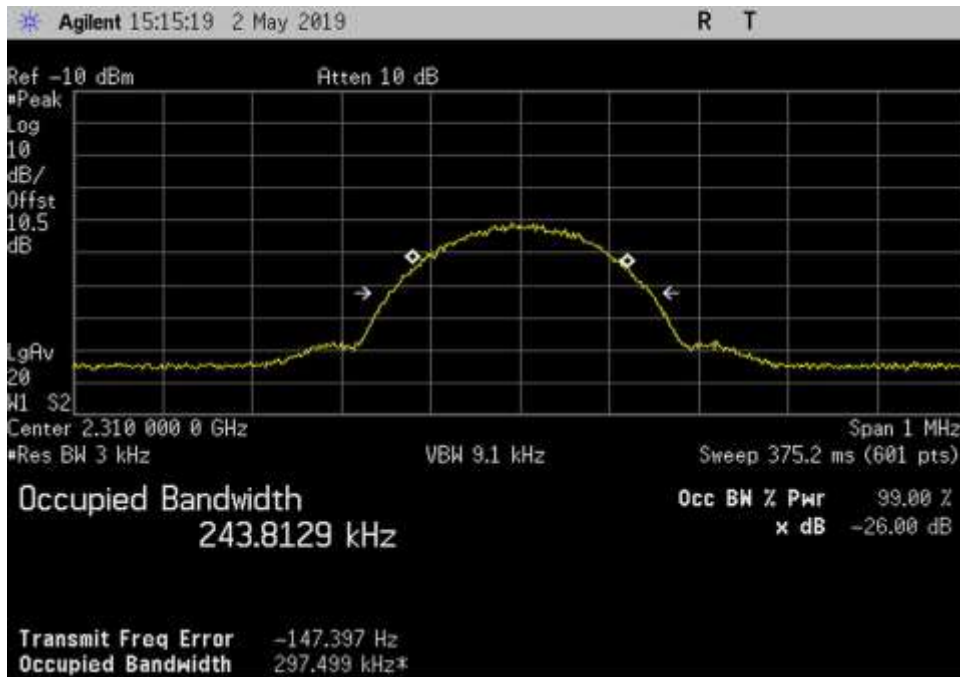
In_UL_824-849_GSM_836.5MHz



In_UL_1710-1755_GSM_1745MHz



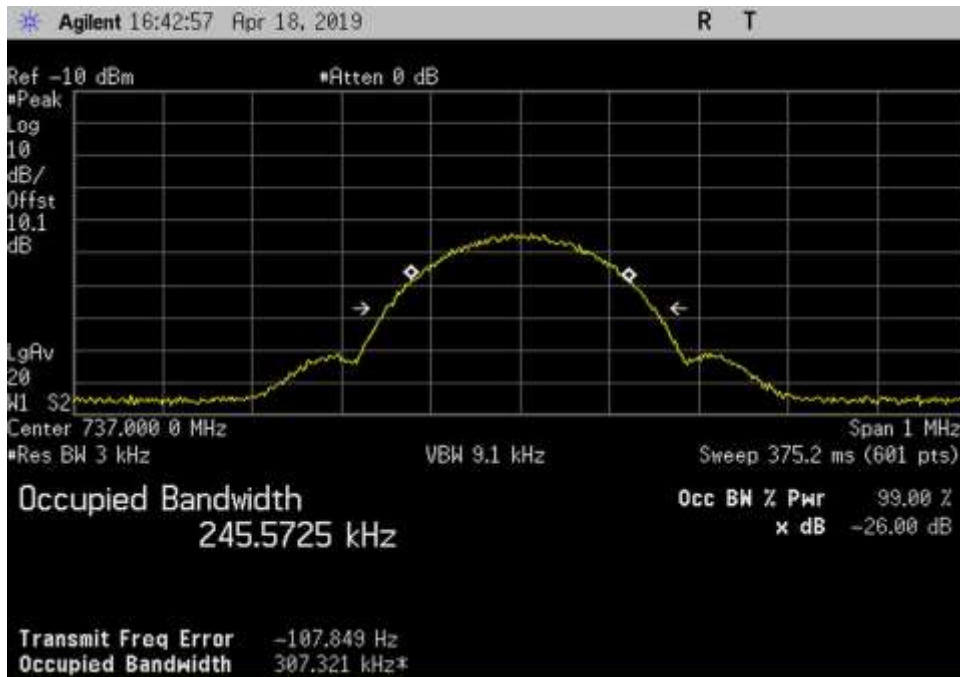
In_UL_1850-1915_GSM_1882.5MHz



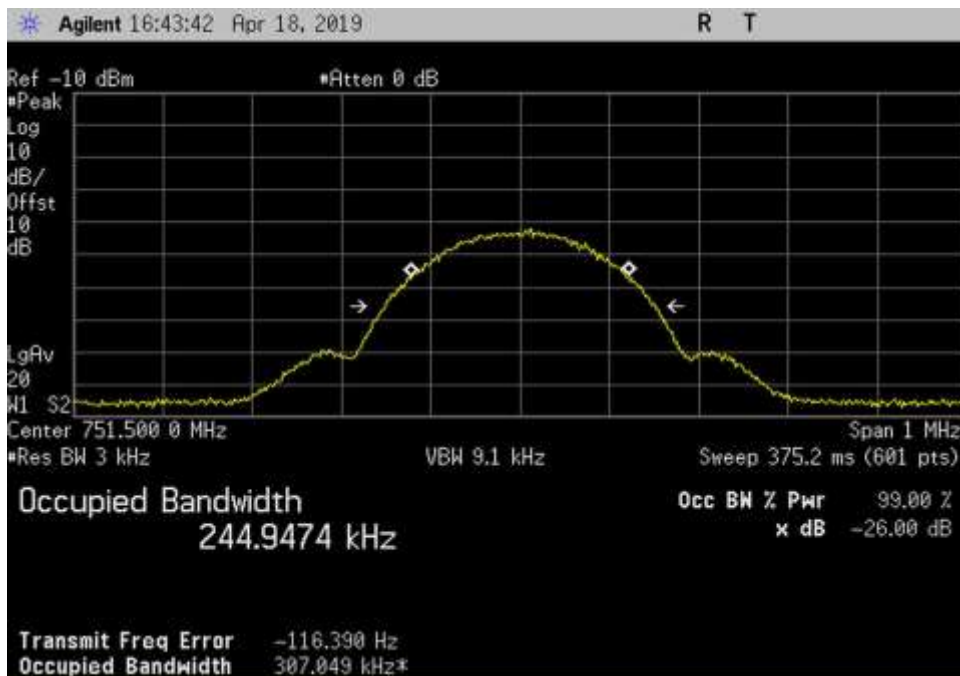
In_UL_2305-2315_GSM_2310MHz



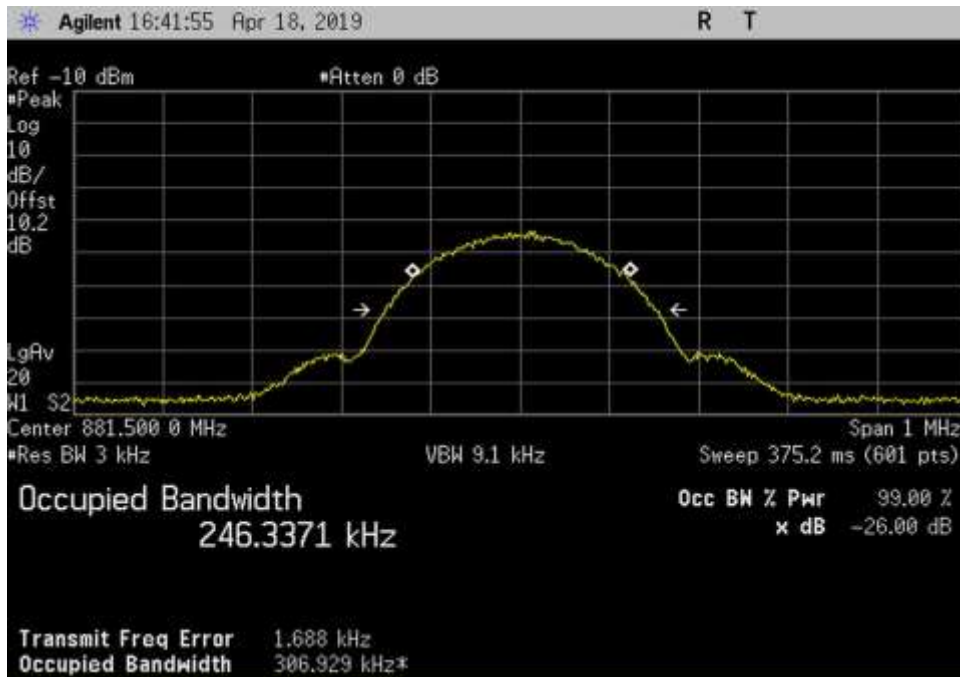
In_DL_617-652_GSM_634.5MHz



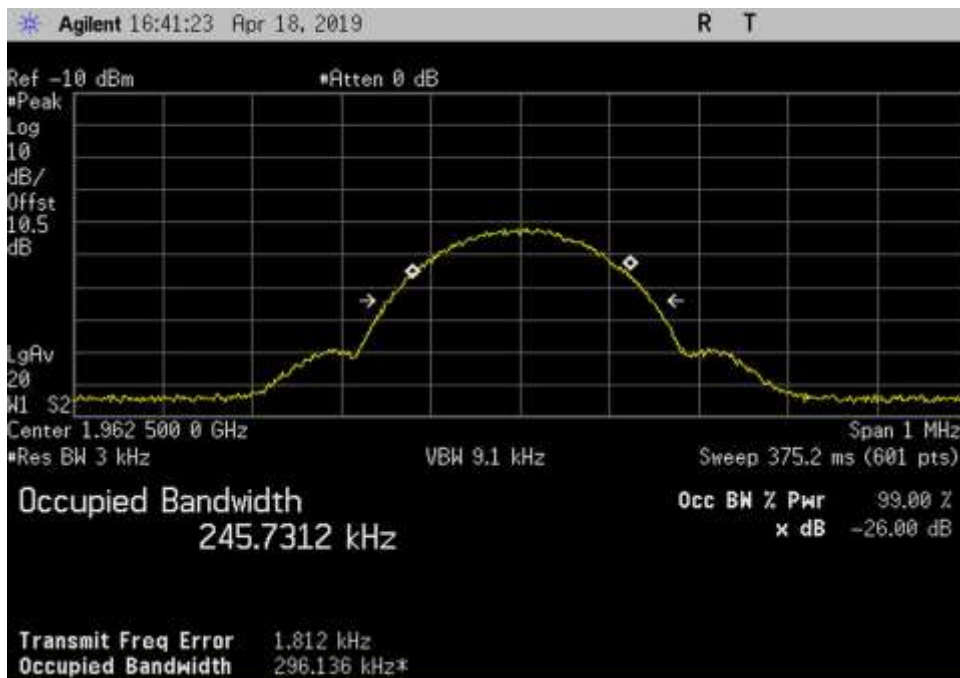
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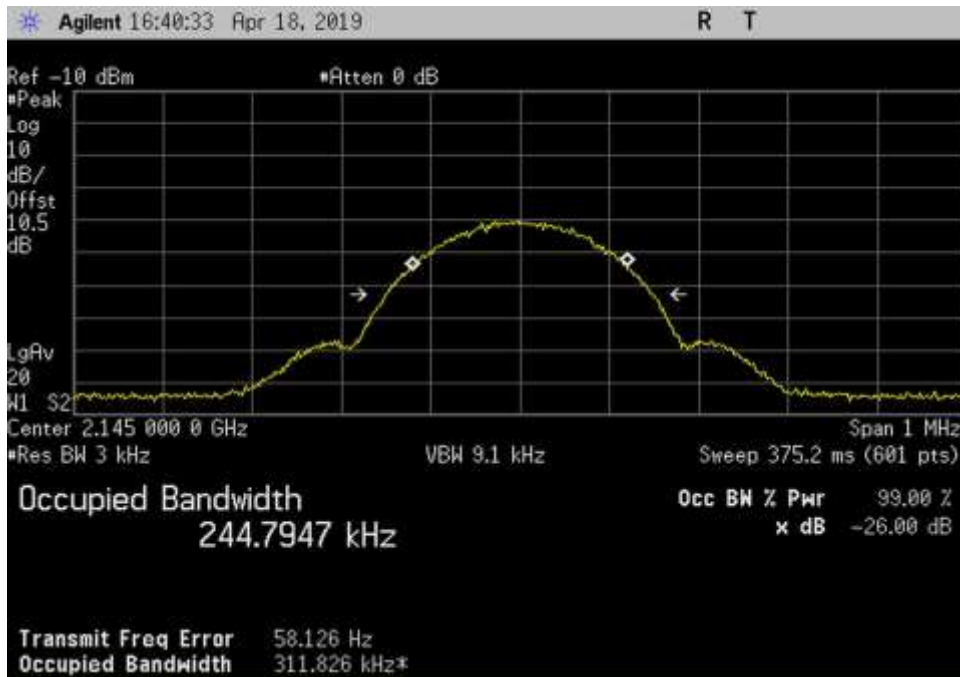
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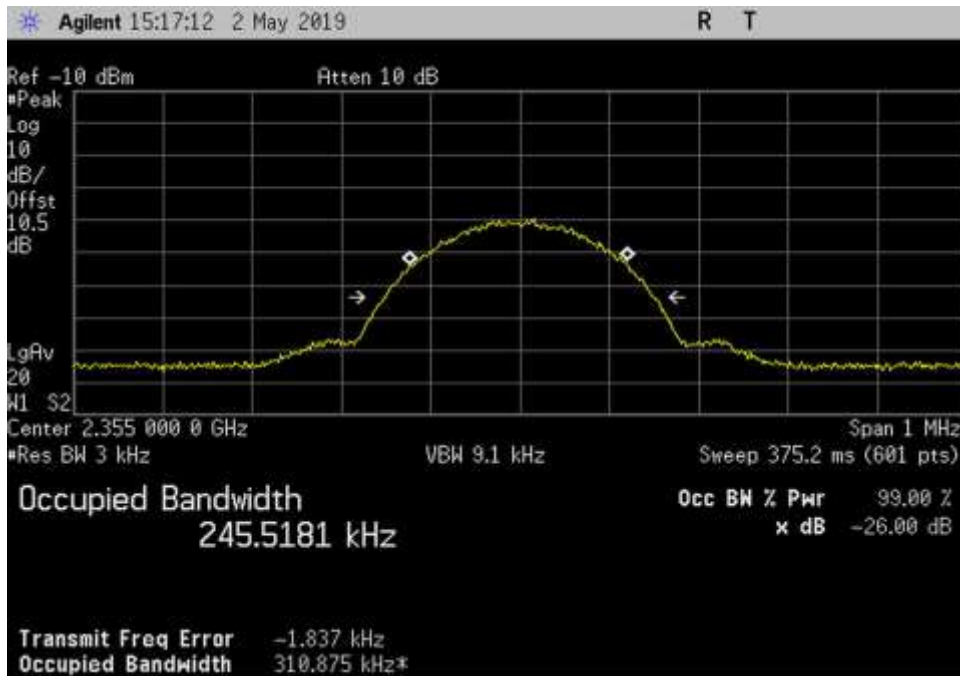
In_DL_869-894_GSM_881.5MHz



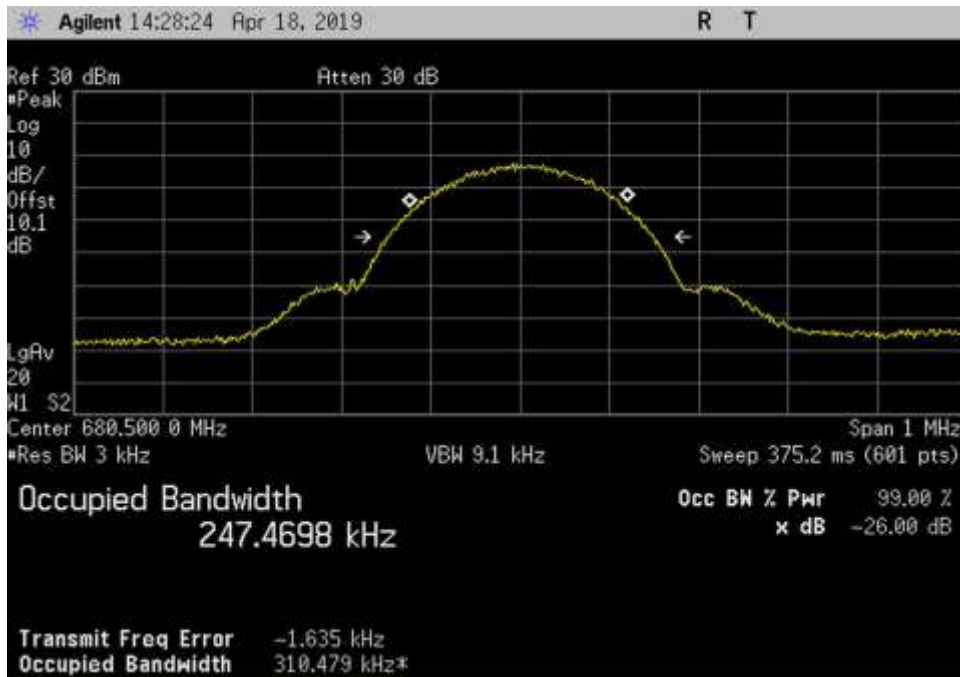
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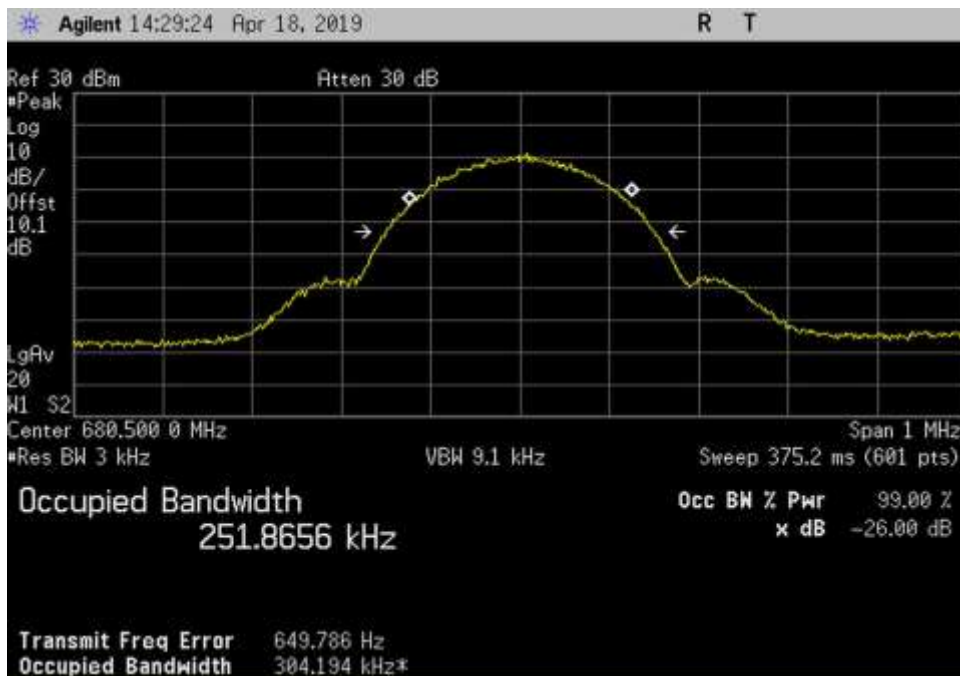
In_DL_2110-2155_GSM_2145MHz



