Cellphone-Mate, Inc.

REVISED TEST REPORT TO 99983-12A

5 Band Mobile Consumer Booster
Model: Fusion2go 2.0

Tested to The Following Standard:

FCC Parts 20.21 / 22 / 24 / 27

Report No.: 99983-12B

Date of issue: March 27, 2019

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

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

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Dennis Findley
Customer Reference Number: CKC20170505

REPORT PREPARED BY:

Darcy Thompson
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 99983

DATE OF EQUIPMENT RECEIPT: May 17, 2017
DATE(S) OF TESTING: May 17-30, 2017
March 4, 2019

Revision History

Original: Testing of the 5 Band Mobile Consumer Booster, Model: Fusion2go 2.0 to FCC Parts 20.21.
Addendum A: To change title page from FCC Part 20.21 to FCC Parts 20.21 / 22 / 24 / 27.
To correct equipment table in Section 7.12 Radiated Spurious.
Revision B: To replace section 7.4 with corrected test data

Report Authorization

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

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

Test Facility Information

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

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

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.02
EMITest Emissions	5.03.11
EMITest Immunity	5.03.02

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont, CA	US0082	SL2-IN-E-1148R	3082B-1	US1023	A-0149

SUMMARY OF RESULTS

Standard / Specification: FCC Parts 20.21 / 22 / 24 / 27

KDB 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04, Feb 12, 2016		FCC Part Section Correlation		Mods	Results
Guidance Sec #	**Guidance Description**	**FCC Sec #**	**FCC Rule Description**		
7.1 a) - k)	Authorized Frequency Band Verification Test	20.21(e)(3)	Frequency Bands	NA	Pass
7.2.2 a) - k)	Maximum Power Measurement Procedure	2.1046/20.21(e)(8)(i)(D)	Power Limit	NA	Pass
7.3 a) - d)	Maximum Booster Gain Computation	20.21(e)(8)(i)(B)	Bidirectional Capabilities	NA	Pass
7.4 a) - n)	Intermodulation Product	20.21(e)(8)(i)(F)	Intermodulation Limit	NA	Pass
7.5 a) - n)	Out of Band Emissions	20.21(e)(8)(i)(E)	Out of Band Emission	NA	Pass
7.6 a) - e)	Conducted Spurious Emission	2.1051/22/24/27	Spurious emission	NA	Pass
7.7.1 a) - g) 7.7.1 h) - n) 7.7.2 a) - g)	Noise Limit Procedure Variable Noise Variable Noise Timing	20.21(e)(8)(i)(A)(2)(i) 20.21(e)(8)(i)(A)(1) 20.21(e)(8)(i)(H)	Noise Limits Transmit Power Off Mode	NA	Pass
7.8 a) - l)	Uplink inactivity	20.21(e)(8)(i)(I)	Uplink Inactivity	NA	Pass

NA = Not Applicable

Standard / Specification: FCC Parts 20.21 / 22 / 24 / 27 continued

KDB 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04, Feb 12, 2016		FCC Part Section Correlation		Mods	Results
Guidance Sec #	**Guidance Description**	**FCC Sec #**	**FCC Rule Description**		
7.9.1 a) - l) 7.9.2 a) - f)	Variable Booster Gain Variable Uplink Gain Timing	20.21(e)(8)(i)(C) (1), (2)(i) 20.21(e)(8)(i)(H)	Booster Gain Transmit Power Off Mode	NA	Pass
7.10.a) - j)	Occupied Band Width	2.1049/22/24/27	Occupied Band Width	NA	Pass
7.11.2 a) - r) 7.11.3 a) - h) 7.11.4 a) - h) (alternate to 7.11.3)	Anti-Oscillation	20.21(e)(8)(ii)(A)	Anti-Oscillation	NA	Pass
7.12a) - f)	Radiated Spurious Emission	2.1053/ 22/24/27	Spurious Emission	NA	Pass
7.13 a) - c)	Spectrum Block Filter[2]	NA[1]	NA[1]	NA	NA[1]

NA = Not Applicable

NA[1] = This device does not employ spectrum block filter.

Modifications During Testing

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

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

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

Configuration 1

Equipment Tested:

Device	Manufacturer	Model #	S/N
5 Band Mobile Consumer Booster	Cellphone-Mate, Inc.	Fusion2go 2.0	01

Support Equipment:

Device	Manufacturer	Model #	S/N
Switching Power Adapter	SureCall	GME36A-120300FDS	None

Configuration 1-for tests performed on March 4, 2019 only

Equipment Tested:

Device	Manufacturer	Model #	S/N
5 Band Mobile Consumer Booster	Cellphone-Mate, Inc.	Fusion2go 2.0	01

Support Equipment:

Device	Manufacturer	Model #	S/N
Switching Power Adapter	SureCall	GME36A-120300FDS	None

FCC PART 20.21

7.1 Authorized Frequency Band Verification

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**7.1 Authorized Frequency Band Verification**		
Work Order #:	**99983**	Date:	5/17/2017
Test Type:	**Conducted Emissions**	Time:	10:18:00 AM
Tested By:	**Daniel Bertran**	Sequence#:	1
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.
The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.
The EUT Server port is a type FME connector and 50-ohm impedance.
The EUT Donor port is type FME connector and 50-ohm impedance.

Part 22
UL: 824-849MHz
DL: 869-894MHz
Part 24
UL: 1850-1915MHz
DL: 1930-1995MHz
Part 27
UL: 1710-1755MHz, 698-716MHz, 776-787MHz
DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure:
The test was performed in accordance with section 7.1 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04 Dated February 12, 2016.
Firmware: 1.7
Test environment conditions: Test environment conditions: 22°C, 40% Relative Humidity, 101.6 kPa

Test Equipment:

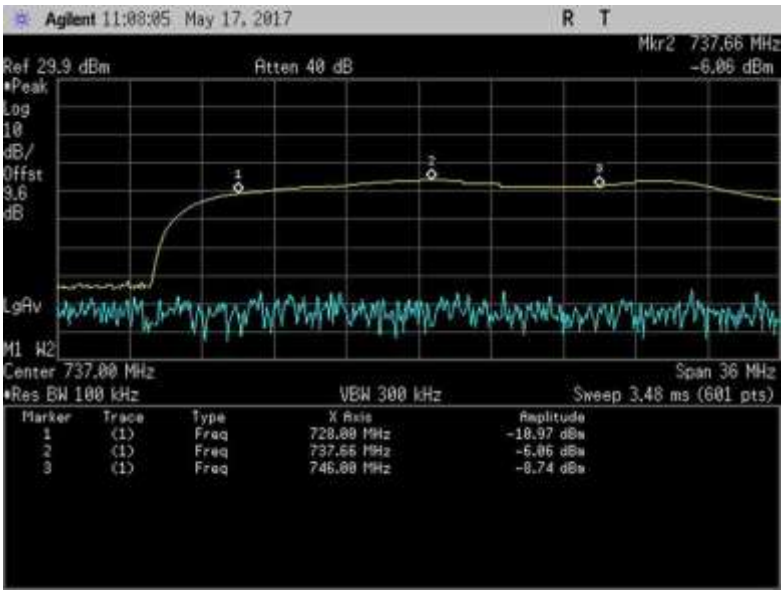
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	7/30/2015	7/30/2017
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	1/4/2016	1/4/2018

Summary of Results

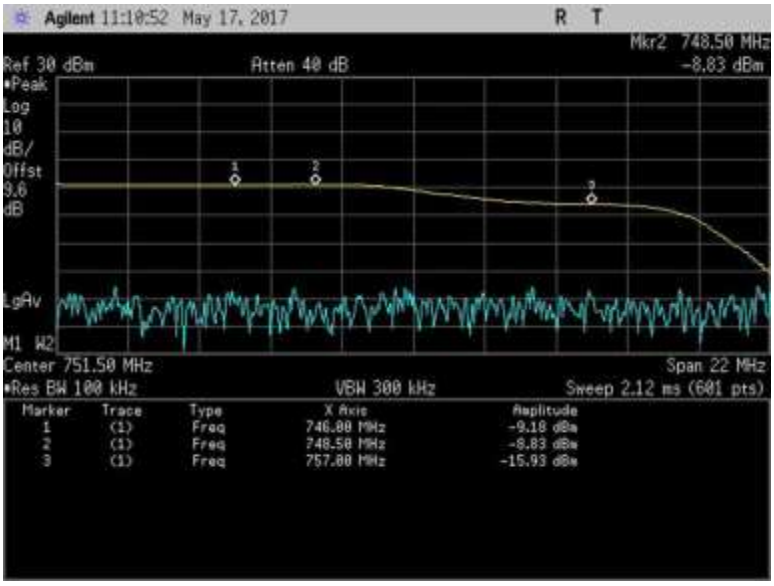
Pass: The plots below show the device only operates on the CMRS frequency bands authorized for use by the NPS.

Plots

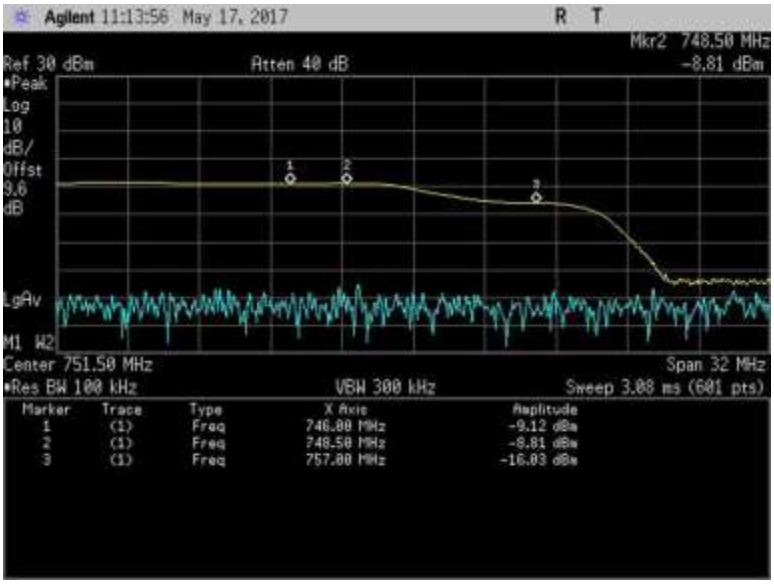
DL



7.1_Band Verify_DL_728-746MHz



7.1_Band Verify_DL_746-757MHz



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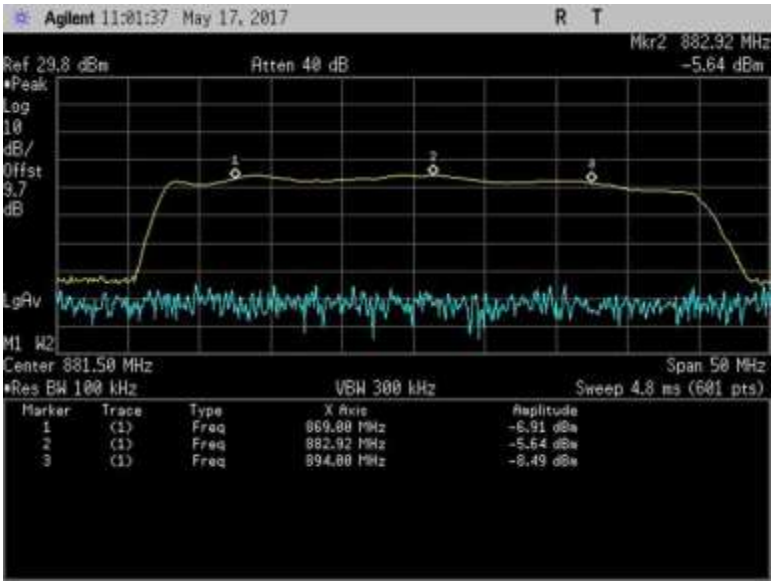
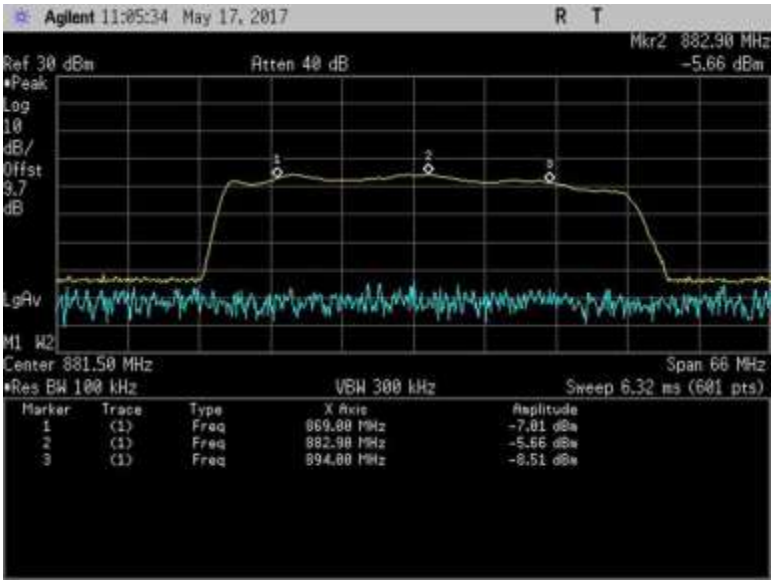
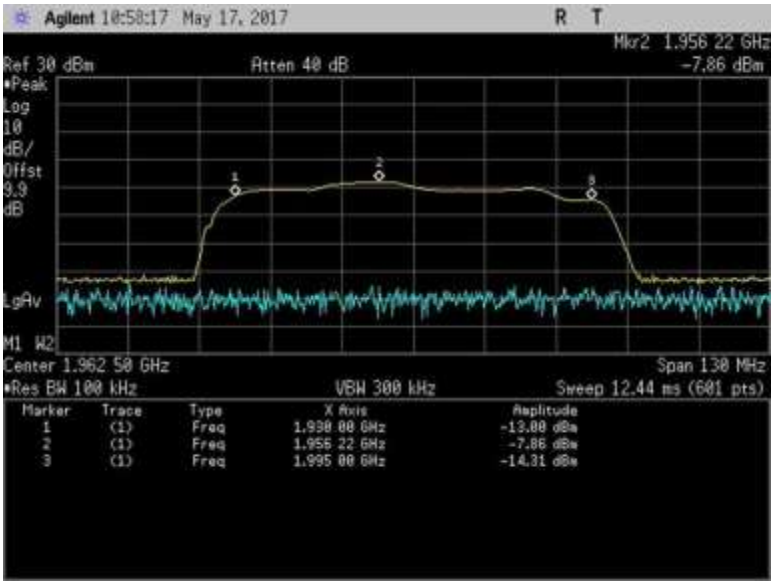


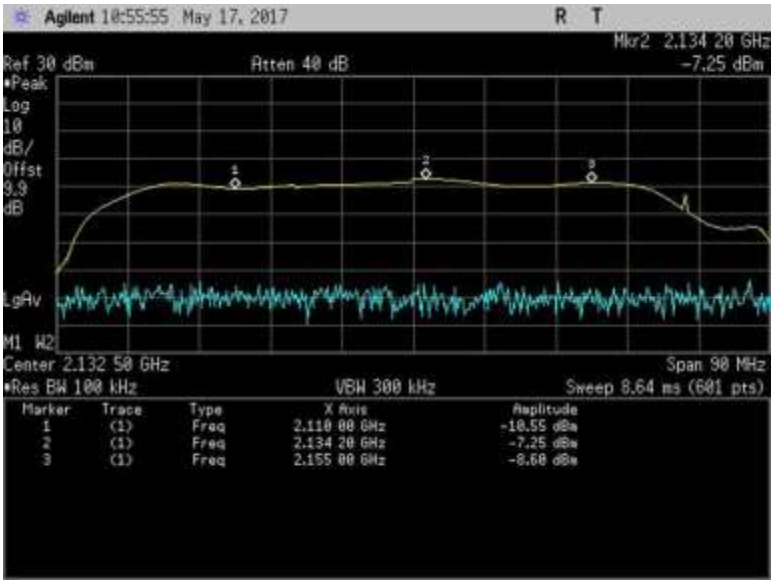
7.1_Band Verify_DL_869-894MHz



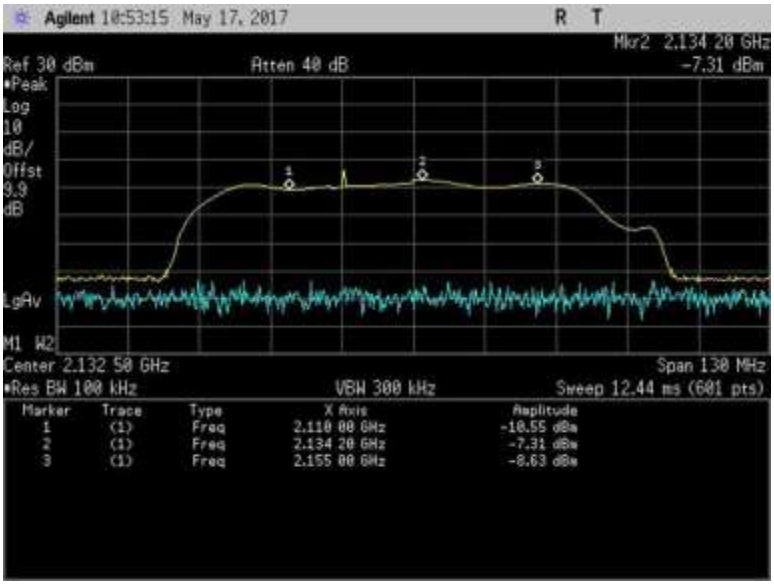
7.1_Band Verify_DL_869-894MHz_Zoom



7.1_Band Verify_DL_1930-1995MHz

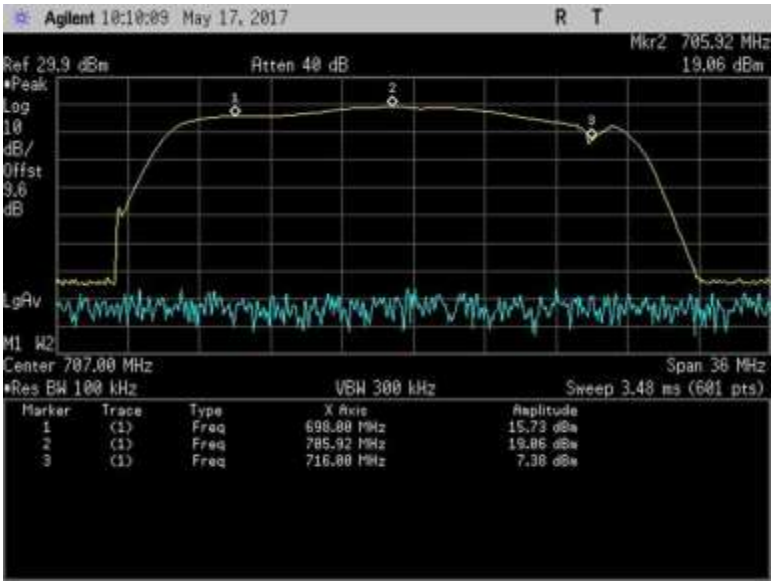


7.1_Band Verify_DL_2110-2155MHz

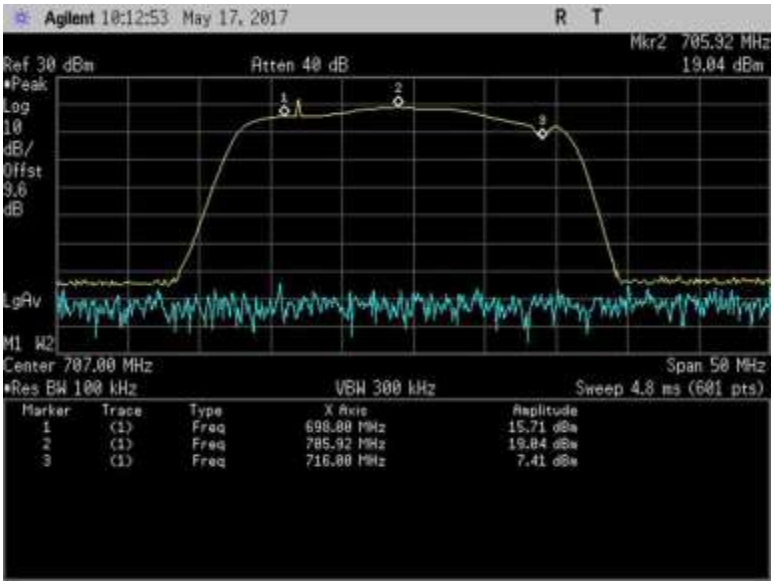


7.1_Band Verify_DL_2110-2155MHz_Zoom

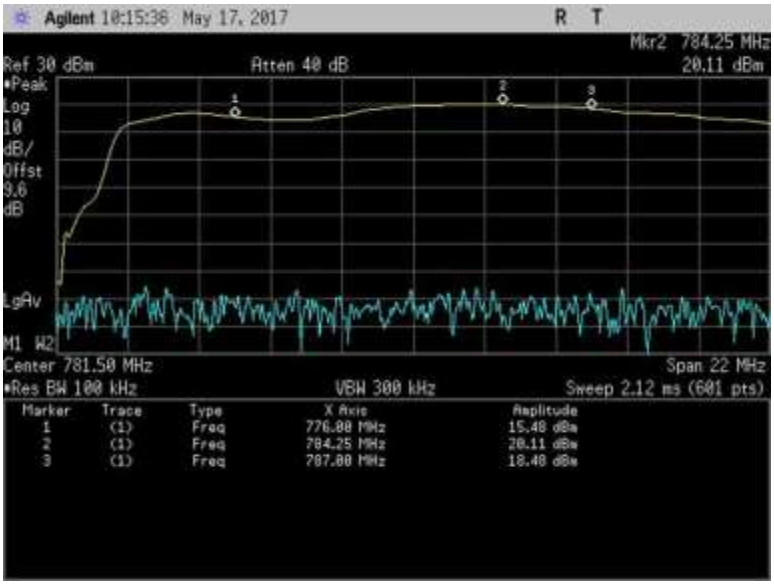
UL



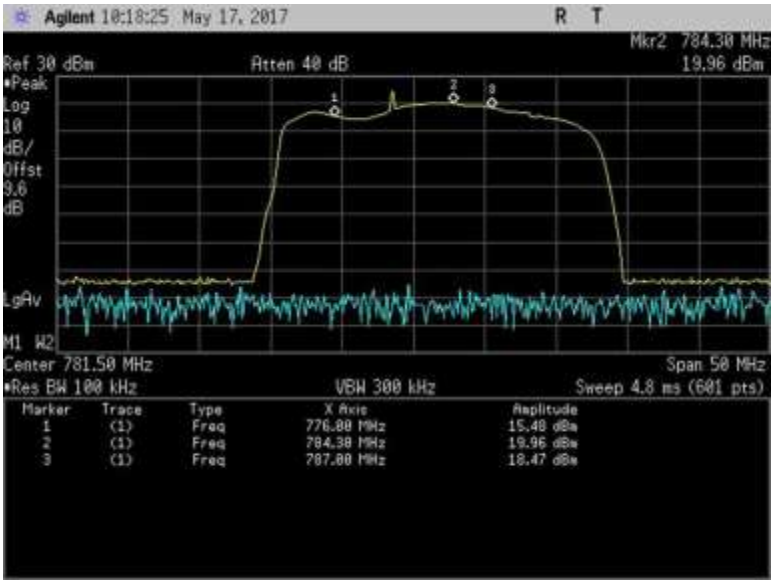
7.1_Band Verify_UL_698-716MHz



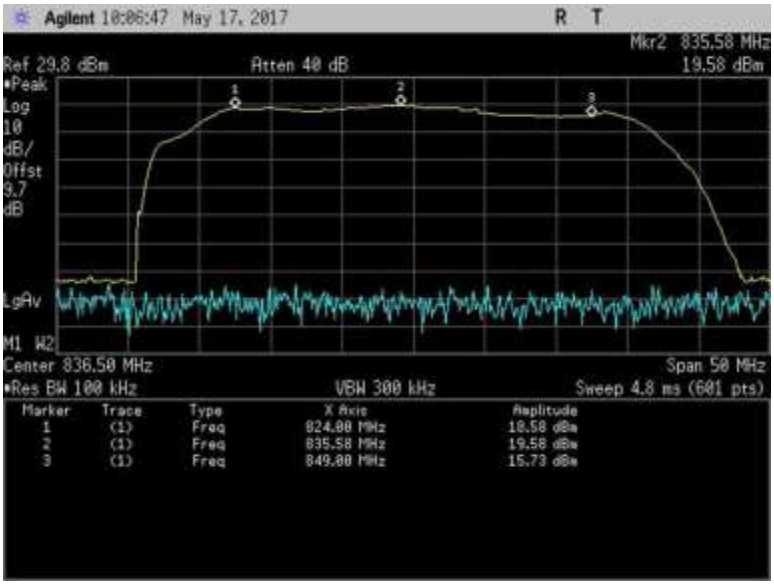
7.1_Band Verify_UL_698-716MHz_Zoom



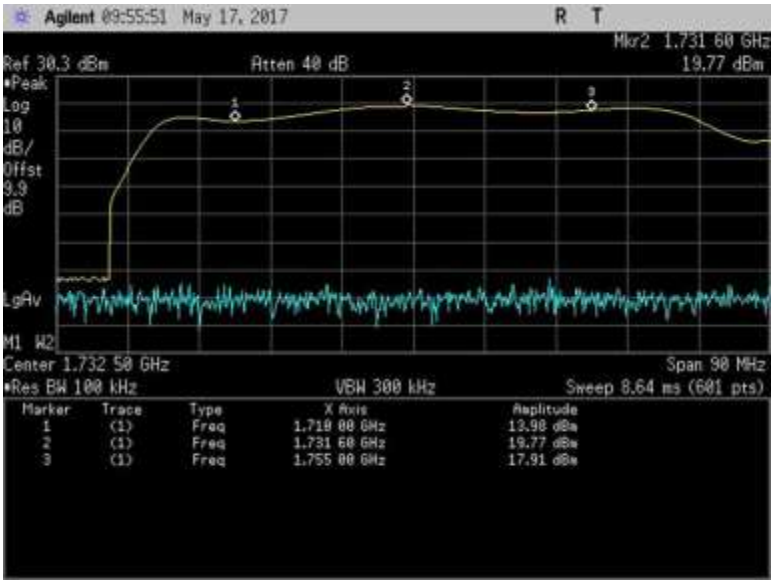
7.1_Band Verify_UL_776-787MHz



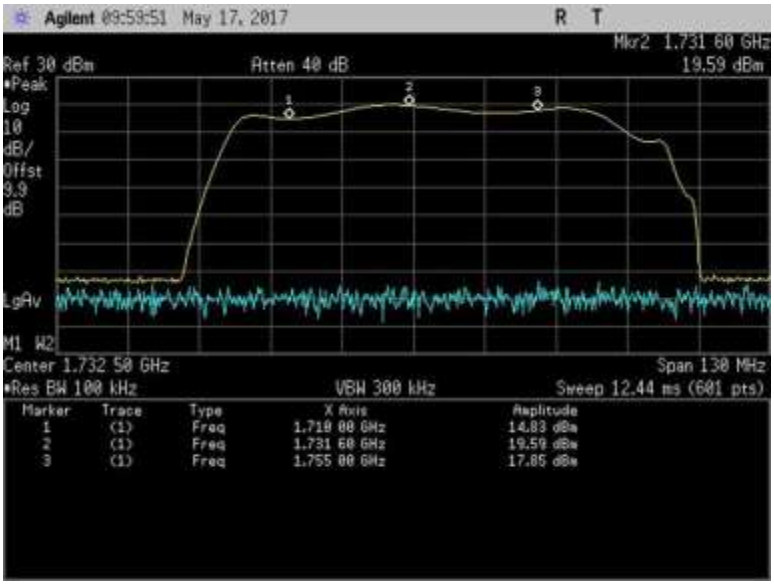
7.1_Band Verify_UL_776-787MHz_Zoom



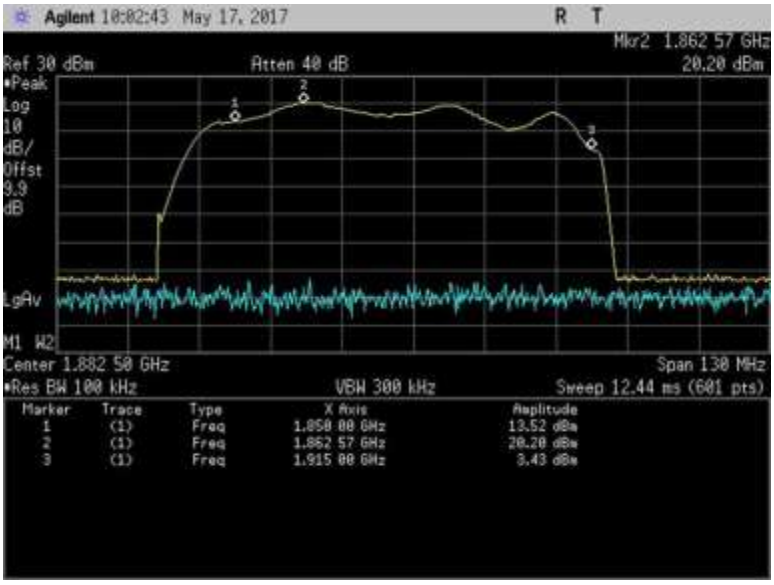
7.1_Band Verify_UL_824-849MHz



7.1_Band Verify_UL_1710-1755MHz



7.1_Band Verify_UL_1710-1755MHz_Zoom



7.1_Band Verify_UL_1850-1915MHz

7.2/7.3 Maximum Power

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**7.2 Maximum Power Measurement**		
	7.3 Maximum Booster Gain		
Work Order #:	**99983**	Date:	5/17/2017
Test Type:	**Conducted Emissions**	Time:	11:40:00 AM
Tested By:	**Daniel Bertran**	Sequence#:	1
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.
The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.
The EUT Server port is a type FME connector and 50-ohm impedance.
The EUT Donor port is type FME connector and 50-ohm impedance.