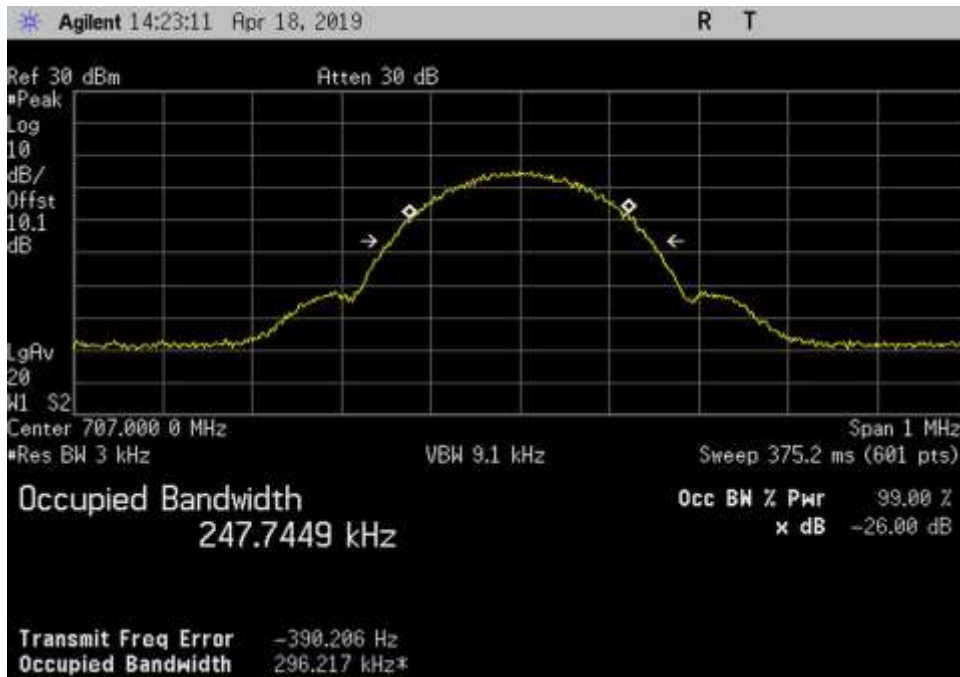
In_DL_2350-2360_GSM_2355MHz



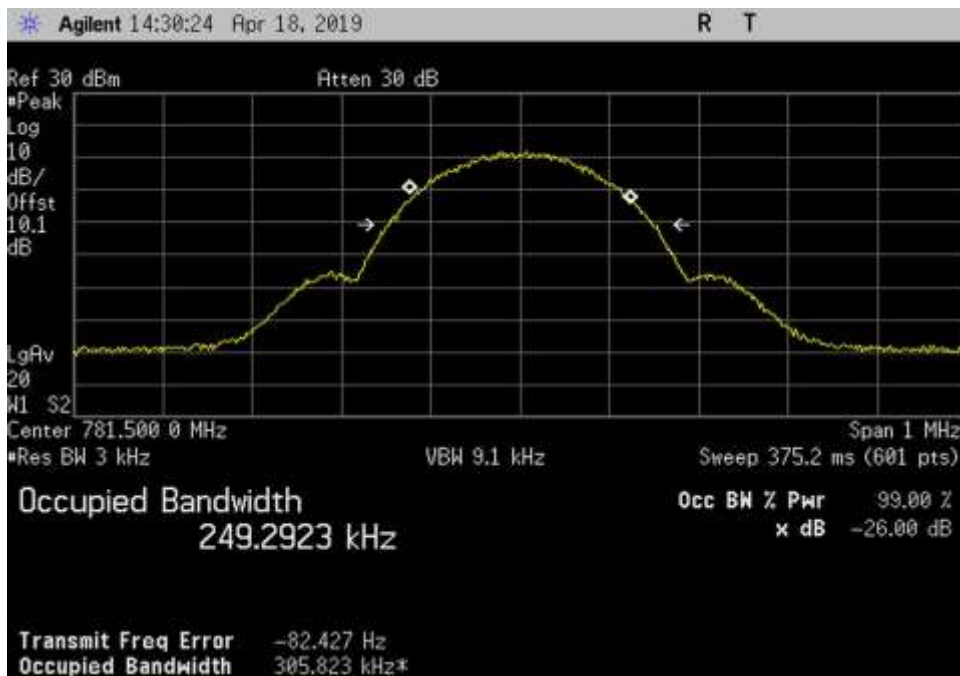
Out_UL_663-698_GSM_680.5MHz



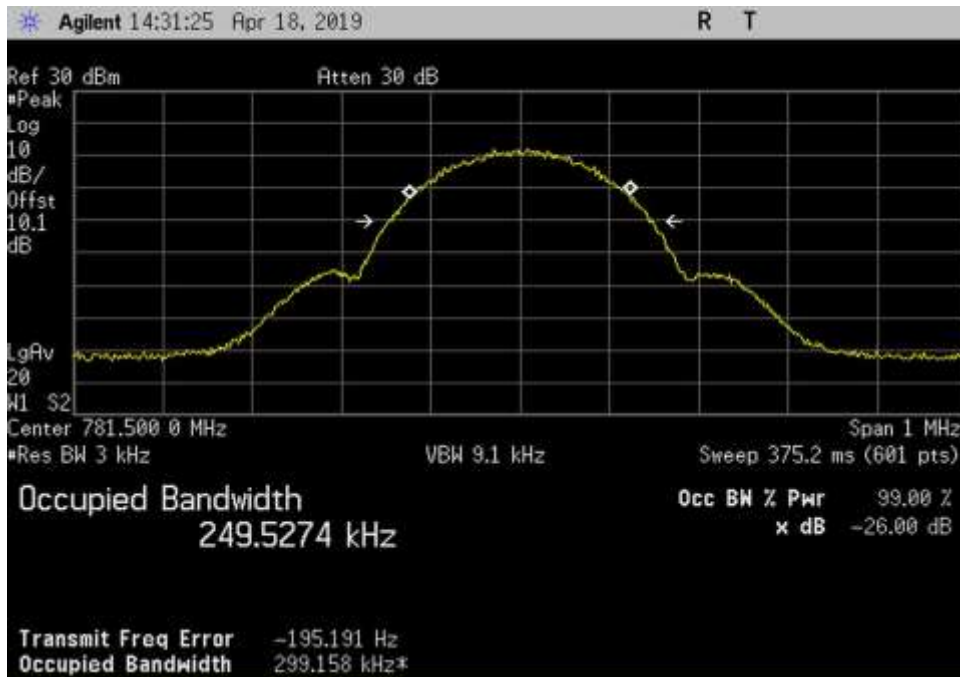
Out_UL_663-698_GSM_680.5MHz_3dB



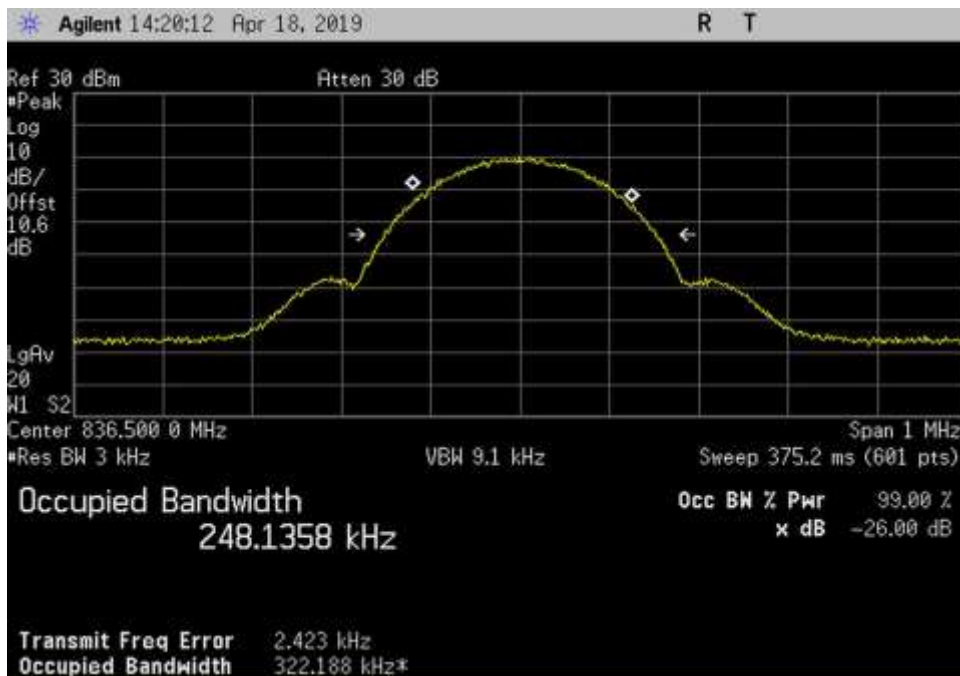
Out_UL_698-716_GSM_707MHz



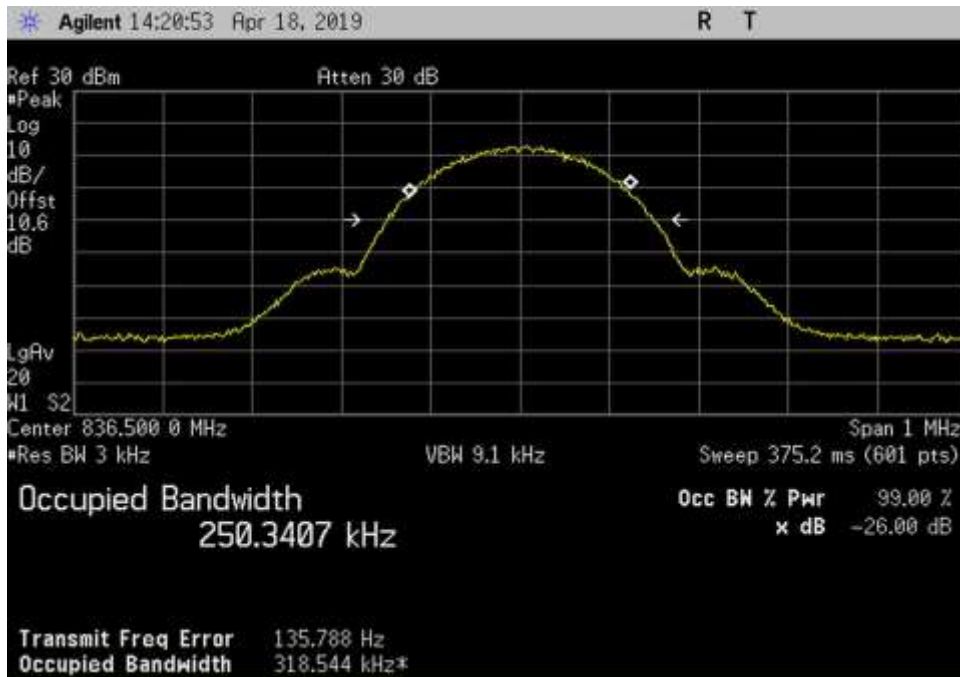
Out_UL_776-787_GSM_781.5MHz



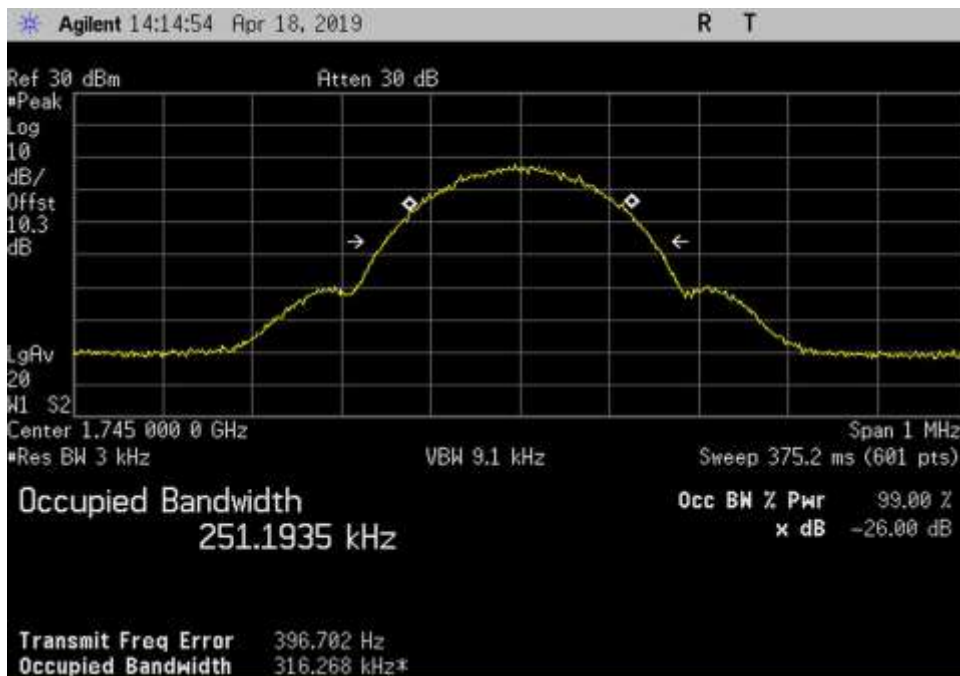
Out_UL_776-787_GSM_781.5MHz_3dB



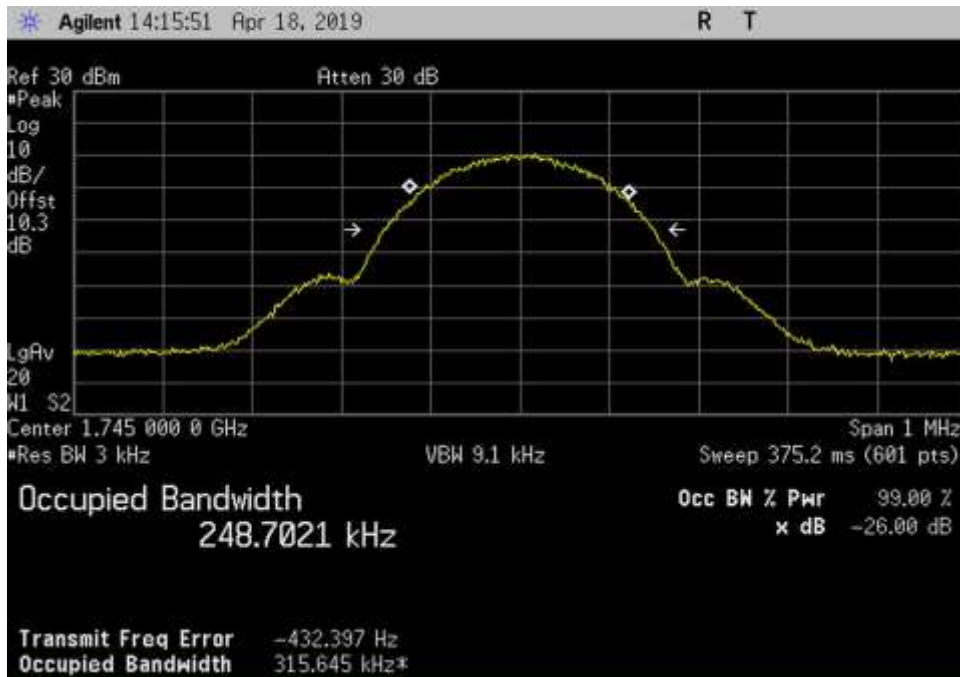
Out_UL_824-849_GSM_836.5MHz



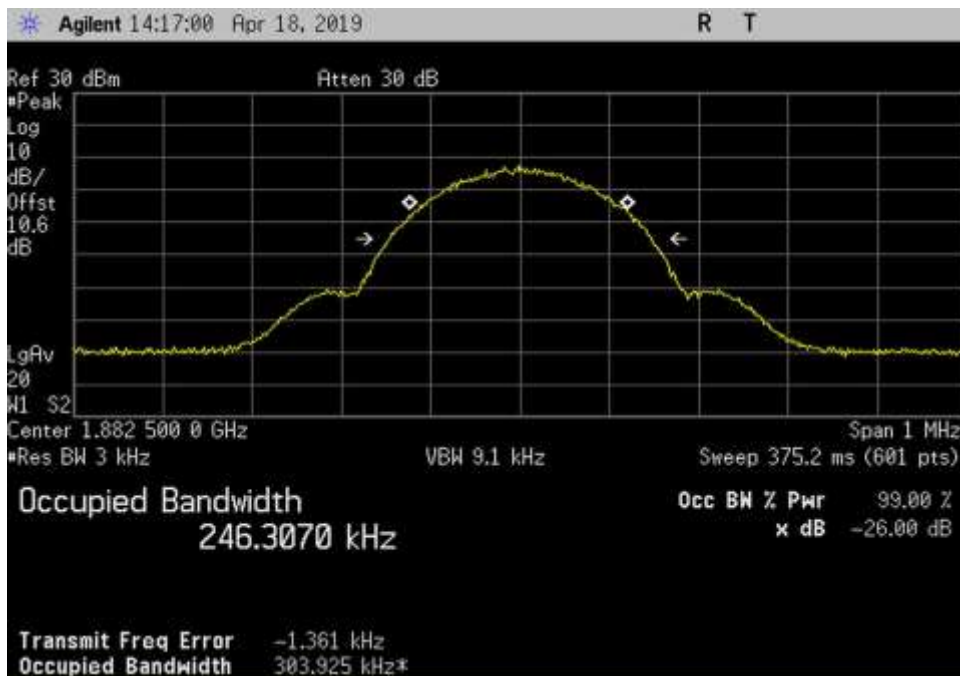
Out_UL_824-849_GSM_836.5MHz_3dB



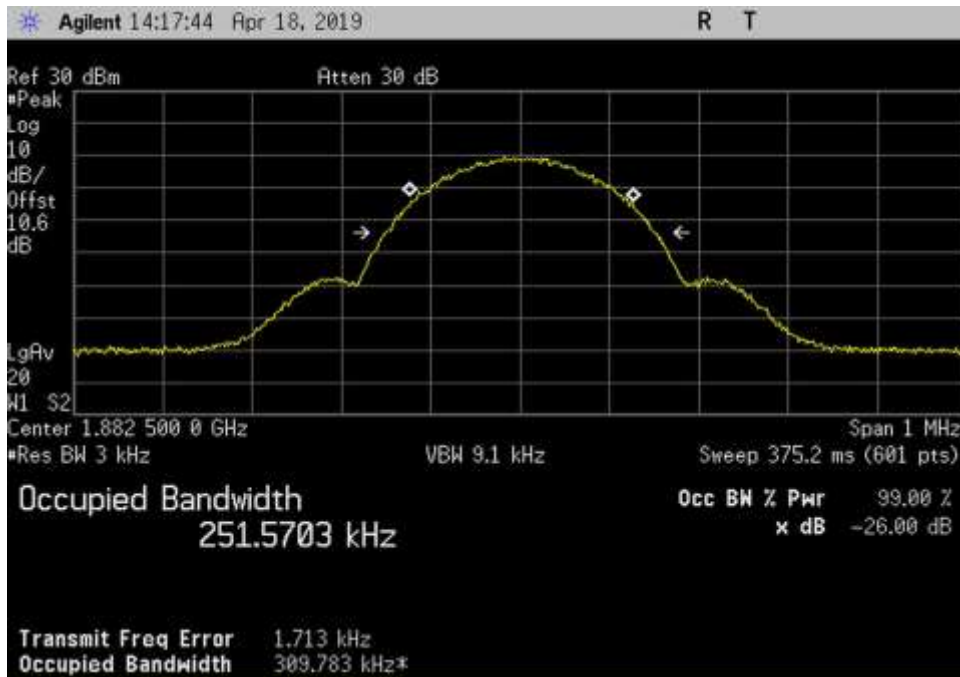
Out_UL_1710-1755_GSM_1745MHz.



Out_UL_1710-1755_GSM_1745MHz_3dB



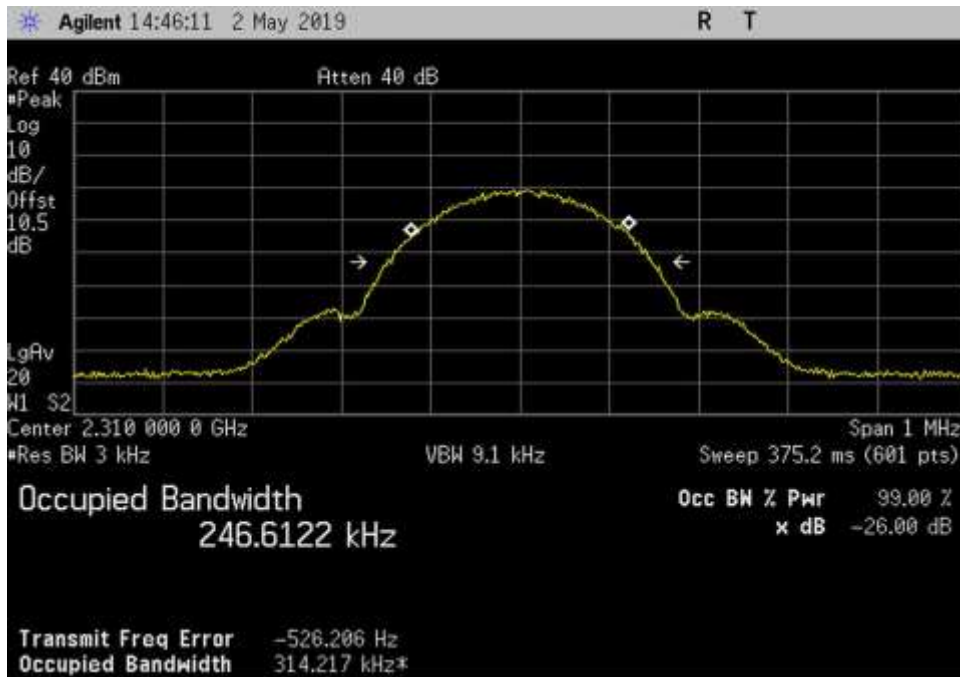
Out_UL_1850-1915_GSM_1882.5MHz



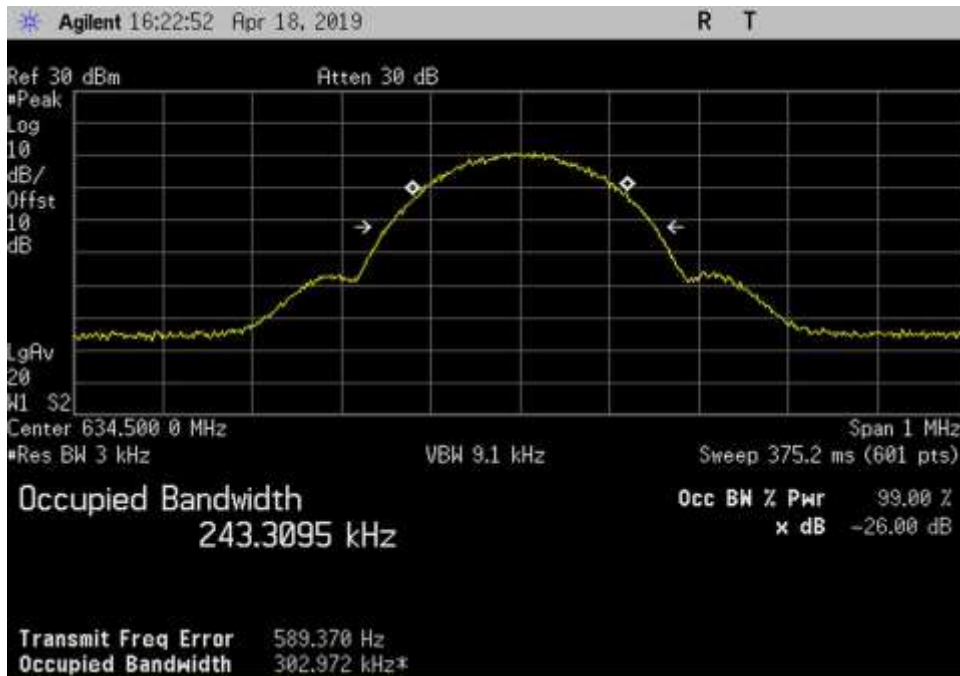
Out_UL_1850-1915_GSM_1882.5MHz_3dB



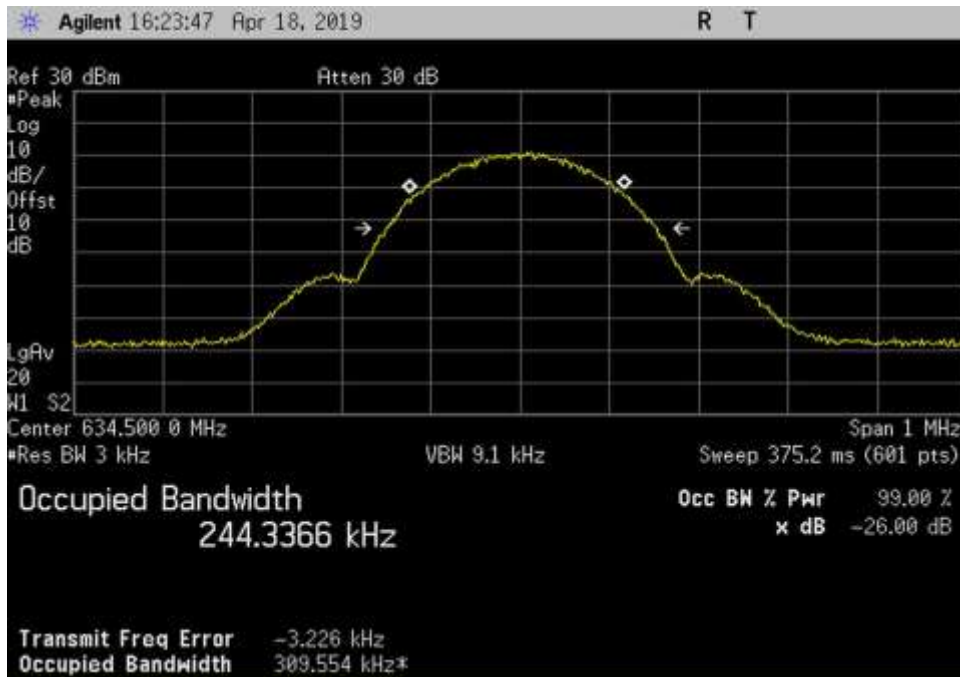
Out_UL_2305-2315_GSM_2310MHz



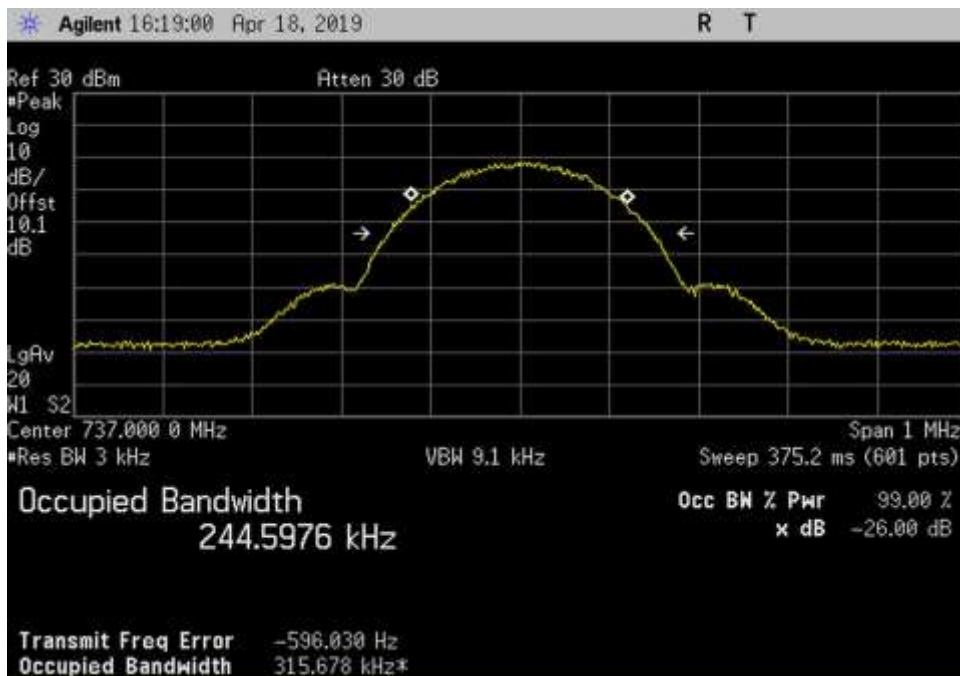
Out_UL_2305-2315_GSM_2310MHz_3dB



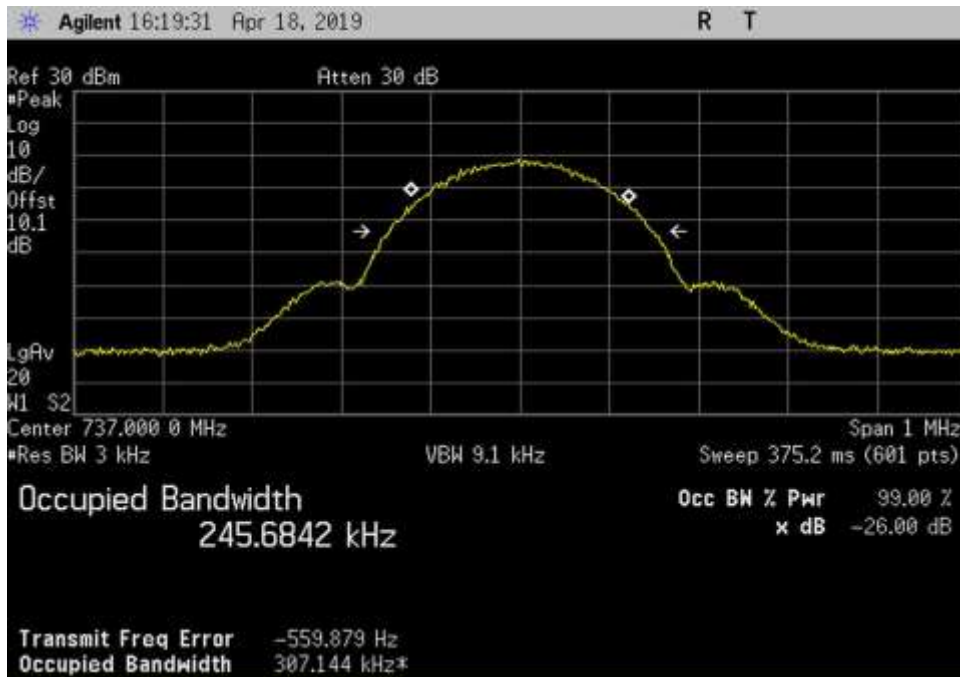
Out_DL_617-652_GSM_634.5MHz



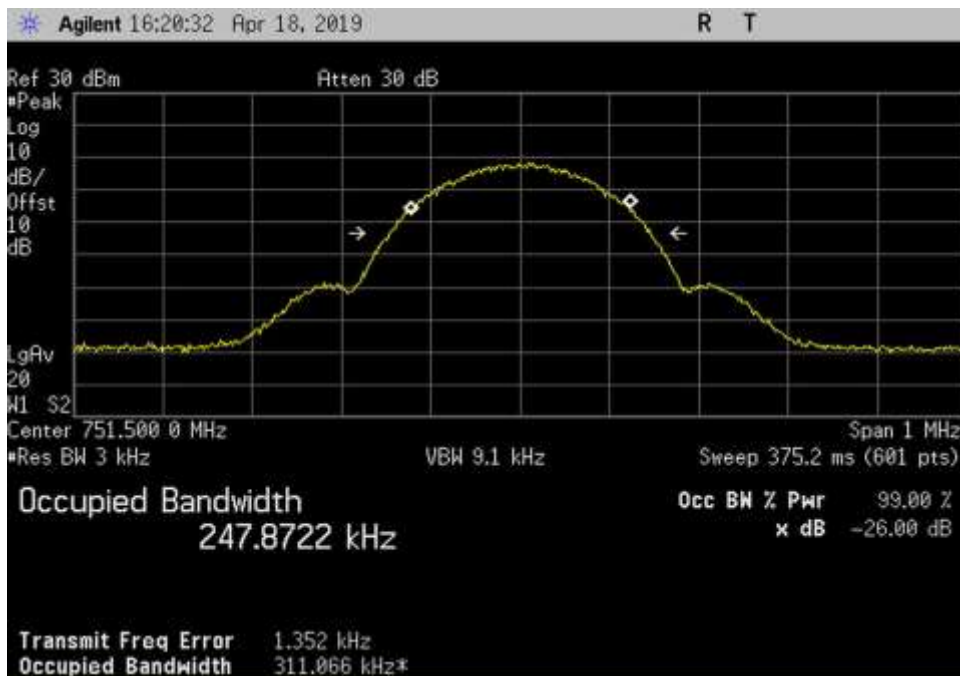
Out_DL_617-652_GSM_634.5MHz_3dB



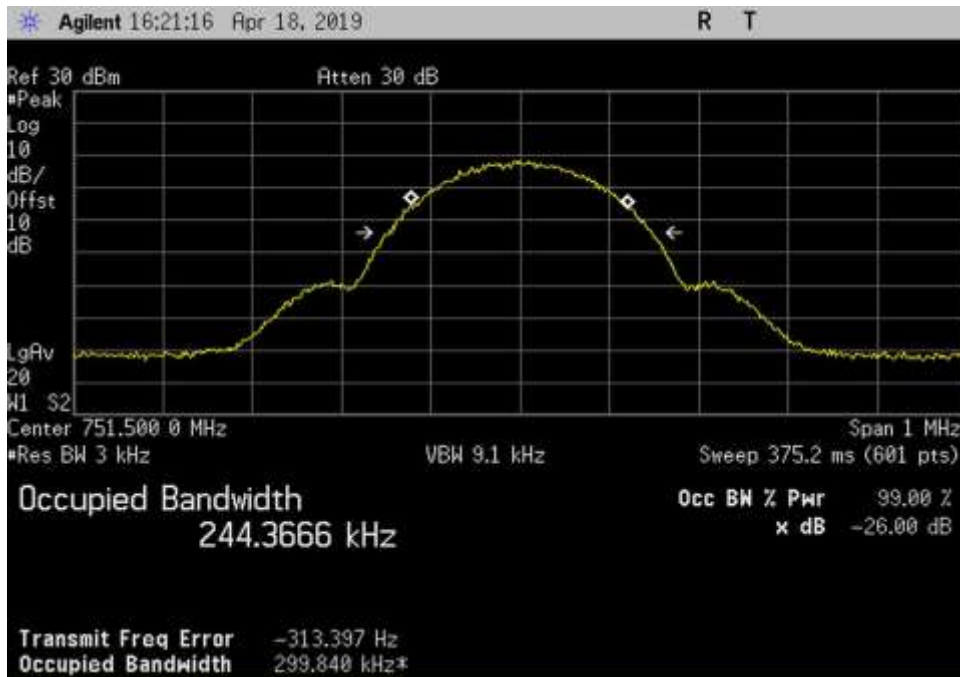
Out_DL_728-746_GSM_737MHz



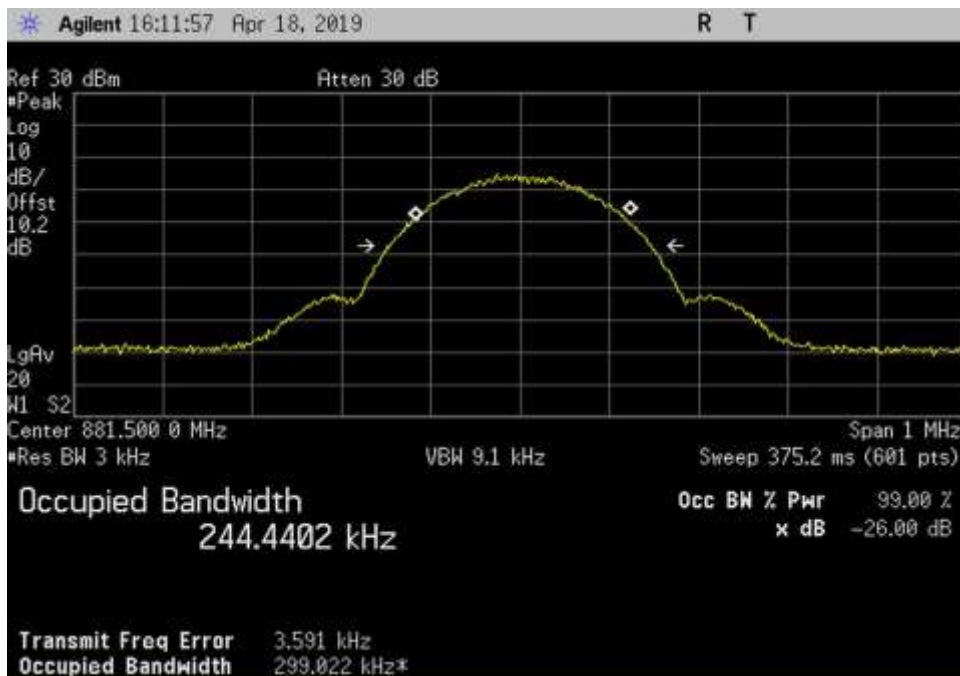
Out_DL_728-746_GSM_737MHz_3dB



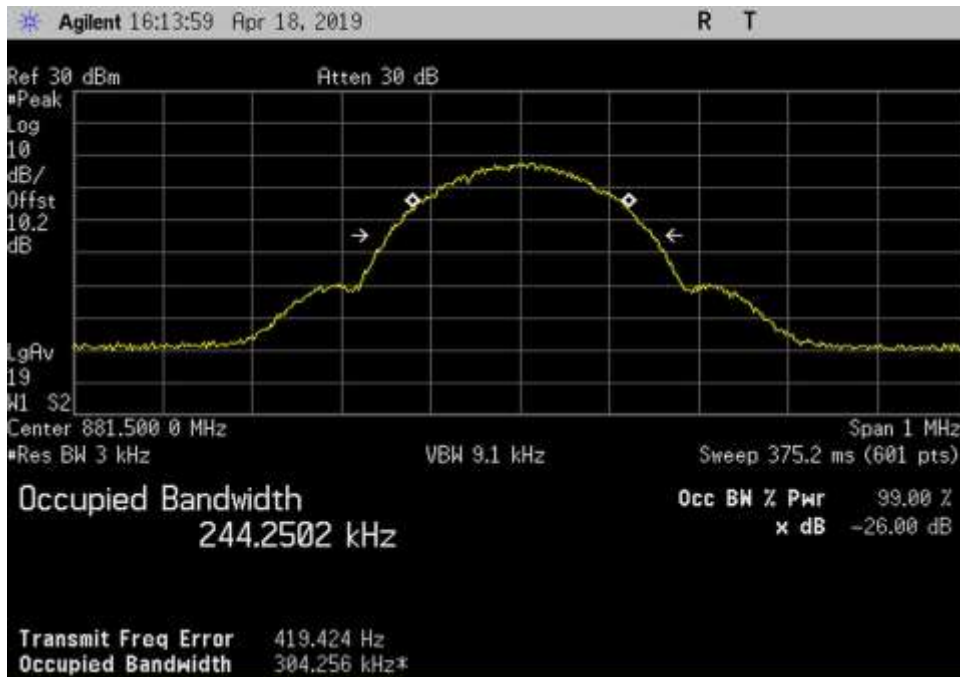
Out_DL_746-757_GSM_751.5MHz



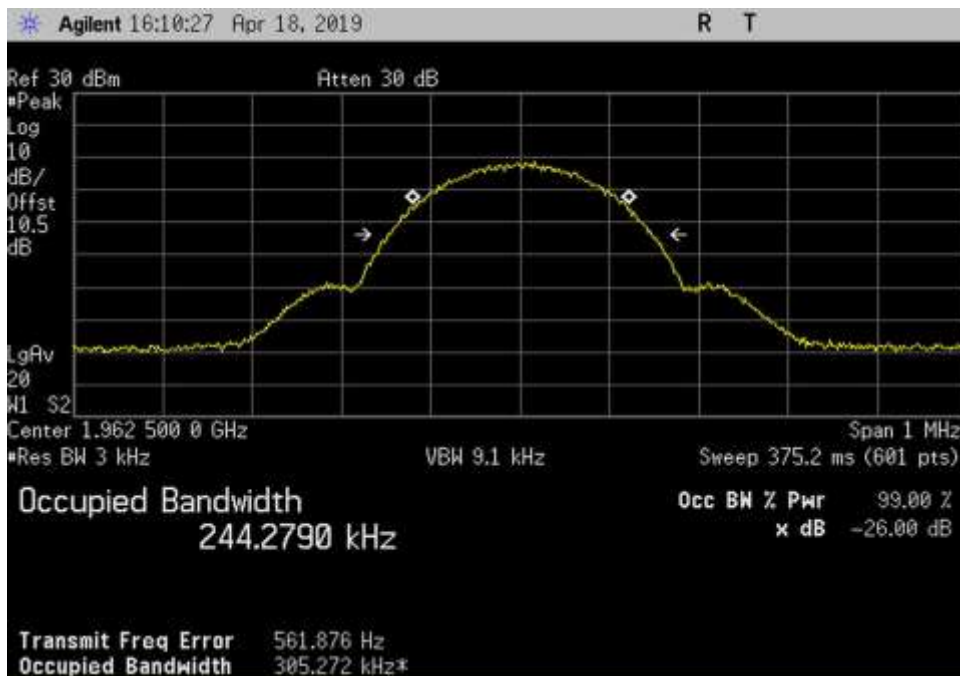
Out_DL_746-757_GSM_751.5MHz_3dB



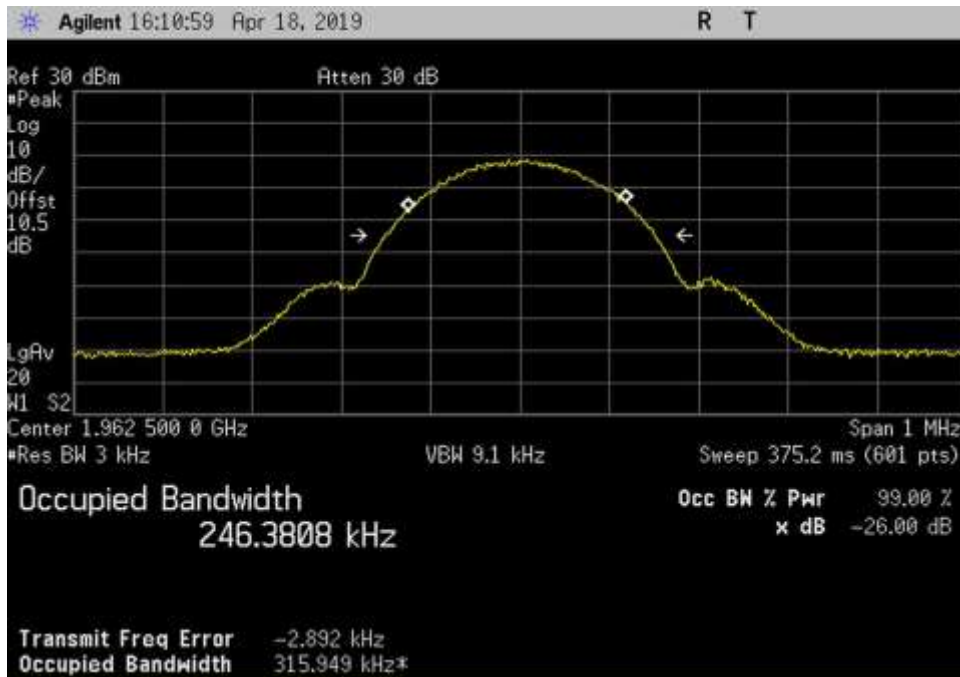
Out_DL_869-894_GSM_881.5MHz



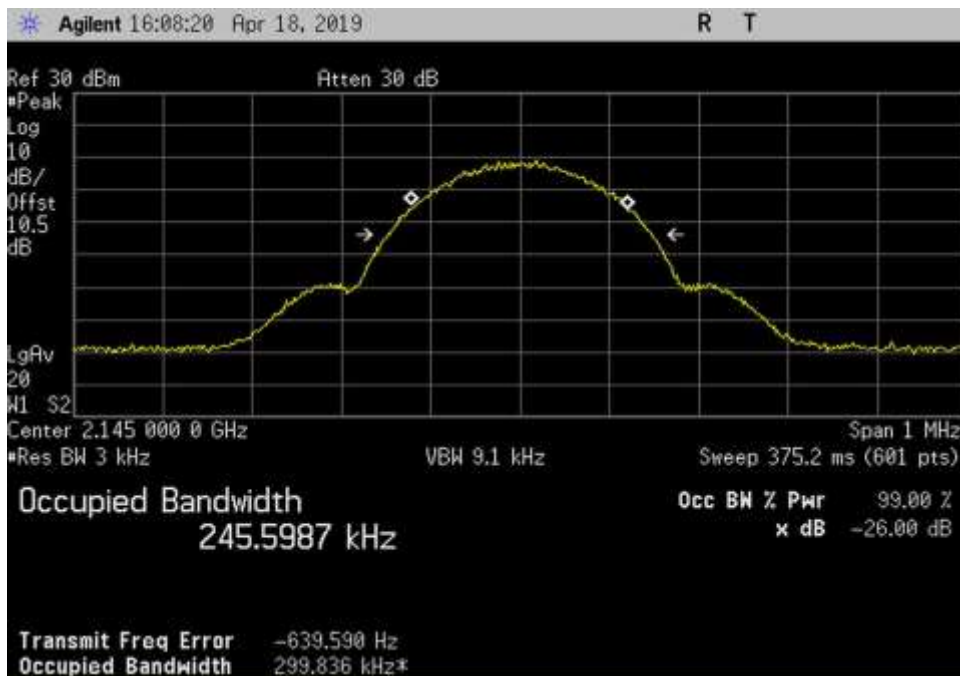
Out_DL_869-894_GSM_881.5MHz_3dB



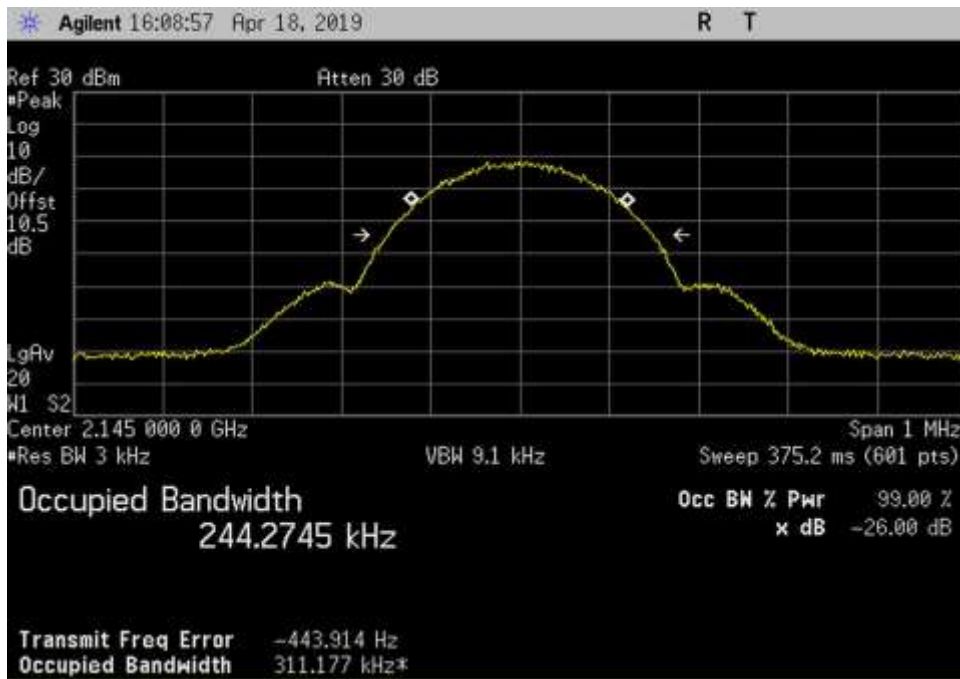
Out_DL_1930-1995_GSM_1962.5MHz.