Part 22
UL: 824-849MHz
DL: 869-894MHz
Part 24
UL: 1850-1915MHz
DL: 1930-1995MHz
Part 27
UL: 1710-1755MHz, 698-716MHz, 776-787MHz
DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure:
The test was performed in accordance with section 7.2 and 7.3 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04 Dated February 12, 2016.
Firmware: 1.7
Test environment conditions: Test environment conditions: 22°C, 40% Relative Humidity, 101.6 kPa

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	7/30/2015	7/30/2017
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	1/4/2016	1/4/2018

Summary of Results

Pass: as summarized in table below, measured EIRP, Gain and UL/DL gain ratio are within limits.

Pre AGC				Pre AGC		
	Pulse GSM			4.1 MHz AWGN		
Frequency (MHz)	Input (dBm)	Output (dBm)	Gain (dB)	Input (dBm)	Output (dBm)	Gain (dB)
UL1710-1755	-18.2	26.3	44.5	-22.2	22.1	44.3
UL1850-1915	-19.9	23.4	43.3	-23.4	19.6	43.0
UL824-894	-18.5	27.1	45.6	-23.8	21.4	45.2
UL 698-716	-21.3	26.3	47.6	-26.3	21.0	47.3
UL776-787	-21.1	26.0	47.1	-25.2	21.8	47.0
DL2110-2155	-43.8	0.5	44.3	-48.6	-4.0	44.6
DL1930-1995	-45.7	-0.1	45.6	-49.9	-4.0	45.9
DL869-894	-44.7	2.0	46.7	-49.7	-3.0	46.7
DL:728-746	-46.3	-0.3	46.0	-51.6	-5.6	46.0
DL 746-757	-44.0	0.7	44.7	-50.2	-4.7	45.5

Pulse GSM					Conducted	Conducted and EIRP
Frequency (MHz)	Output Power (dBm)	*Ant Gain-Cable loss (dBi)		EIRP (dBm)	Limit Min (dBm)	Limit Max (dBm)
UL1710-1755	26.3	-3.98		22.3	17	30
UL1850-1915	23.4	-5.8		17.6	17	30
UL824-894	27.1	-2.3		24.8	17	30
UL 698-716	26.3	-2.3		24.0	17	30
UL776-787	26.0	-2.3		23.7	17	30
DL2110-2155	0.5	-5.96		**-5.5**	NA	17
DL1930-1995	-0.1	-5.8		**-5.9**	NA	17
DL869-894	2.0	-3.2		**-1.2**	NA	17
DL:728-746	-0.3	-2.7		**-3.0**	NA	17
DL 746-757	0.7	-2.7		**-2.0**	NA	17

4.1MHz AWGN					Conducted	Conducted and EIRP
Frequency (MHz)	Output Power (dBm)	*Ant Gain-Cable loss (dBi)		EIRP (dBm)	Limit Min (dBm)	Limit Max (dBm)
UL1710-1755	22.1	-3.98		**18.1**	17	30
UL1850-1915	19.6	-5.8		**13.8**	17	30
UL824-894	21.4	-2.3		**19.1**	17	30
UL 698-716	21.0	-2.3		**18.7**	17	30
UL776-787	21.8	-2.3		**19.5**	17	30
DL2110-2155	-4.0	-5.96		**-10.0**	NA	17
DL1930-1995	-4.0	-5.8		**-9.8**	NA	17
DL869-894	-3.0	-3.2		**-6.2**	NA	17
DL:728-746	-5.6	-2.7		**-8.3**	NA	17
DL 746-757	-4.7	-2.7		**-7.4**	NA	17

* Antenna gain and cable losses indicated from the antenna kitting (vehicle Kit1).

Section 5.5 power						
		Pulse GSM			4.1 MHz AWGN	
Frequency (MHz)	Input (dBm)	Output (dBm)	Gain (dB)	Input (dBm)	Output (dBm)	Gain (dB)
UL1710-1755	-5.5	25.7	31.2	-13.5	21.7	35.2
UL1850-1915	-7.4	24.4	31.8	-9.4	22.5	31.9
UL824-894	-6.4	26.1	32.5	-9.4	21.0	30.4
UL 698-716	-8.3	26.2	34.5	-12.3	21.0	33.3
UL776-787	-6.5	26.6	33.1	-11.5	22.9	34.4
DL2110-2155	-41.5	-0.1	41.4	-46.0	-3.8	42.2
DL1930-1995	-43.4	-0.8	42.6	-47.6	-4.2	43.4
DL869-894	-41.6	1.9	43.5	-46.4	-2.3	44.1
DL:728-746	-43.4	-0.2	43.2	-47.9	-4.9	43.0
DL 746-757	-42.4	0.4	42.8	-47.4	-4.6	42.8

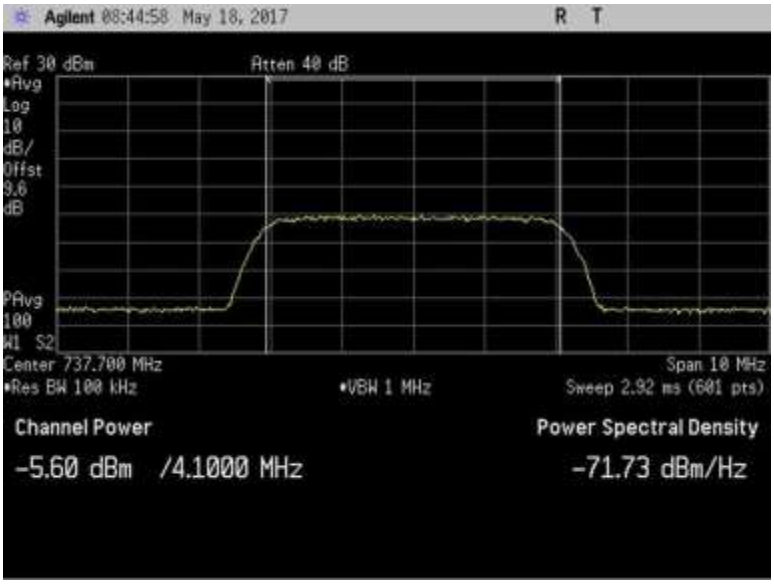
Note: The booster went into Transmitter off mode at Max input power in accordance with section 5.5. Results presented on the above table are at 1 dB below the Transmit off RF input level.

UL gain vs DL gain	Pulse GSM (dB)	4.1MHz AWGN (dB)	Limit (dB)
UL gain vs DL gain 1710/2110	0.2	-0.3	9.0
UL gain vs DL gain 1850/1930	-2.3	-2.9	9.0
UL gain vs DL gain 824/869	-1.1	-1.5	9.0
UL gain vs DL gain 776/728	1.6	1.3	9.0
UL gain vs DL gain 776/746	2.4	1.6	9.0