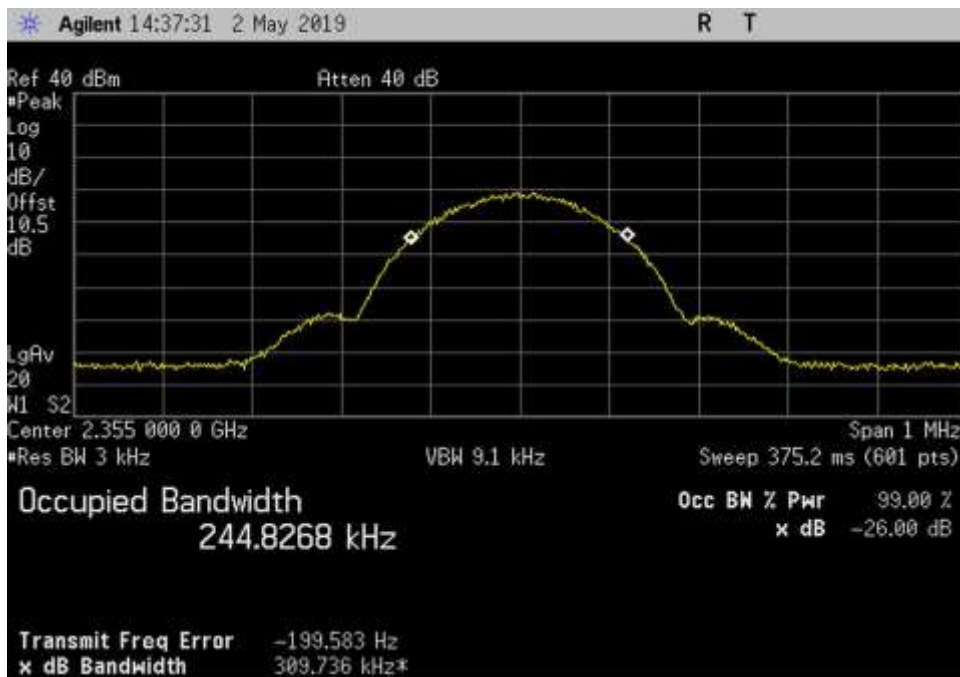
Out_DL_1930-1995_GSM_1962.5MHz_3dB



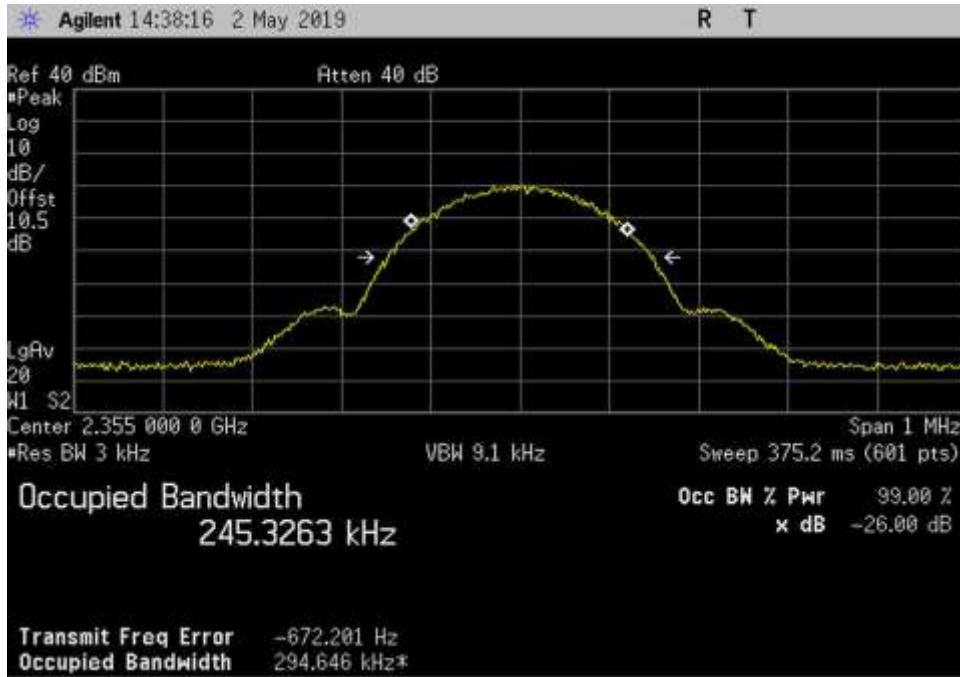
Out_DL_2110-2155_GSM_2145MHz



Out_DL_2110-2155_GSM_2145MHz_3dB

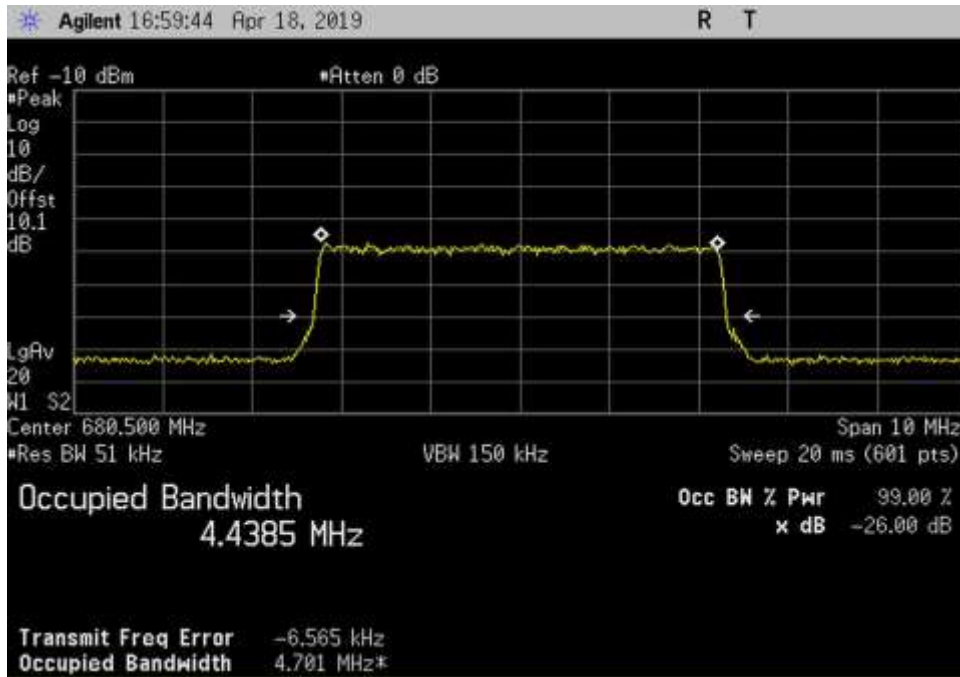


Out_DL_2350-2360_GSM_2355MHz

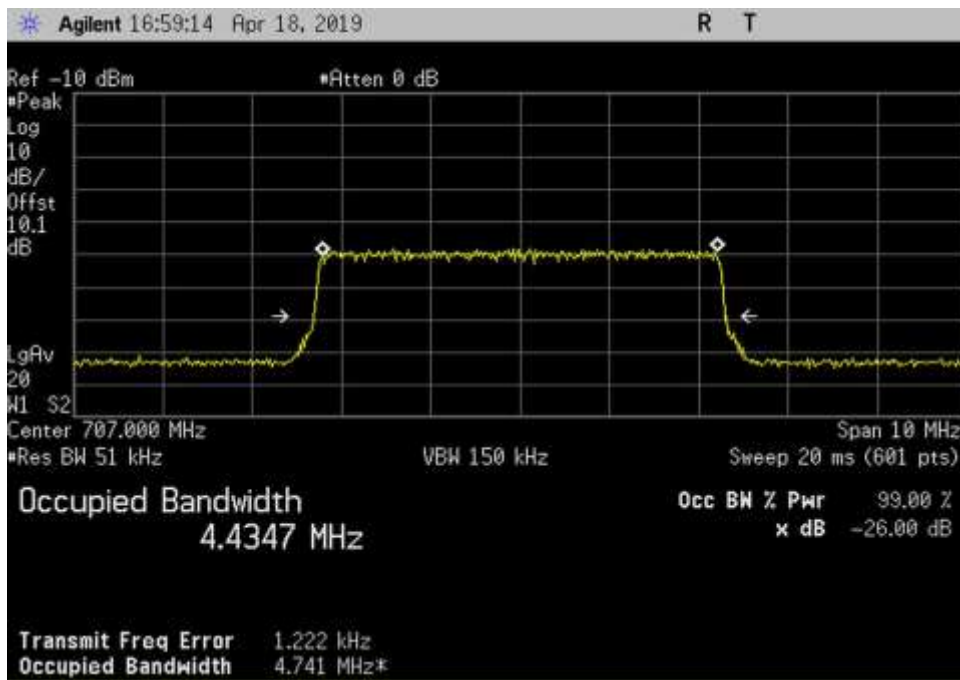


Out_DL_2350-2360_GSM_2355MHz_3dB

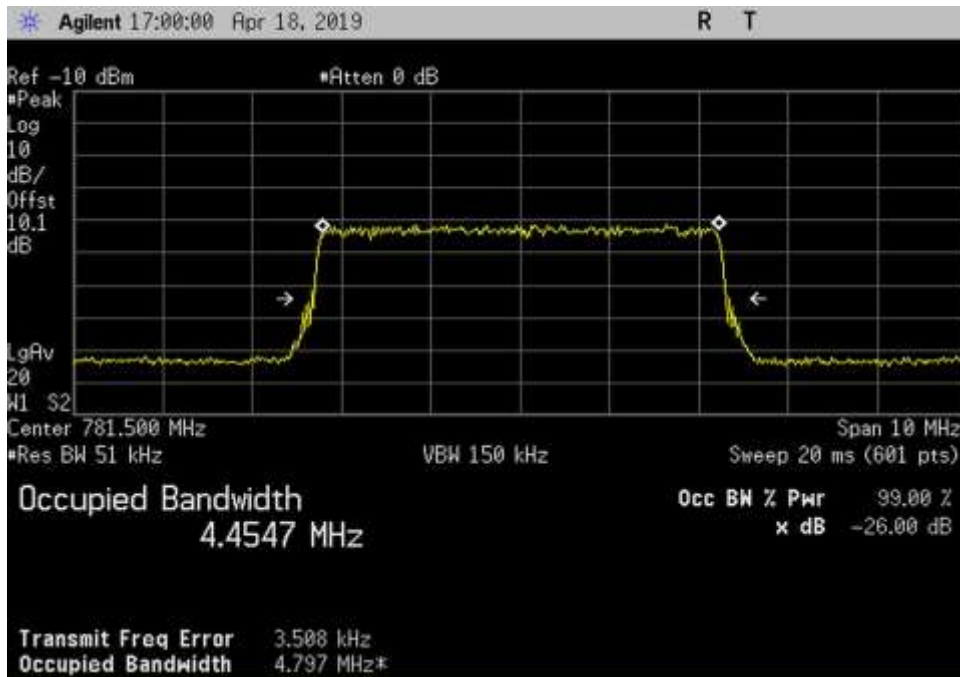
LTE



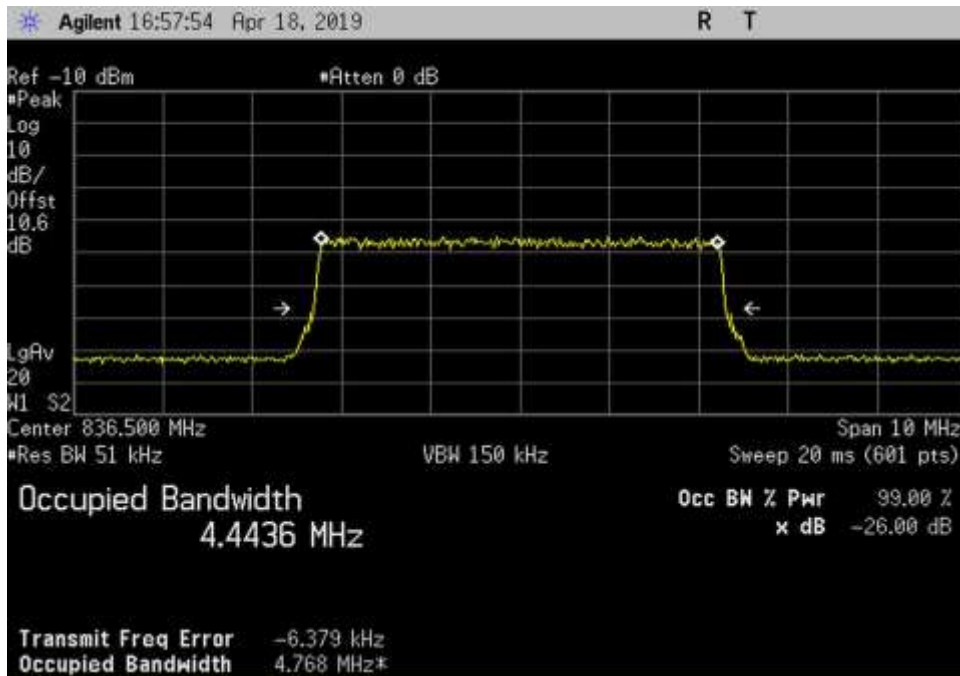
In_UL_663-698_LTE_680.5MHz



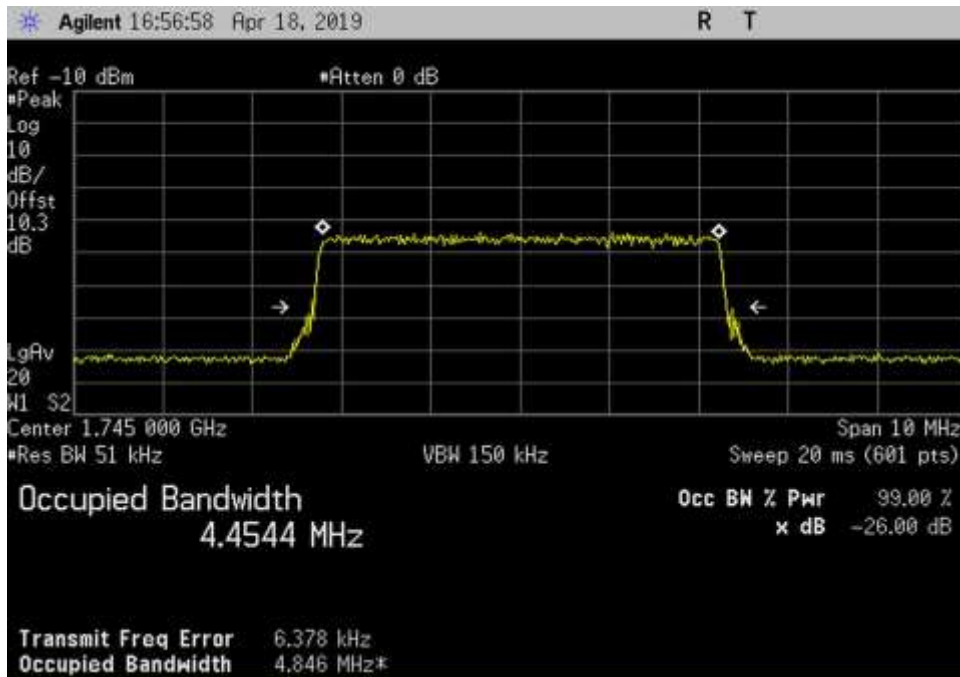
In_UL_698-716_LTE_707MHz



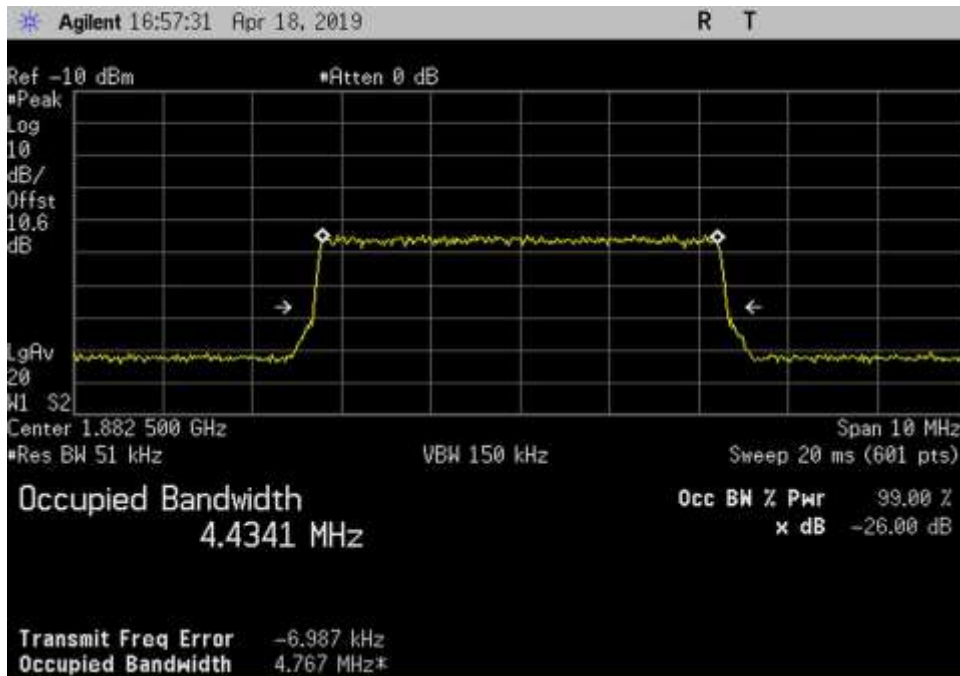
In_UL_776-787_LTE_781.5MHz



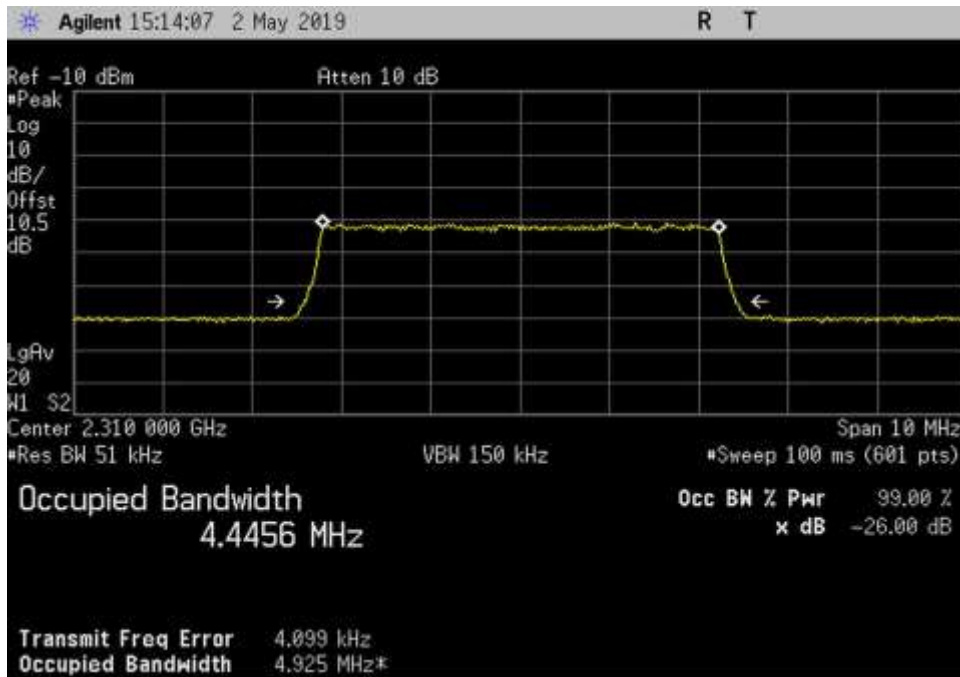
In_UL_824-849_LTE_836.5MHz



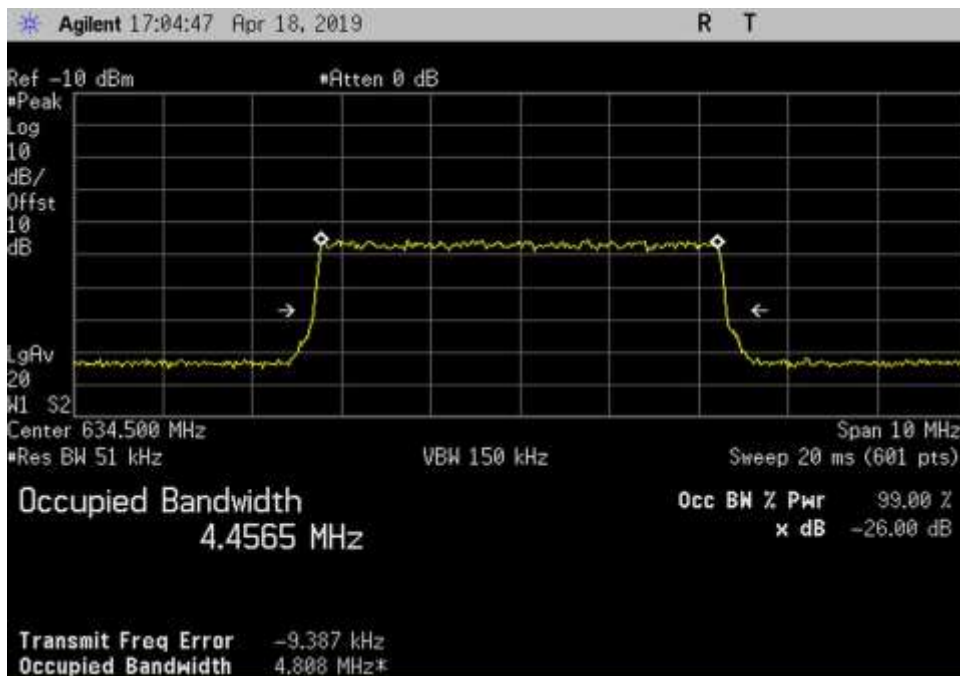
In_UL_1710-1755_LTE_1745MHz



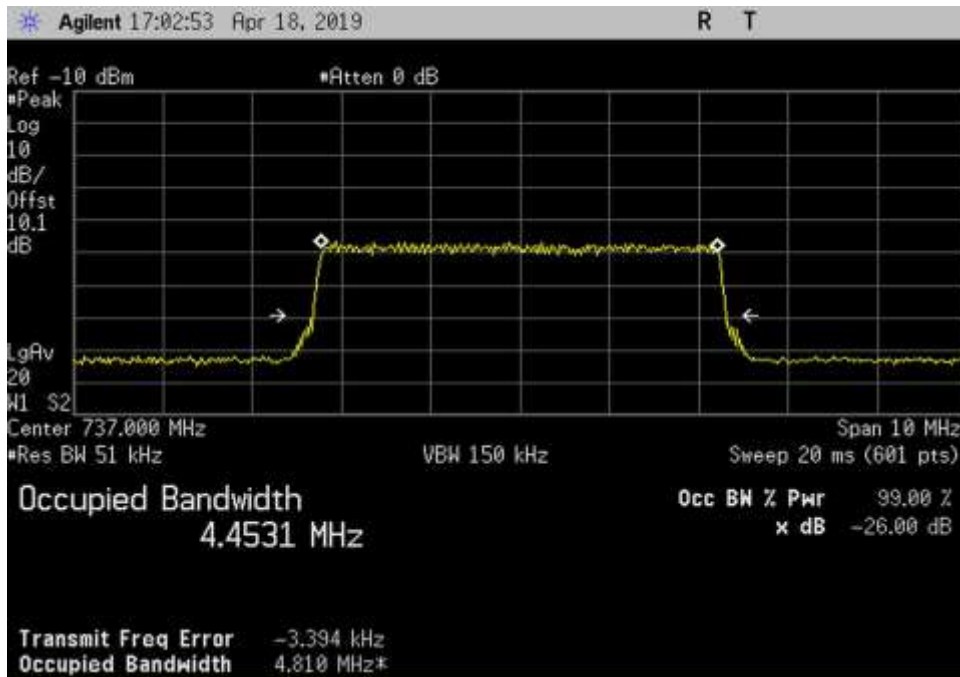
In_UL_1850-1915_LTE_1882.5MHz



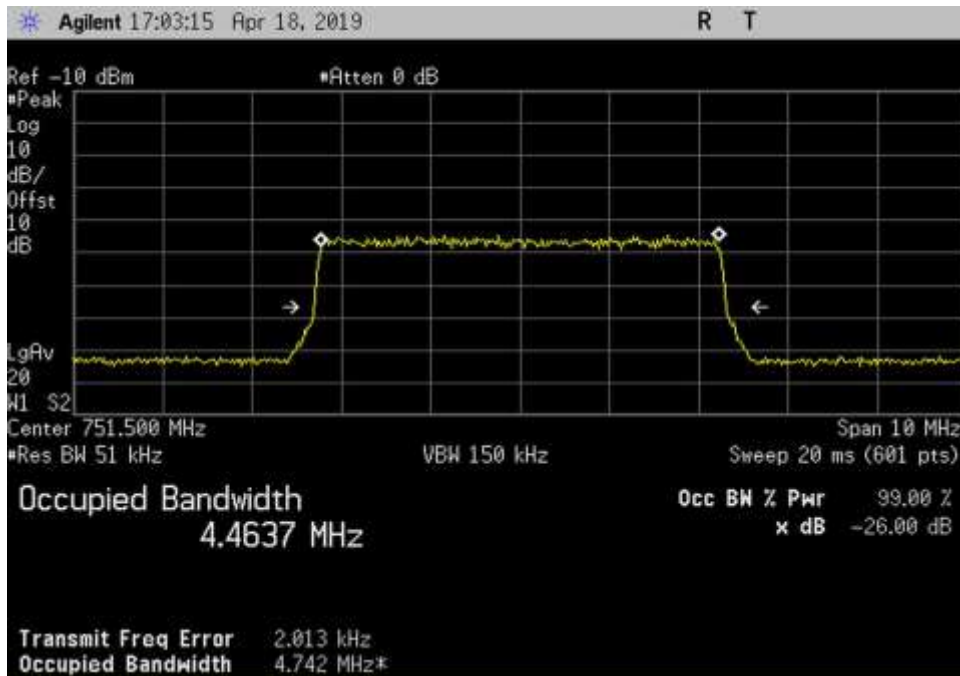
In_UL_2305-2315_LTE_2310MHz



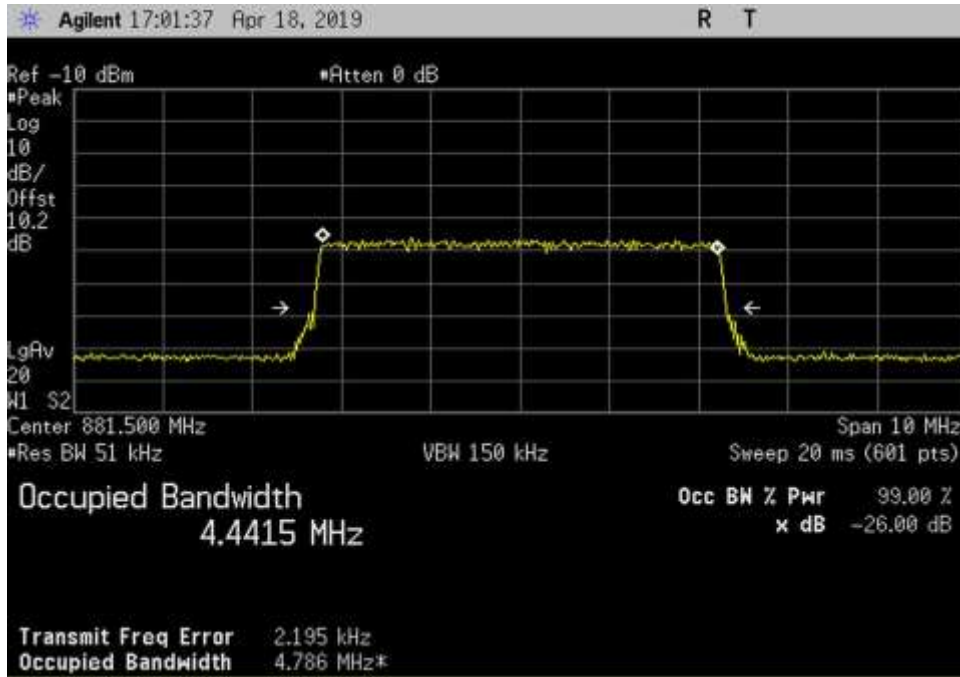
In_DL_617-652_LTE_634.5MHz



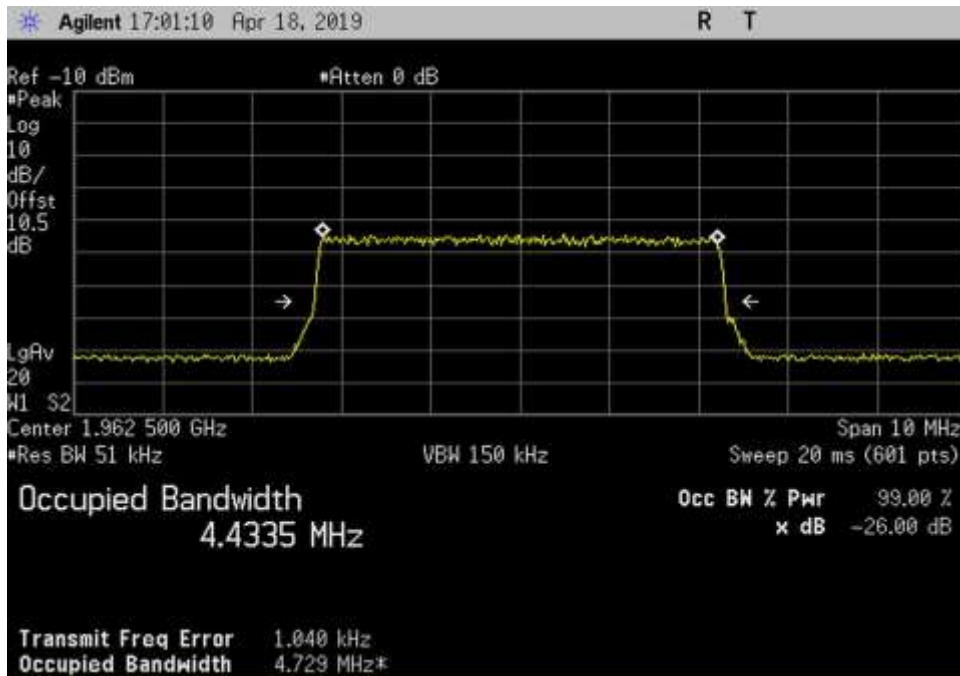
In_DL_728-746_LTE_737MHz