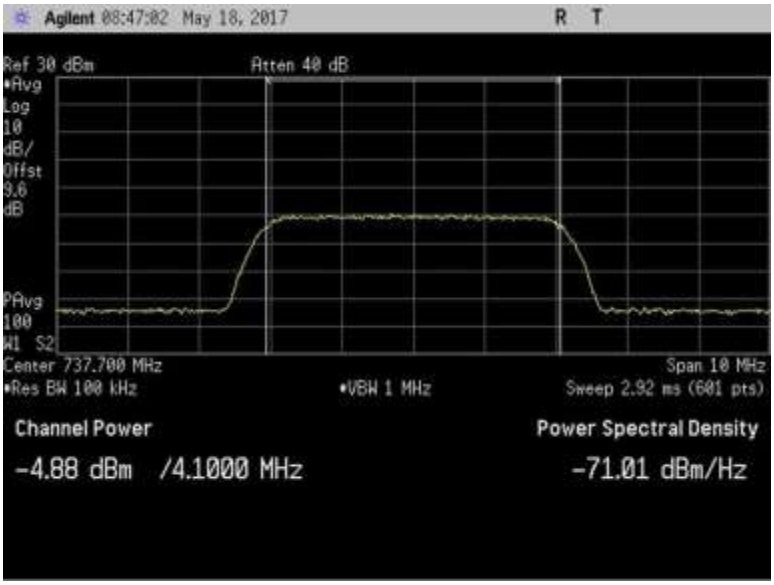
Plots

DL

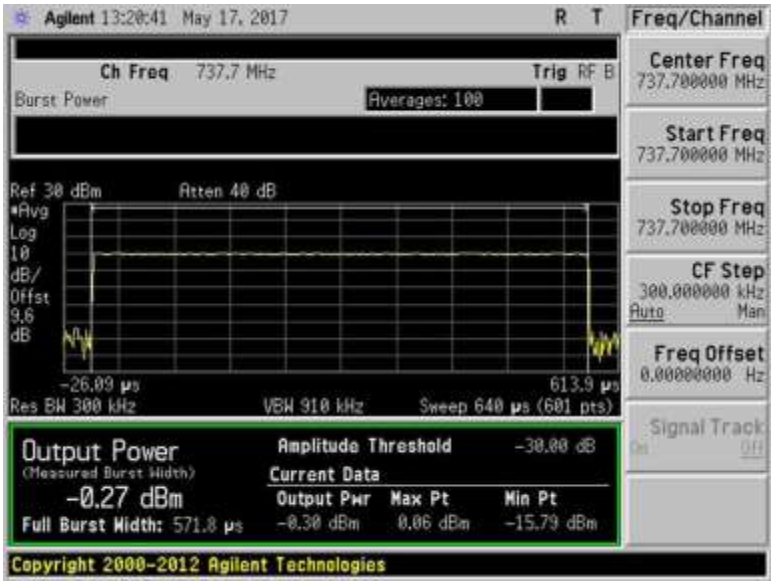
AWGN / GSM



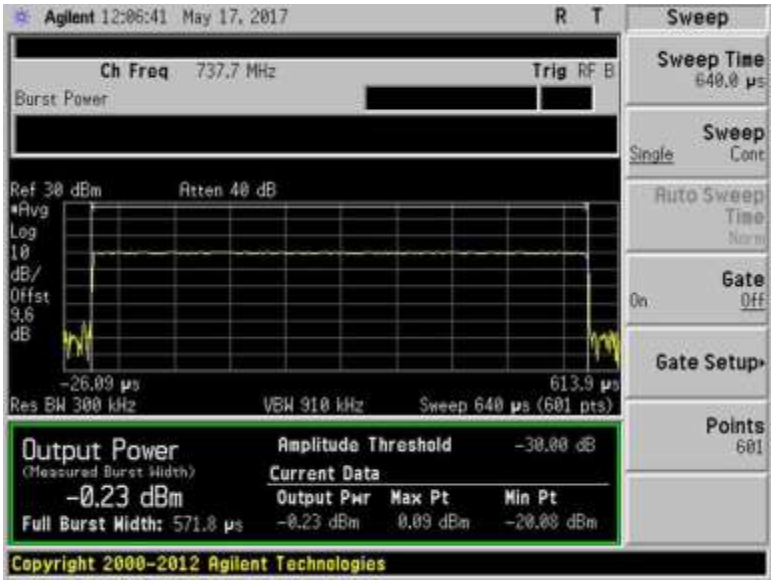
7.2_Power_DL_728-746MHz_AWGN



7.2_Power_DL_728-746MHz_AWGN_Max



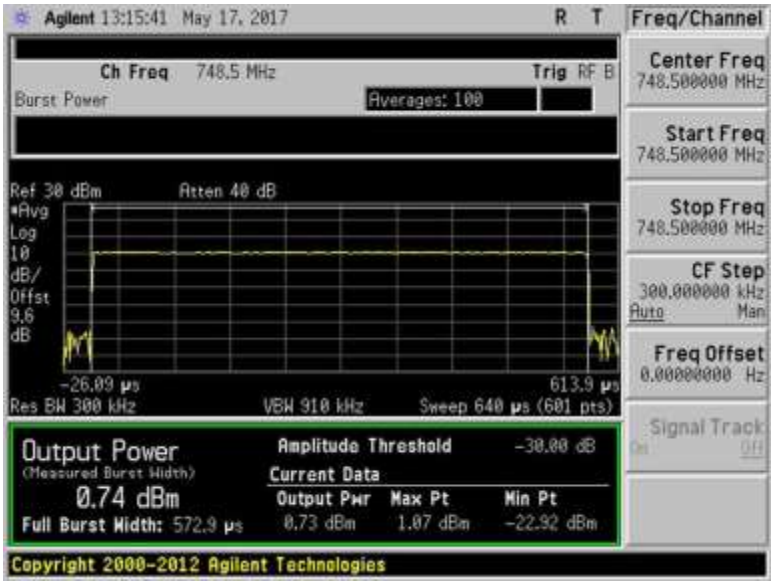
7.2_Power_DL_728-746MHz_GSM



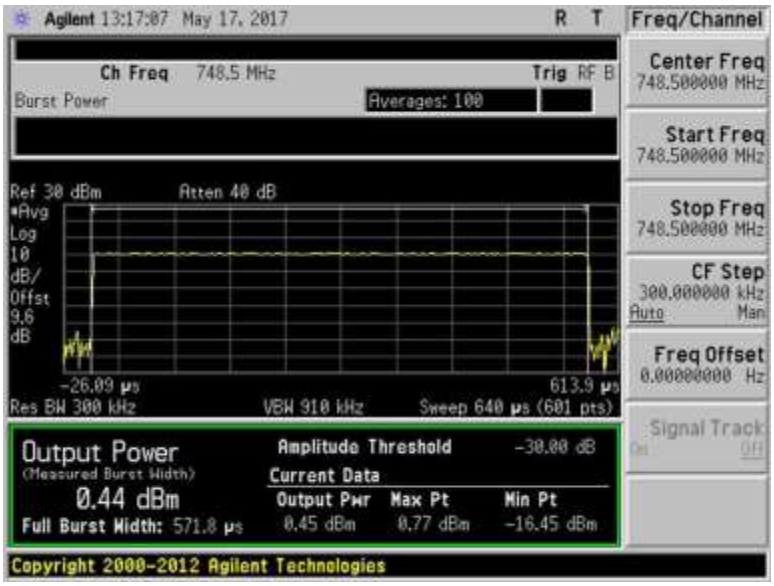
7.2_Power_DL_728-746MHz_GSM_Max

7.2_Power_DL_746-757MHz_AWGN

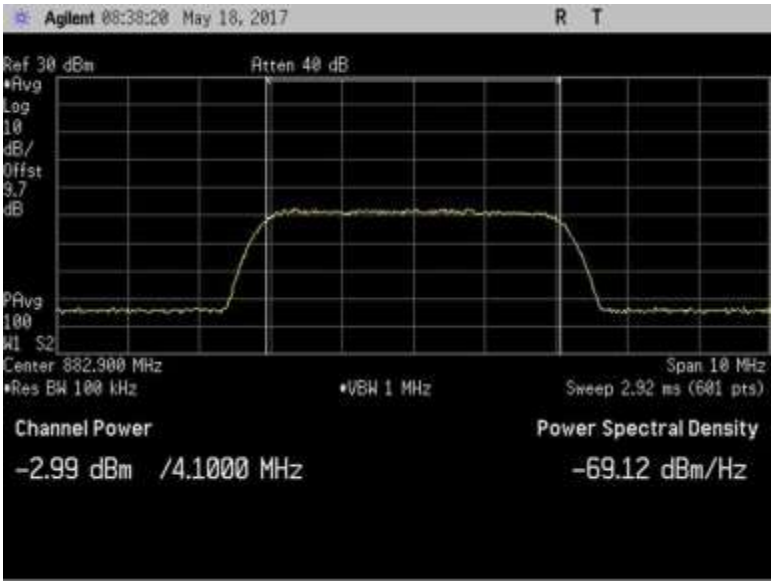
7.2_Power_DL_746-757MHz_AWGN_Max



7.2_Power_DL_746-757MHz_GSM

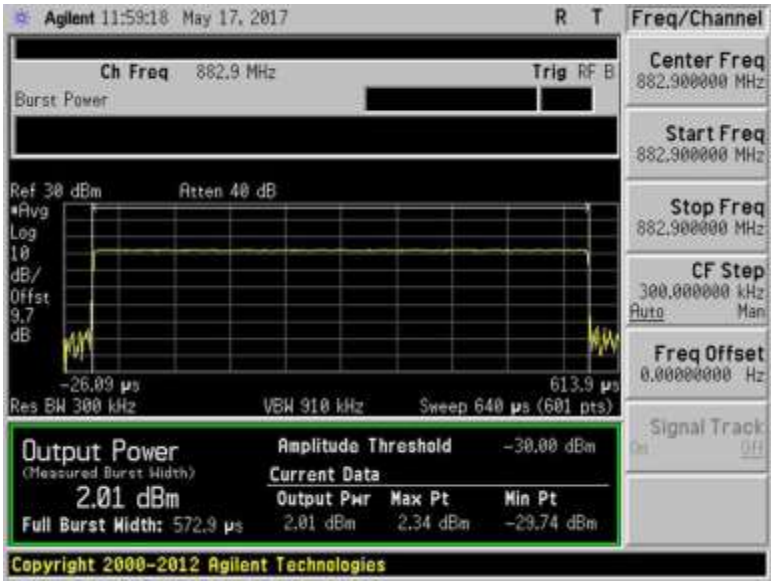


7.2_Power_DL_746-757MHz_GSM_Max

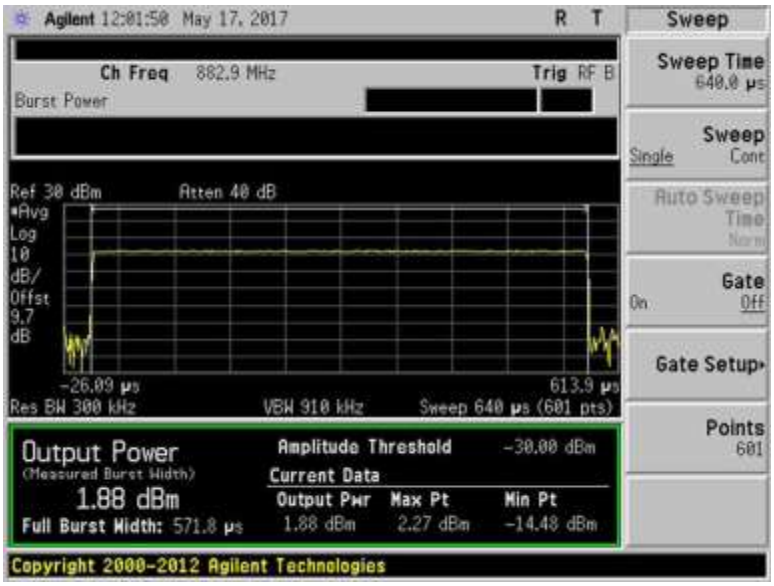


7.2_Power_DL_869-894MHz_AWGN

7.2_Power_DL_869-894MHz_AWGN_Max



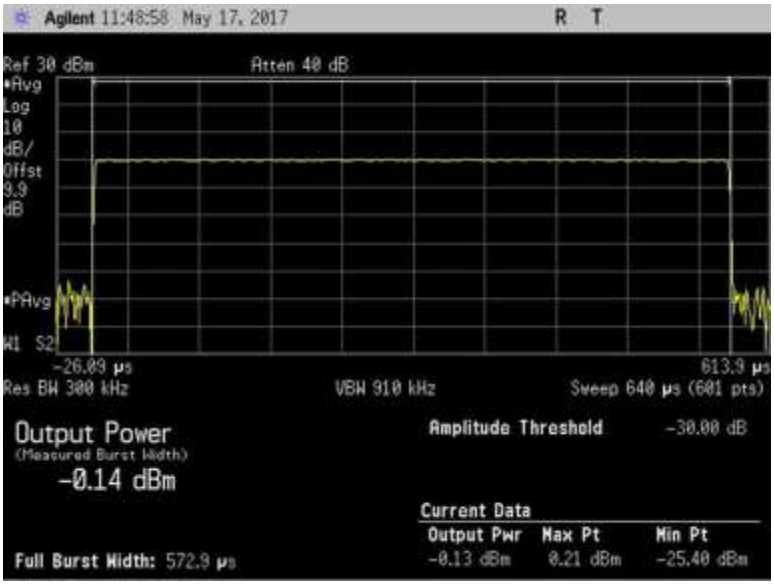
7.2_Power_DL_869-894MHz-GSM



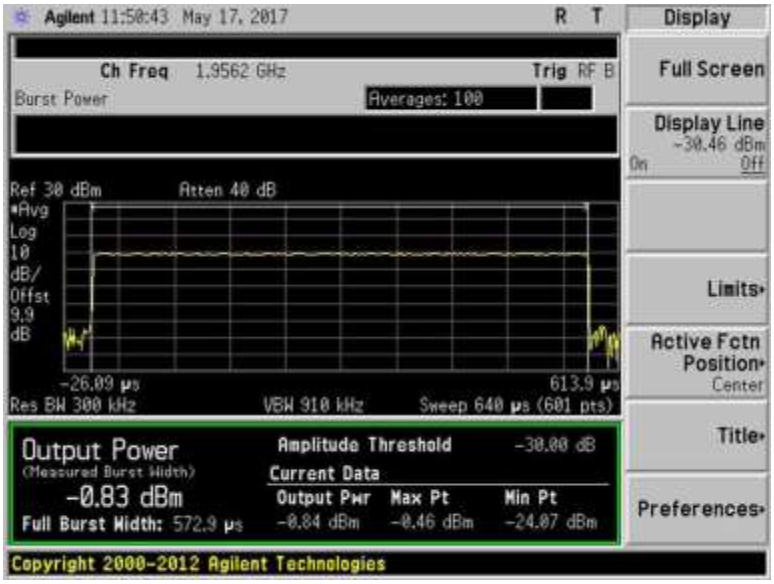
7.2_Power_DL_869-894MHz-GSM_Max

7.2_Power_DL_1930-1995MHz_AWGN

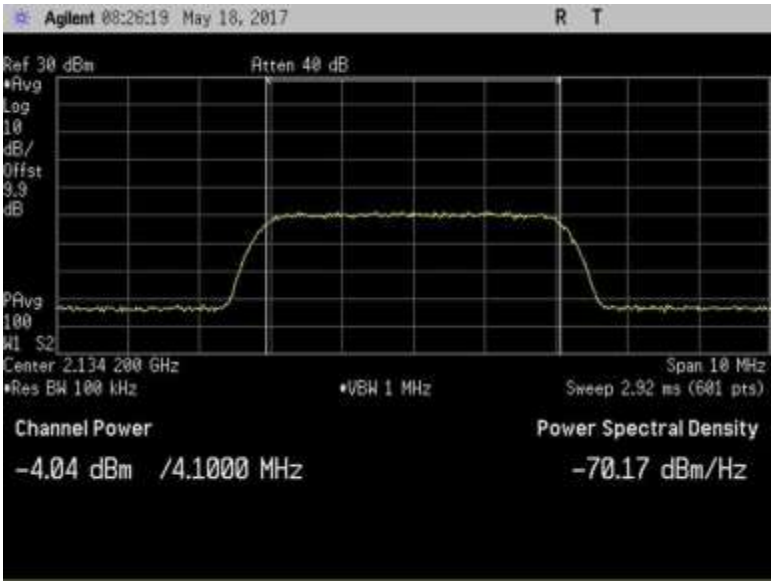
7.2_Power_DL_1930-1995MHz_AWGN_Max



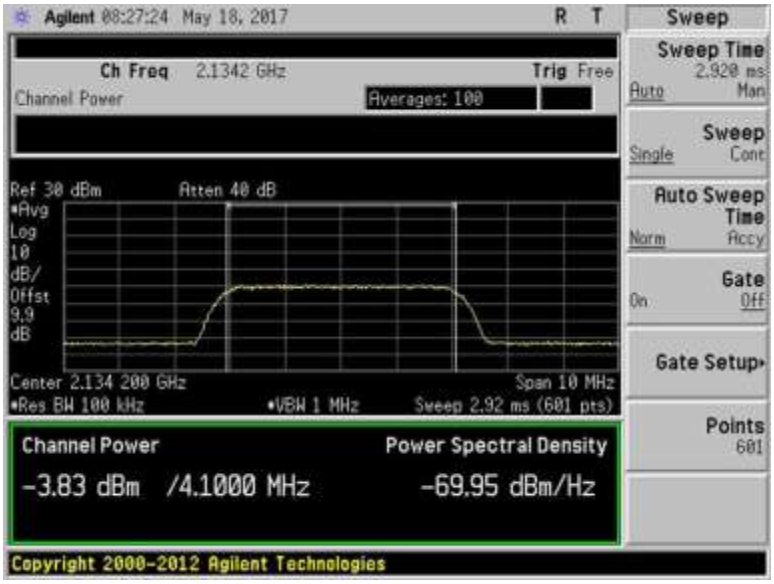
7.2_Power_DL_1930-1995MHz_GSM



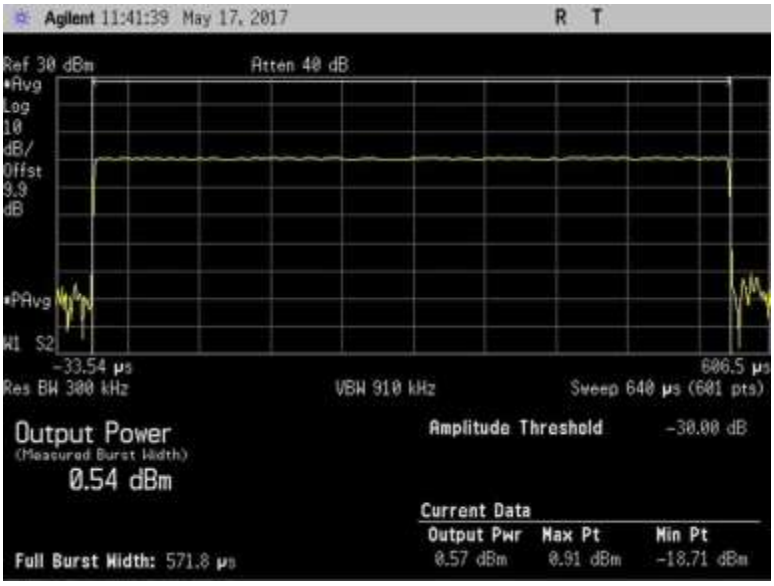
7.2_Power_DL_1930-1995MHz_GSM_Max



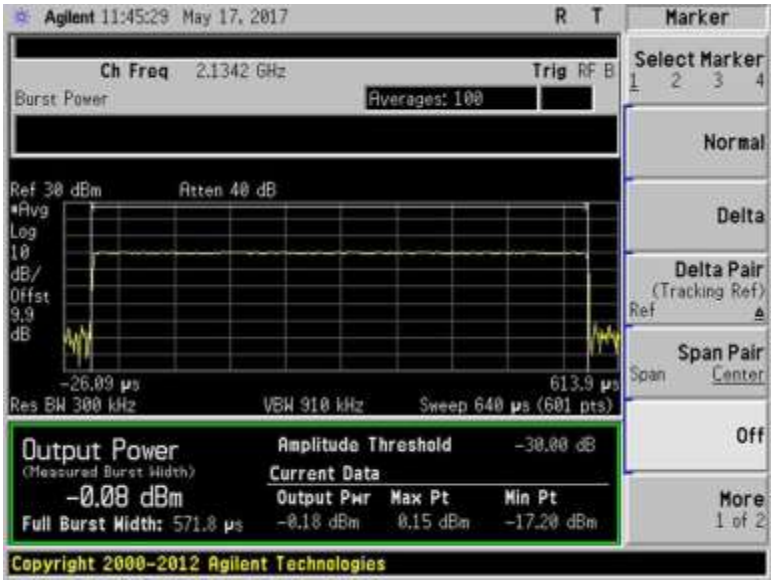
7.2_Power_DL_2110-2155MHz_AWGN



7.2_Power_DL_2110-2155MHz_AWGN_Max



7.2_Power_DL_2110-2155MHz_GSM

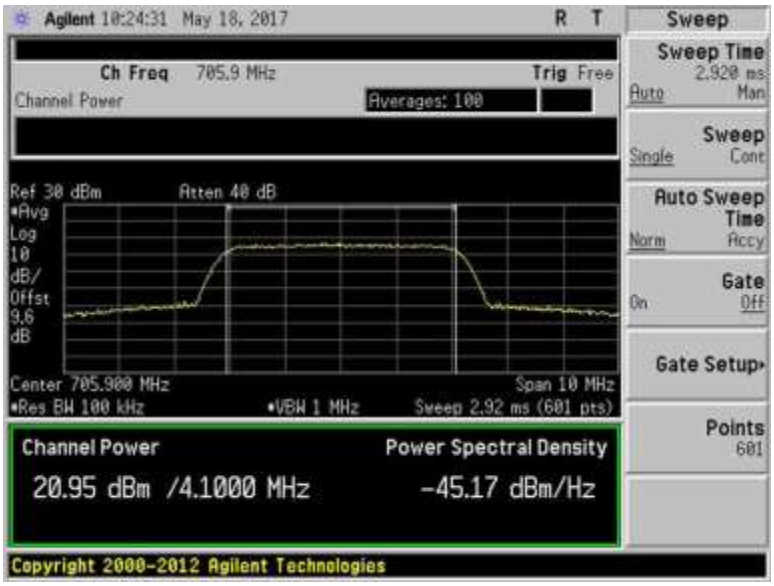


7.2_Power_DL_2110-2155MHz_GSM_Max

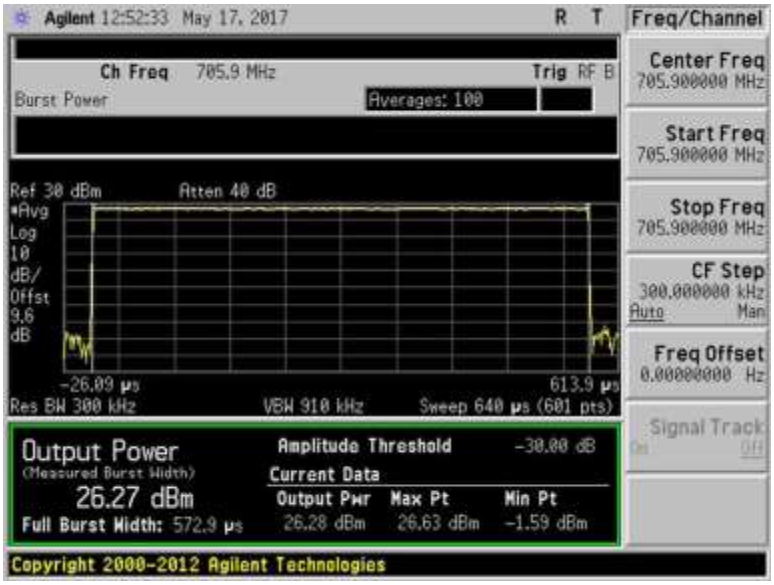
UL

AWGN / GSM

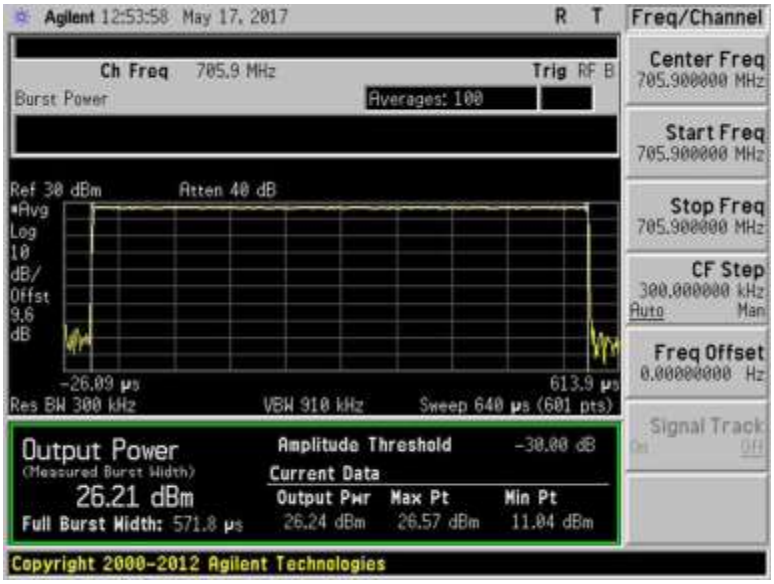
7.2_Power_UL_698-716MHz_AWGN



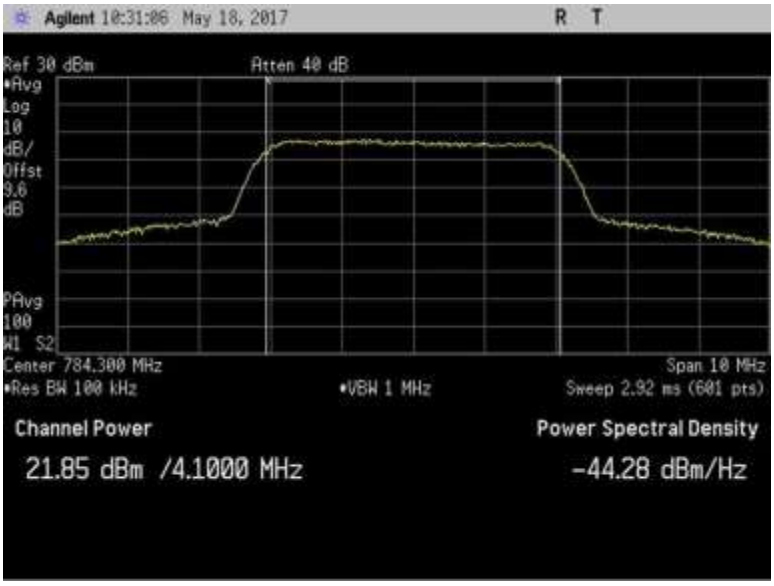
7.2_Power_UL_698-716MHz_AWGN_Max



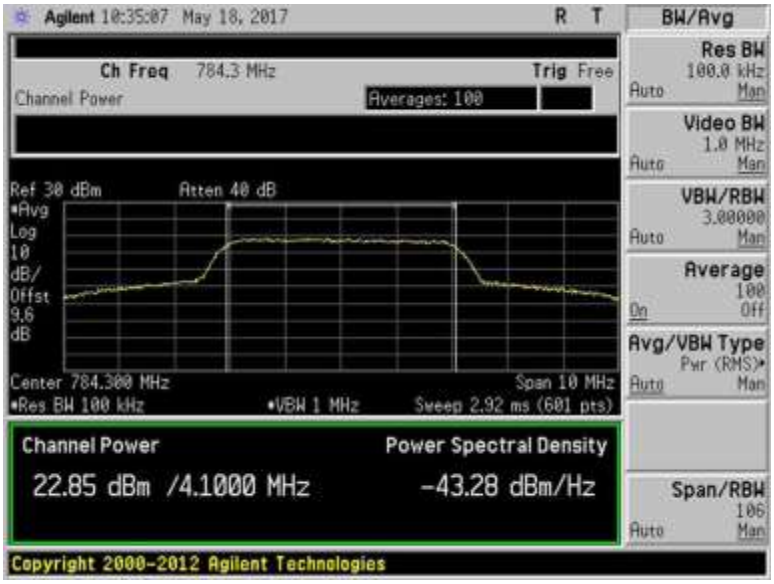
7.2_Power_UL_698-716MHz_GSM



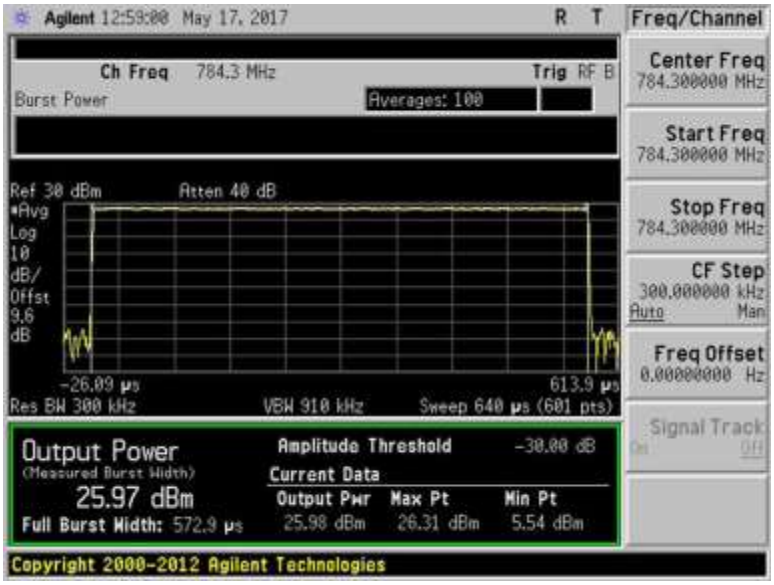
7.2_Power_UL_698-716MHz_GSM_Max



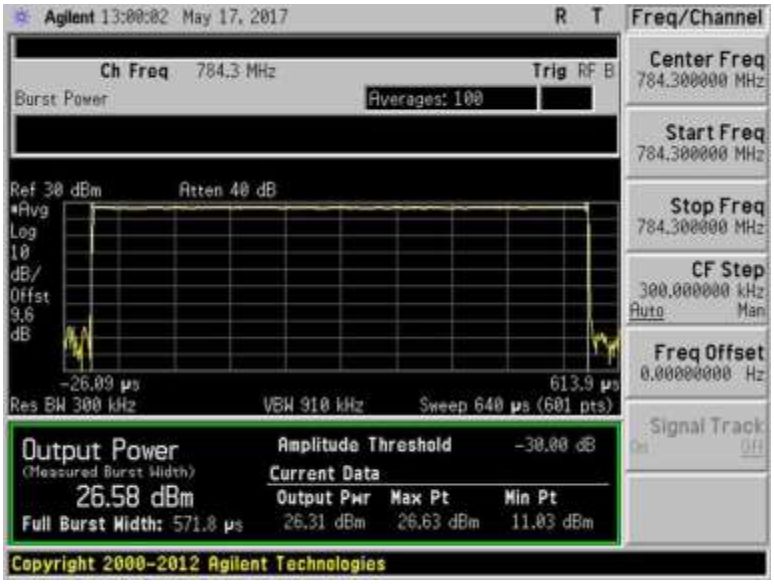
7.2_Power_UL_776-787MHz_AWGN



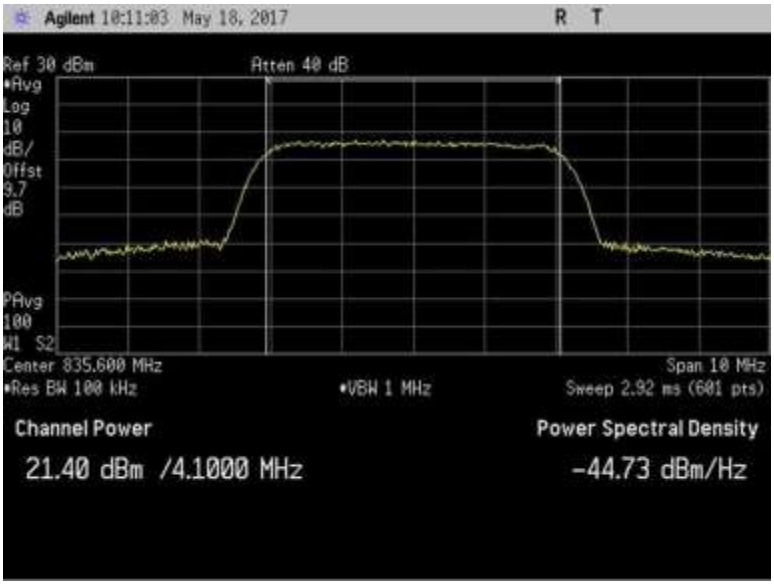
7.2_Power_UL_776-787MHz_AWGN_Max



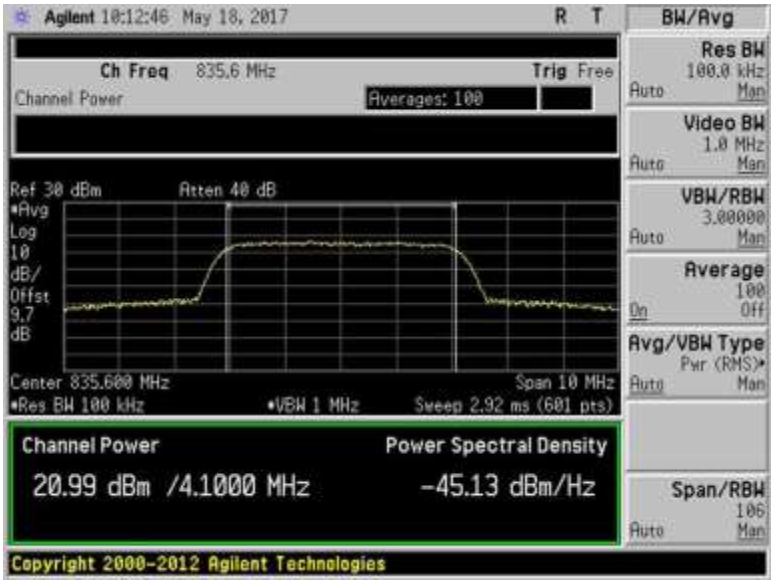
7.2_Power_UL_776-787MHz_GSM



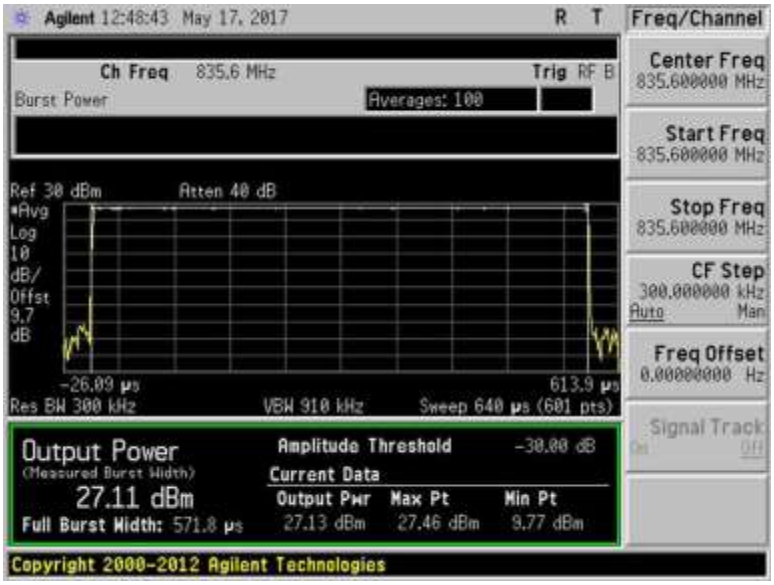
7.2_Power_UL_776-787MHz_GSM_Max



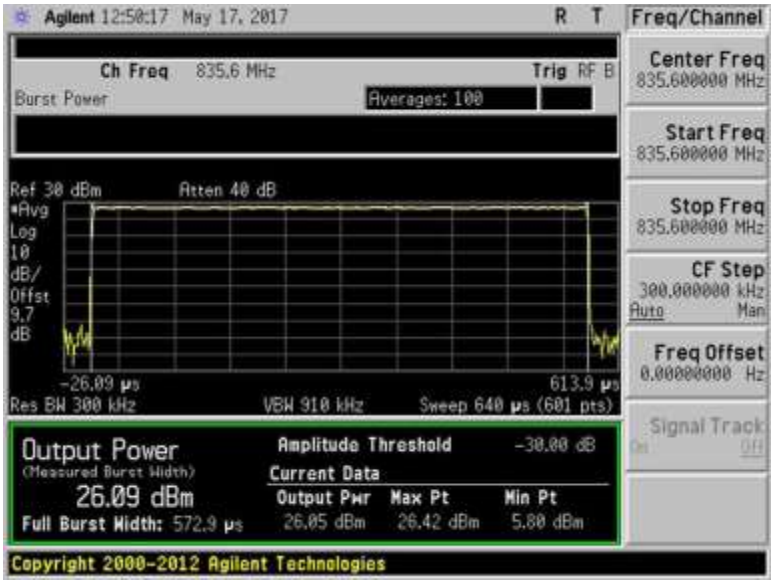
7.2_Power_UL_824-849MHz_AWGN



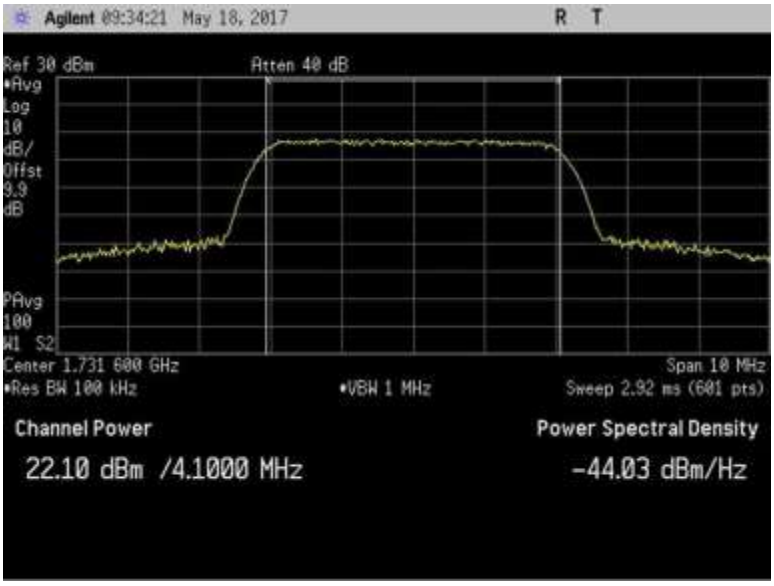
7.2_Power_UL_824-849MHz_AWGN_Max



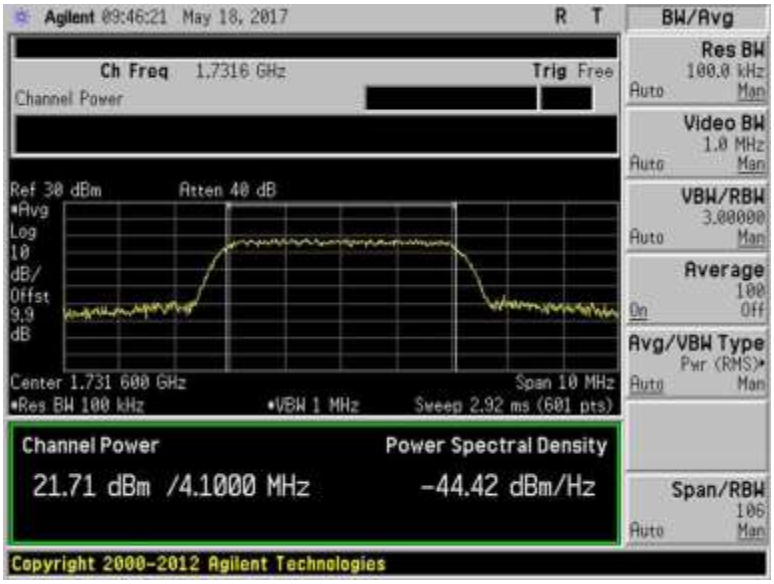
7.2_Power_UL_824-849MHz_GSM



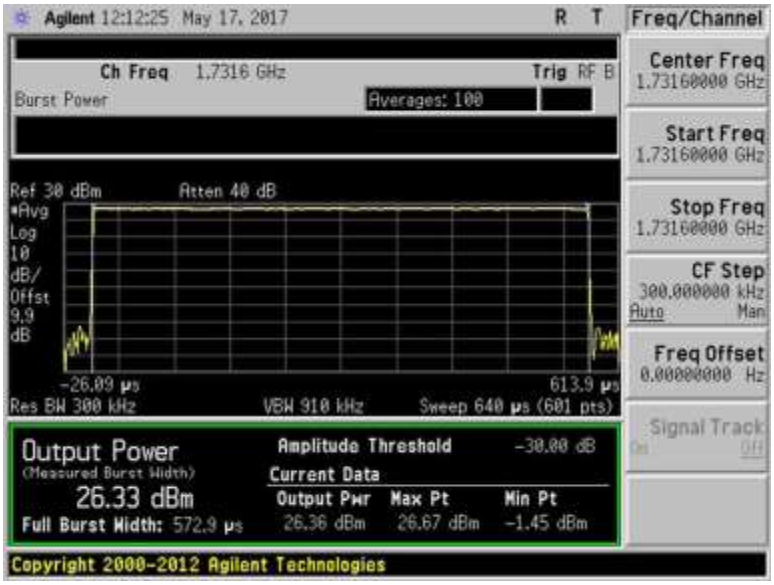
7.2_Power_UL_824-849MHz_GSM_Max



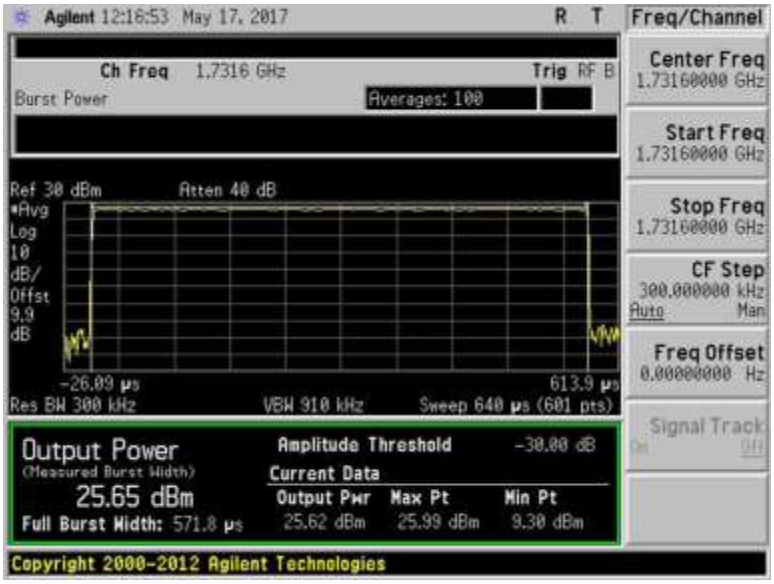
7.2_Power_UL_1710-1755MHz_AWGN



7.2_Power_UL_1710-1755MHz_AWGN_Max

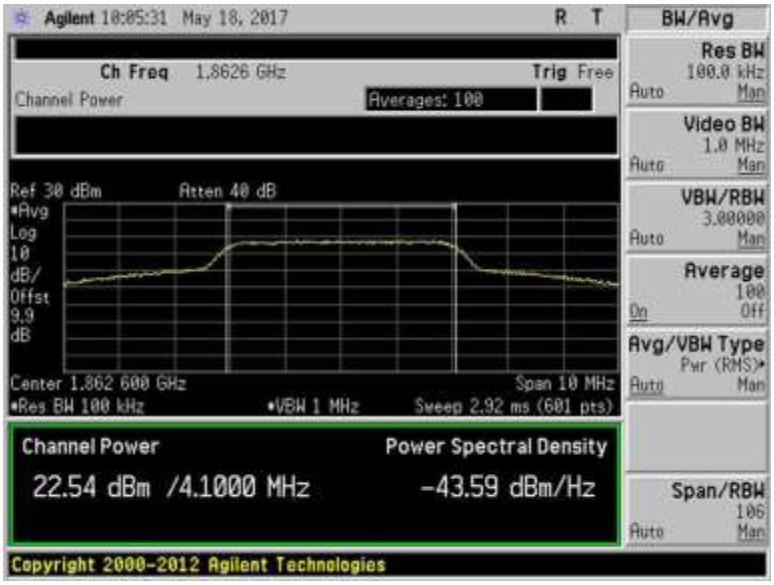


7.2_Power_UL_1710-1755MHz_GSM

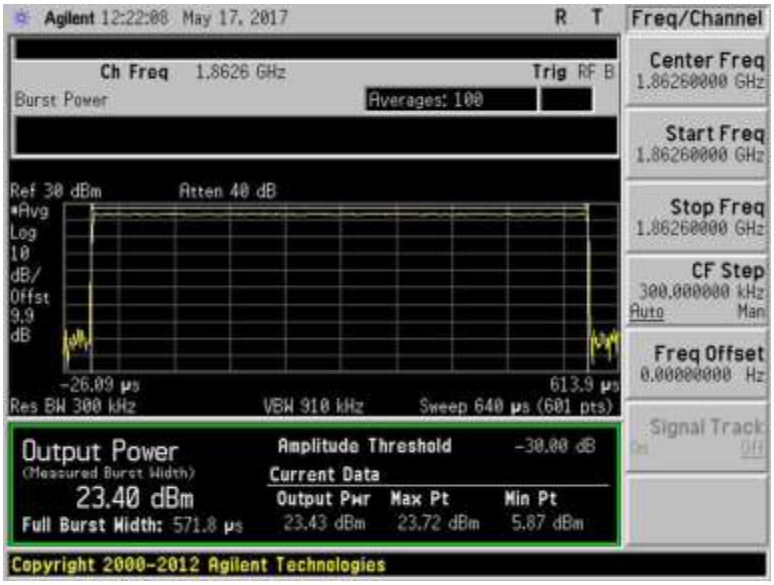


7.2_Power_UL_1710-1755MHz_GSM_Max

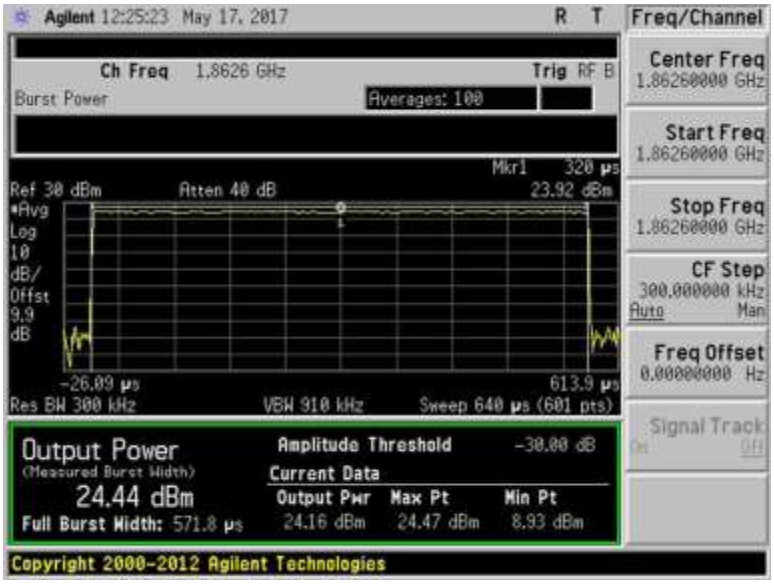
7.2_Power_UL_1850-1915MHz_AWGN



7.2_Power_UL_1850-1915MHz_AWGN_Max



7.2_Power_UL_1850-1915MHz_GSM



7.2_Power_UL_1850-1915MHz_GSM_Max

7.4 Intermodulation Product

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
Customer:	Cellphone-Mate, Inc
Specification:	**7.4 Intermodulation Product**
Work Order #:	**99983** Date 03/04/2019
Test Type:	**Conducted Emissions**
Tested By:	**Hieu S. Nguyenpham**
Software:	EMITest 5.03.11

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Test environment conditions:
Temperature: 20.8° C
Relative Humidity: 40%
Pressure: 102.1kPa

Test Equipment:

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

Summary of Results

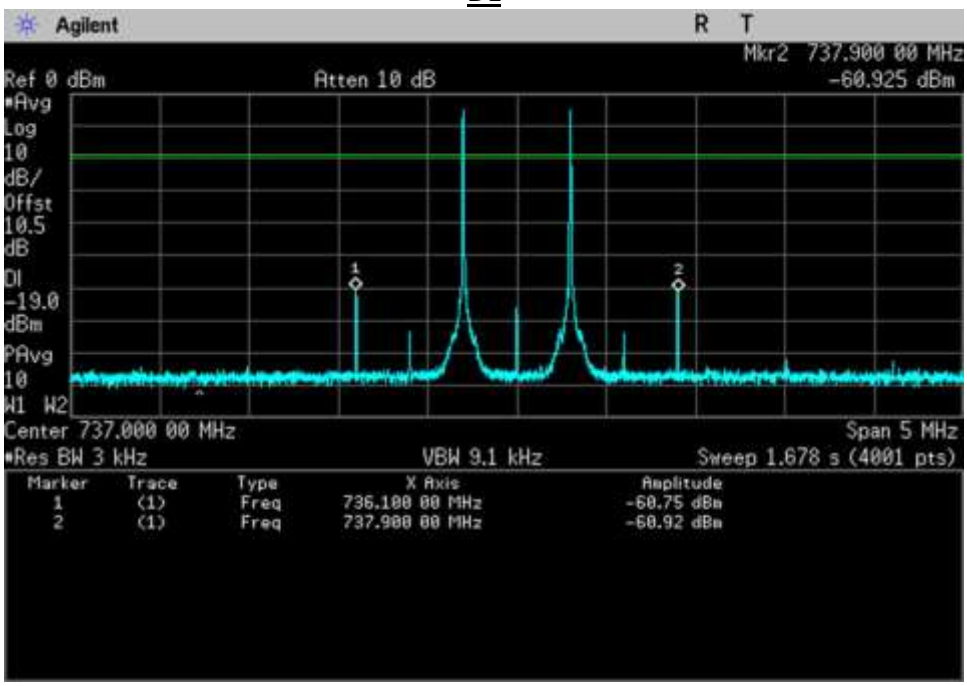
Pass: As shown on the plots, all intermodulation products are measured below -19dbm limit.

Inter Modulation Product			
Frequency (MHz)	**Pre AGC (dBm)**	**Limit (dBm)**	**Results**
UL 1710-1755	-23.6	-19	Pass
UL 1850-1915	-23.4	-19	Pass
UL 824-894	-21.7	-19	Pass
UL 698-716	-21.6	-19	Pass
UL 776-787	-21.1	-19	Pass
DL 2110-2155	-52.2	-19	Pass
DL 1930-1995	-65.0	-19	Pass
DL 869-894	-62.1	-19	Pass
DL 728-746	-60.8	-19	Pass
DL 746-757	-63.4	-19	Pass

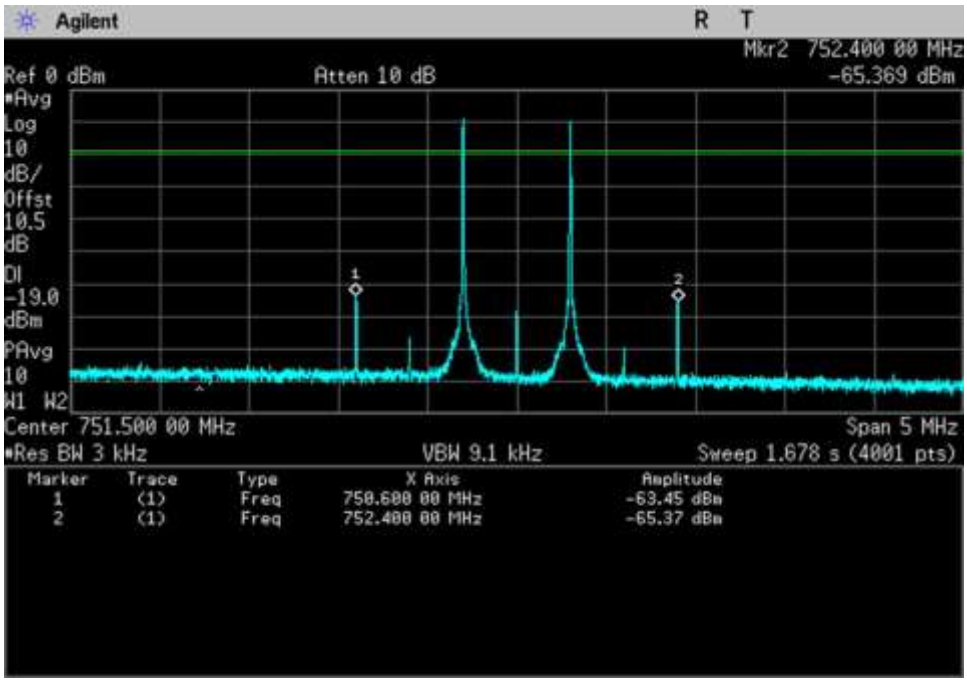
Note: The EUT maintains compliance with the intermodulation limit at input power of AGC+10dB

Plots

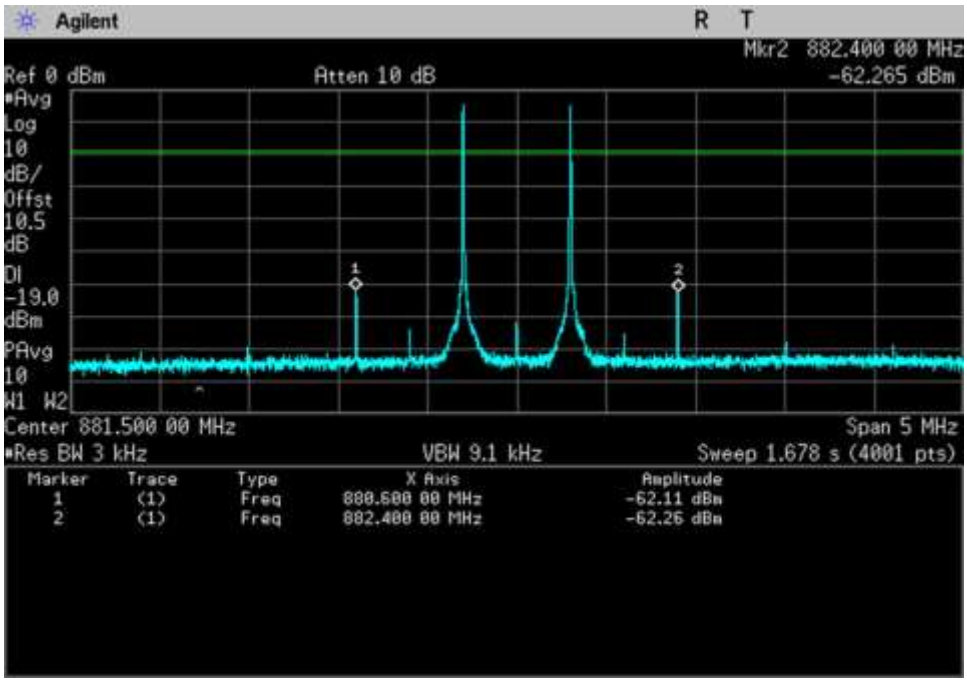
DL



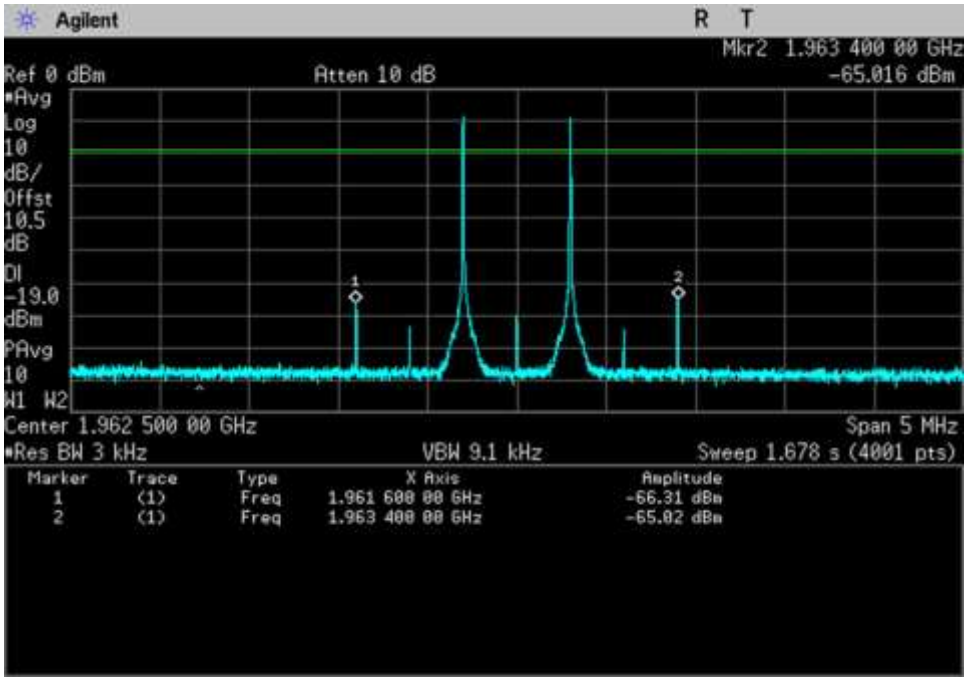
7.4_Intermod_DL_728-746MHz



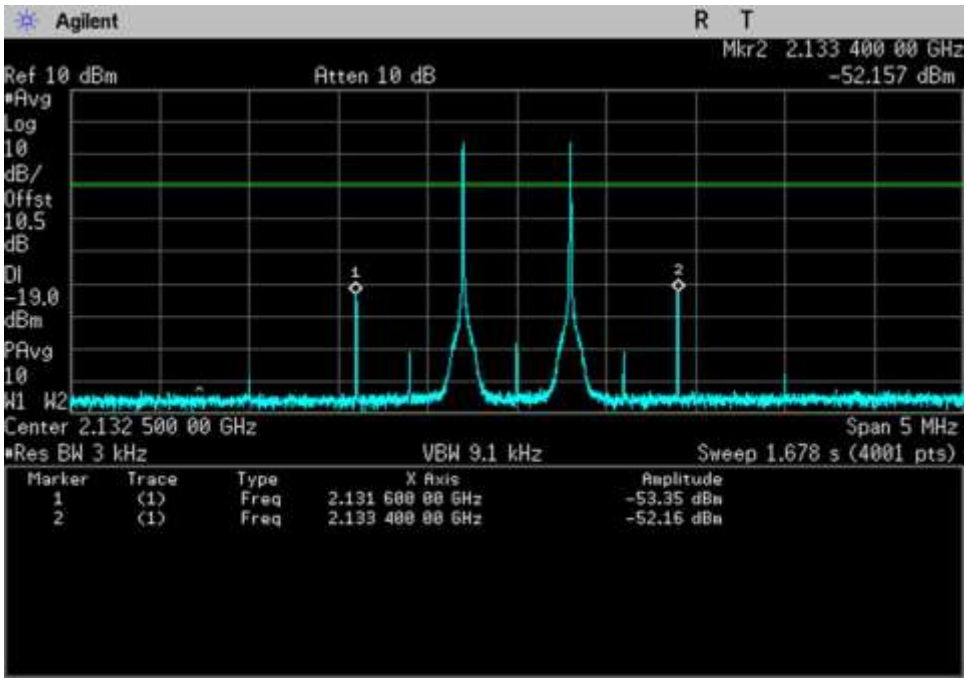
7.4_Intermod_DL_746-757MHz



7.4_Intermod_DL_869-894MHz

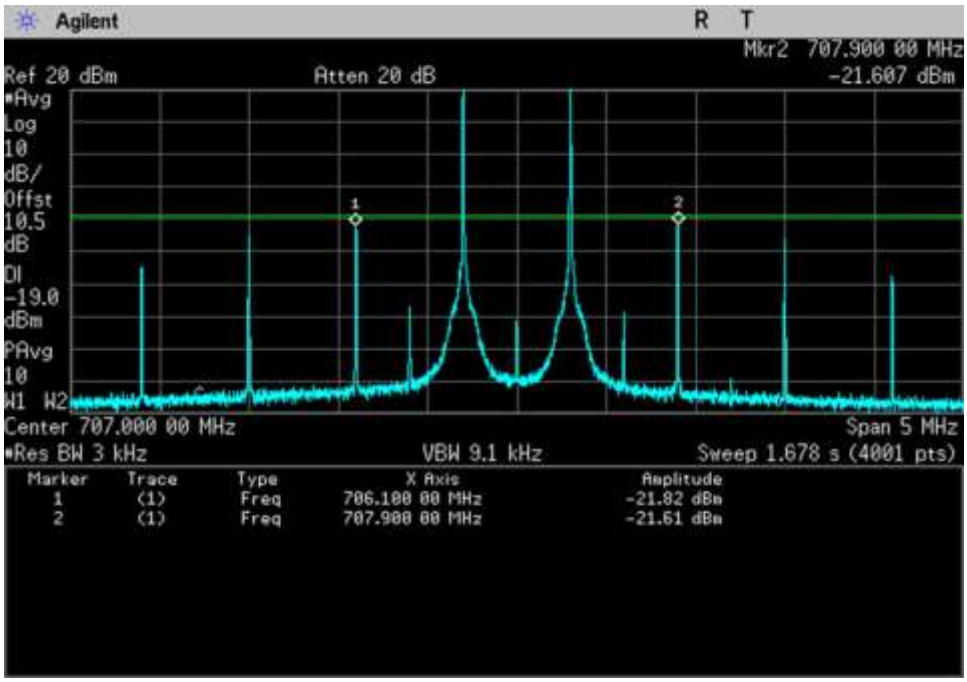


7.4_Intermod_DL_1930-1995MHz

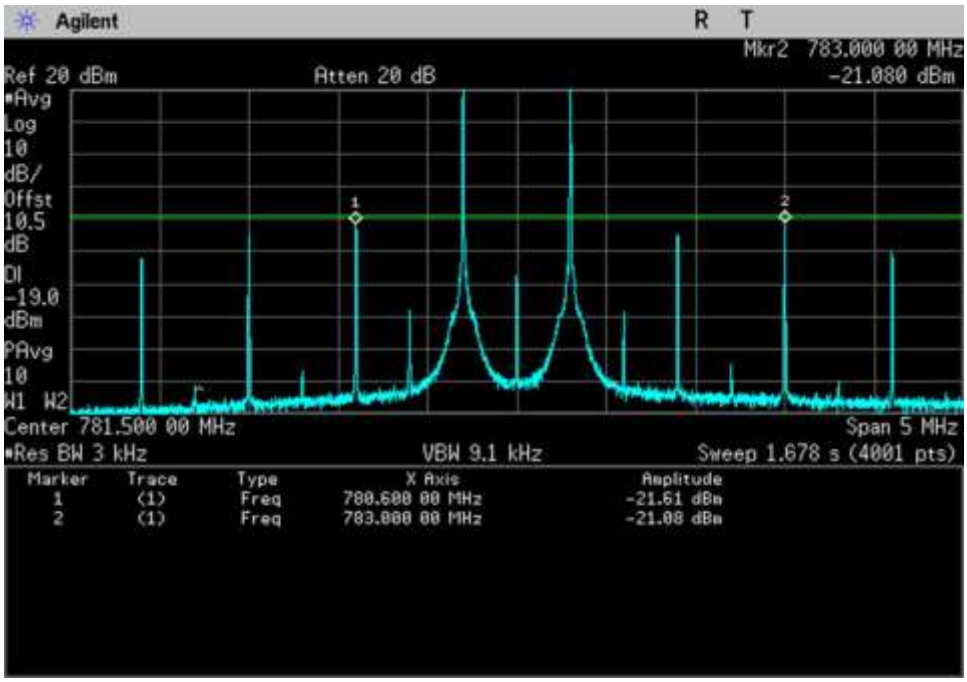


7.4_Intermod_DL_2110-2155MHz

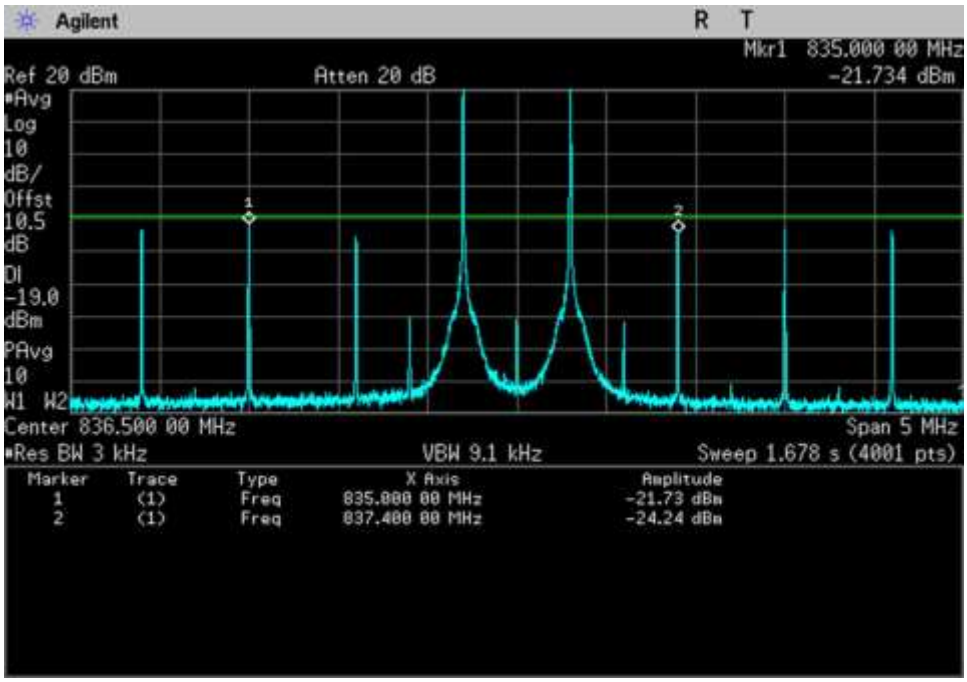
UL



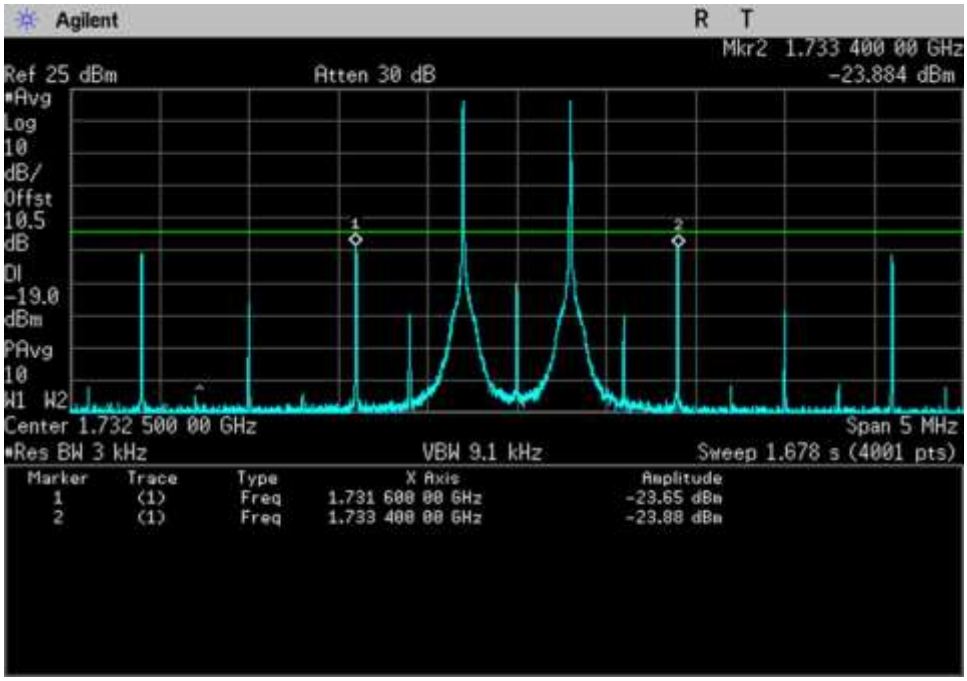
7.4_Intermod_UL_698-716MHz



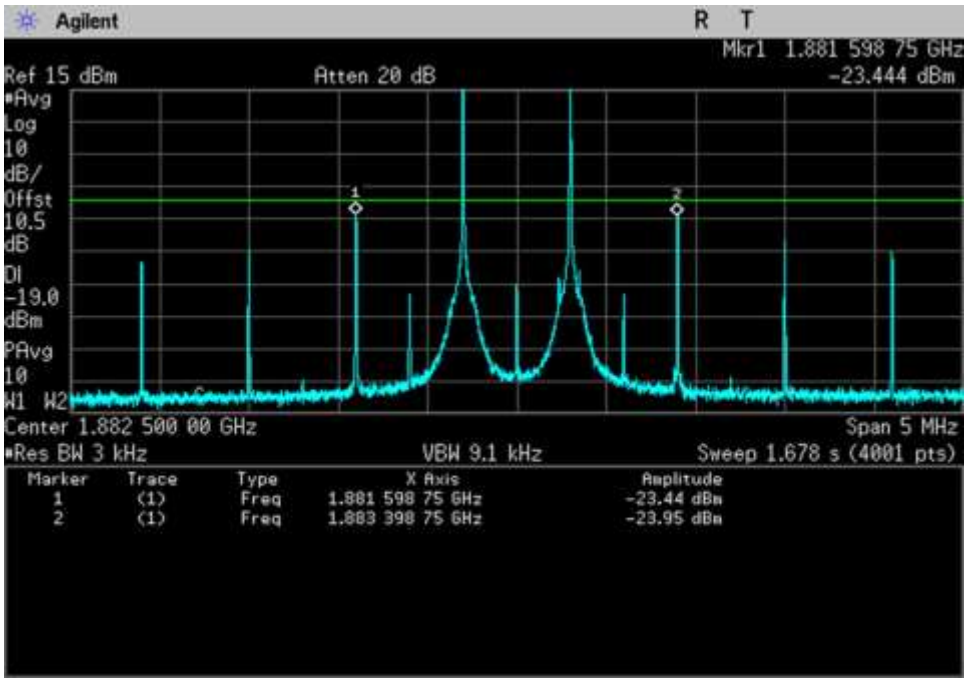
7.4_Intermod_UL_776-787MHz



7.4_Intermod_UL_824-849MHz



7.4_Intermod_UL_1710-1755MHz



7.4_Intermod_UL_1850-1915MHz

7.5 Out of Band Emissions

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**7.5 Out-of-band Emissions**		
Work Order #:	**99983**	Date:	5/18/2017
Test Type:	**Conducted Emissions**	Time:	16:00:00 PM
Tested By:	**Daniel Bertran**	Sequence#:	1
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.
The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.
The EUT Server port is a type FME connector and 50-ohm impedance.
The EUT Donor port is type FME connector and 50-ohm impedance.