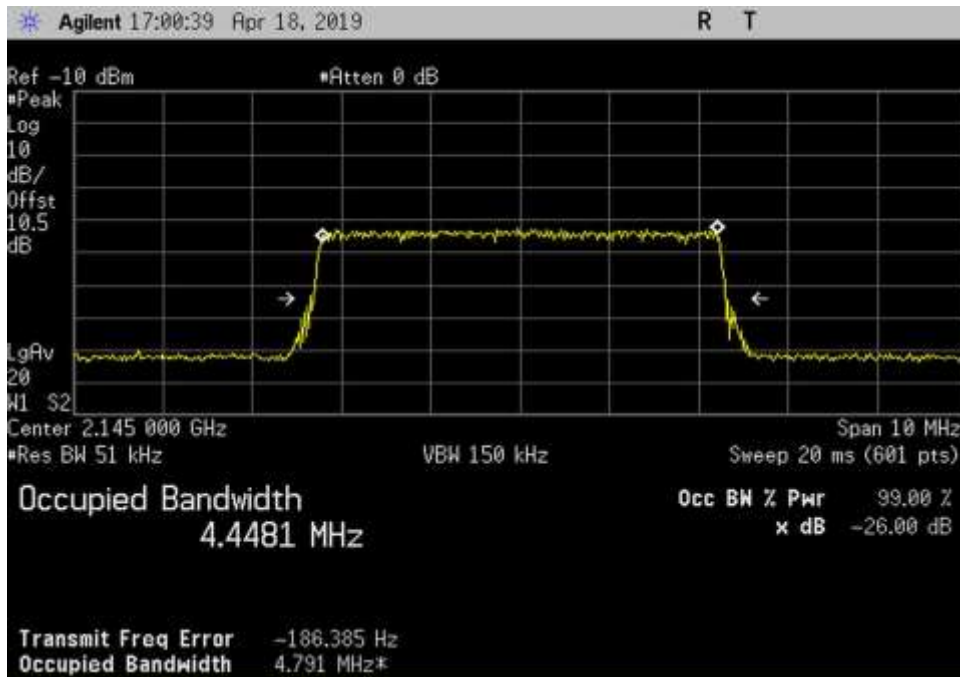
In_DL_746-757_LTE_751.5MHz



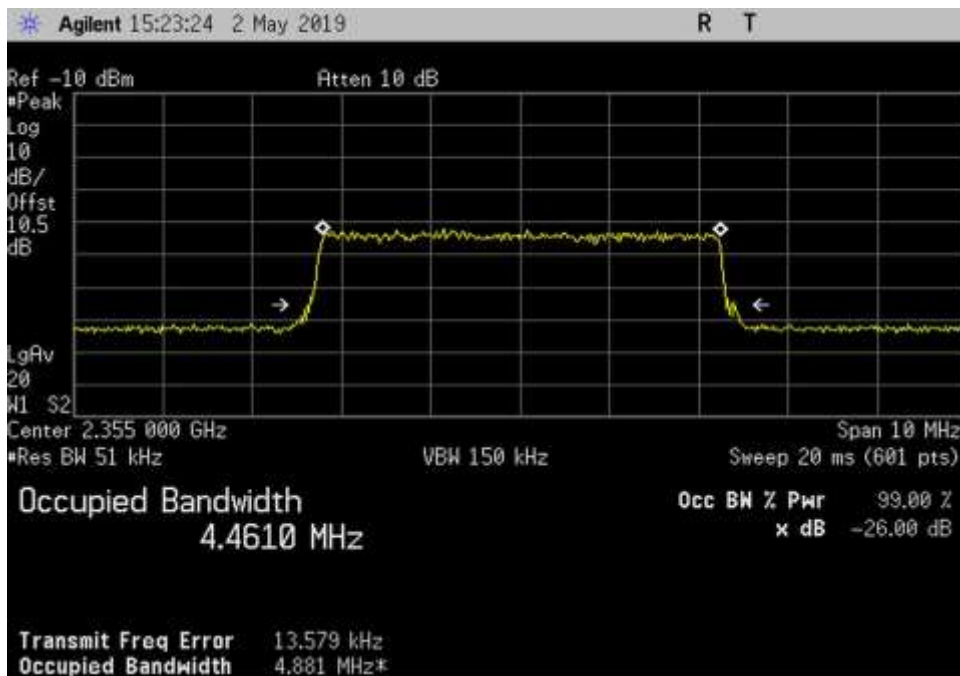
In_DL_869-894_LTE_881.5MHz



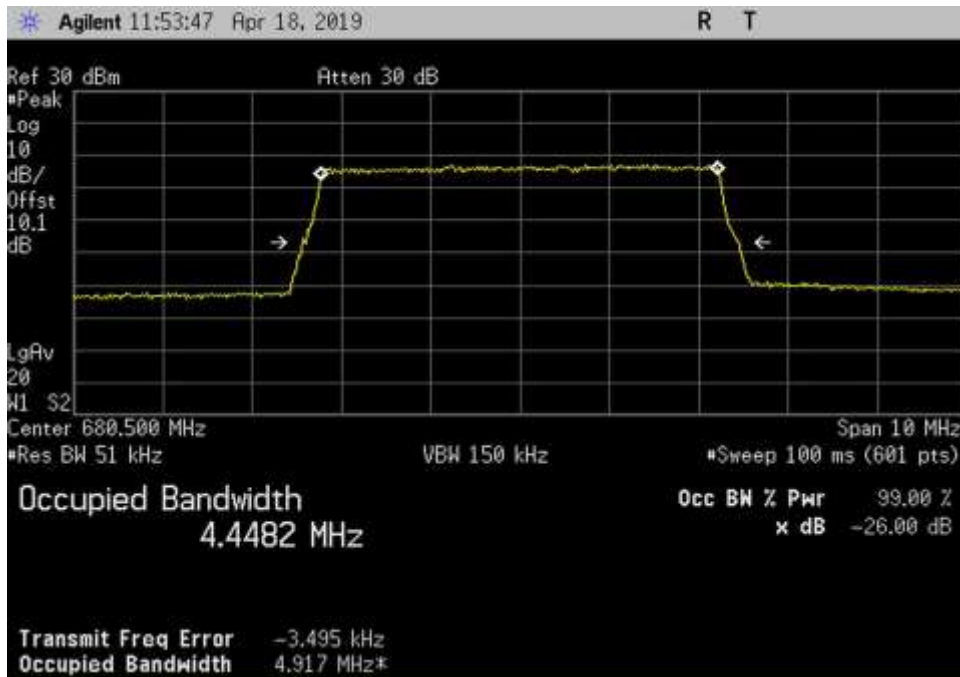
In_DL_1930-1995_LTE_1962.5MHz



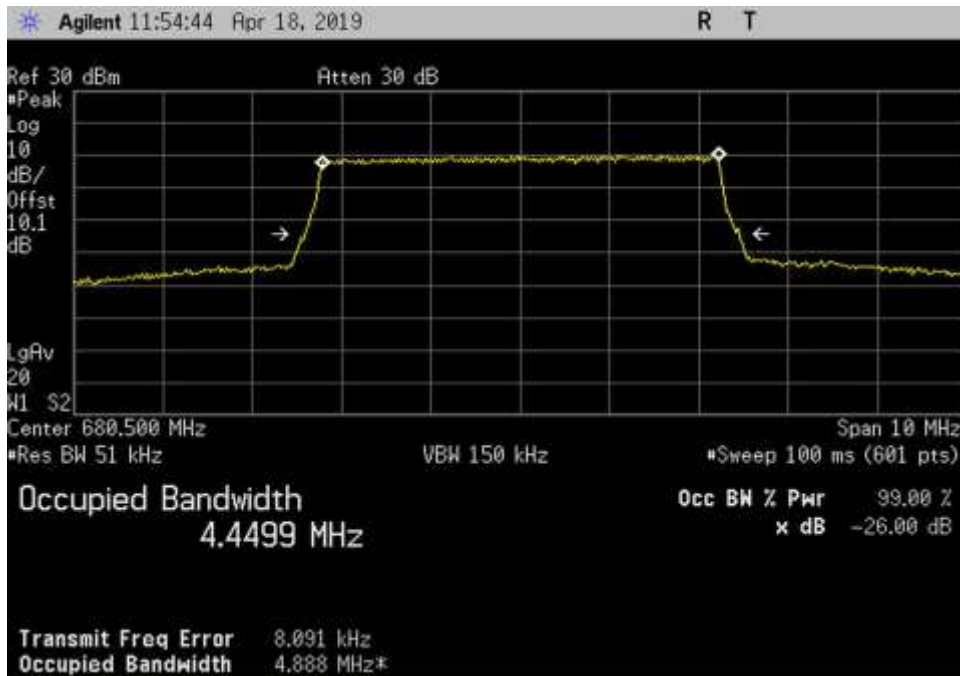
In_DL_2110-2155_LTE_2145MHz



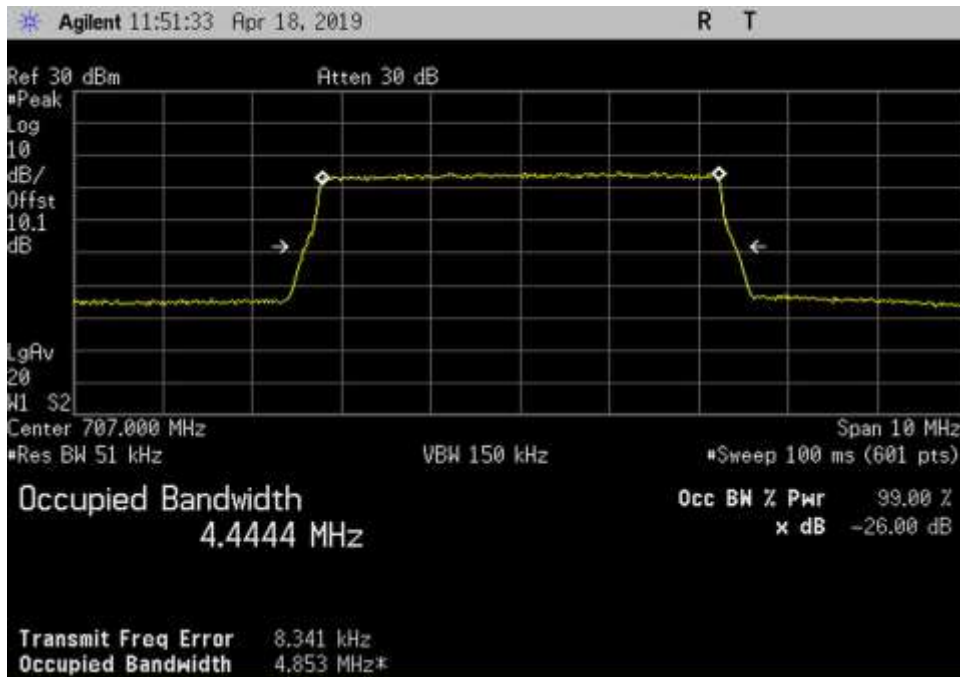
In_DL_2350-2360_LTE_2355MHz



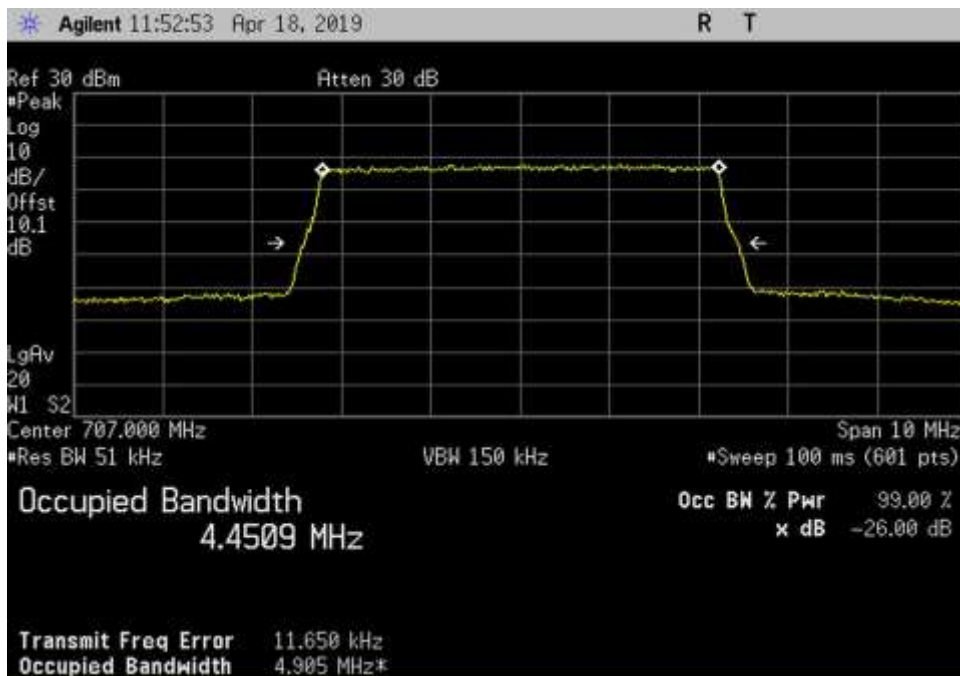
Out_UL_663-698_LTE_680.5MHz



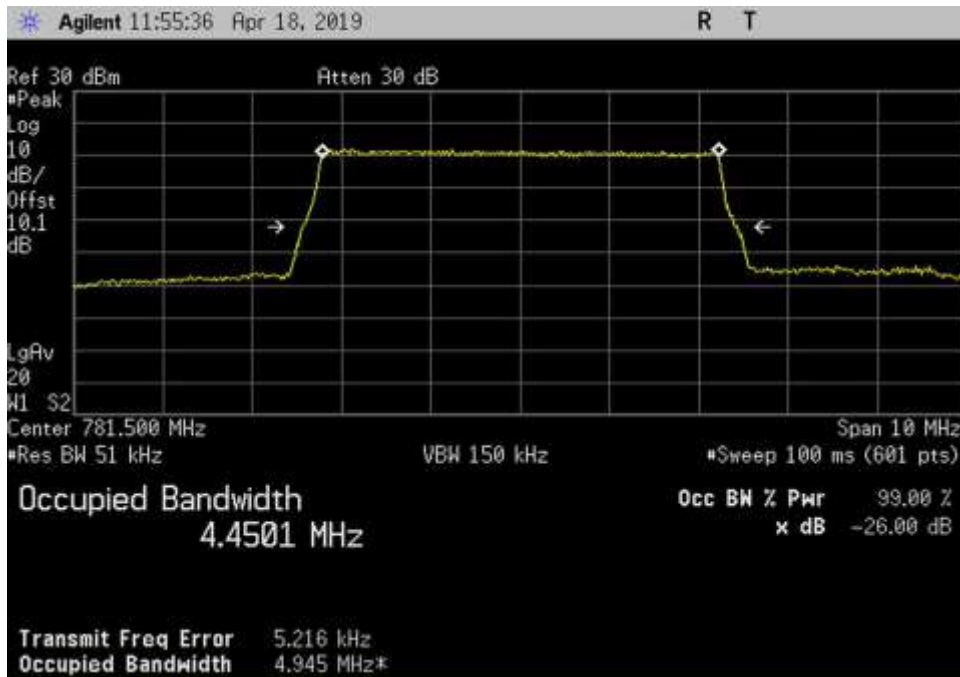
Out_UL_663-698_LTE_680.5MHz_3dB



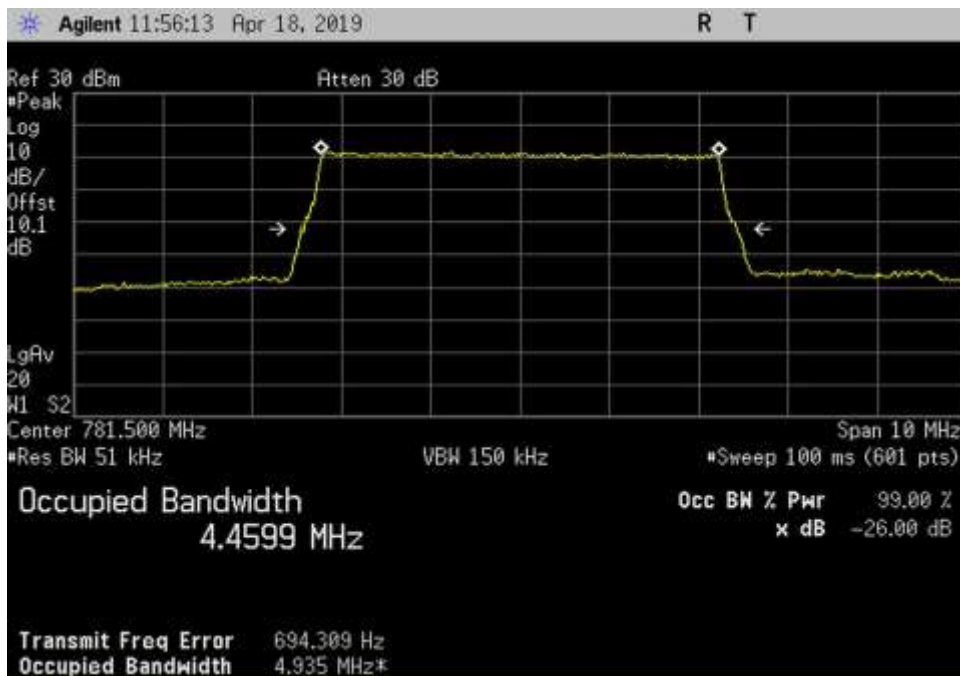
Out_UL_698-716_LTE_707MHz



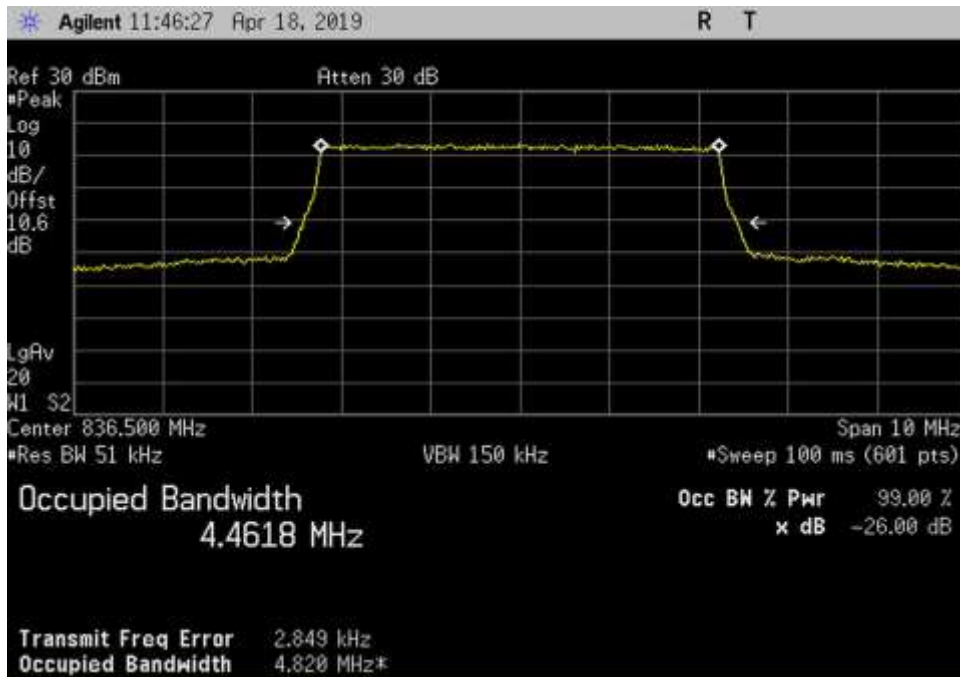
Out_UL_698-716_LTE_707MHz_3dB



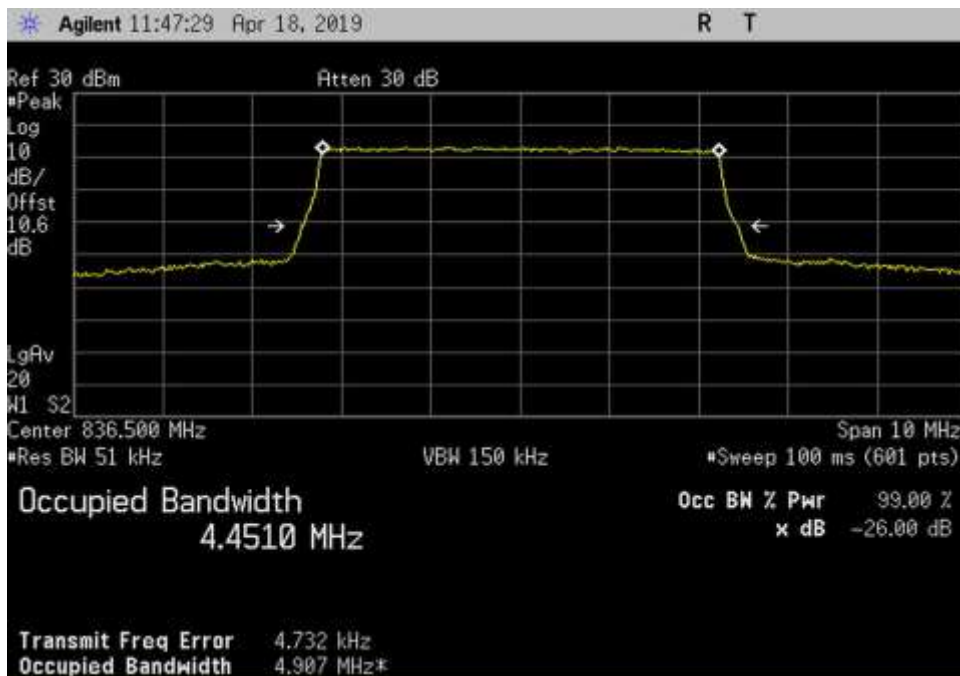
Out_UL_776-787_LTE_781.5MHz



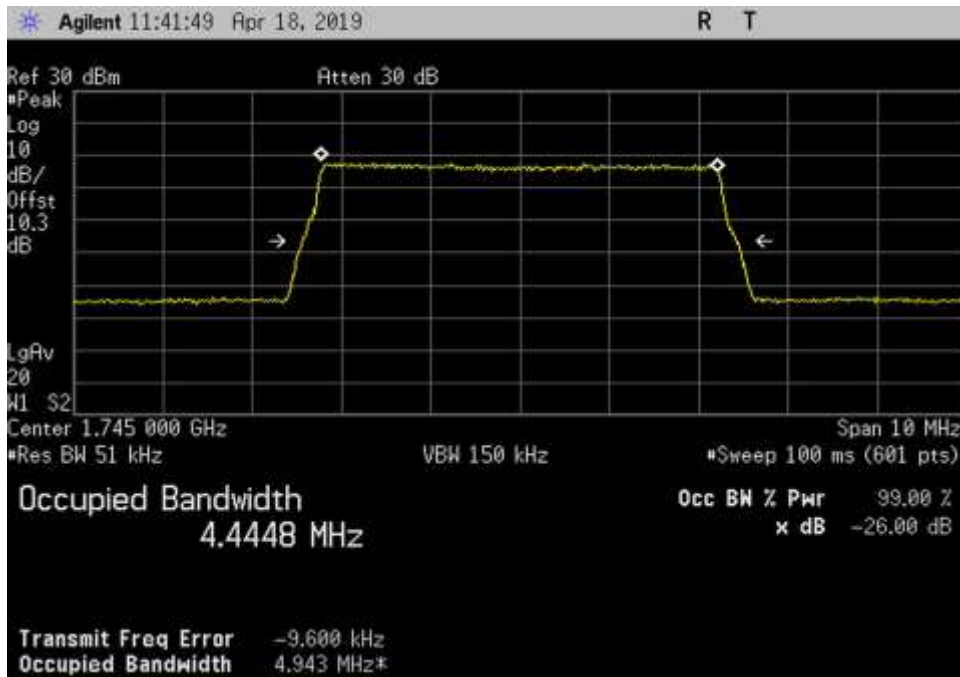
Out_UL_776-787_LTE_781.5MHz_3dB



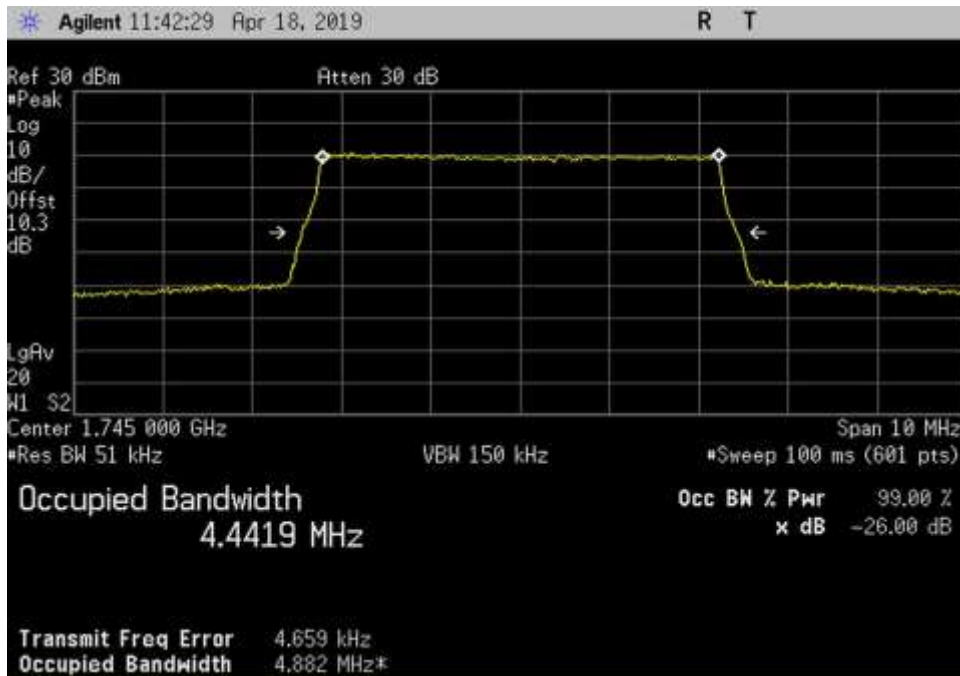
Out_UL_824-849_LTE_836.5MHz



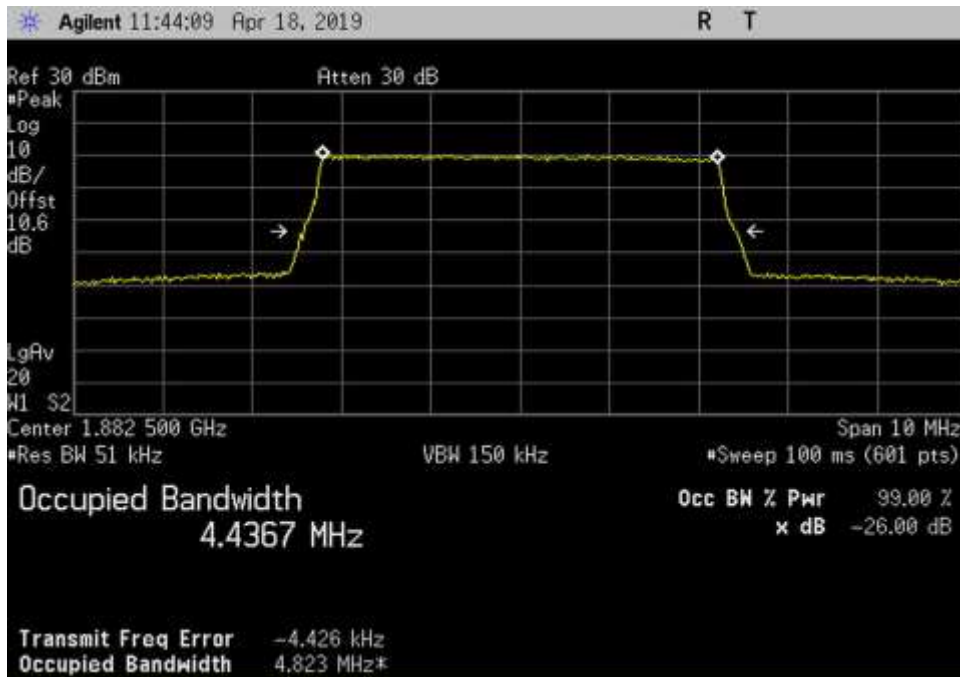
Out_UL_824-849_LTE_836.5MHz_3dB



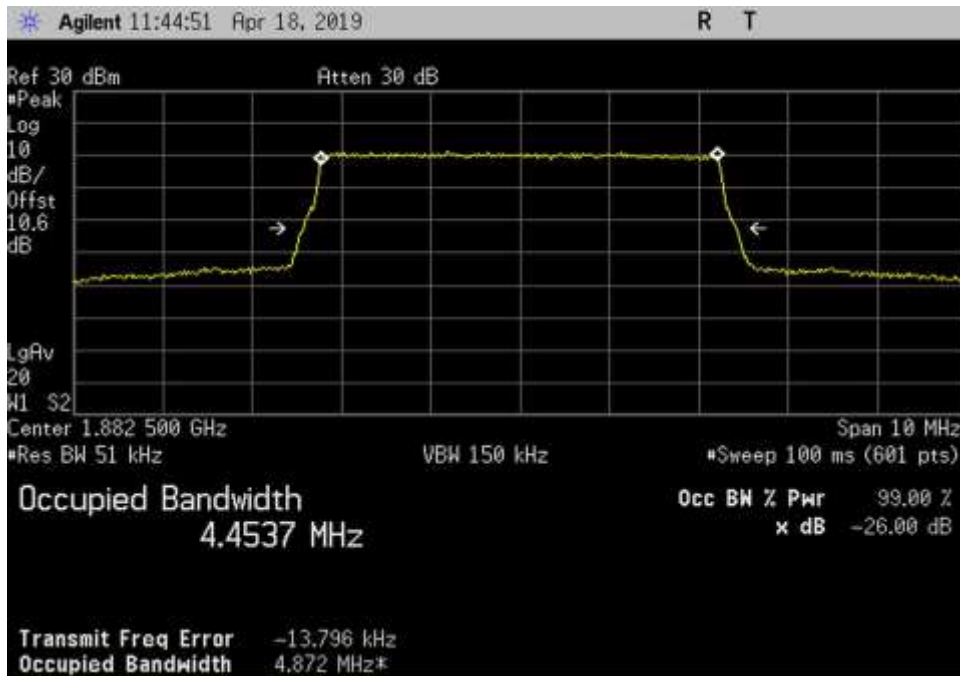
Out_UL_1710-1755_LTE_1745MHz



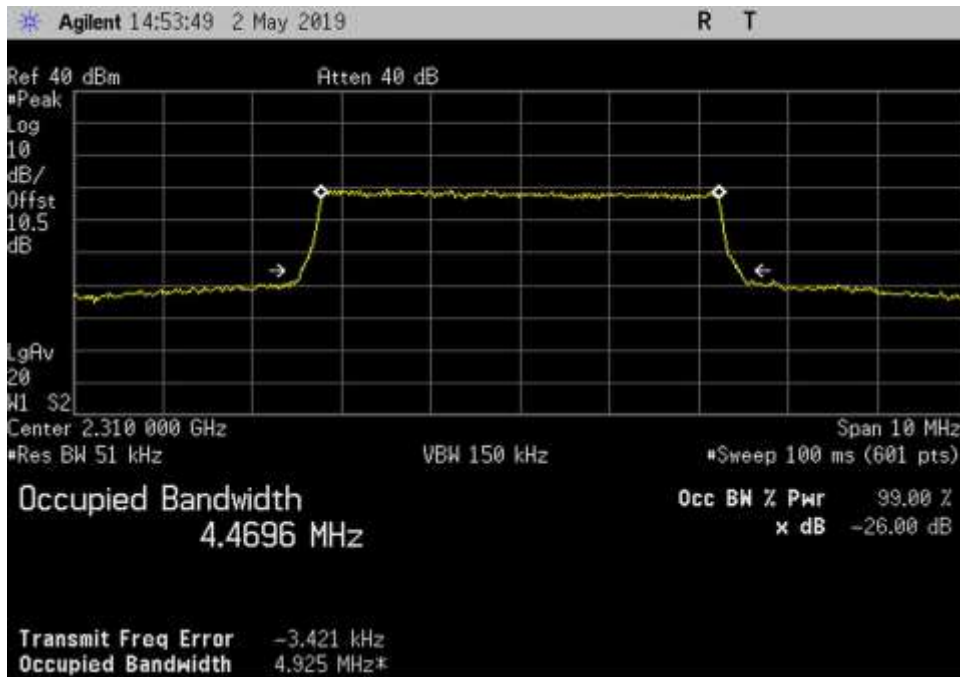
UL_1710-1755_LTE_1745MHz_3dB



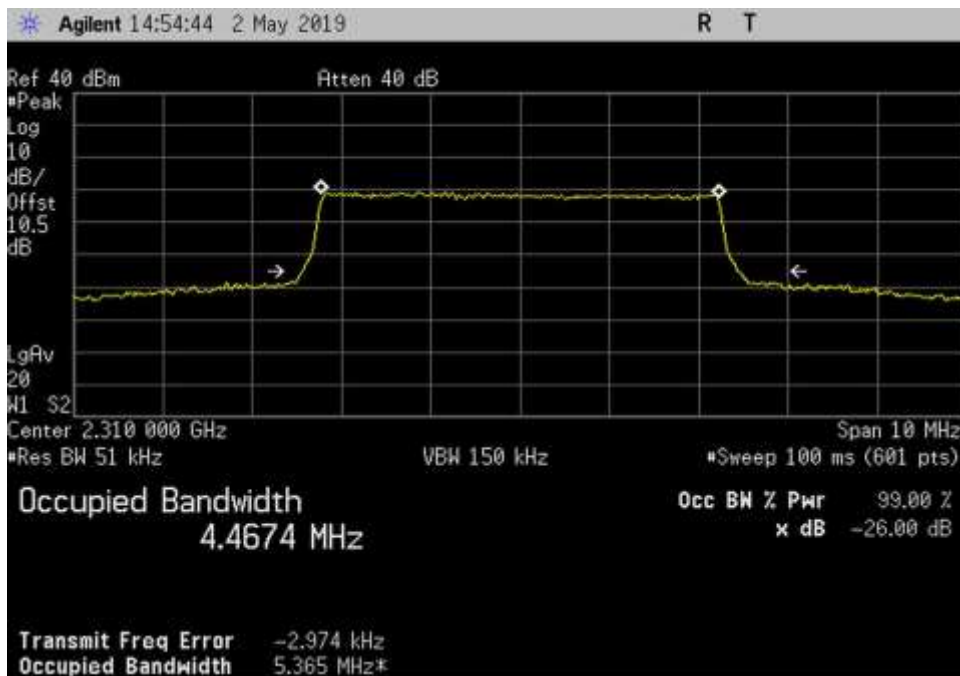
Out_UL_1850-1915_LTE_1882.5MHz



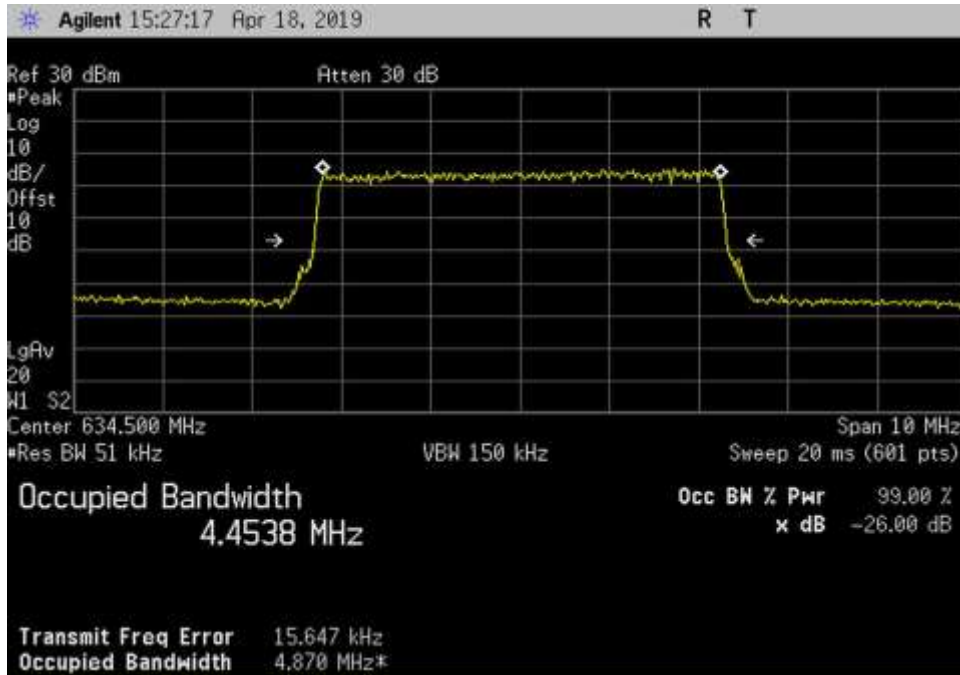
Out_UL_1850-1915_LTE_1882.5MHz_3dB



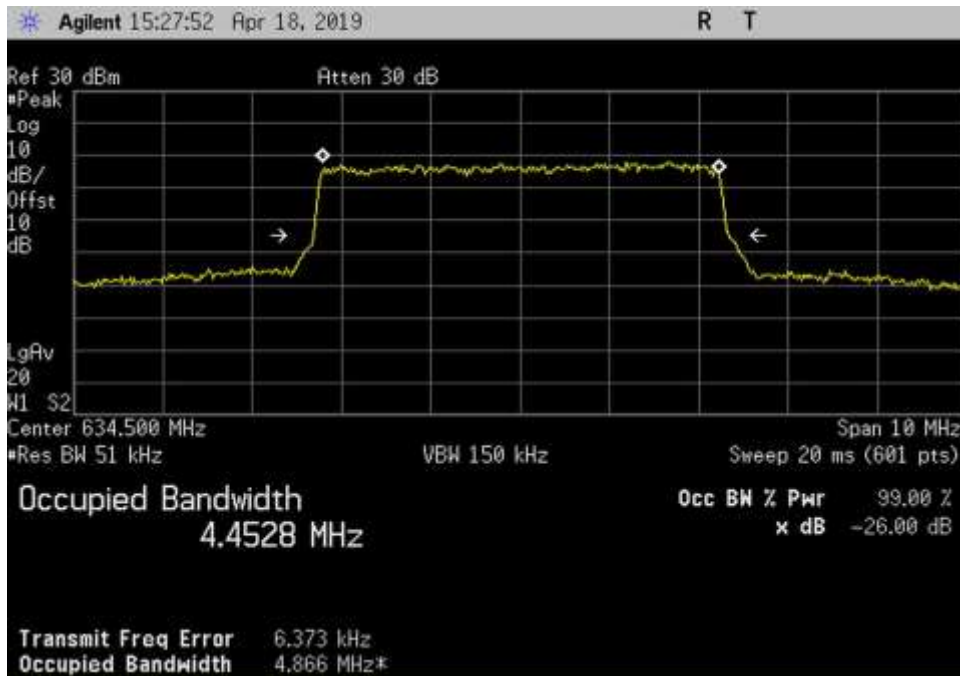
UL_2305-2315_LTE_2310MHz



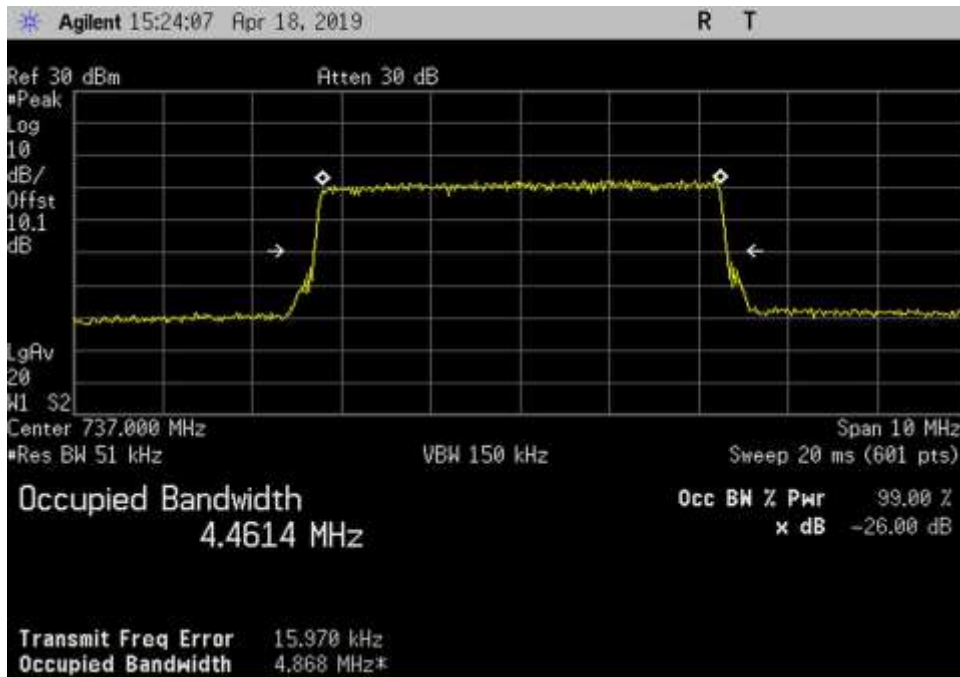
Out_UL_2305-2315_LTE_2310MHz_3dB



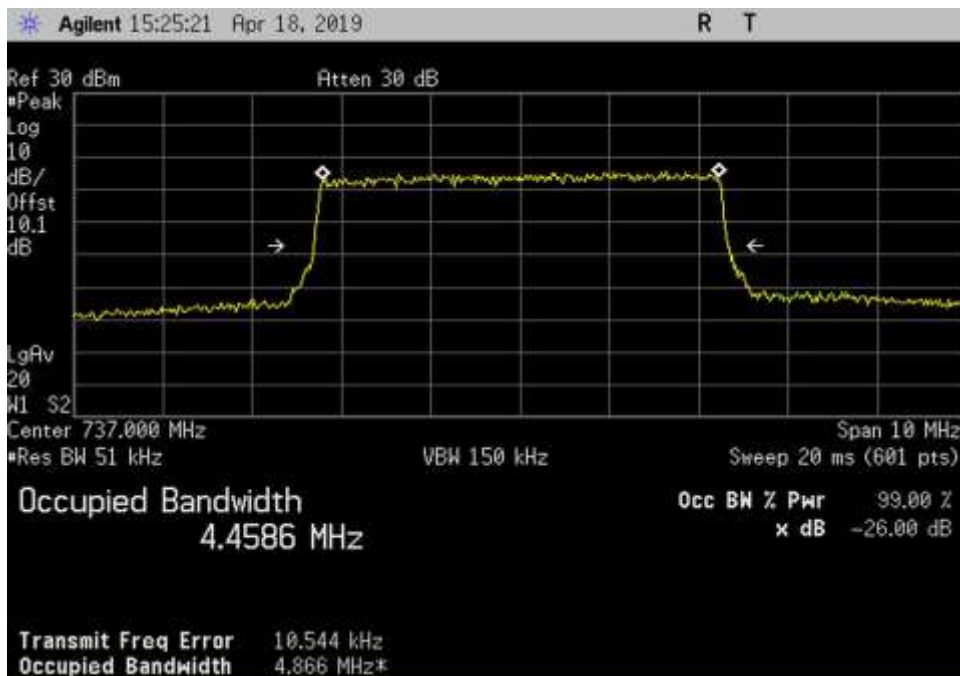
Out_DL_617-652_LTE_ 634.5MHz



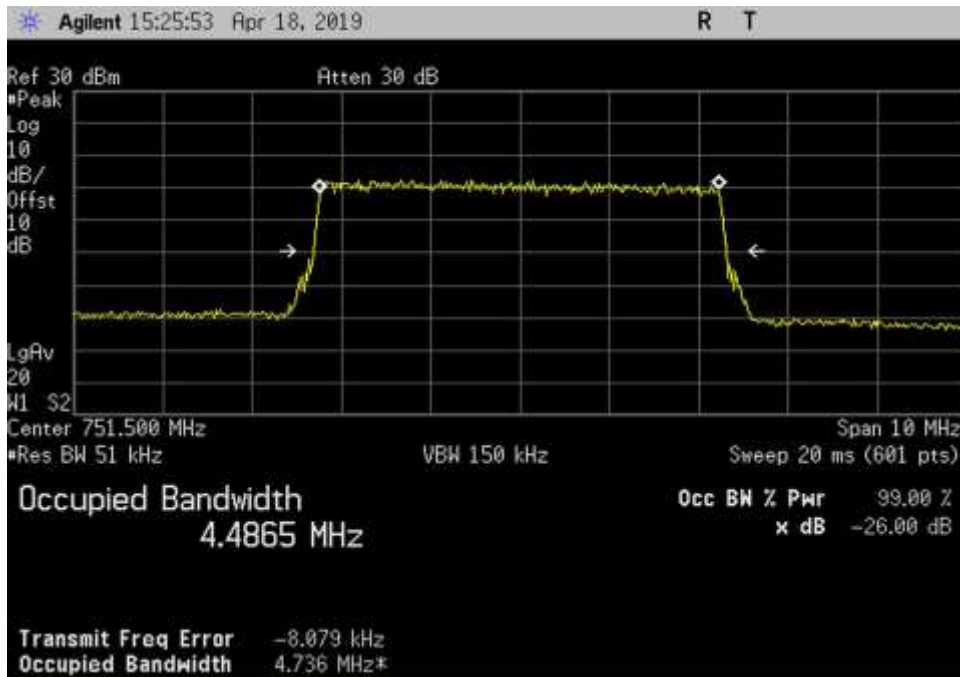
Out_DL_617-652_LTE_ 634.5MHz_3dB



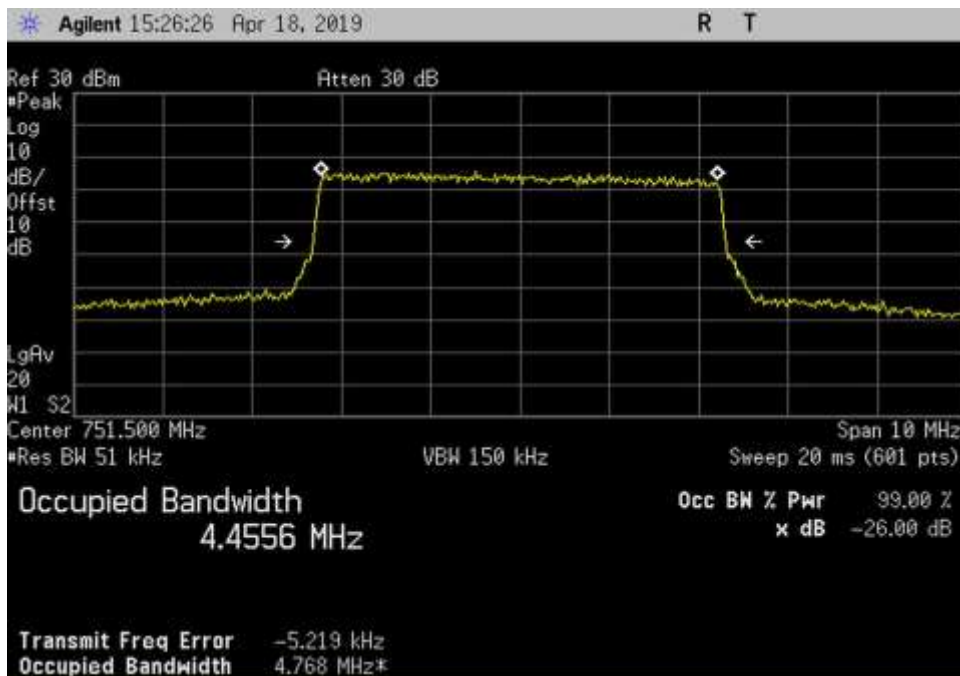
Out_DL_728-746_LTE_737MHz



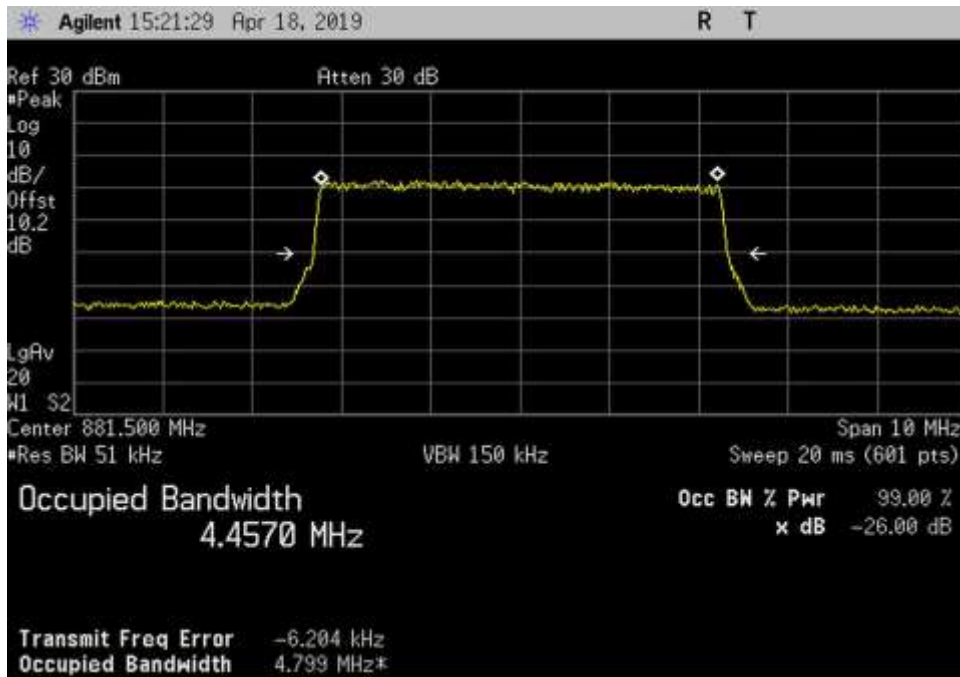
Out_DL_728-746_LTE_737MHz_3dB



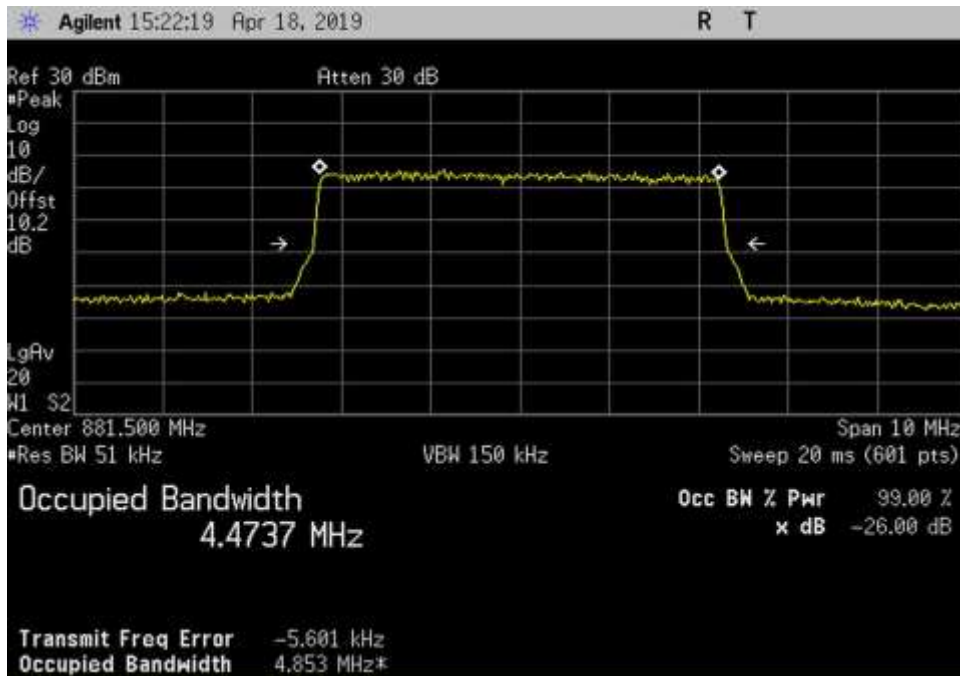
Out_DL_746-757_LTE_751.5MHz



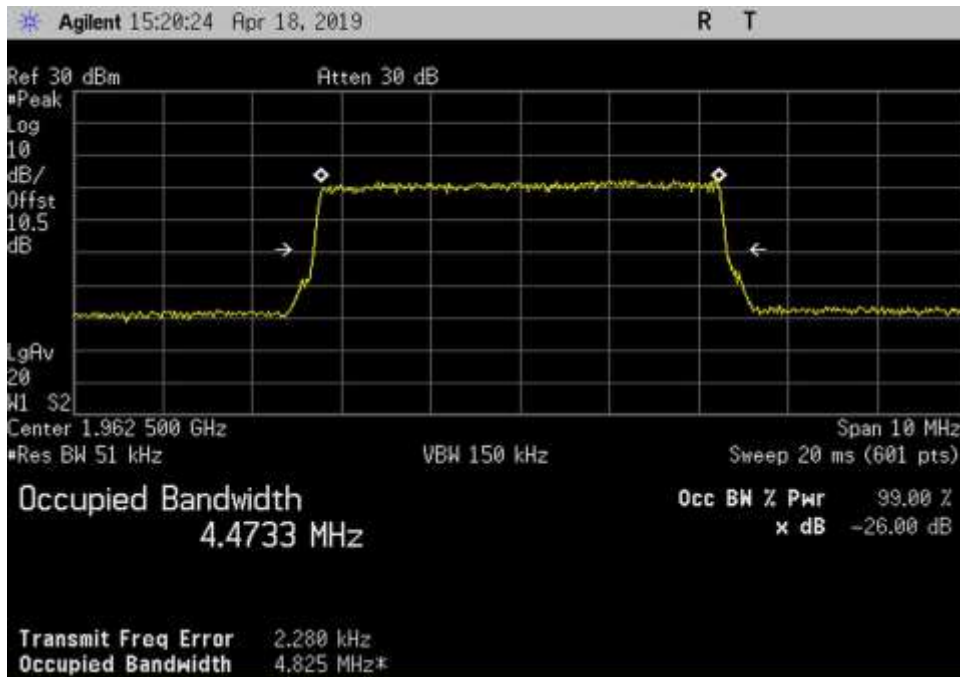
Out_DL_746-757_LTE_751.5MHz_3dB



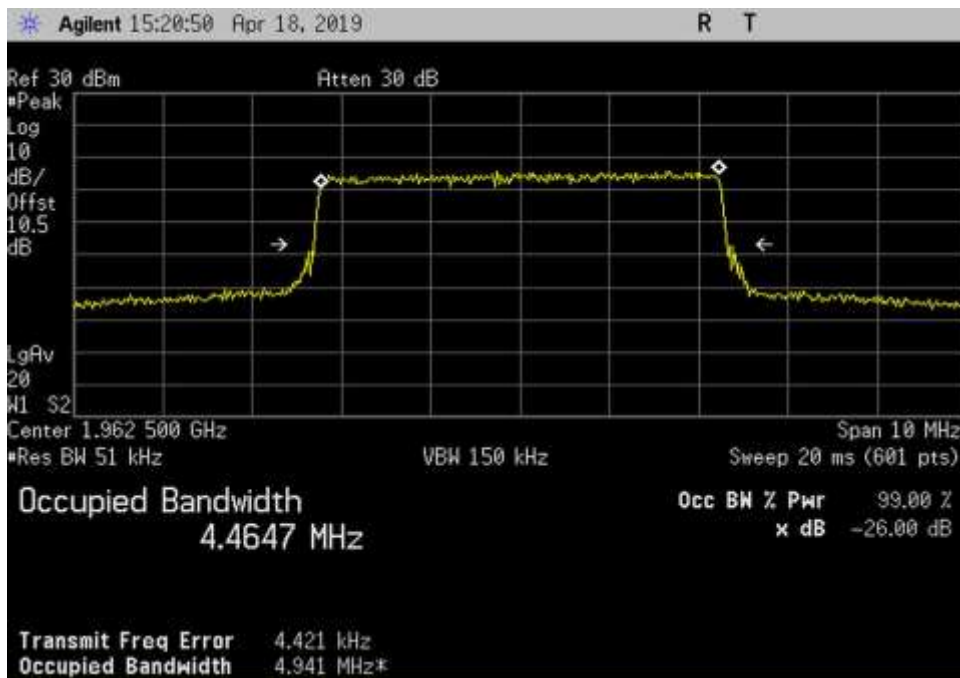
Out_DL_869-894_LTE_881.5MHz



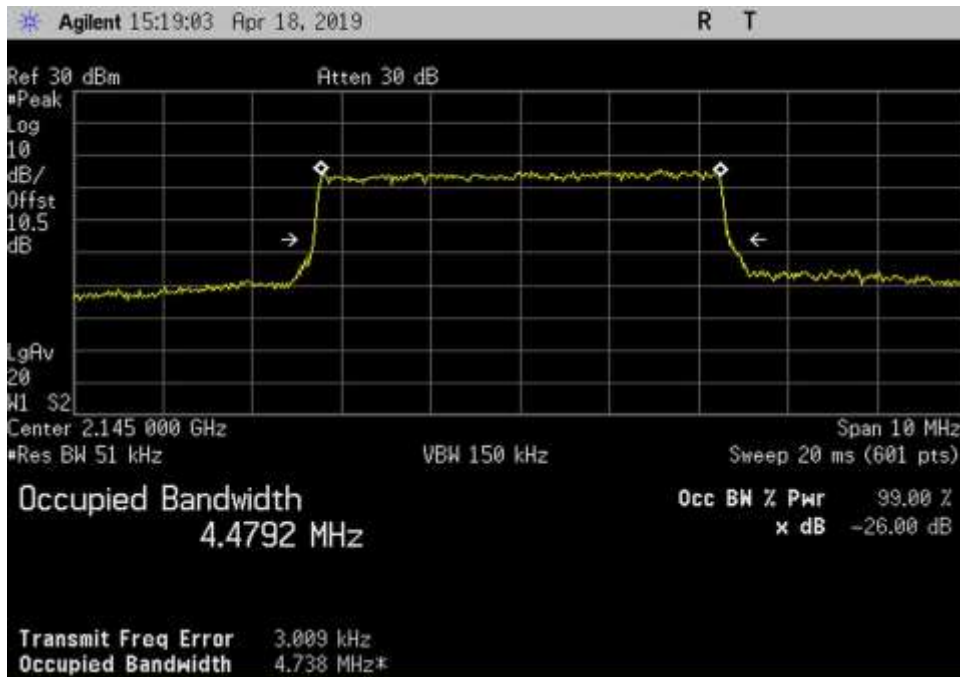
Out_DL_869-894_LTE_881.5MHz_3dB



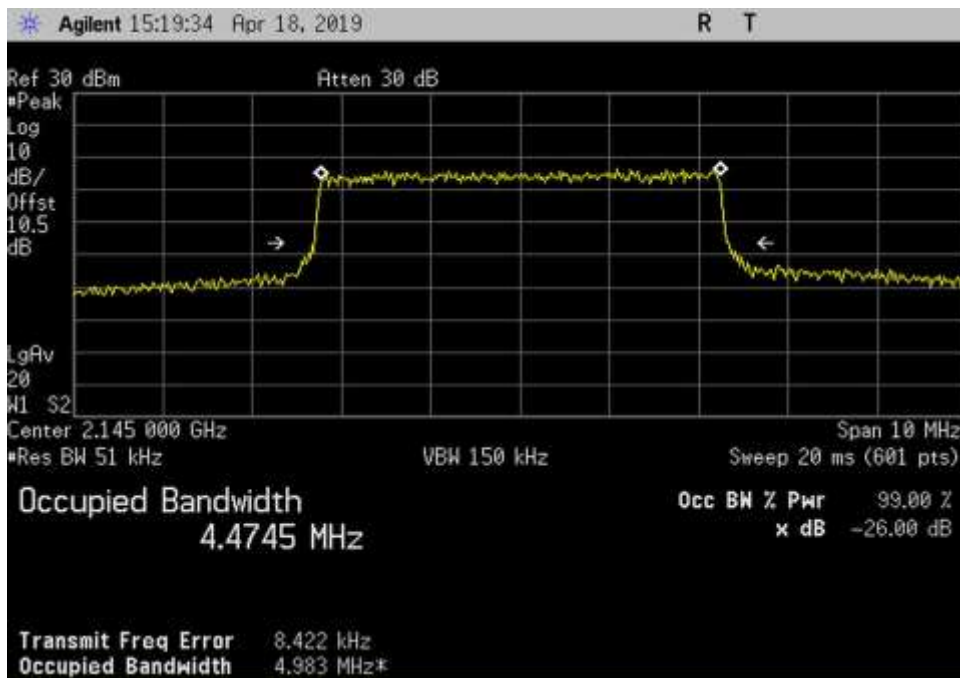
Out_DL_1930-1995_LTE_1962.5MHz.