Part 22
UL: 824-849MHz
DL: 869-894MHz
Part 24
UL: 1850-1915MHz
DL: 1930-1995MHz
Part 27
UL: 1710-1755MHz, 698-716MHz, 776-787MHz
DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure:
The test was performed in accordance with section 7.5 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04 Dated February 12, 2016.
Firmware: 1.7
Test environment conditions: Test environment conditions: 22°C, 40% Relative Humidity, 101.6 kPa
Additional plots taken at 1dB before EUT shuts down and before reaching the maximum input level indicated in section 5.5 of above document.
- Maximum uplink transmitter test levels for Mobile wideband consumer signal booster: +0 dBm
- The maximum downlink input level for all device types is −20 dBm

Lower RBW was used as applicable per rule part, in addition integration power function of the Spectrum Analyzers' Adjacent Channel Power tool was used to show compliance in instances where accuracy can be improved by integrating power measured in smaller RBW and linearly summed into standard bandwidth.
Used for testing the alternative test modulation types:
- CDMA (alternative 1.25 MHz AWGN*)
- LTE 5 MHz (alternative 4.1 MHz AWGN*)

*AWGN test signal, the bandwidth was measured 99% occupied bandwidth.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	7/30/2015	7/30/2017
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	1/4/2016	1/4/2018

Summary of Results

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

GSM

Low

Out of Band Emission			
Freq (MHz)	**Pre AGC**	**Limit (dBm)**	**Results**
UL1710-1755	-23.2	-19	Pass
UL1850-1915	-22.8	-19	Pass
UL824-849	-20.4	-19	Pass
UL 698-716	-25.8	-19	Pass
UL776-787	-24.2	-19	Pass
DL2110-2155	-51.8	-19	Pass
DL1930-1995	-53.9	-19	Pass
DL869-894	-48.2	-19	Pass
DL:728-746	-53.0	-19	Pass
DL 746-757	-49.0	-19	Pass

Hi

Out of Band Emission			
Freq (MHz)	**Pre AGC**	**Limit (dBm)**	**Results**
UL1710-1755	-22.2	-19	Pass
UL1850-1915	-34.8	-19	Pass
UL824-849	-27.7	-19	Pass
UL 698-716	-29.4	-19	Pass
UL776-787	-24.5	-19	Pass
DL2110-2155	-59.7	-19	Pass
DL1930-1995	-56.4	-19	Pass
DL869-894	-34.8	-19	Pass
DL:728-746	-49.3	-19	Pass
DL 746-757	-57.5	-19	Pass

CDMA (alternative 1.25 MHz AWGN)

Low

Out of Band Emission			
Freq (MHz)	**Pre AGC**	**Limit (dBm)**	**Results**
UL1710-1755	-29.5	-19	Pass
UL1850-1915	-31.5	-19	Pass
UL824-849	-27.8	-19	Pass
UL 698-716	-40.2	-19	Pass
UL776-787	-33.2	-19	Pass
DL2110-2155	-62.0	-19	Pass
DL1930-1995	-65.9	-19	Pass
DL869-894	-68.4	-19	Pass
DL:728-746	-89.0	-19	Pass
DL 746-757	-76.3	-19	Pass

Hi

Out of Band Emission			
Freq (MHz)	**Pre AGC**	**Limit (dBm)**	**Results**
UL1710-1755	-29.3	-19	Pass
UL1850-1915	-40.6	-19	Pass
UL824-849	-32.0	-19	Pass
UL 698-716	-43.5	-19	Pass
UL776-787	-40.8	-19	Pass
DL2110-2155	-43.7	-19	Pass
DL1930-1995	-66.2	-19	Pass
DL869-894	-34.8	-19	Pass
DL:728-746	-89.2	-19	Pass
DL 746-757	-82.3	-19	Pass

LTE (alternative 4.1MHz AWGN)

Low

Out of Band Emission			
Freq (MHz)	**Pre AGC**	**Limit (dBm)**	**Results**
UL1710-1755	-24.5	-19	Pass
UL1850-1915	-23.4	-19	Pass
UL824-849	-22.7	-19	Pass
UL 698-716	-21.3	-19	Pass
UL776-787	-21.4	-19	Pass
DL2110-2155	-43.3	-19	Pass
DL1930-1995	-65.8	-19	Pass
DL869-894	-45.7	-19	Pass
DL:728-746	-51.1	-19	Pass
DL 746-757	-47.0	-19	Pass

Hi

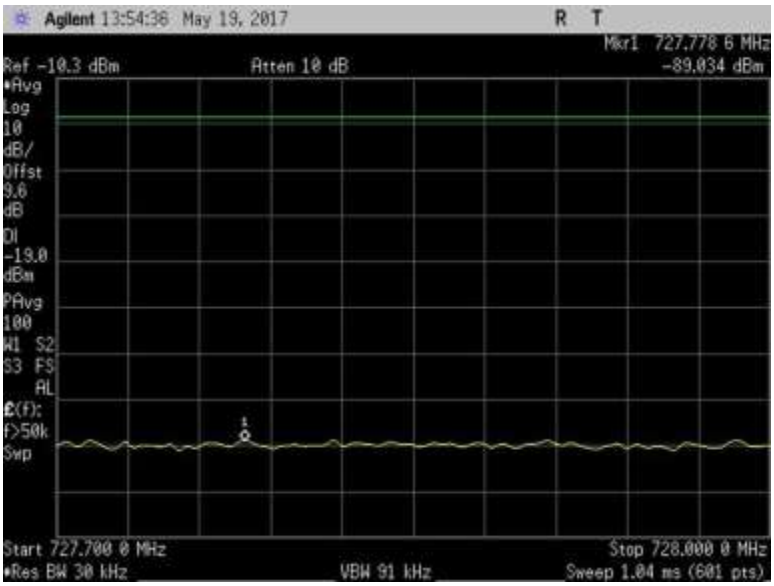
Out of Band Emission			
Freq (MHz)	**Pre AGC**	**Limit (dBm)**	**Results**
UL1710-1755	-23.0	-19	Pass
UL1850-1915	-35.6	-19	Pass
UL824-849	-25.3	-19	Pass
UL 698-716	-23.7	-19	Pass
UL776-787	-21.1	-19	Pass
DL2110-2155	-43.7	-19	Pass
DL1930-1995	-59.1	-19	Pass
DL869-894	-34.8	-19	Pass
DL:728-746	-48.7	-19	Pass
DL 746-757	-53.9	-19	Pass

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

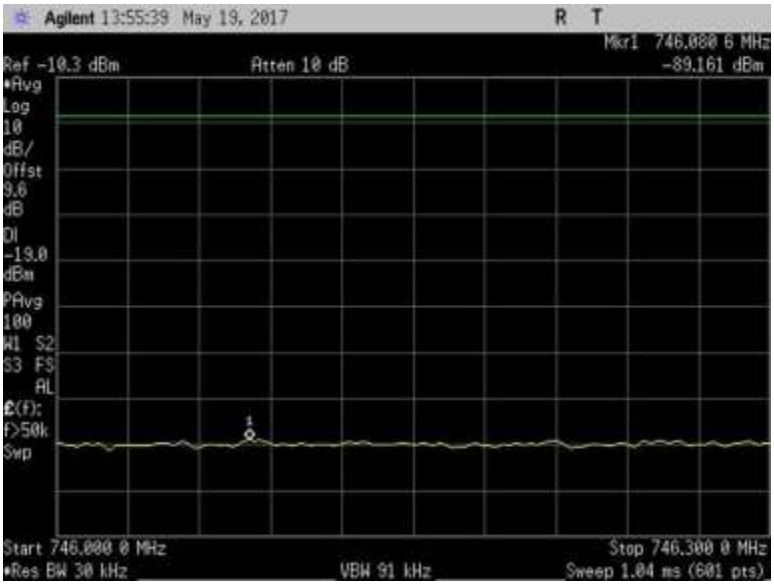
Plots

DL

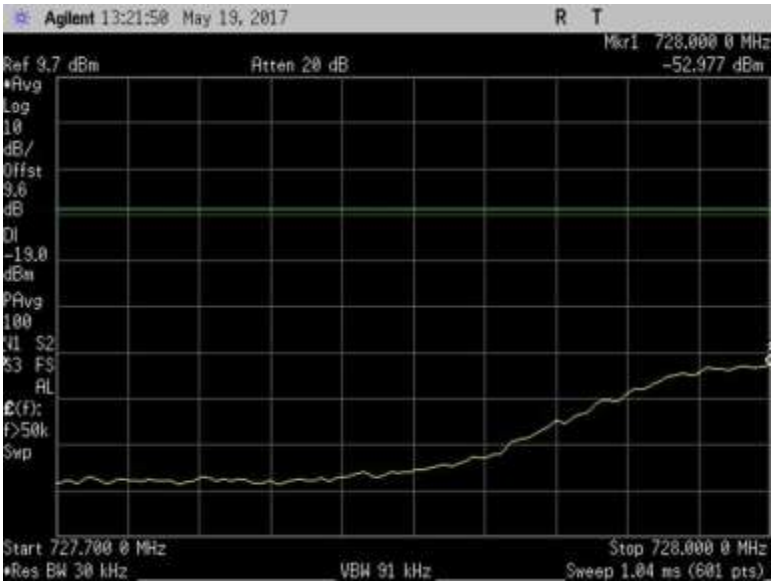
CDMA, GSM and LTE



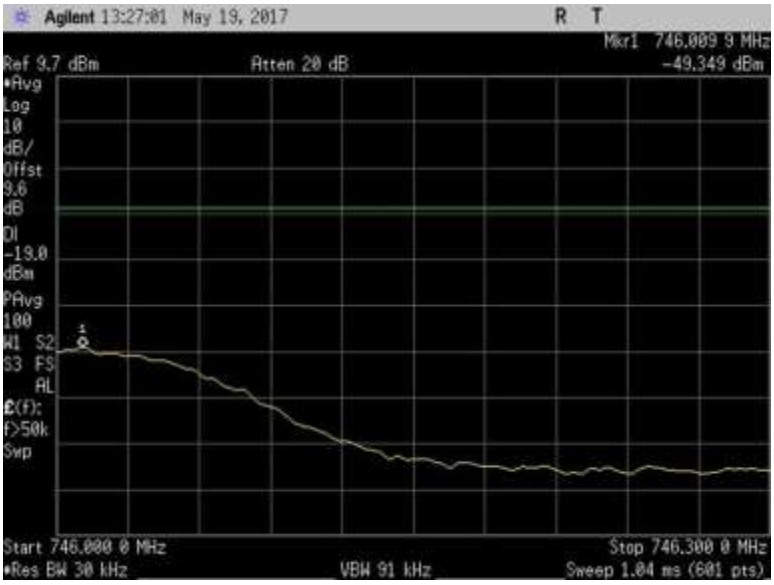
7.5_OBE_DL_728-746MHz_L_PreAGC_CDMA



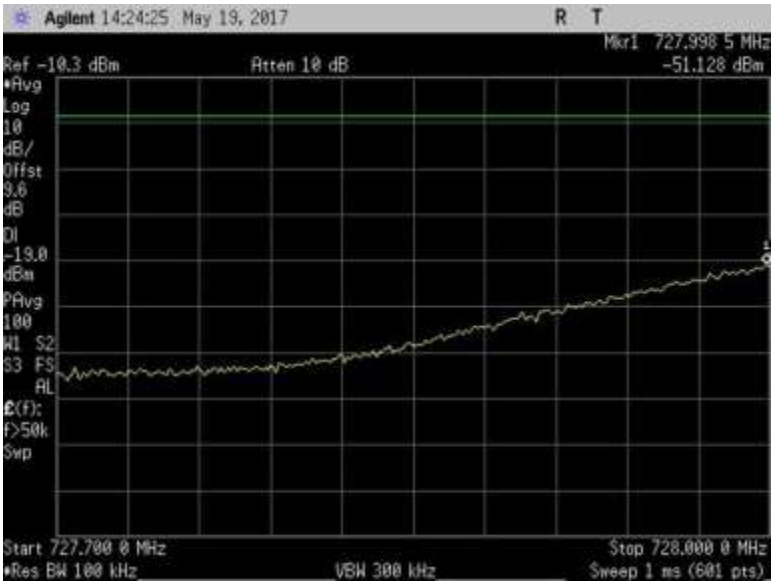
7.5_OBE_DL_728-746MHz_H_PreAGC_CDMA



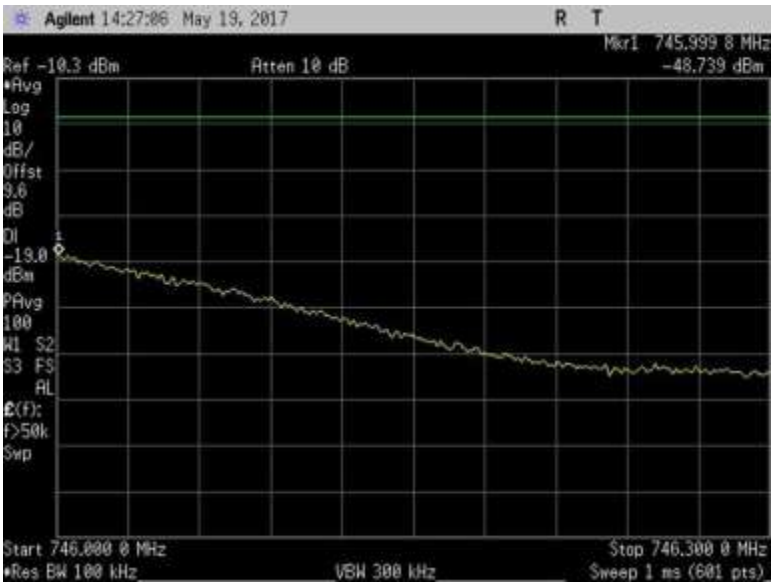
7.5_OBE_DL_728-746MHz_L_PreAGC_GSM



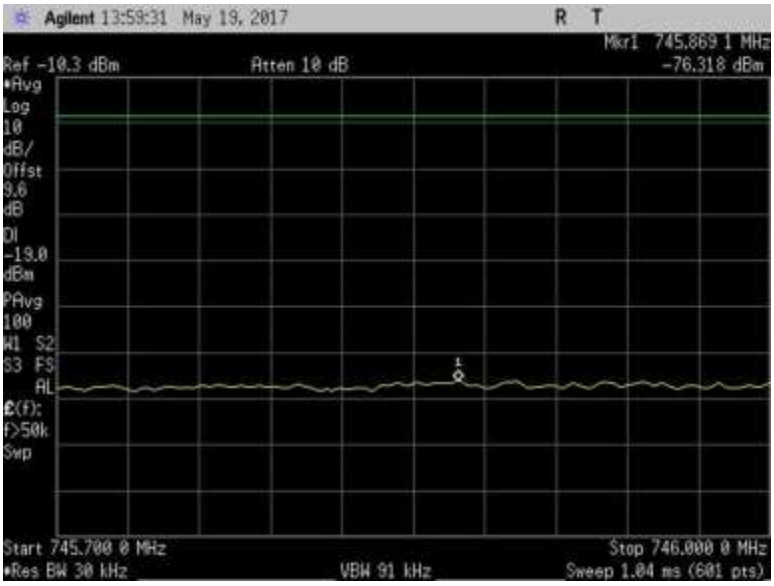
7.5_OBE_DL_728-746MHz_H_PreAGC_GSM



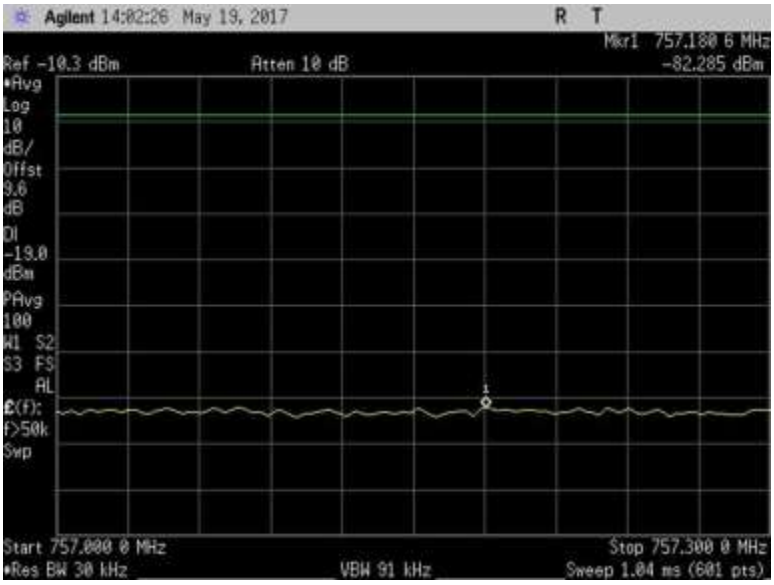
7.5_OBE_DL_728-746MHz_L_PreAGC_LTE



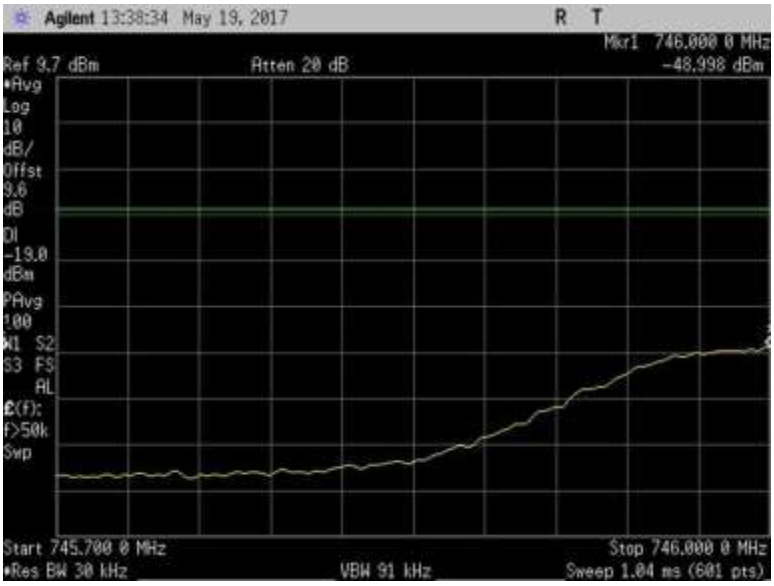
7.5_OBE_DL_728-746MHz_H_PreAGC_LTE



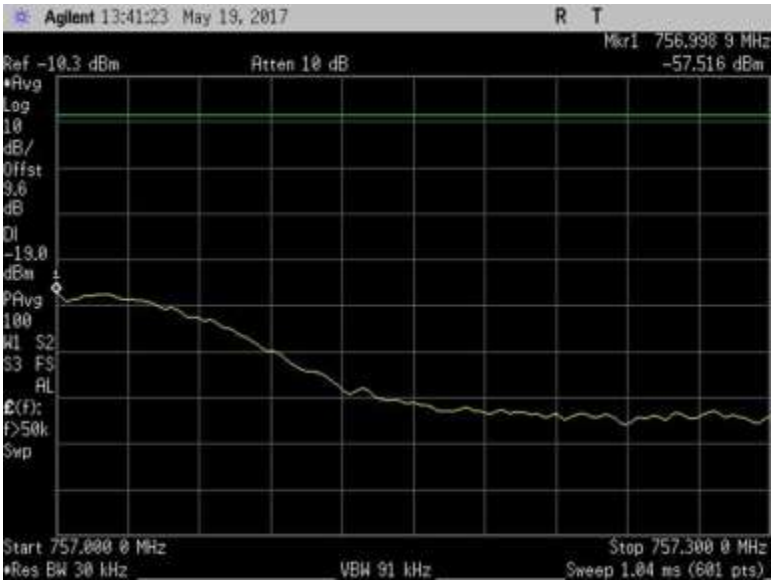
7.5_OBE_DL_746-757MHz_L_PreAGC_CDMA



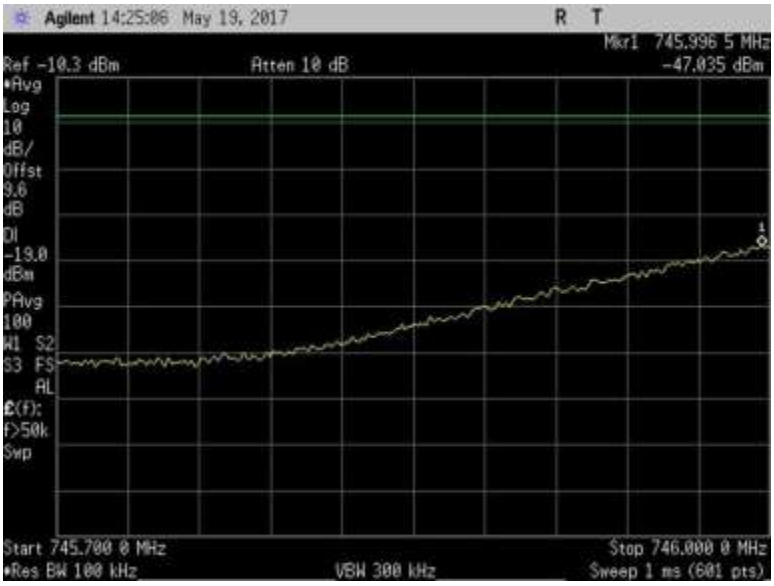
7.5_OBE_DL_746-757MHz_H_PreAGC_CDMA



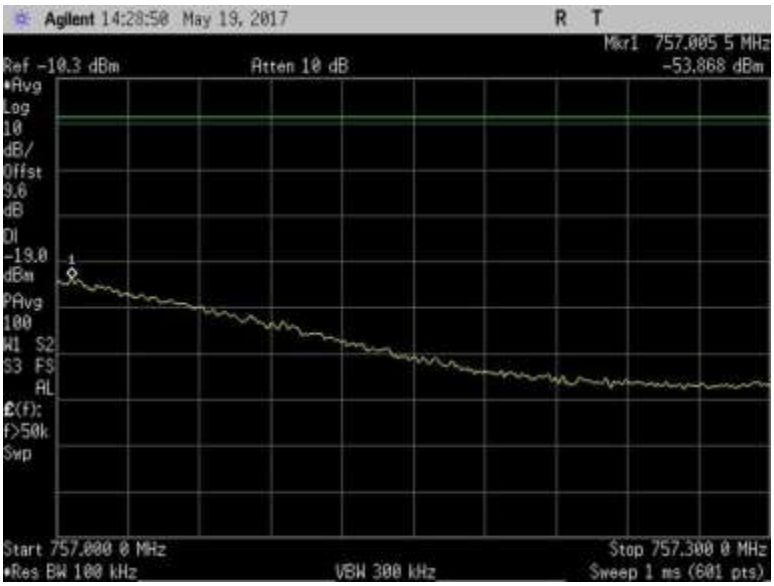
7.5_OBE_DL_746-757MHz_L_PreAGC_GSM



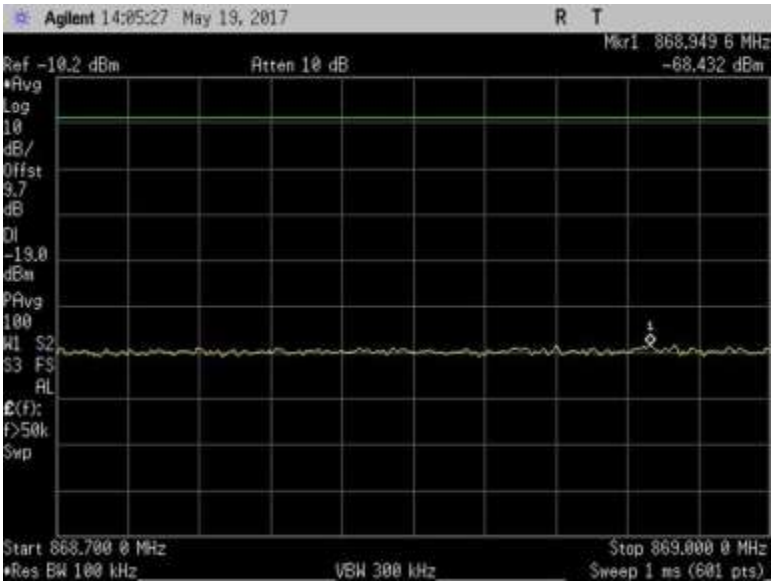
7.5_OBE_DL_746-757MHz_H_PreAGC_GSM



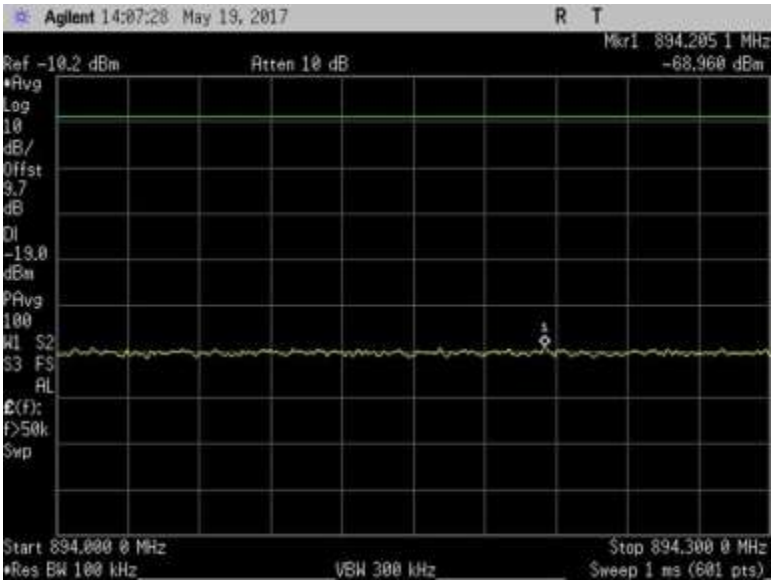
7.5_OBE_DL_746-757MHz_L_PreAGC_LTE



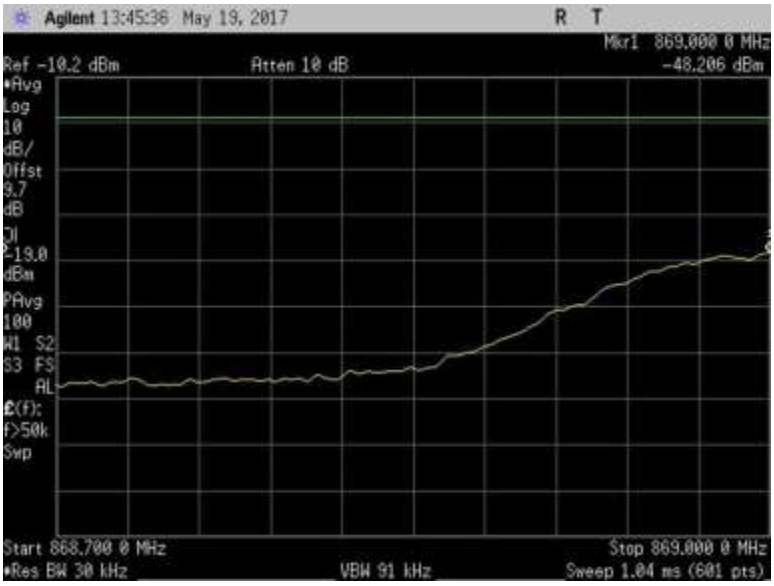
7.5_OBE_DL_746-757MHz_H_PreAGC_LTE



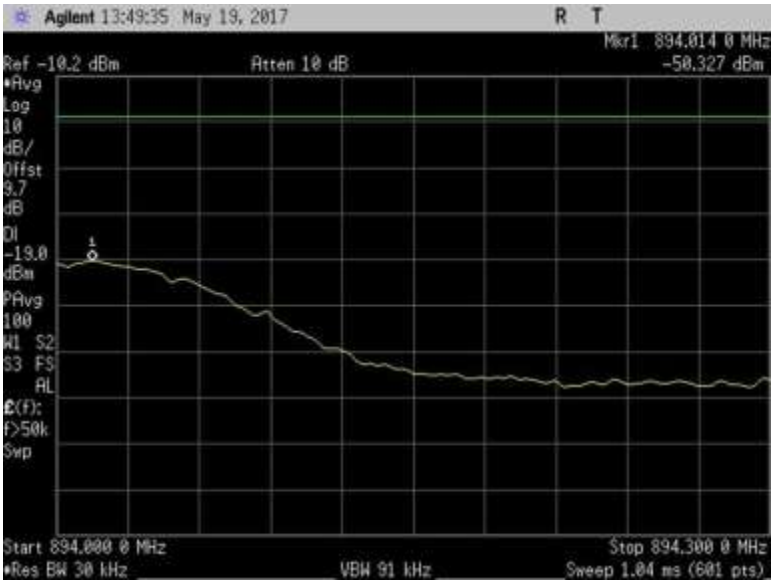
7.5_OBE_DL_869-894MHz_L_PreAGC_CDMA



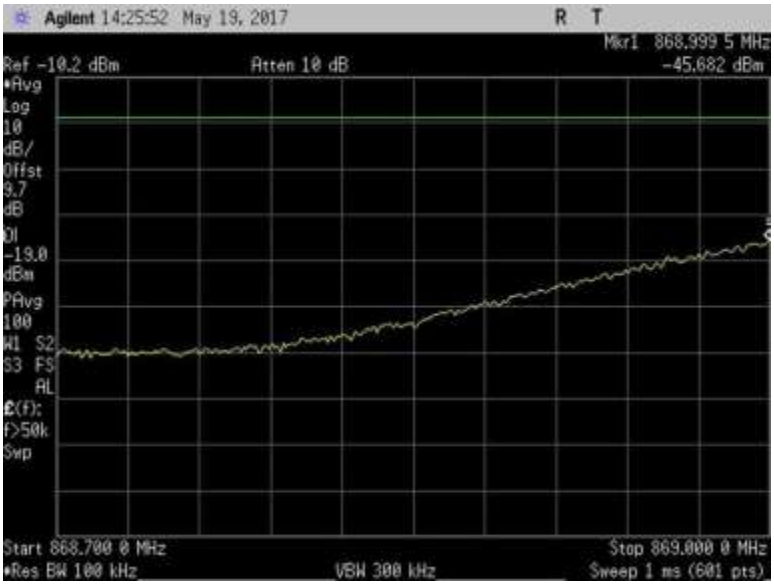
7.5_OBE_DL_869-894MHz_H_PreAGC_CDMA



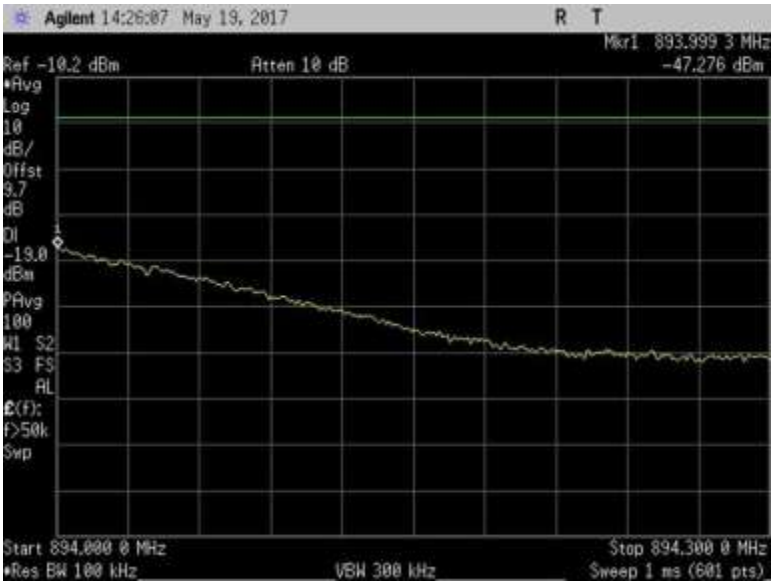
7.5_OBE_DL_869-894MHz_L_PreAGC_GSM



7.5_OBE_DL_869-894MHz_H_PreAGC_GSM

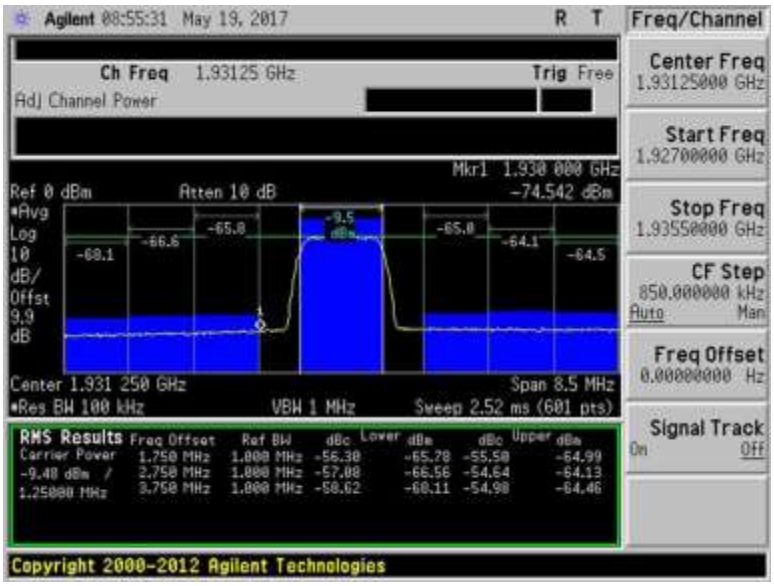


7.5_OBE_DL_869-894MHz_L_PreAGC_LTE

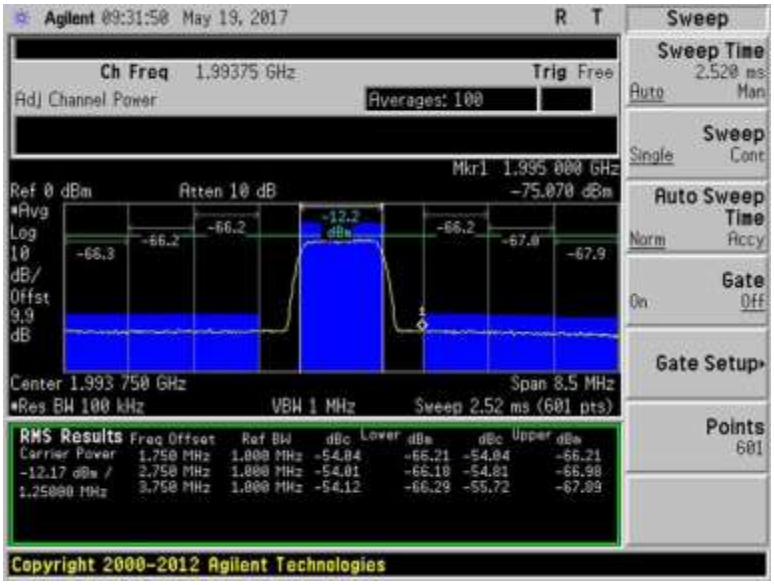


7.5_OBE_DL_869-894MHz_H_PreAGC_LTE

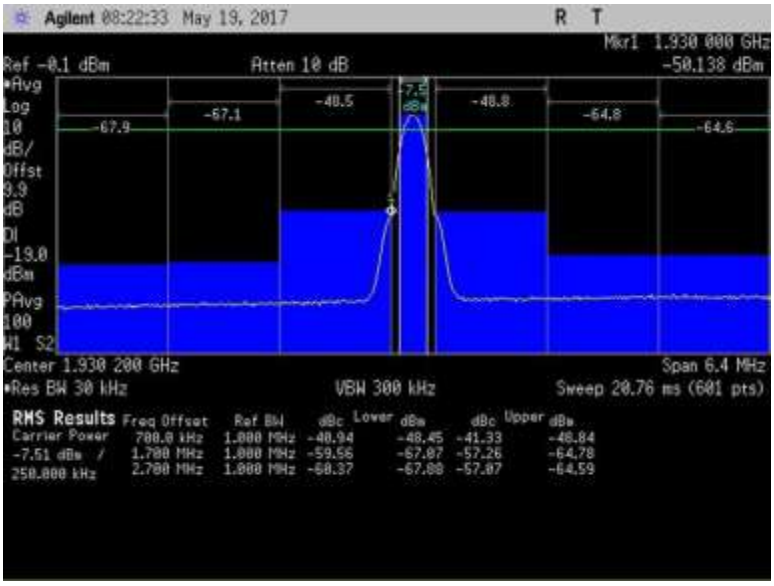
DL
CDMA, GSM and WCDMA



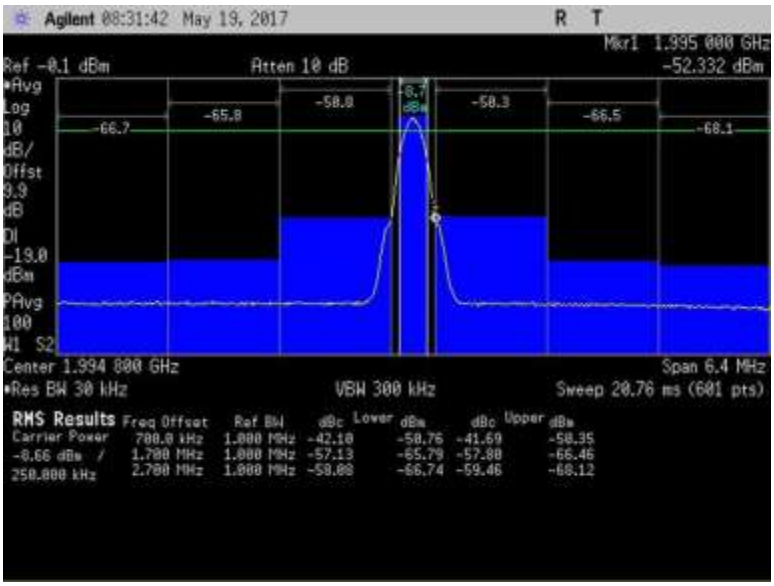
7.5_OBE_DL_1930-1995MHz_L_PreAGC_CDMA



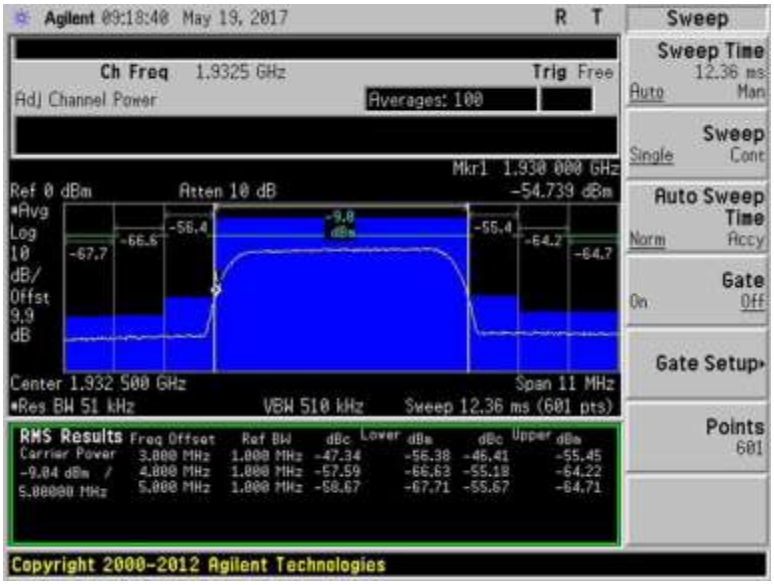
7.5_OBE_DL_1930-1995MHz_H_PreAGC_CDMA



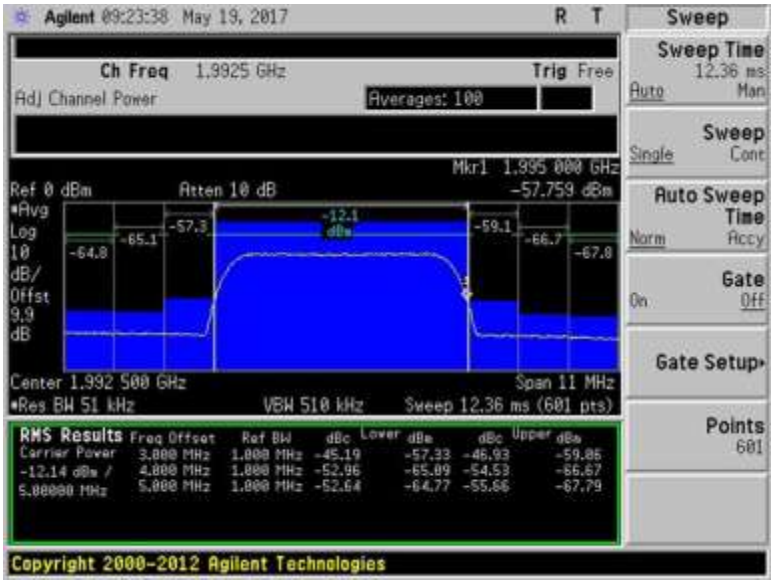
7.5_OBE_DL_1930-1995MHz_L_PreAGC_GSM



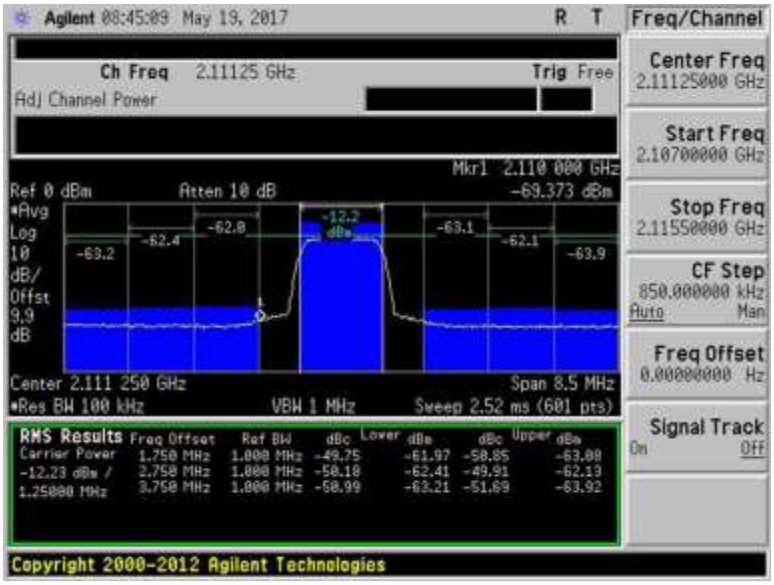
7.5_OBE_DL_1930-1995MHz_H_PreAGC_GSM



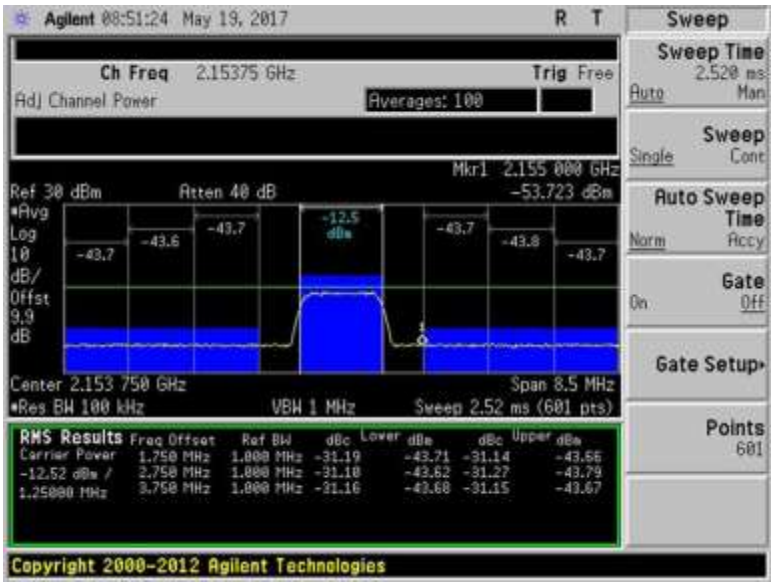
7.5_OBE_DL_1930-1995MHz_L_PreAGC_WCDMA



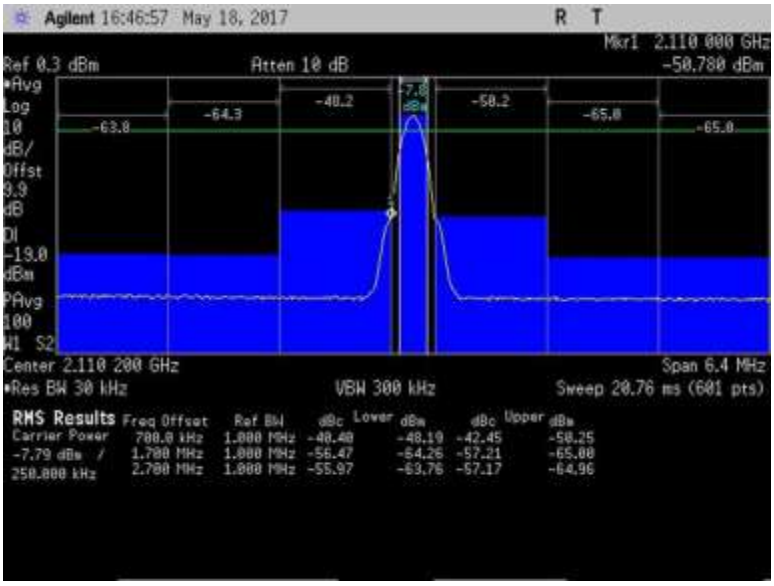
7.5_OBE_DL_1930-1995MHz_H_PreAGC_WCDMA



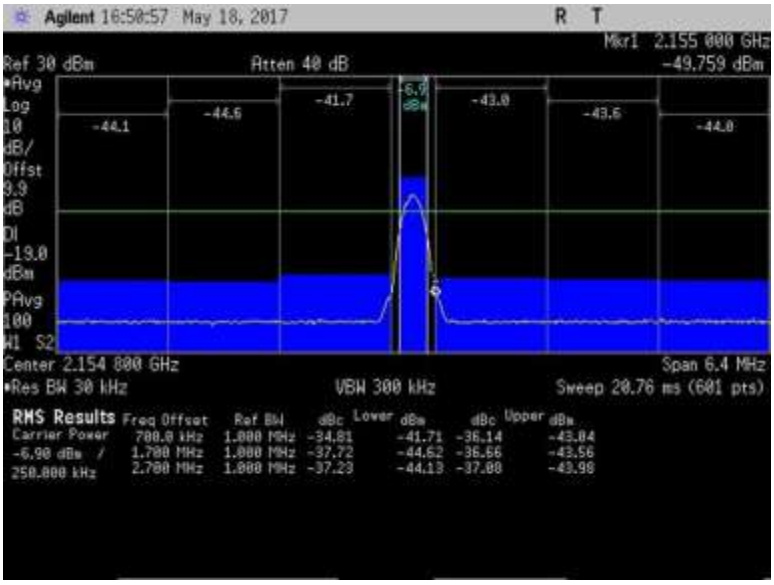
7.5_OBE_DL_2110-2155MHz_L_PreAGC_CDMA



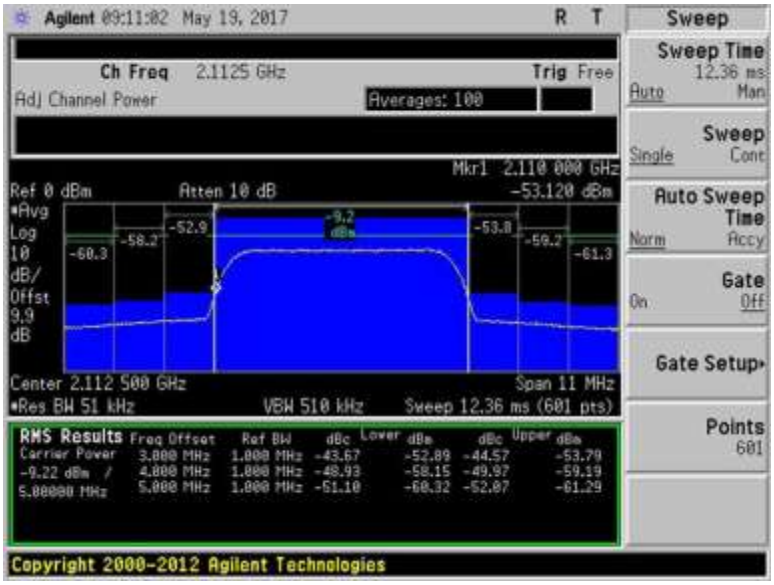
7.5_OBE_DL_2110-2155MHz_H_PreAGC_CDMA



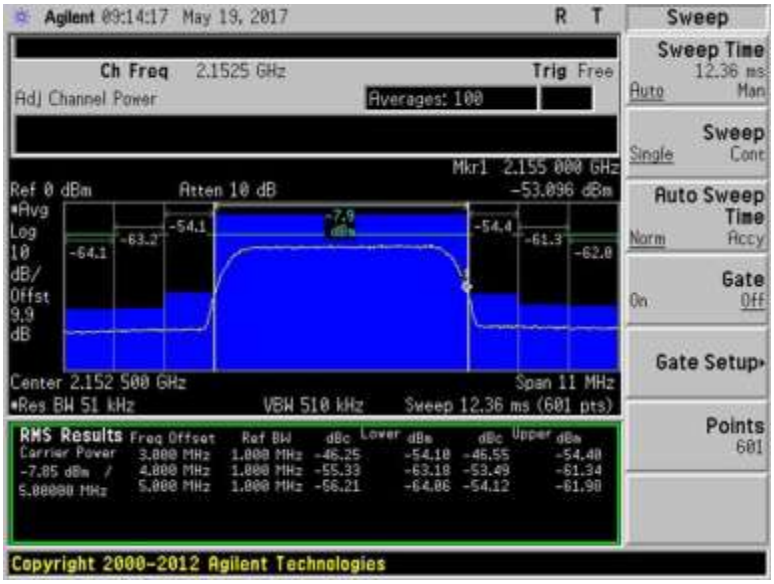
7.5_OBE_DL_2110-2155MHz_L_PreAGC_GSM



7.5_OBE_DL_2110-2155MHz_H_PreAGC_GSM

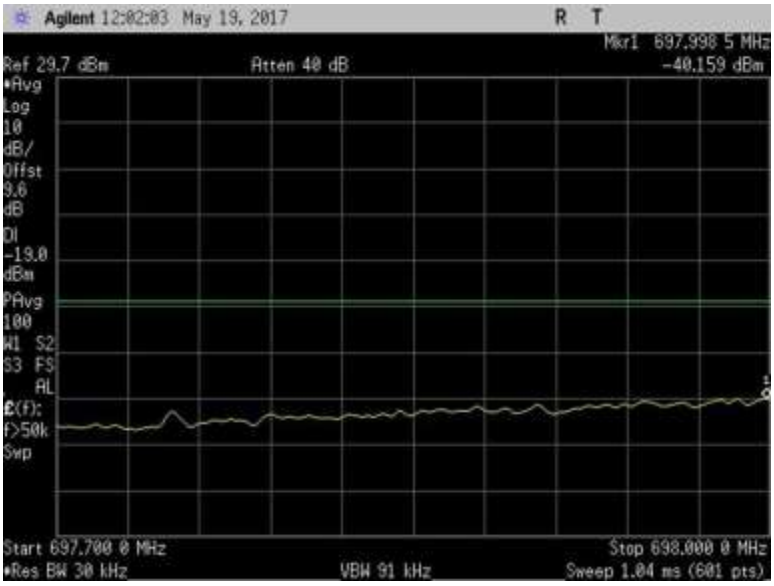


7.5_OBE_DL_2110-2155MHz_L_PreAGC_WCDMA

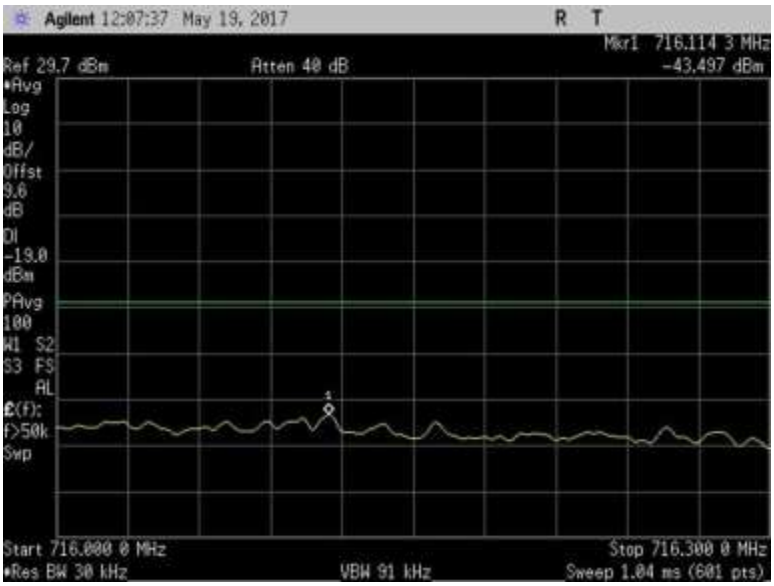


7.5_OBE_DL_2110-2155MHz_H_PreAGC_WCDMA

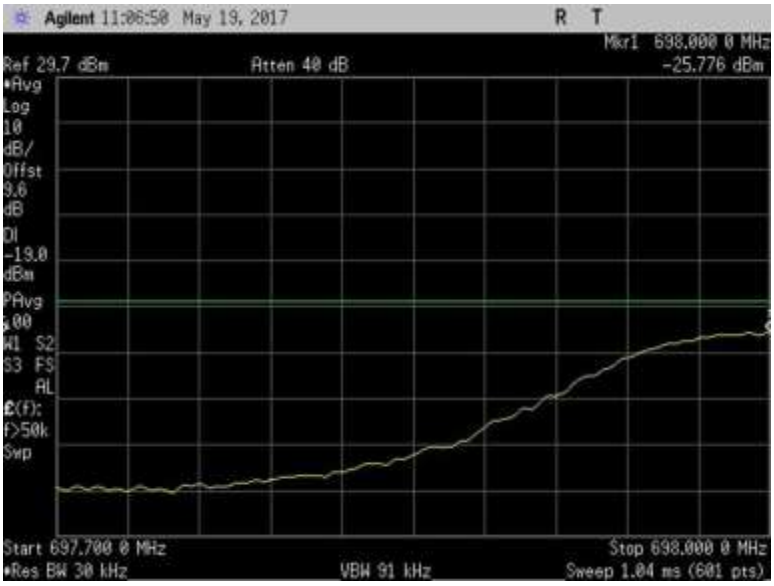
UL
CDMA, GSM and LTE



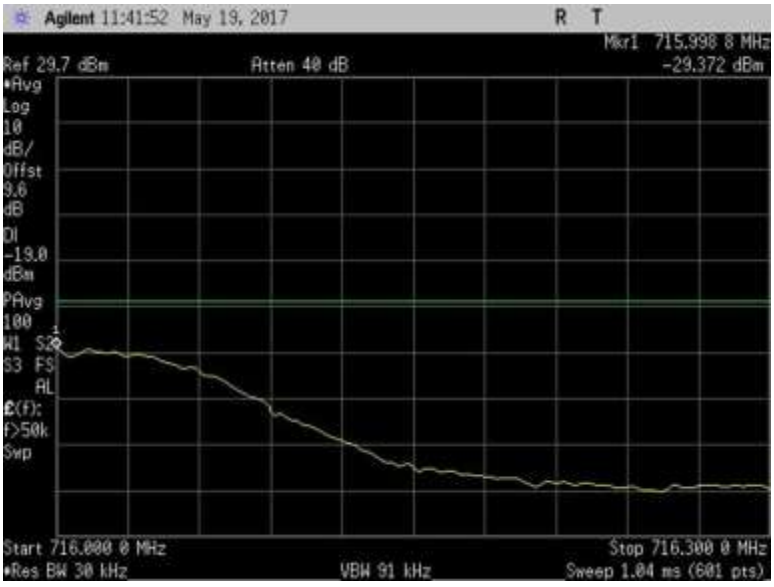
7.5_OBE_UL_698-716MHz_L_PreAGC_CDMA



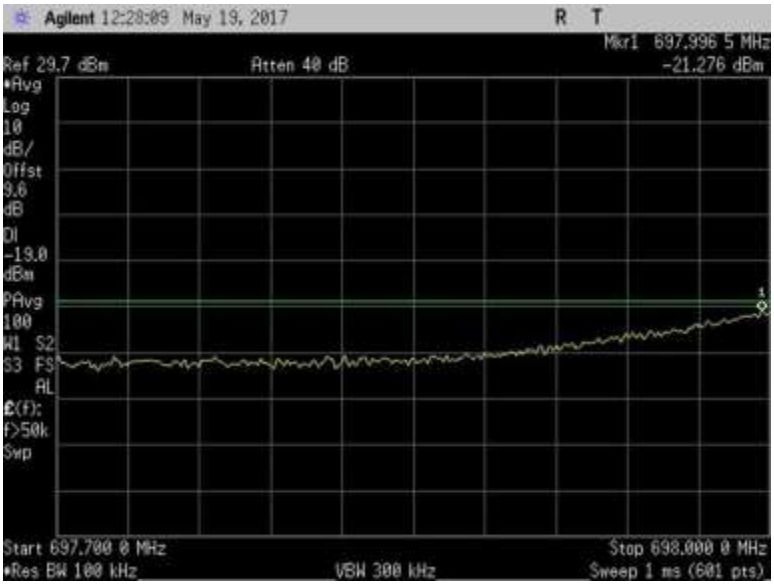