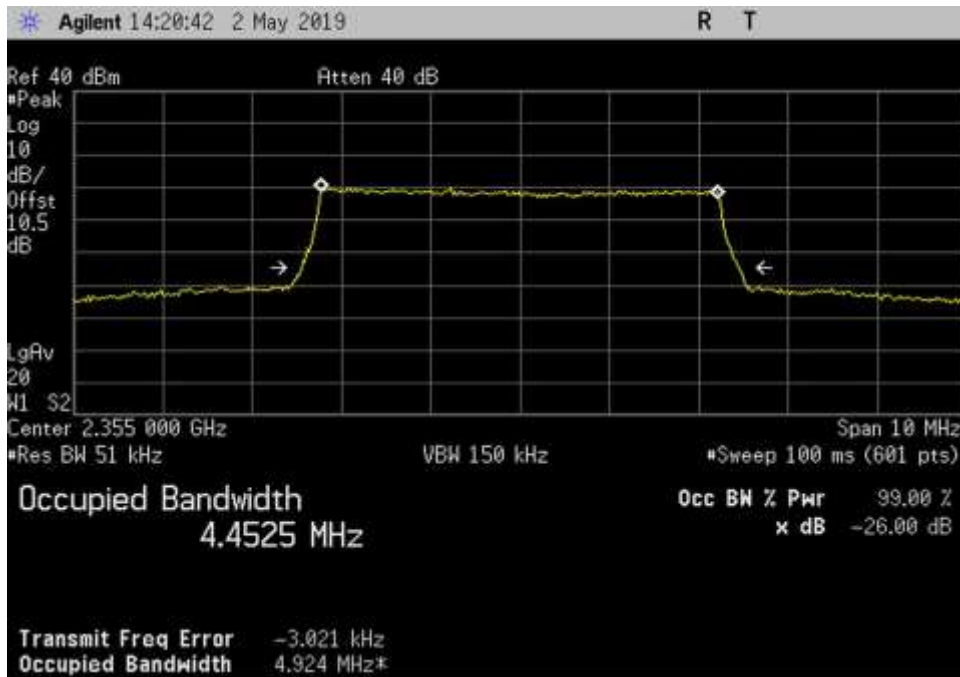
Out_DL_1930-1995_LTE_1962.5MHz_3dB



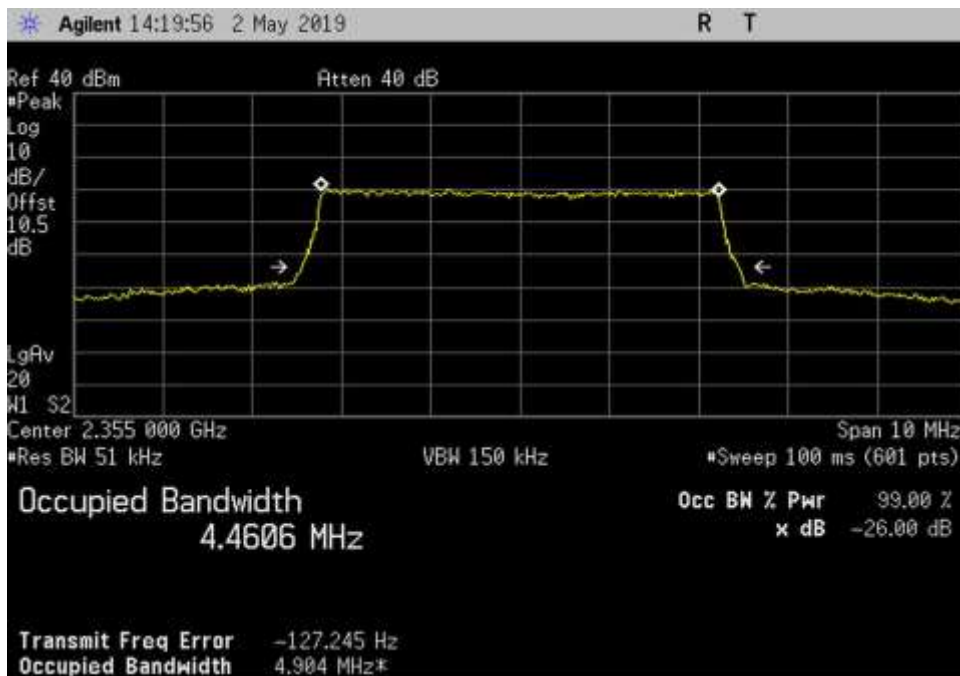
Out_DL_2110-2155_LTE_2145MHz



Out_DL_2110-2155_LTE_2145MHz_3dB

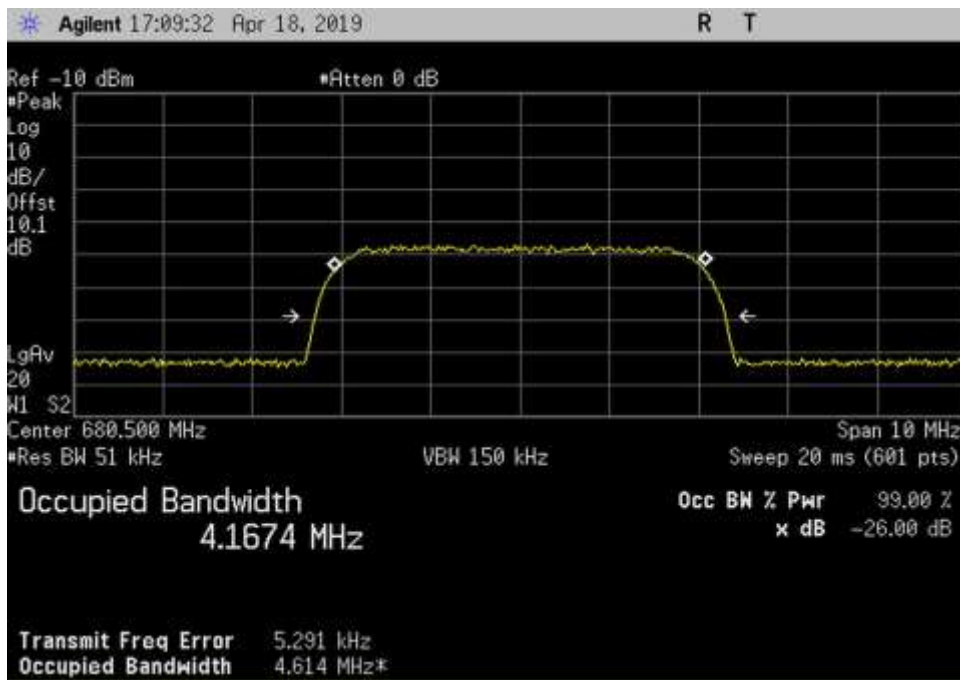


Out_DL_2350-2360_LTE_2355MHz

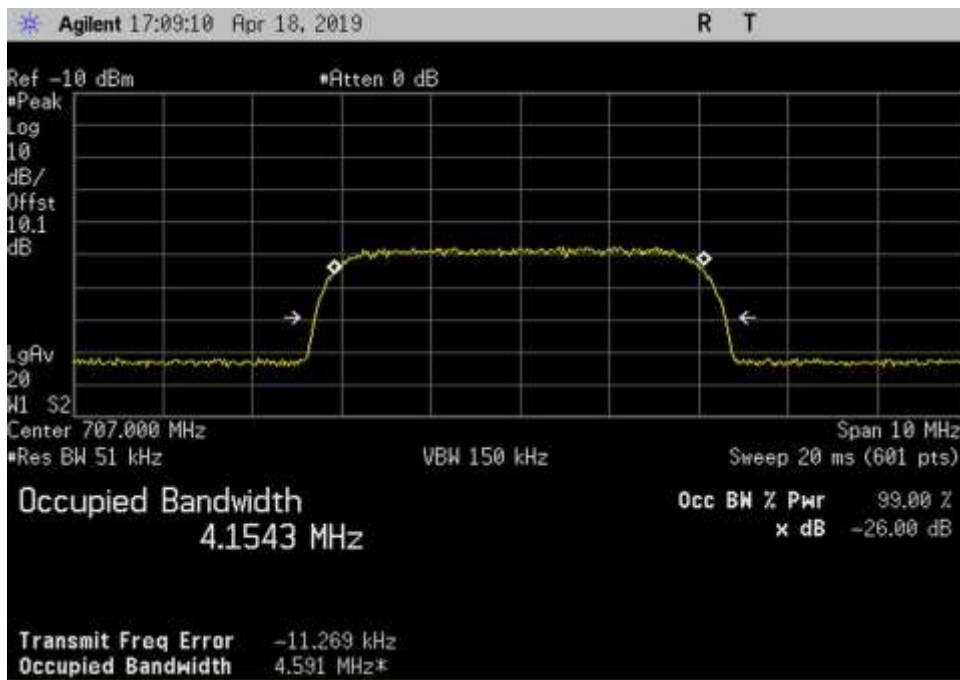


Out_DL_2350-2360_LTE_2355MHz_3dB

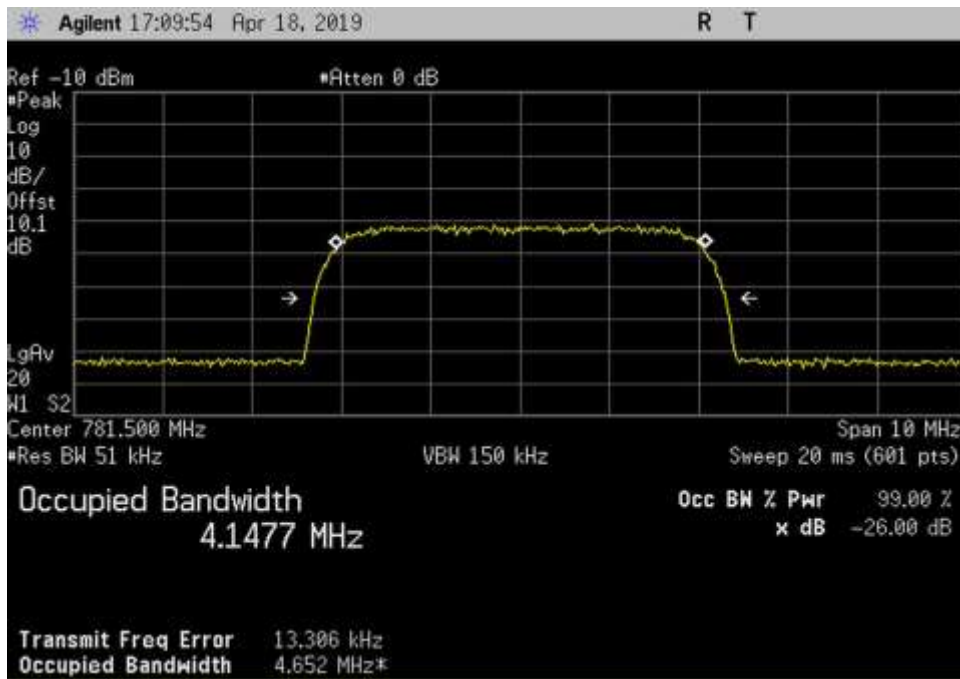
WCDMA



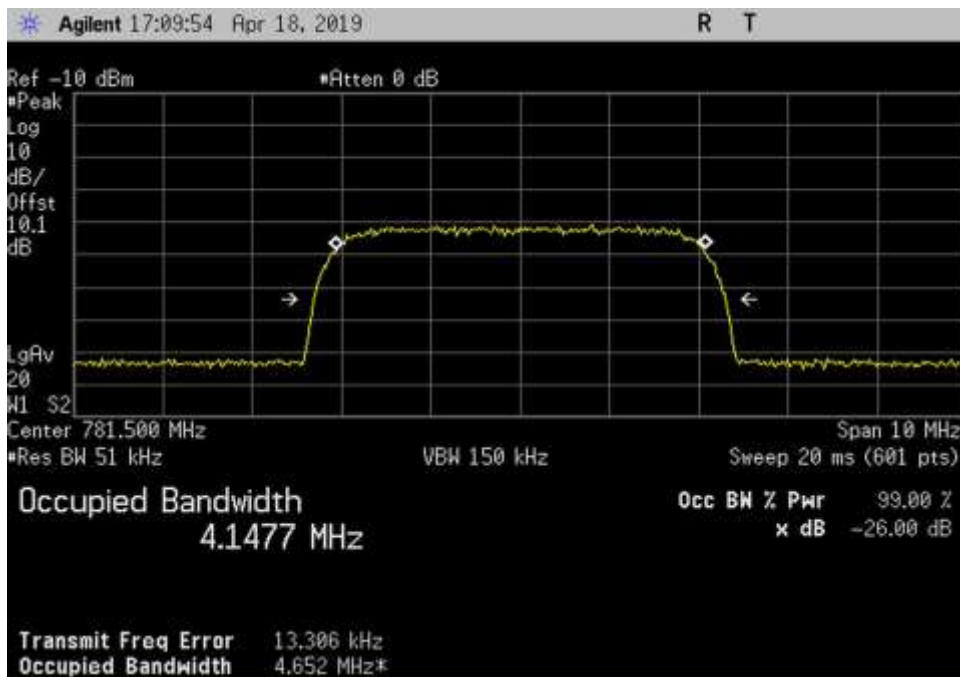
In_UL_663-698_WCDMA_680.5MHz



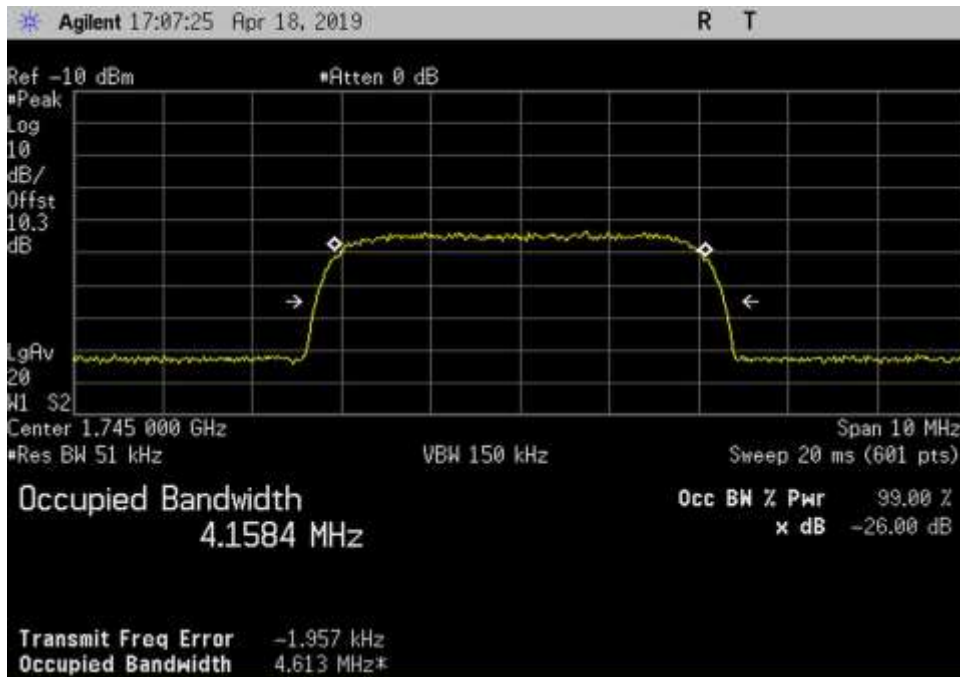
In_UL_698-716_WCDMA_707MHz



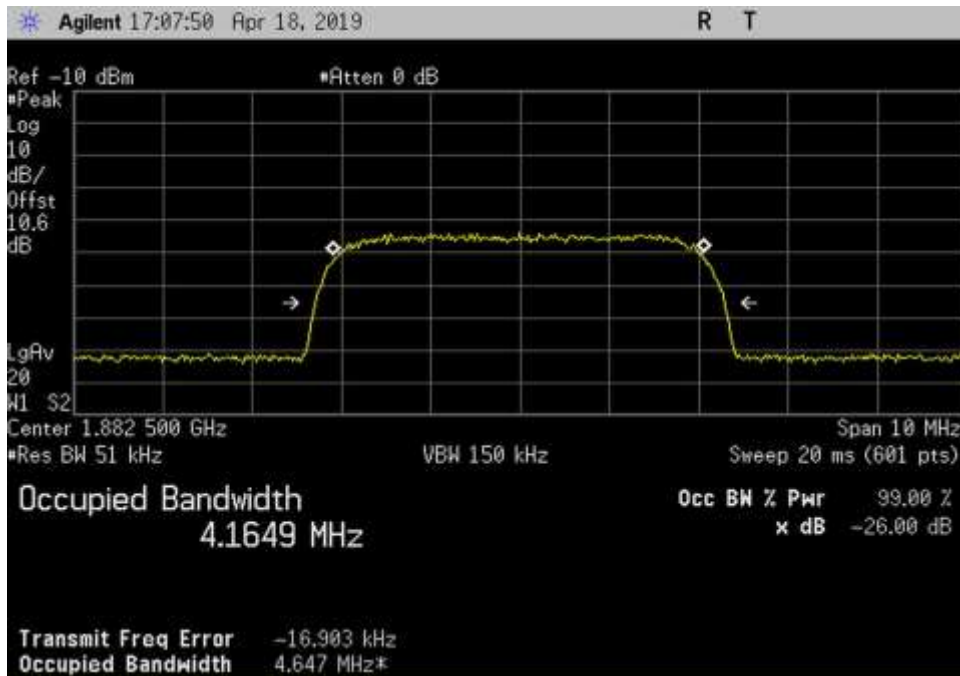
In_UL_776-787_WCDMA_781.5MHz



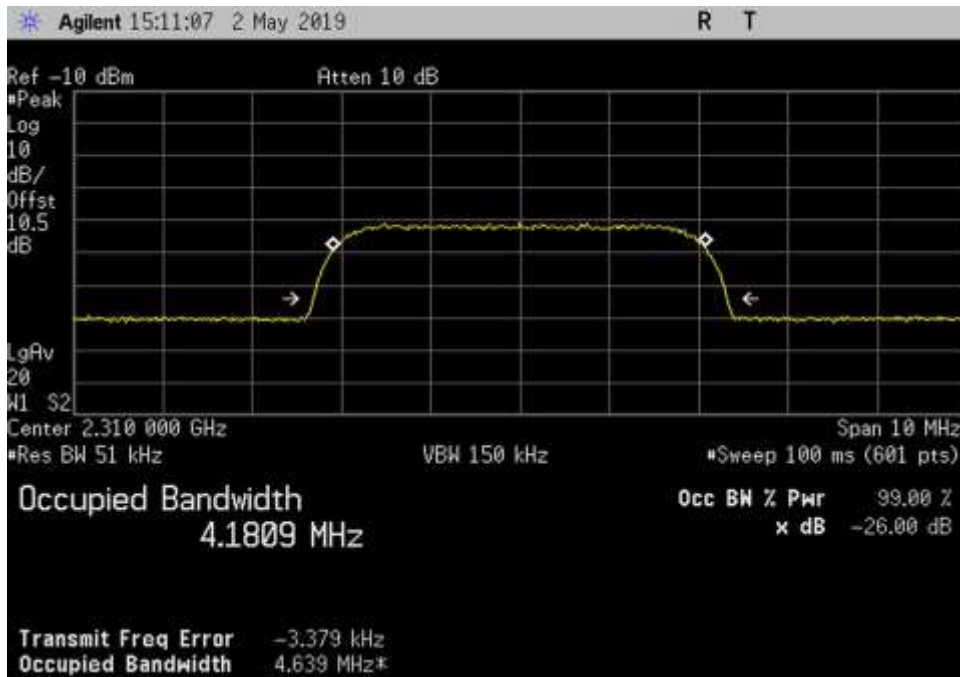
In_UL_824-849_WCDMA_836.5MHz



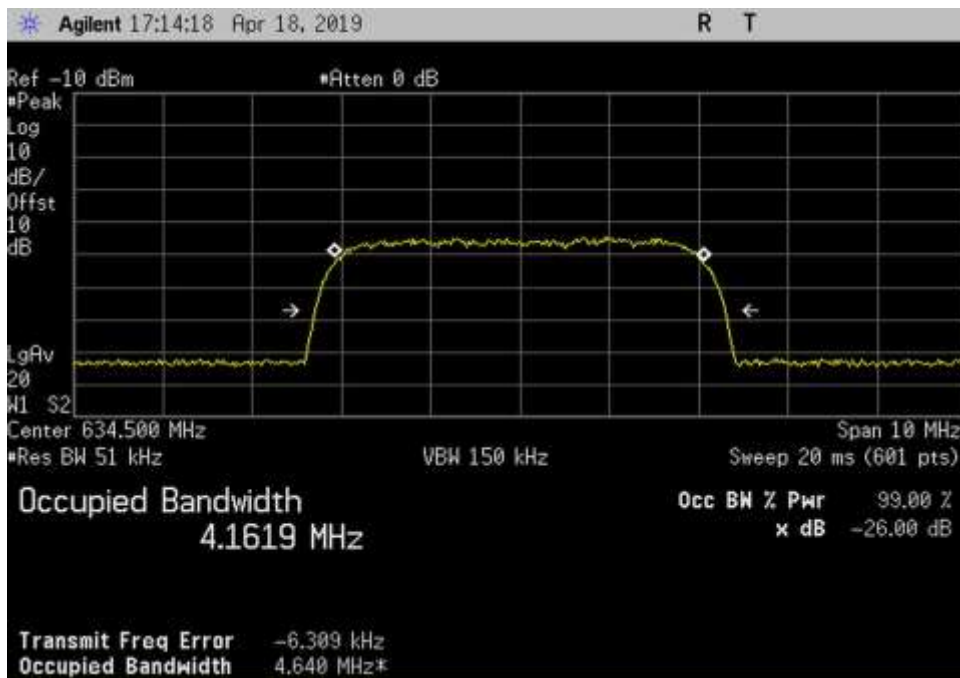
In_UL_1710-1755_WCDMA_1745MHz



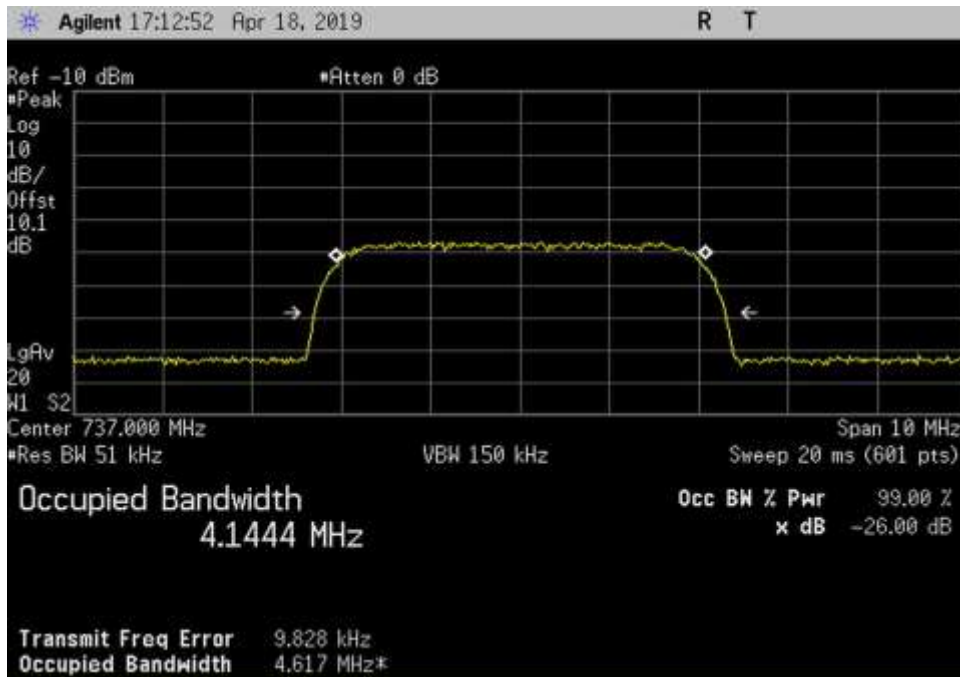
In_UL_1850-1915_WCDMA_1882.5MHz



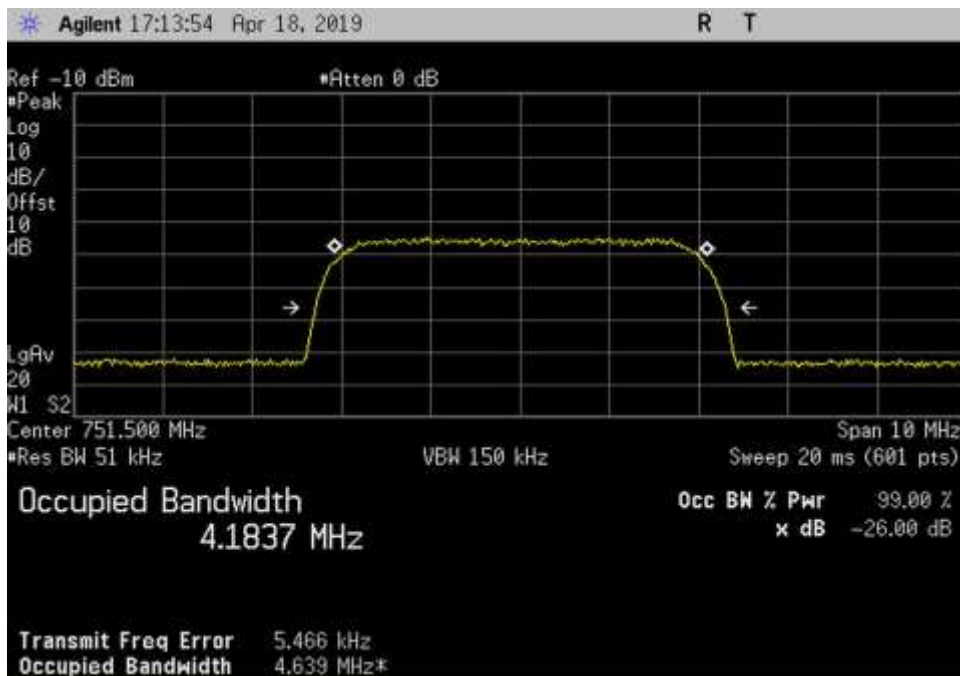
In_UL_2305-2315_WCDMA_2310MHz



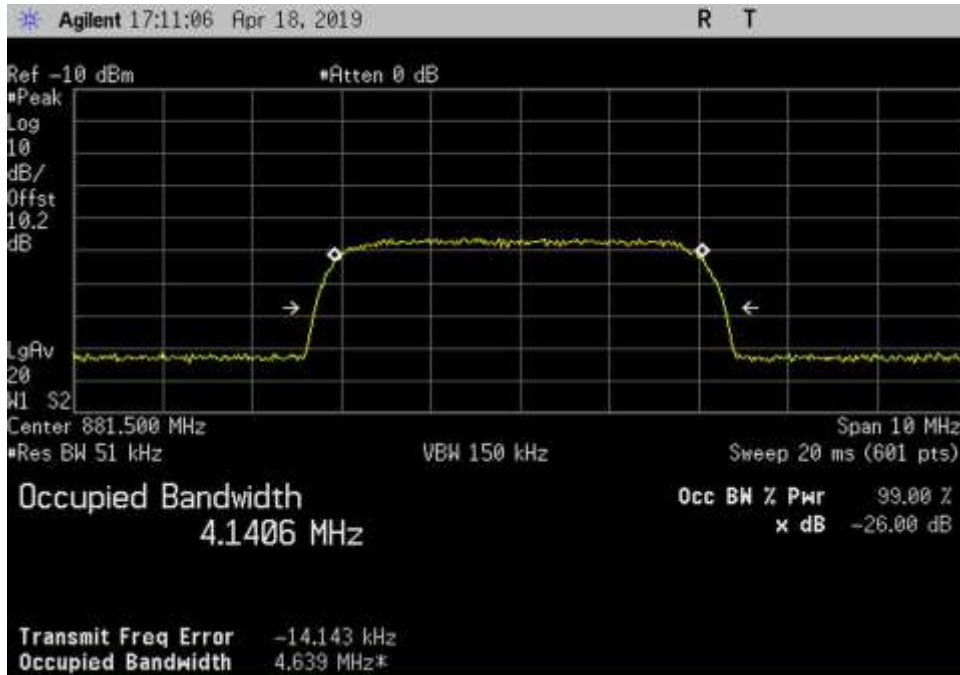
In_DL_617-652_WCDMA_634.5MHz



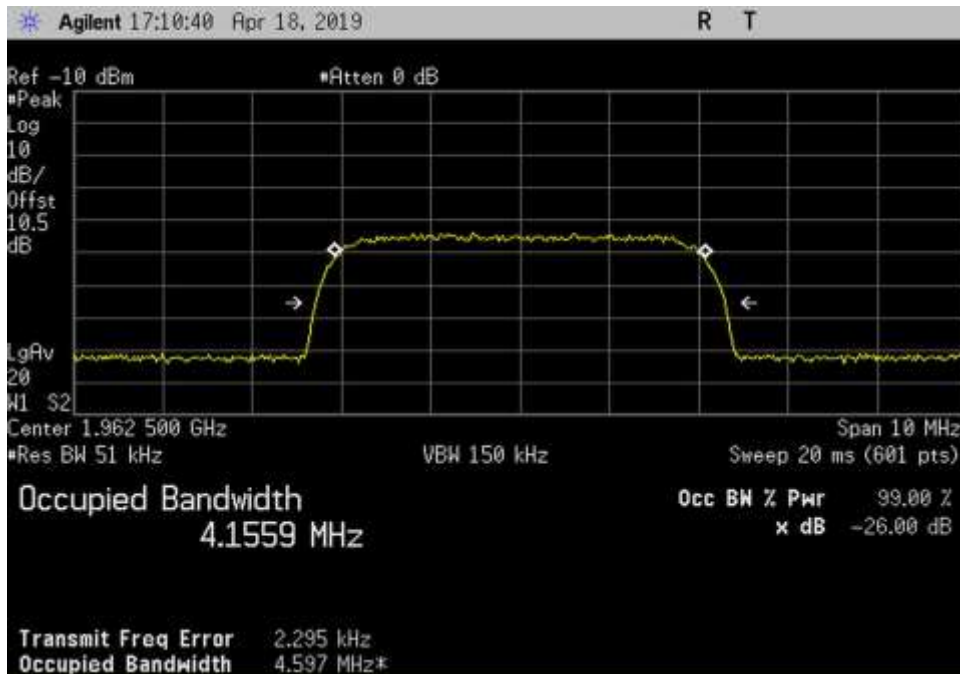
In_DL_728-746_WCDMA_737MHz



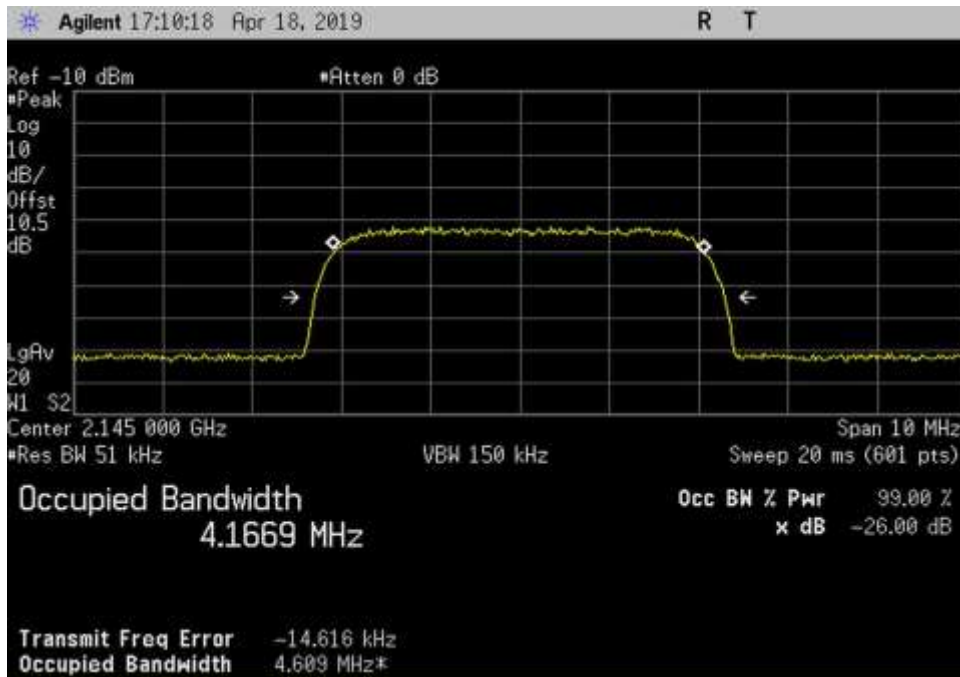
In_DL_746-757_WCDMA_751.5MHz



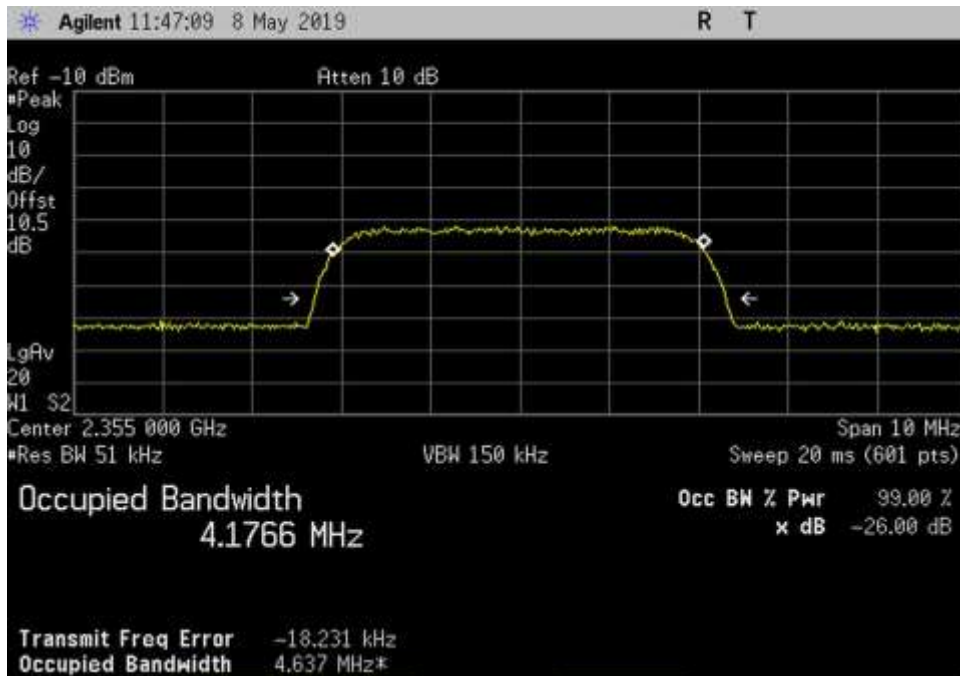
In_DL_869-894_WCDMA_881.5MHz



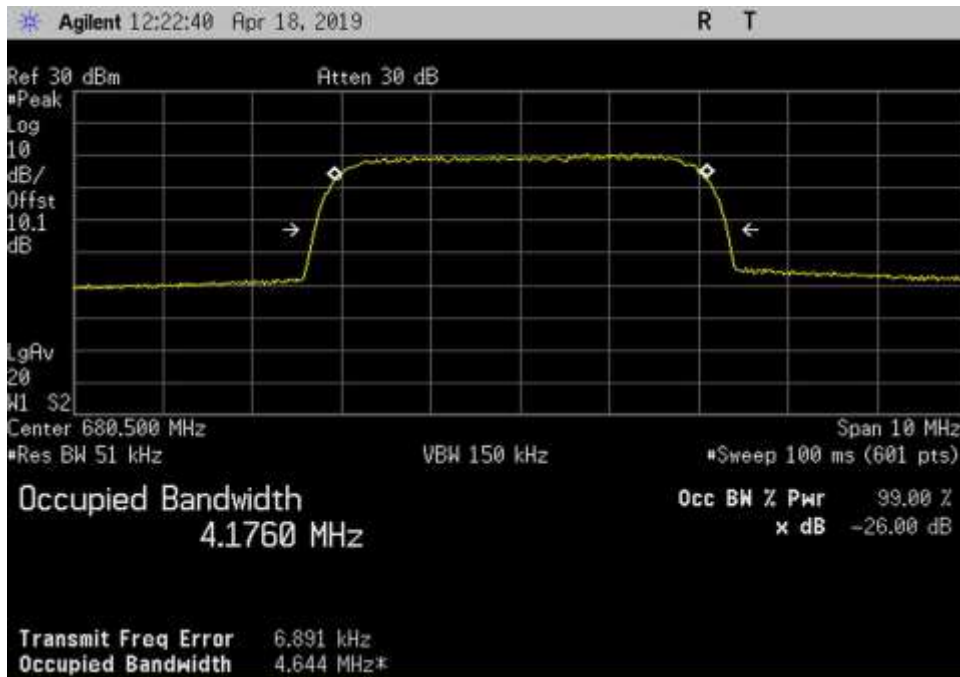
In_DL_1930-1995_WCDMA_1962.5MHz



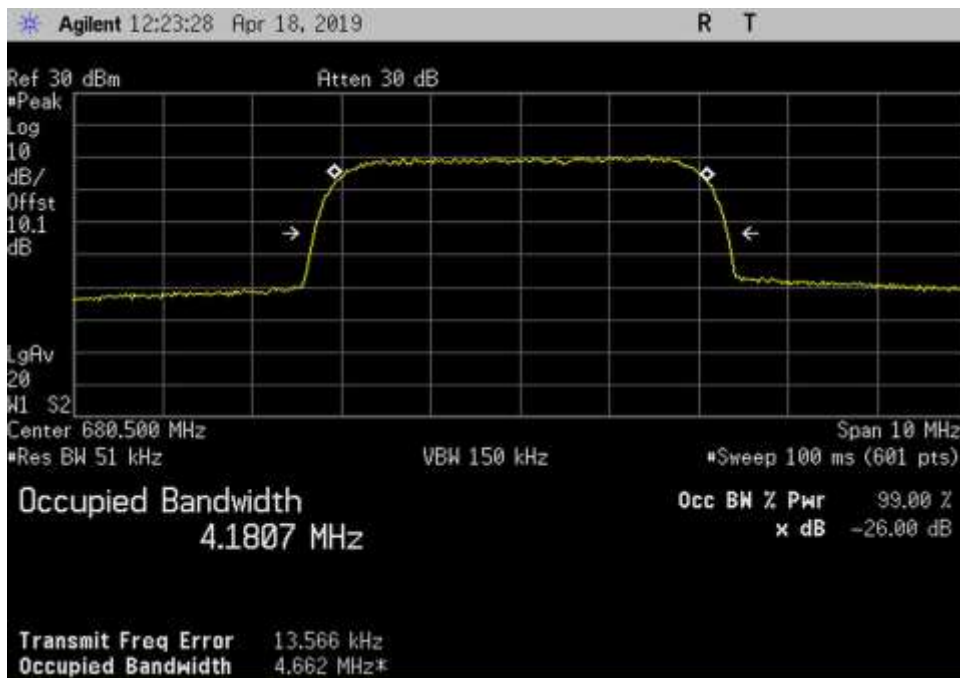
In_DL_2110-2155_WCDMA_2145MHz



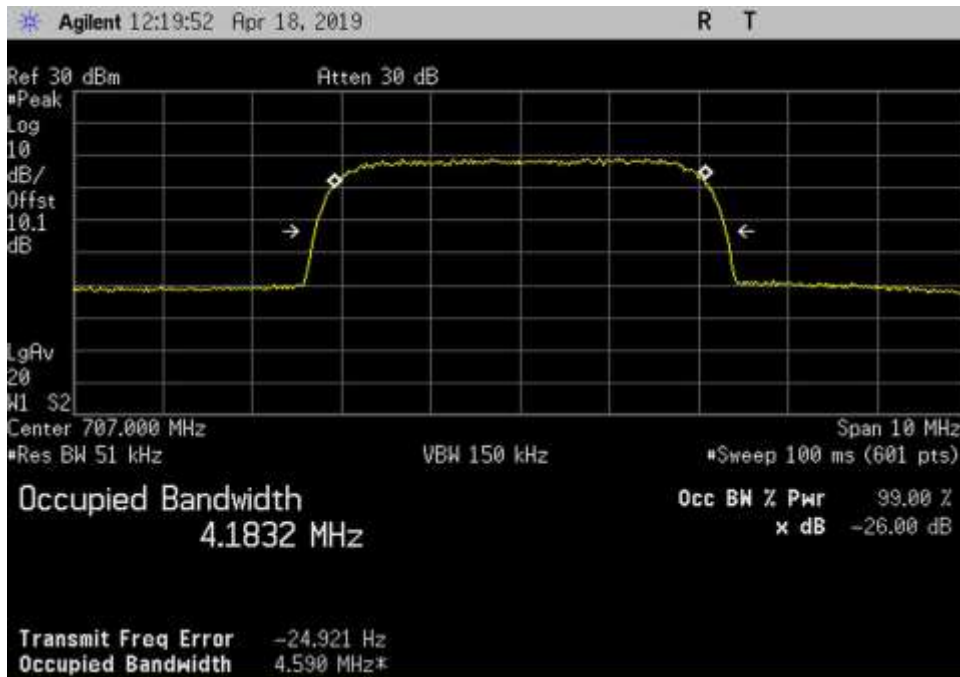
In_DL_2350-2360_WCDMA_2355MHz