7.5_OBE_UL_698-716MHz_H_PreAGC_CDMA



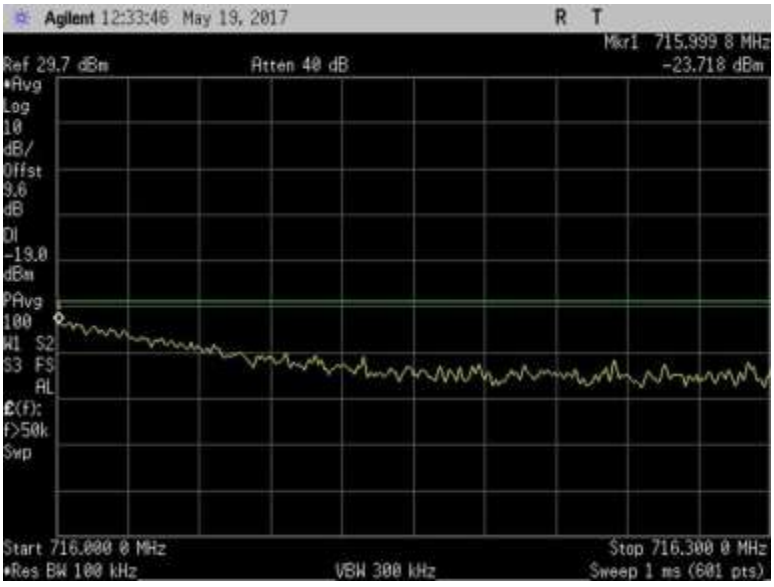
7.5_OBE_UL_698-716MHz_L_PreAGC_GSM



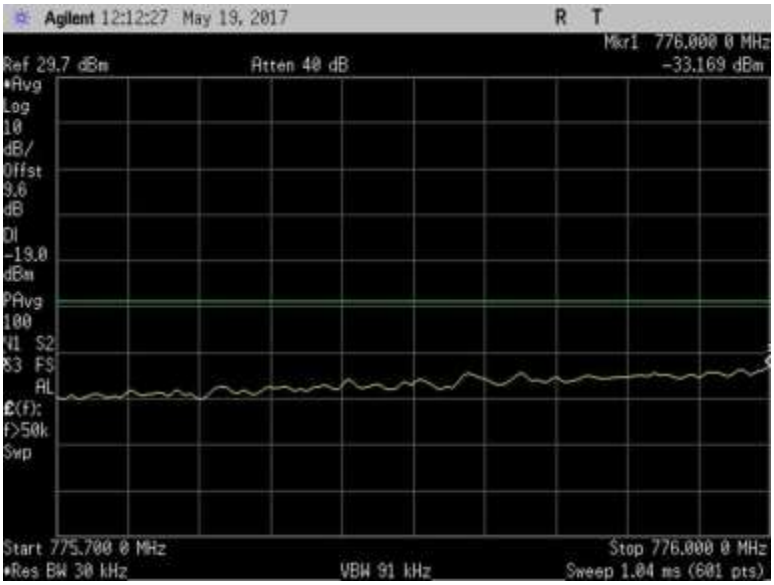
7.5_OBE_UL_698-716MHz_H_PreAGC_GSM



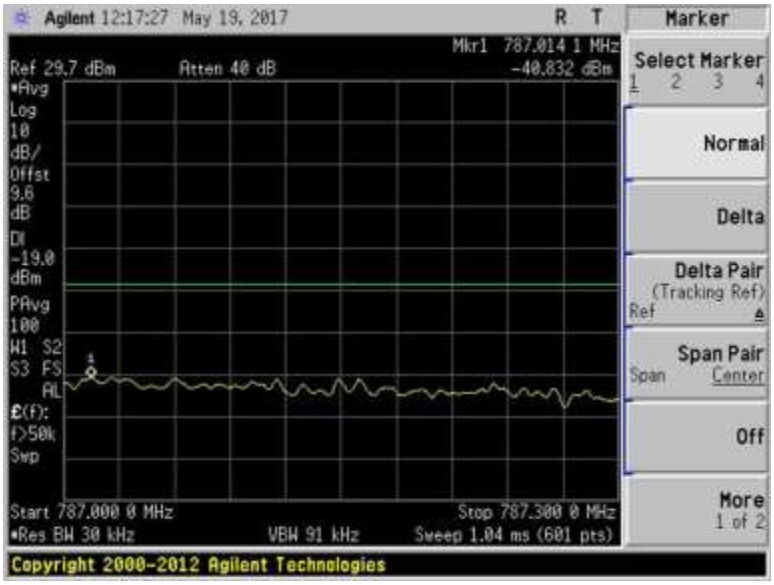
7.5_OBE_UL_698-716MHz_L_PreAGC_LTE



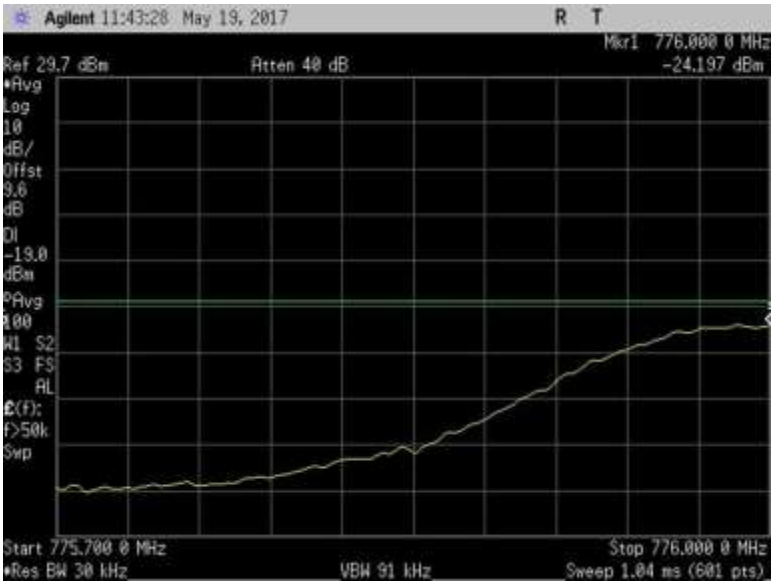
7.5_OBE_UL_698-716MHz_H_PreAGC_LTE



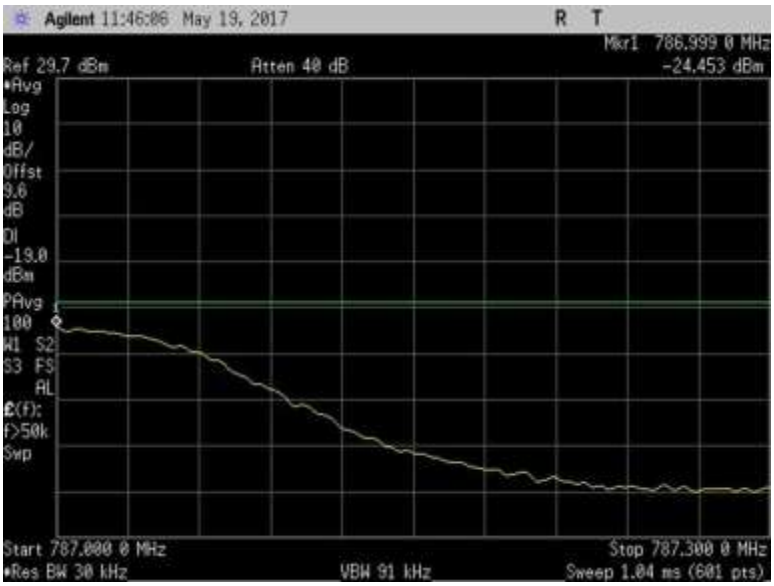
7.5_OBE_UL_776-787MHz_L_PreAGC_CDMA



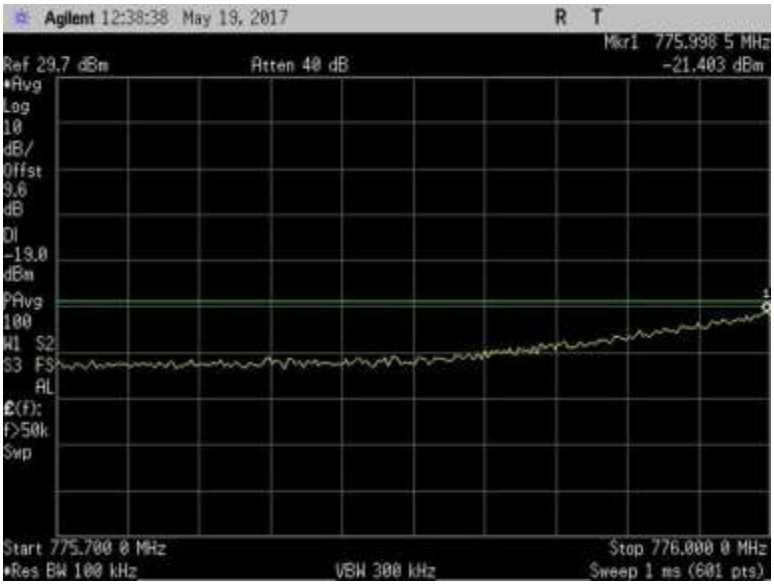
7.5_OBE_UL_776-787MHz_H_PreAGC_CDMA



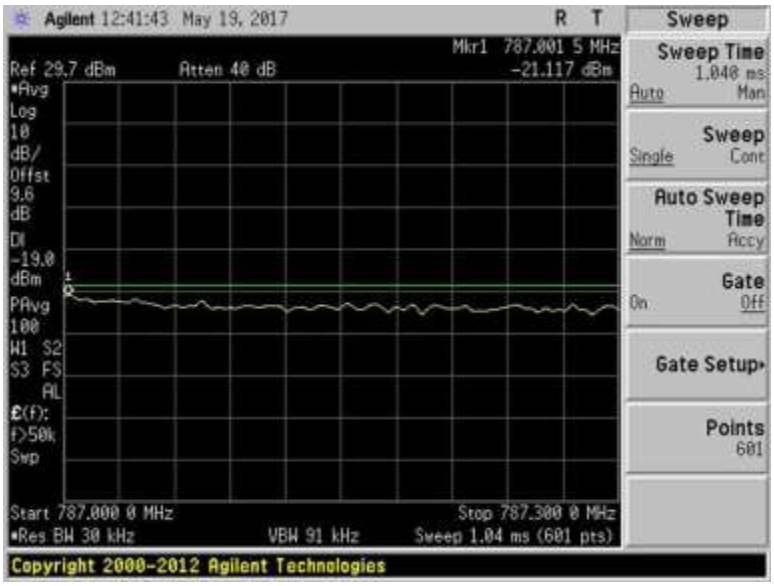
7.5_OBE_UL_776-787MHz_L_PreAGC_GSM



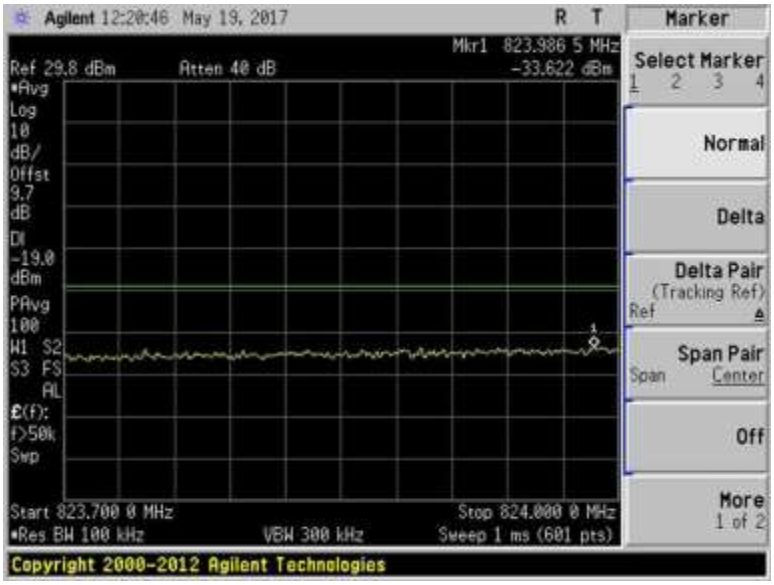
7.5_OBE_UL_776-787MHz_H_PreAGC_GSM



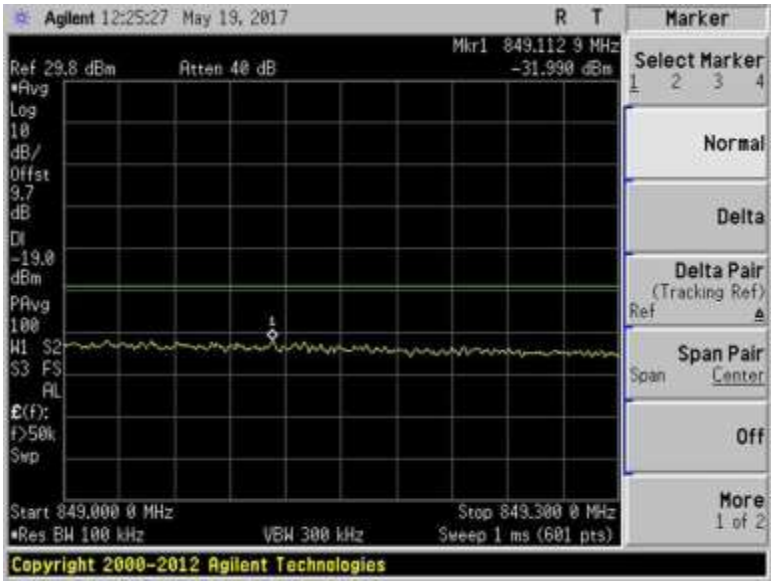
7.5_OBE_UL_776-787MHz_L_PreAGC_LTE



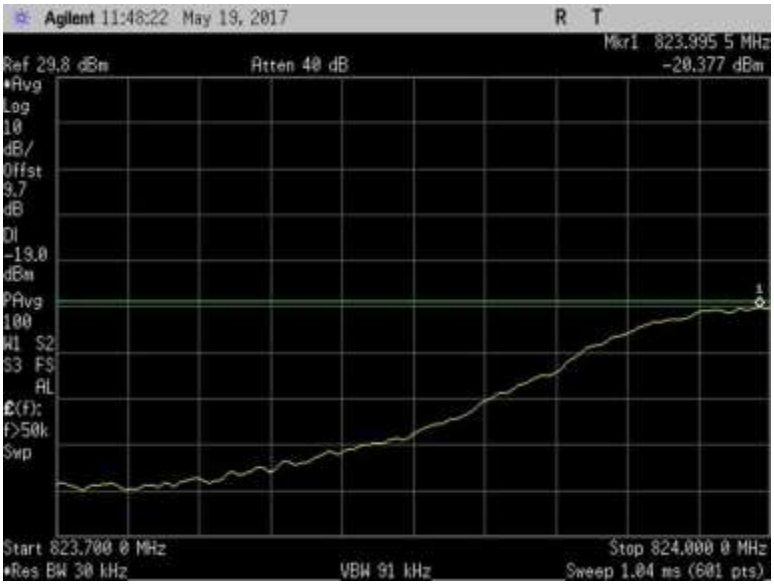
7.5_OBE_UL_776-787MHz_H_PreAGC_LTE



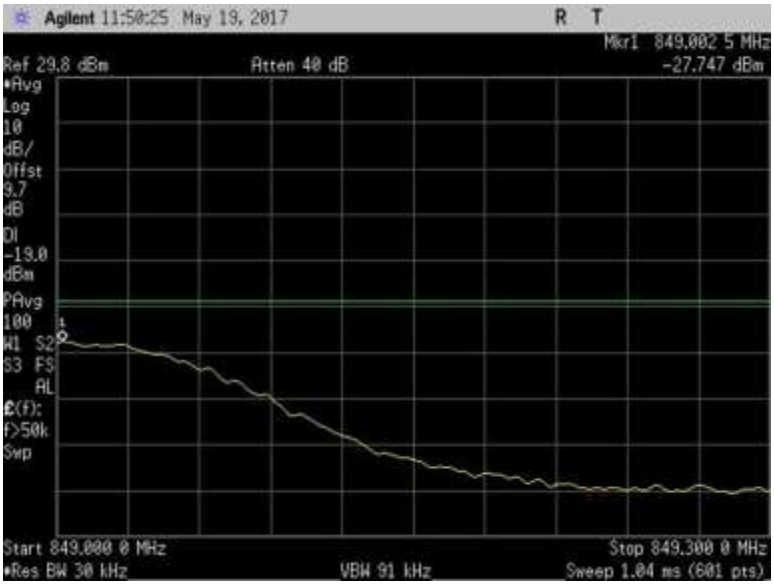
7.5_OBE_UL_824-849MHz_L_PreAGC_CDMA



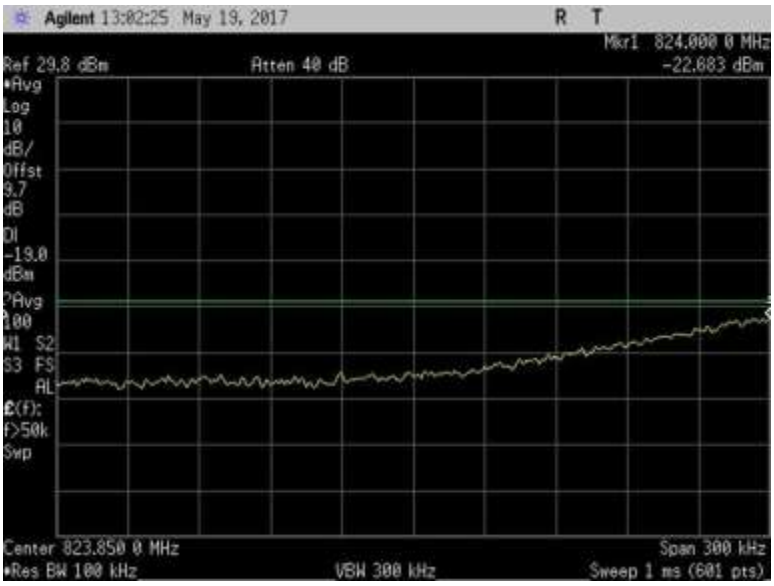
7.5_OBE_UL_824-849MHz_H_PreAGC_CDMA



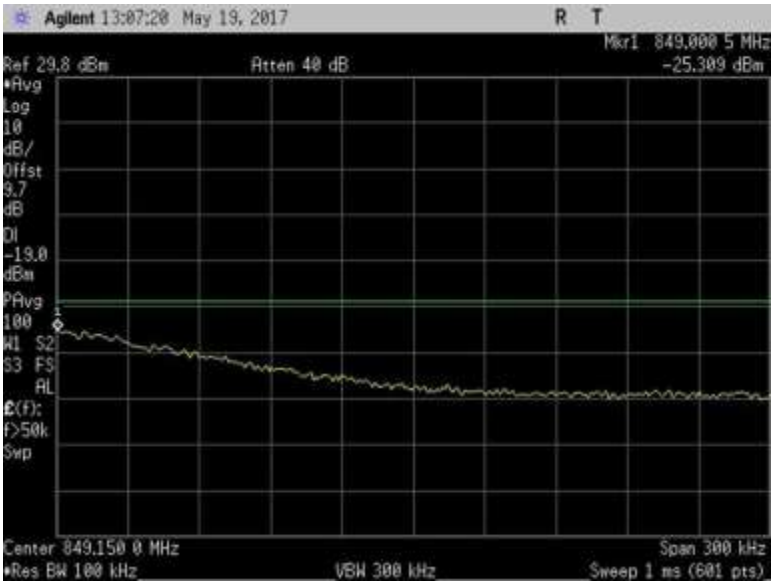
7.5_OBE_UL_824-849MHz_L_PreAGC_GSM



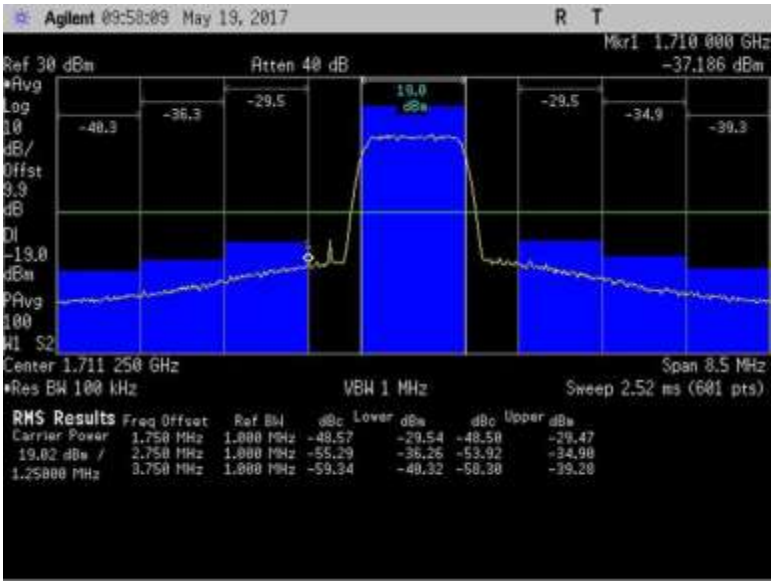
7.5_OBE_UL_824-849MHz_H_PreAGC_GSM



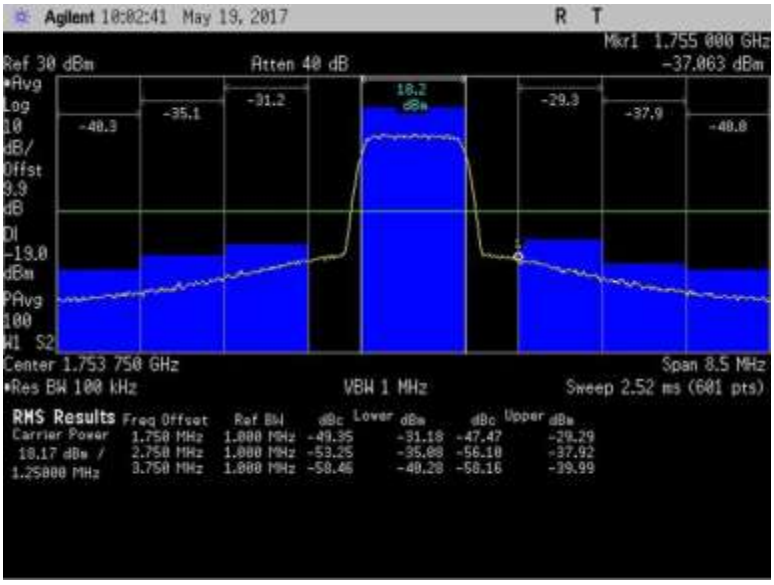
7.5_OBE_UL_824-849MHz_L_PreAGC_LTE



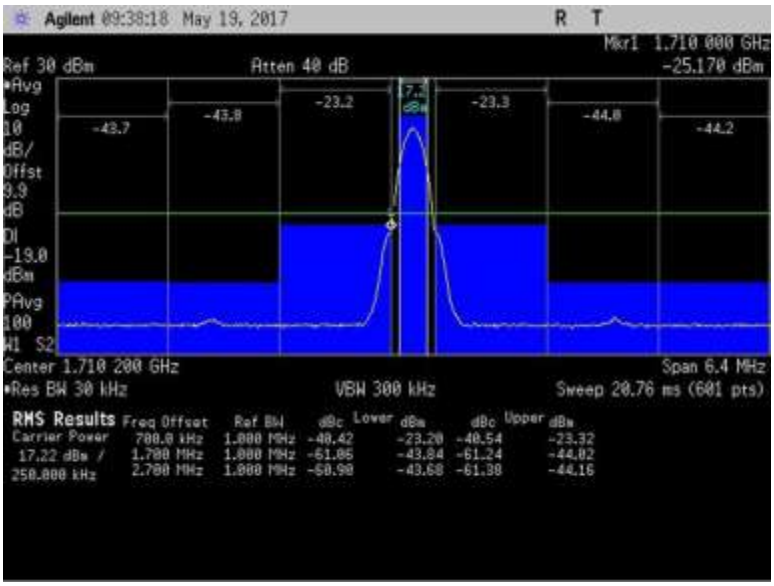
7.5_OBE_UL_824-849MHz_H_PreAGC_LTE



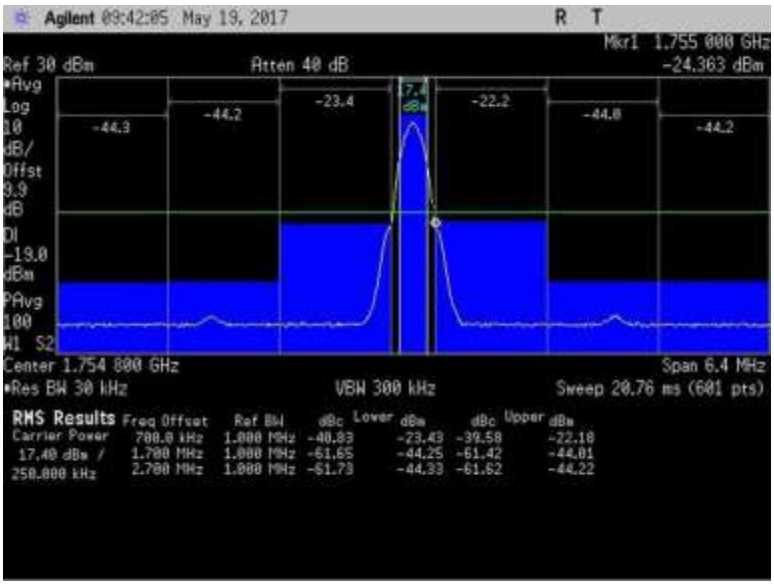
7.5_OBE_UL_1710-1755MHz_L_PreAGC_CDMA



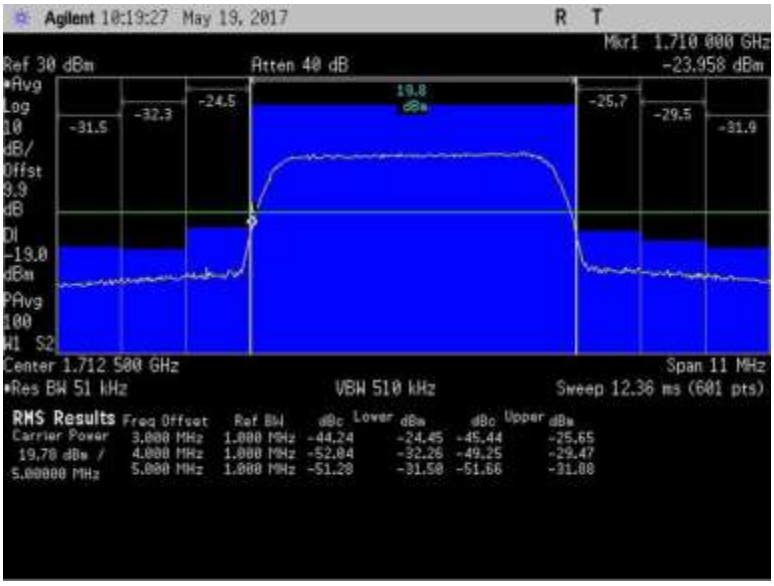
7.5_OBE_UL_1710-1755MHz_H_PreAGC_CDMA



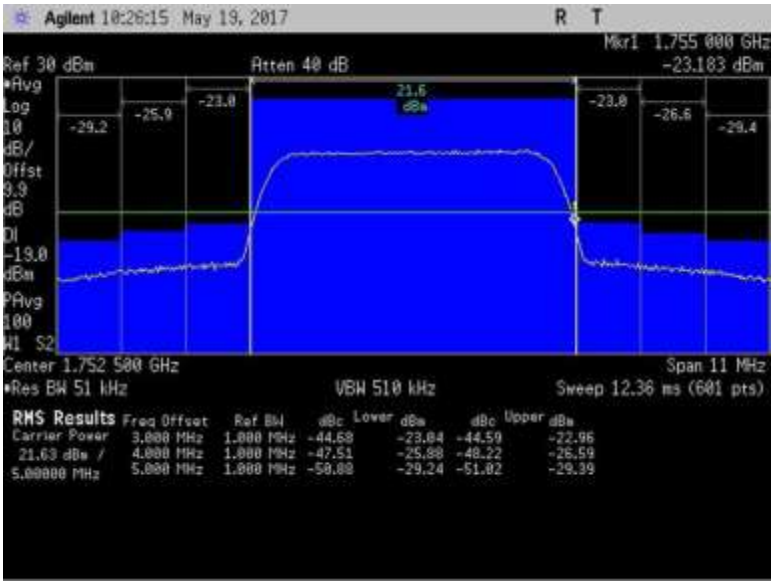
7.5_OBE_UL_1710-1755MHz_L_PreAGC_GSM



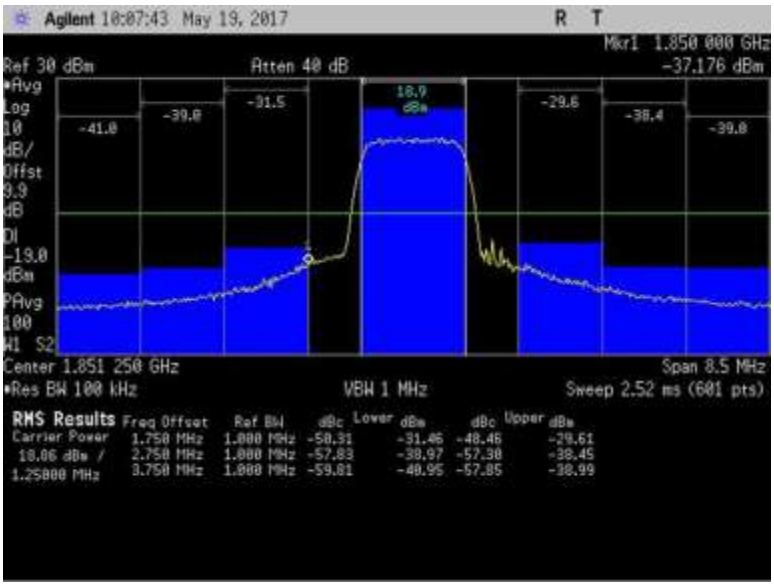
7.5_OBE_UL_1710-1755MHz_H_PreAGC_GSM



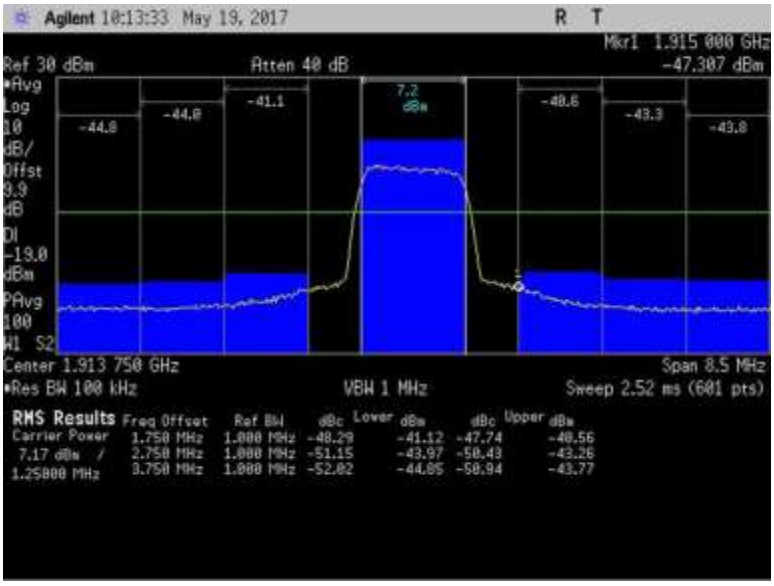
7.5_OBE_UL_1710-1755MHz_L_PreAGC_LTE



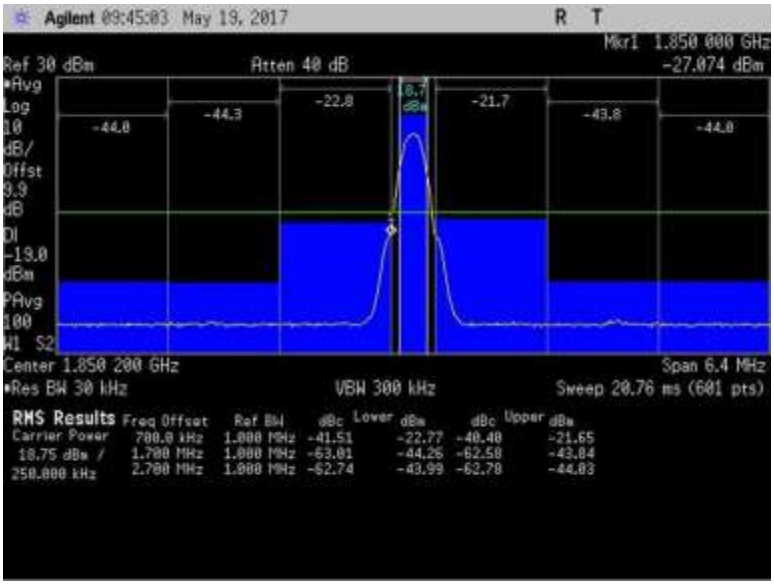
7.5_OBE_UL_1710-1755MHz_H_PreAGC_LTE



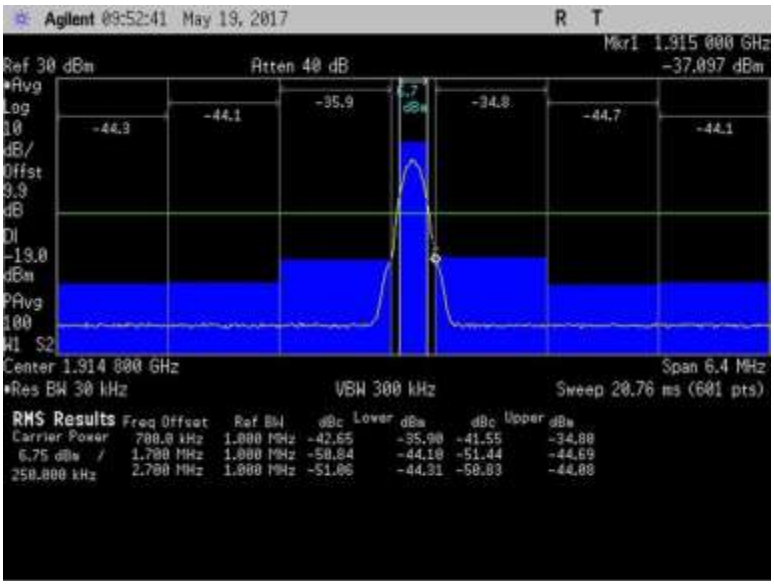
7.5_OBE_UL_1850-1915MHz_L_PreAGC_CDMA



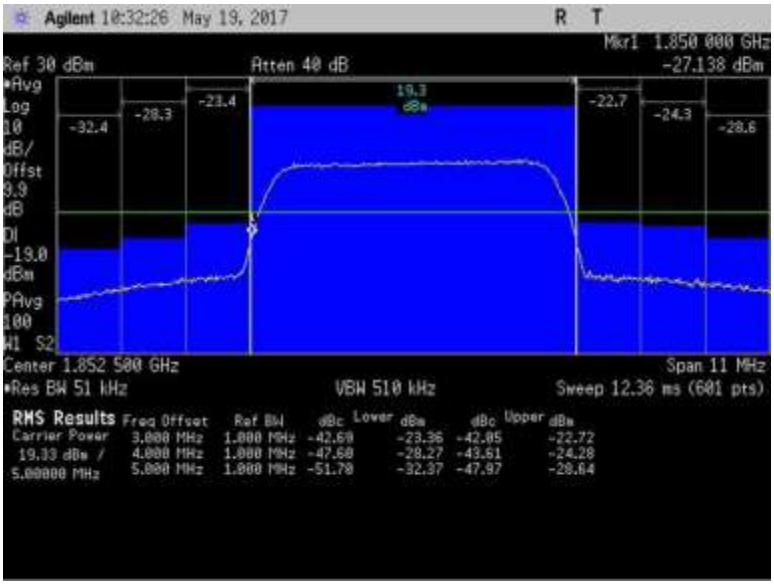
7.5_OBE_UL_1850-1915MHz_H_PreAGC_CDMA



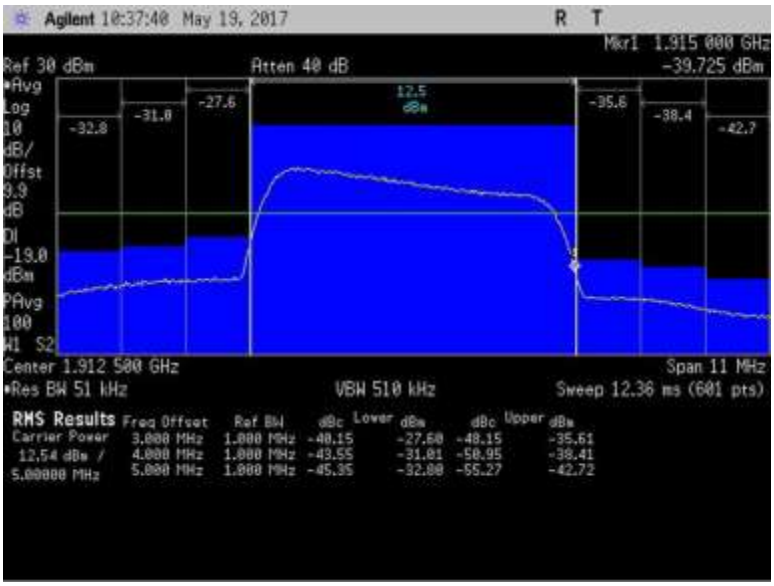
7.5_OBE_UL_1850-1915MHz_L_PreAGC_GSM



7.5_OBE_UL_1850-1915MHz_H_PreAGC_GSM



7.5_OBE_UL_1850-1915MHz_L_PreAGC_LTE



7.5_OBE_UL_1850-1915MHz_H_PreAGC_LTE

7.6 Conducted Spurious Emissions

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**7.6 Conducted Spurious Emissions / 47 CFR §2.1051 Spurious Emissions at Antenna Terminals**		
Work Order #:	**99983**	Date:	5/19/2017
Test Type:	**Conducted Emissions**	Time:	15:37:00 PM
Tested By:	**Daniel Bertran**	Sequence#:	1
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.
The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.
The EUT Server port is a type FME connector and 50-ohm impedance.
The EUT Donor port is type FME connector and 50-ohm impedance.

Part 22
UL: 824-849MHz
DL: 869-894MHz
Part 24
UL: 1850-1915MHz