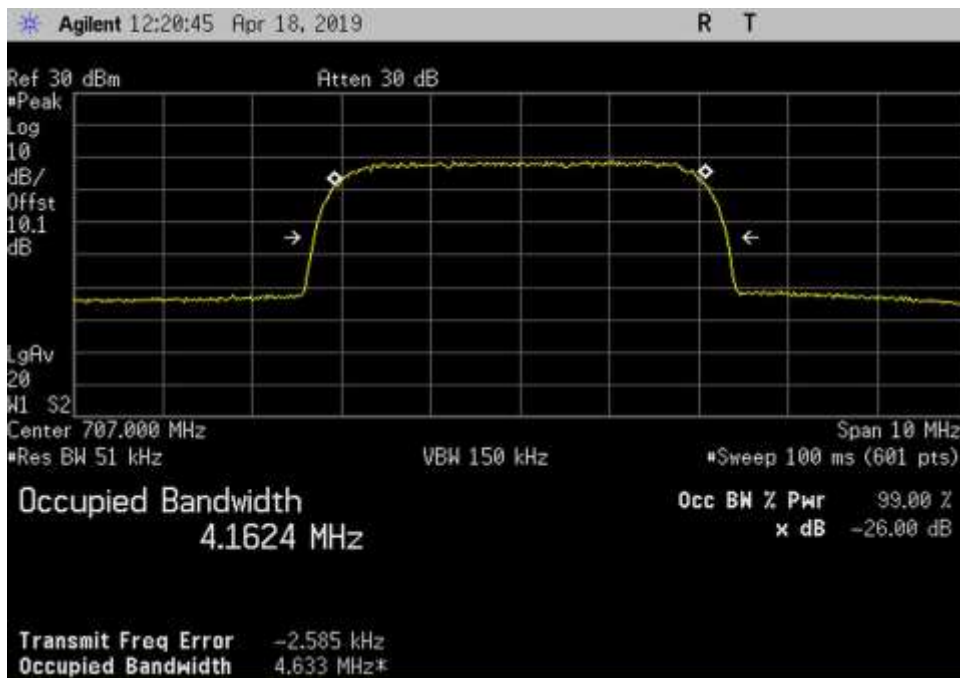
Out_UL_663-698_WCDMA_680.5MHz



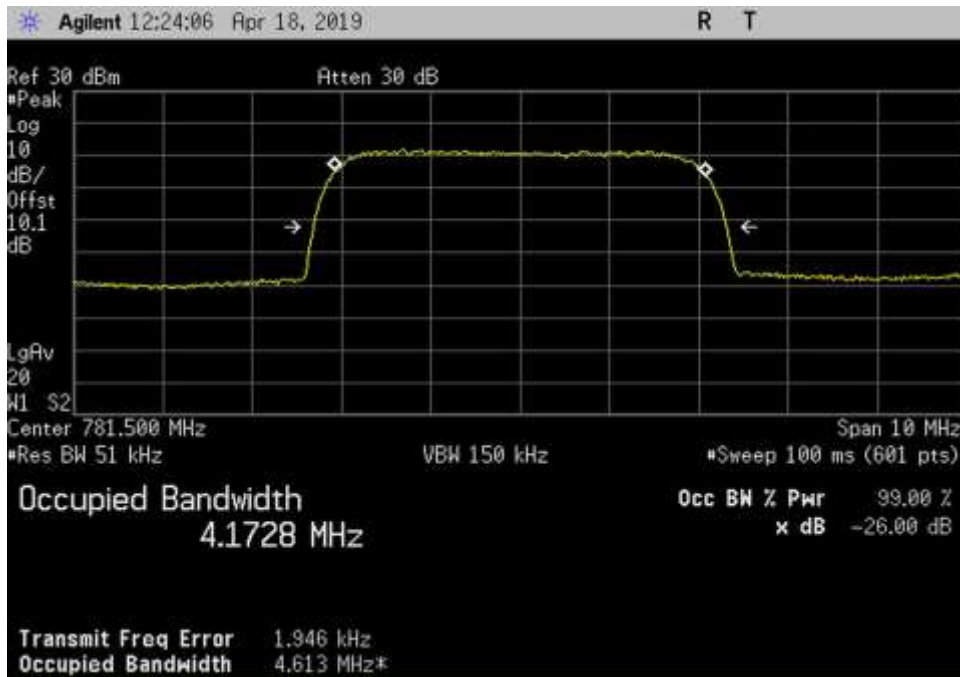
Out_UL_663-698_WCDMA_680.5MHz_3dB



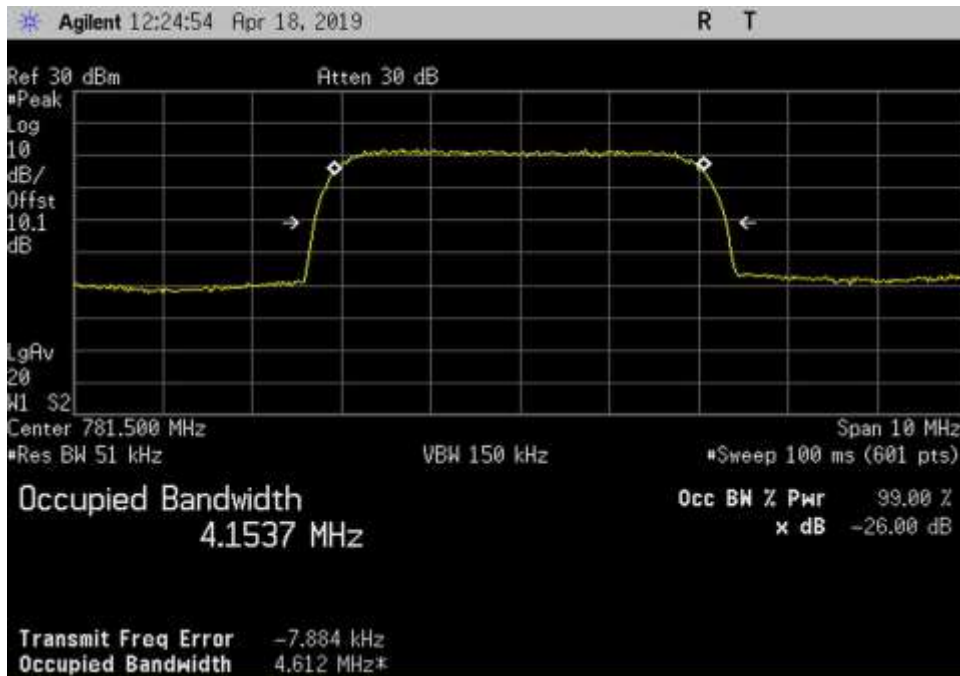
Out_UL_698-716_WCDMA_707MHz



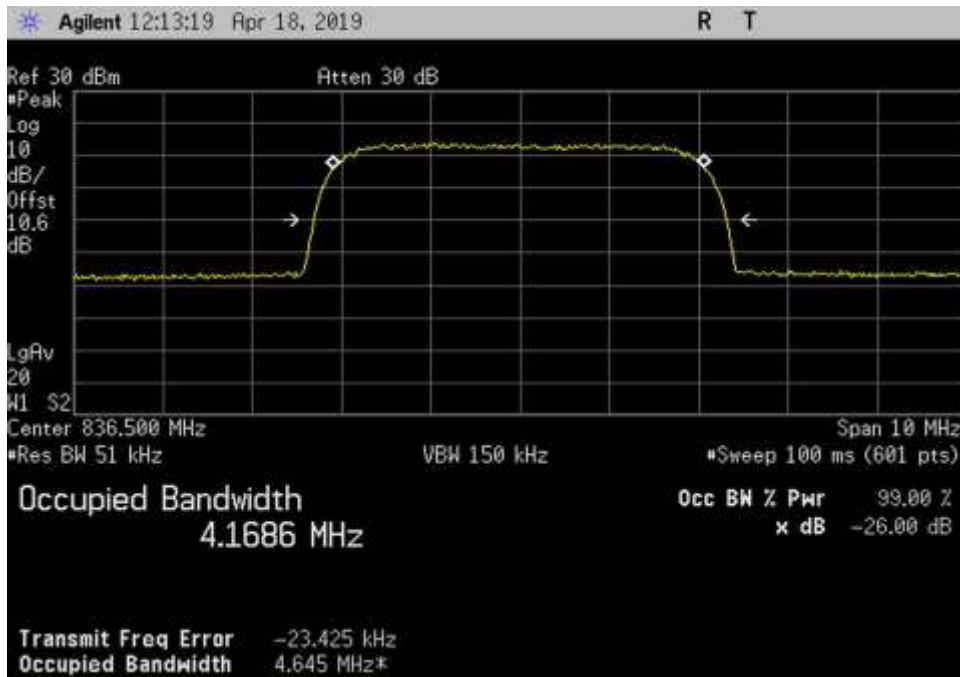
Out_UL_698-716_WCDMA_707MHz_3dB



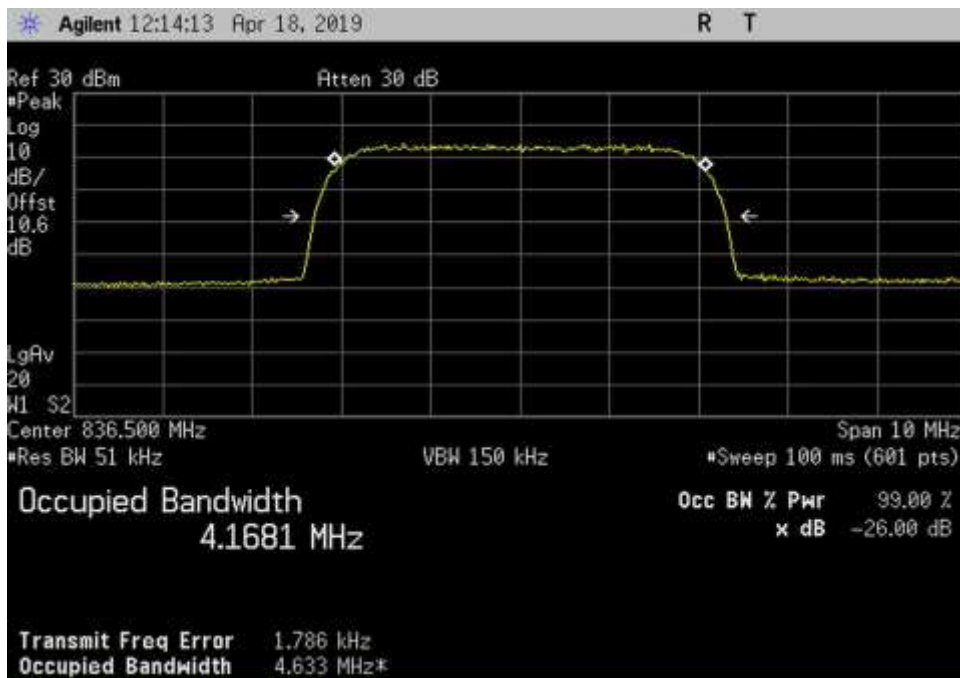
Out_UL_776-787_WCDMA_781.5MHz



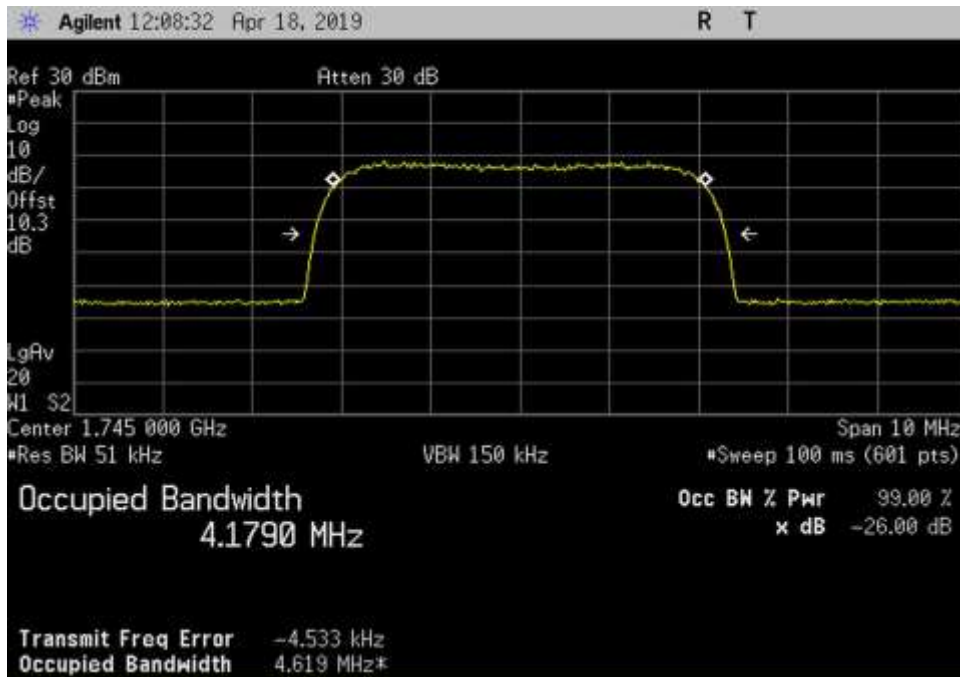
Out_UL_776-787_WCDMA_781.5MHz_3dB



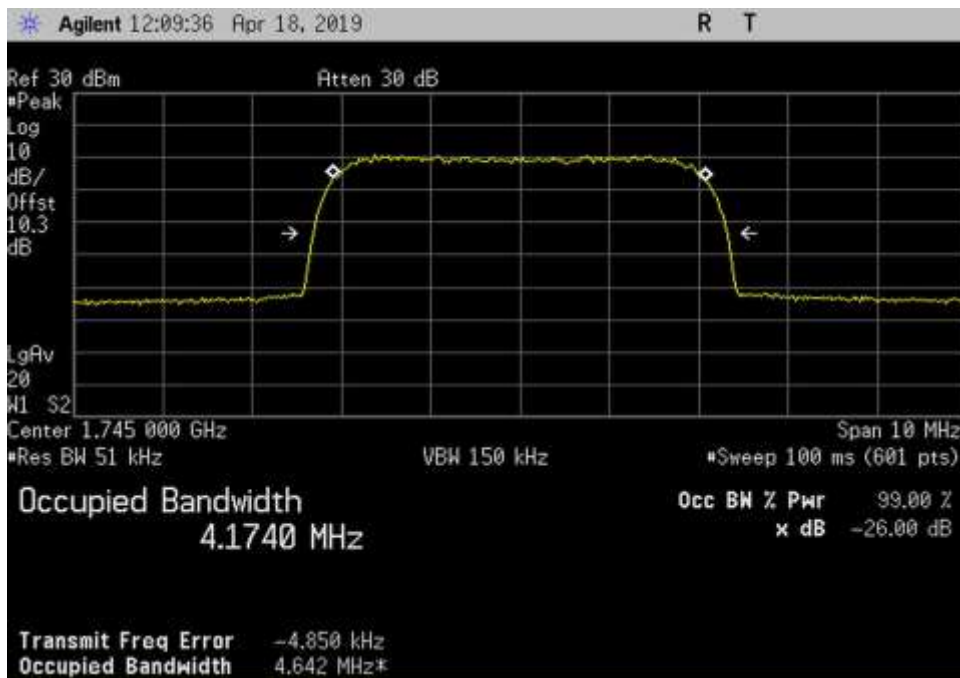
Out_UL_824-849_WCDMA_836.5MHz



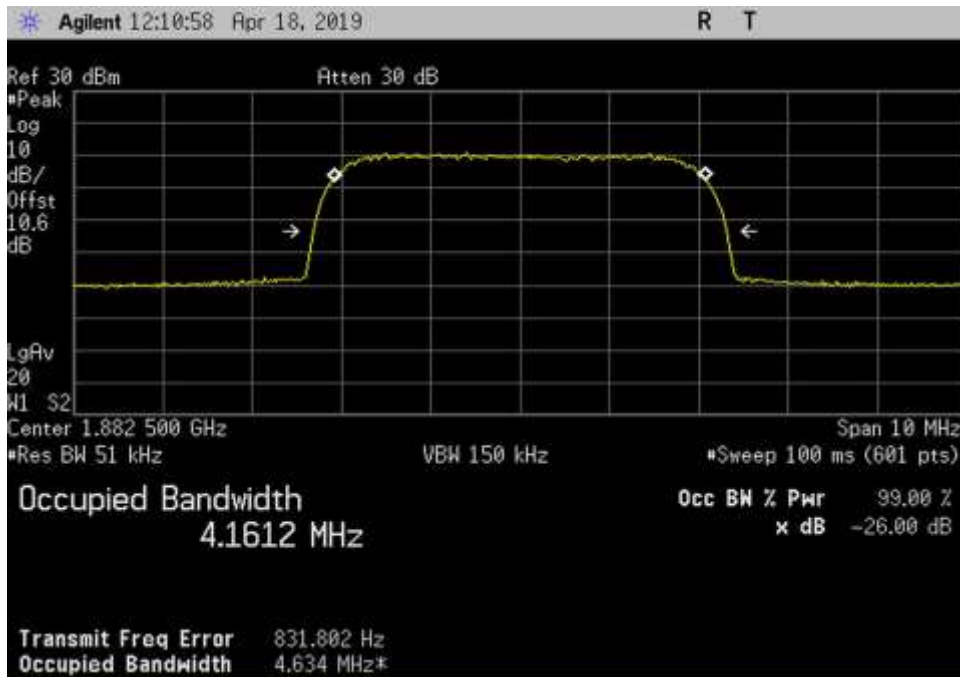
UL_824-849_WCDMA_836.5MHz_3dB



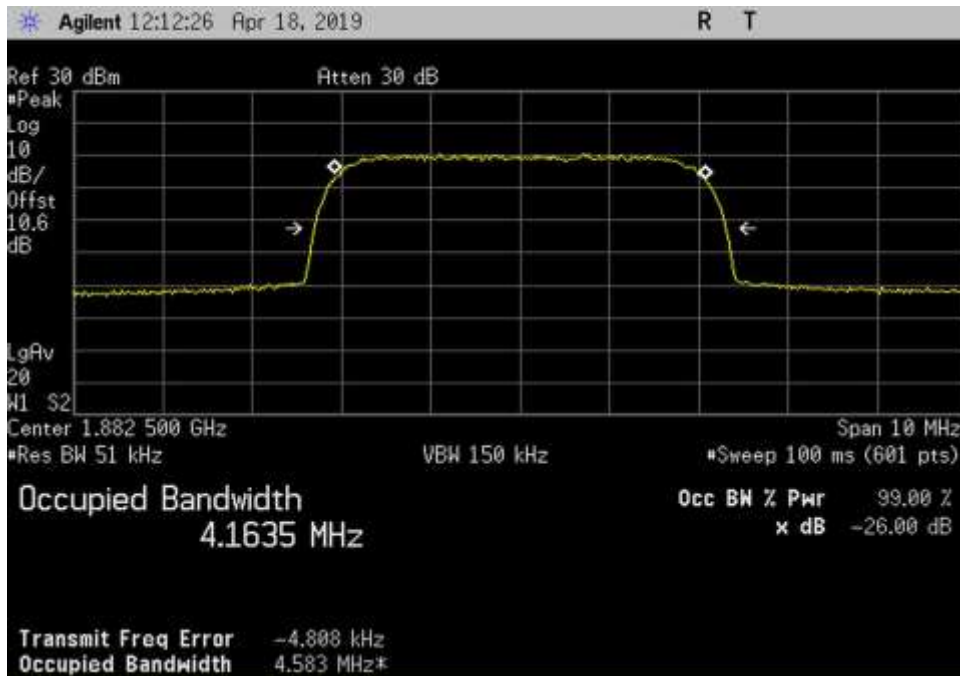
Out_UL_1710-1755_WCDMA_1745MHz



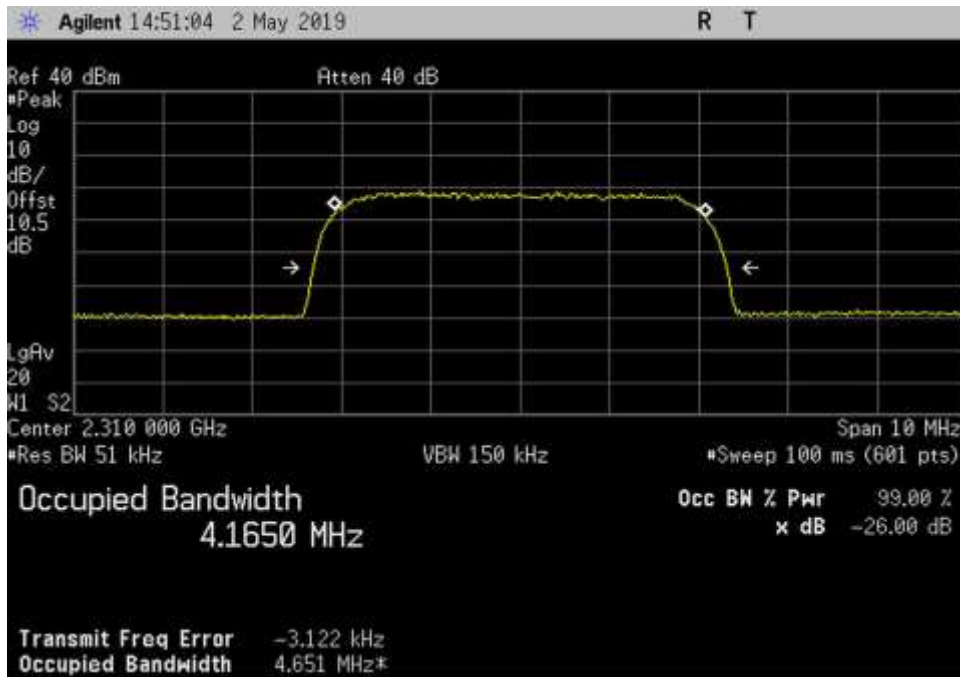
Out_UL_1710-1755_WCDMA_1745MHz_3dB



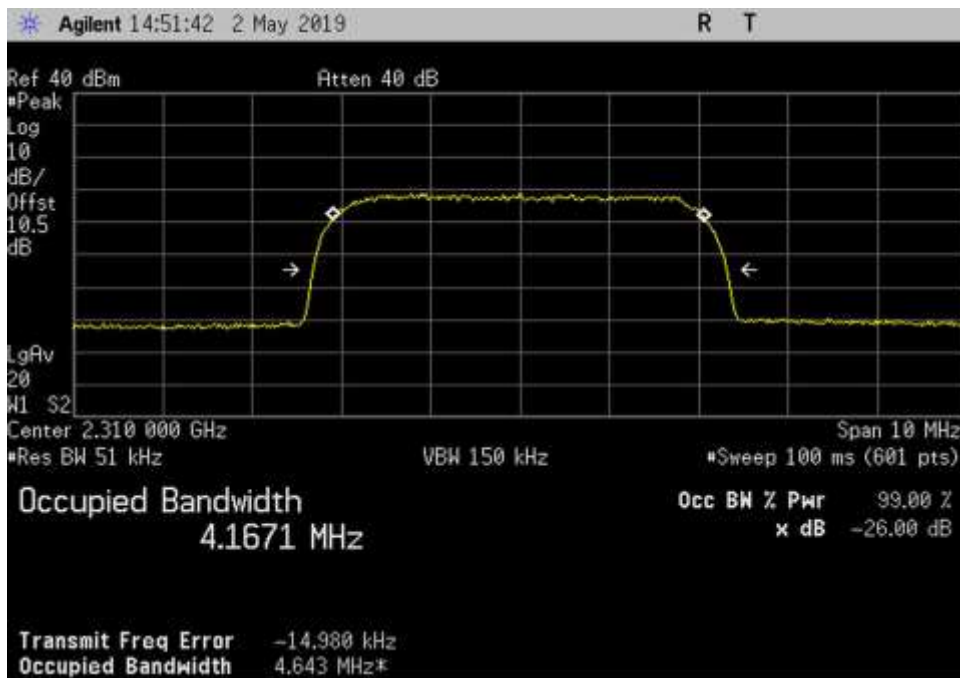
Out_UL_1850-1915_WCDMA_1882.5MHz



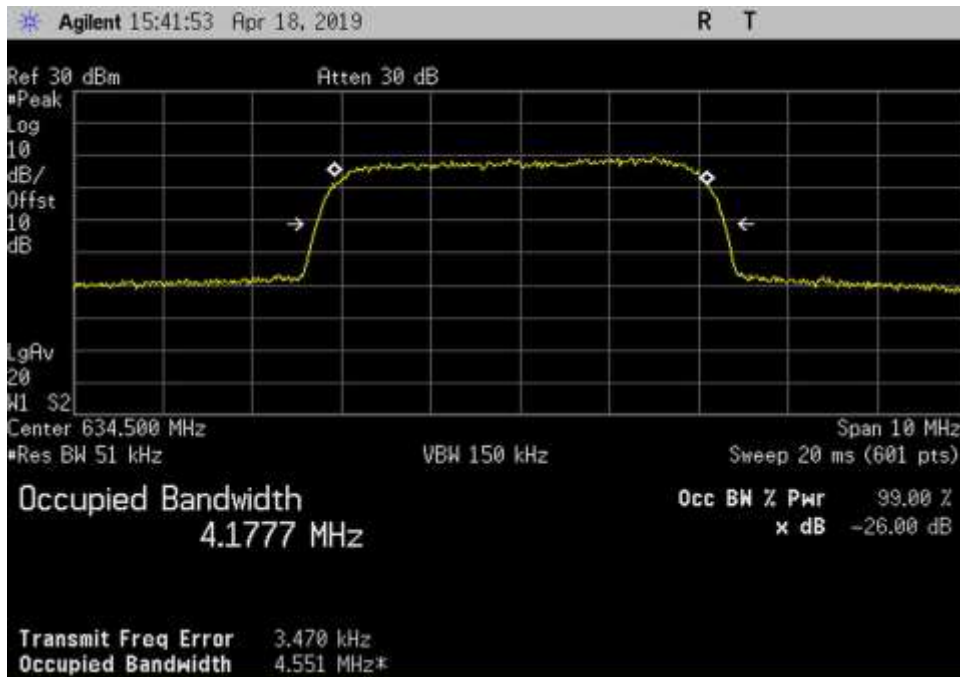
Out_UL_1850-1915_WCDMA_1882.5MHz_3dB



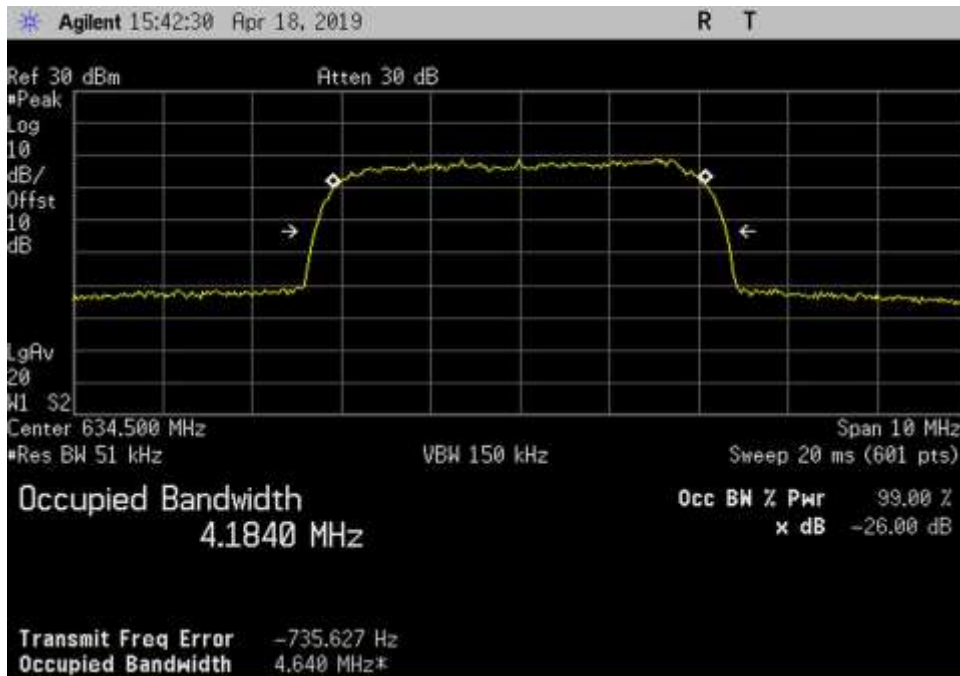
Out_UL_2305-2315_WCDMA_2310MHz



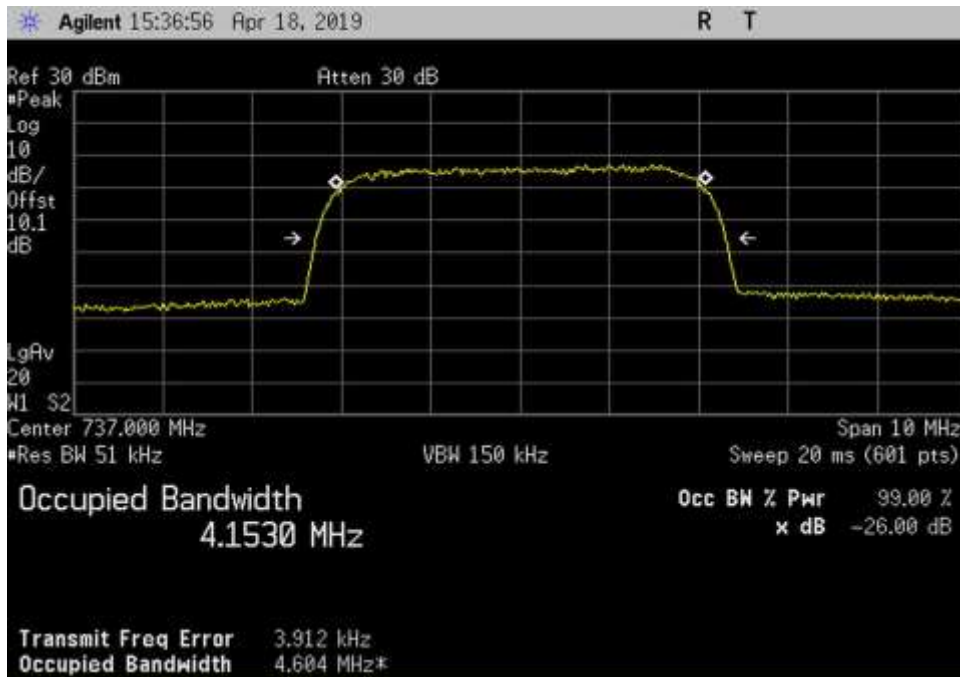
Out_UL_2305-2315_WCDMA_2310MHz_3dB



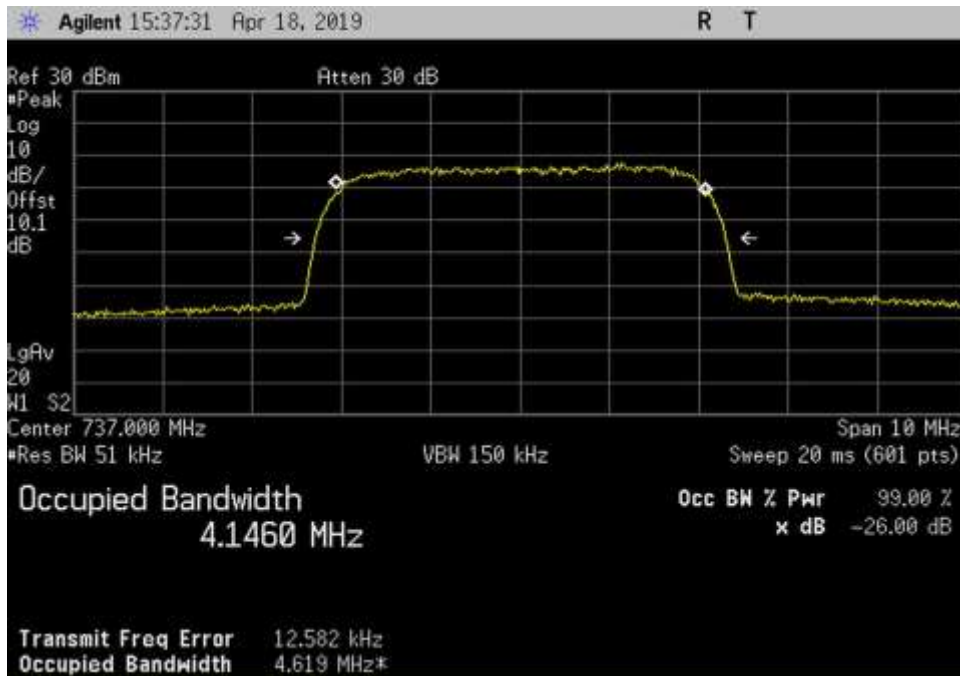
Out_DL_617-652_WCDMA_634.5MHz



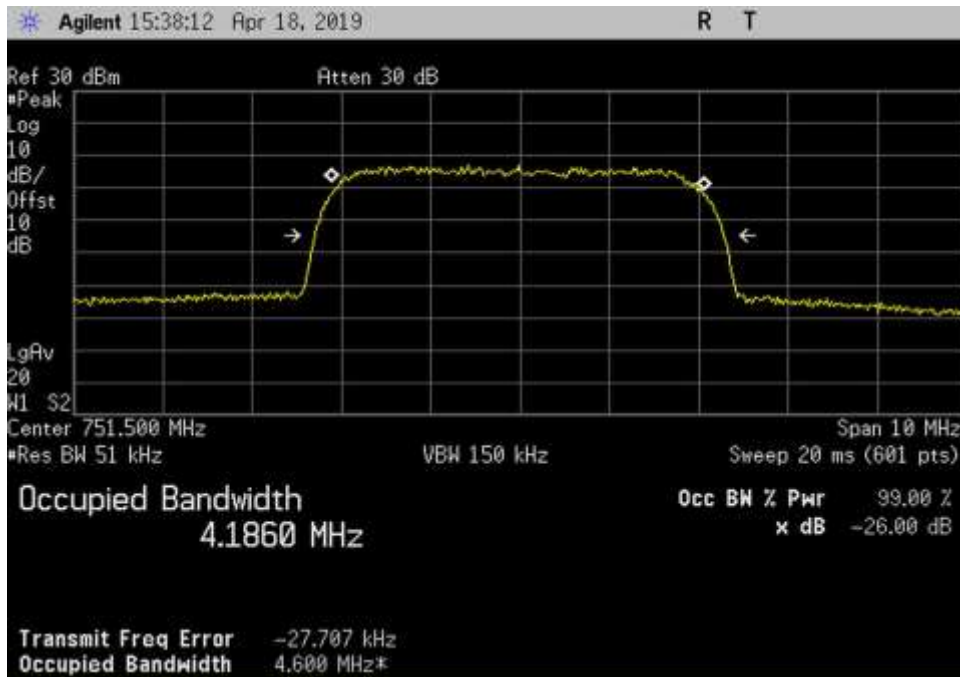
Out_DL_617-652_WCDMA_634.5MHz_3dB



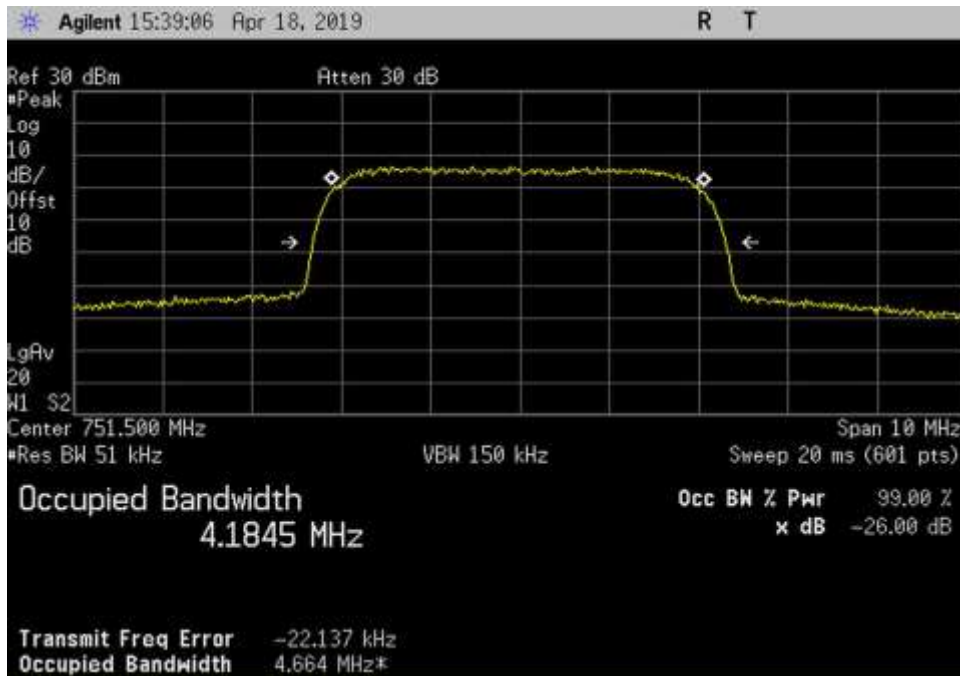
Out_DL_728-746_WCDMA_737MHz



Out_DL_728-746_WCDMA_737MHz_3dB



Out_DL_746-757_WCDMA_751.5MHz



Out_DL_746-757_WCDMA_751.5MHz_3dB