DL: 1930-1995MHz
Part 27
UL: 1710-1755MHz, 698-716MHz, 776-787MHz
DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure:
The test was performed in accordance with section 7.6 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04 Dated February 12, 2016.
Firmware: 1.7
Test environment conditions: Test environment conditions: 24°C, 40% Relative Humidity, 101.5kPa
Frequency range of measurement = 9kHz- 22GHz.
9 kHz - 150 kHz -> RBW= 200Hz VBW= 200Hz
150 kHz - 30 MHz -> RBW= 9kHz VBW= 9kHz
30 MHz - 1000MHz -> RBW*= 1MHz VBW= 3MHz
1000 MHz - 22000MHz ->RBW= 1MHz VBW= 3MHz

*Note: As specified on 7.6 Conducted spurious emissions test procedure of 935210 D03 Signal Booster Measurements v04, for frequencies below 1 GHz, an RBW of 1 MHz may be used in a preliminary measurement. If non-compliant emissions are detected, a final measurement shall be made with a 100 kHz RBW. Additionally, a

peak detector may also be used for the preliminary measurement. If non-compliant emissions are detected, then a final measurement of these emissions shall be made with the power averaging (RMS) detector.

27.53 (f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	7/30/2015	7/30/2017
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	1/4/2016	1/4/2018

Summary of Results

Pass: As summarized in plots below, the conducted spurious emissions are within limits.

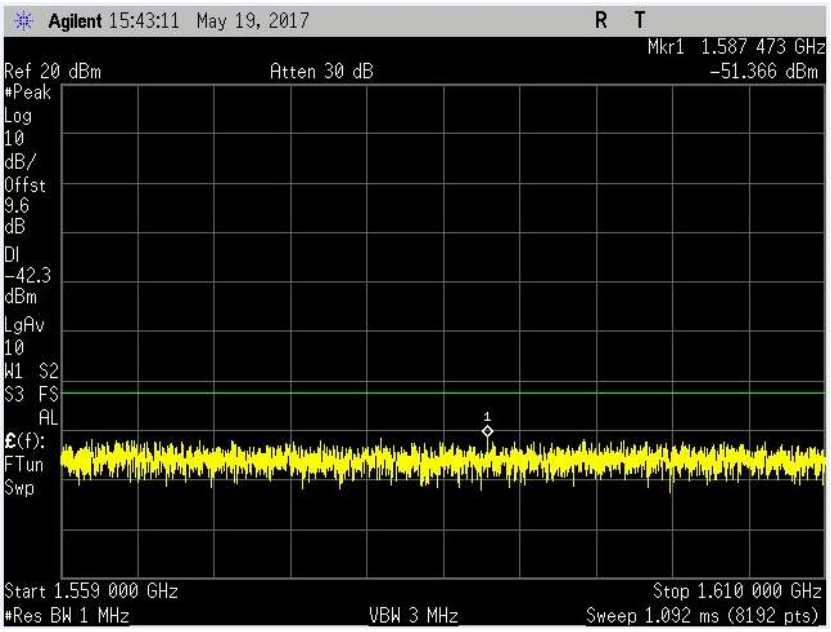
9 KHz-30 MHz

No Conducted Spurious Emissions were found within 20dB of the limit.

Per section 27.53 (f), the 1559-1610 band was also investigated and found emission within limits using applied correction (see calculation below).

Limit Line Calculation*					
Freq (MHz)	Antenna Gain- cable loss (dBi)		Limit line EIRP (dBW/MHz)	Limit line EIRP (dBm)	Limit line EIRP corrected (dBm)
UL 776-787	-2.3		-70.0	-40	-42.3

*Used vehicle Kit number 1



LIMIT LINE FOR SPURIOUS CONDUCTED EMISSION

REQUIRED ATTENUATION = 43+10 LOG P DB

Limit line (dBuV) = V_{dBuv} - Attenuation

$$V_{dBuV} = 20 \text{ Log } \frac{V}{1 \text{ x } 10^{-6}}$$

$$= 20\left(\text{Log } V - \text{Log } 1 \text{ x } 10^{-6}\right)$$

$$= 20 \text{ Log } V - 20 \text{ Log} 1 \text{ x } 10^{-6}$$

$$= 20 \text{ Log } V - 20(-6)$$

$$= 20 \text{ Log } V + 120$$

$$\text{Attenuatio n} = 43 + 10 \text{ Log } P$$

$$= 43 + 10 \text{ Log } \frac{V^2}{R}$$

$$= 43 + 10\left(\text{Log } V^2 \text{ - Log } R\right)$$

$$= 43 + 10\left(2 \text{ Log } V \text{ - Log } R\right)$$

$$= 43 + 20 \text{ Log } V \text{ - } 10 \text{ Log } R$$

Limit line = V_{dBuv} - Attenuation

= 20 Log V + 120 – (43 + 20 Log V – 10Log R)

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

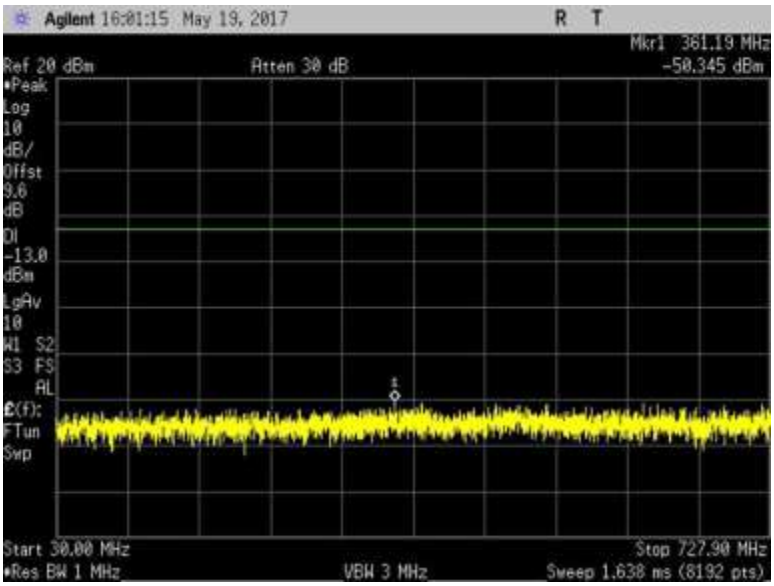
= 120 – 43 + 10 Log 50 Note : R = 50 Ω

= 120 –43 + 16.897

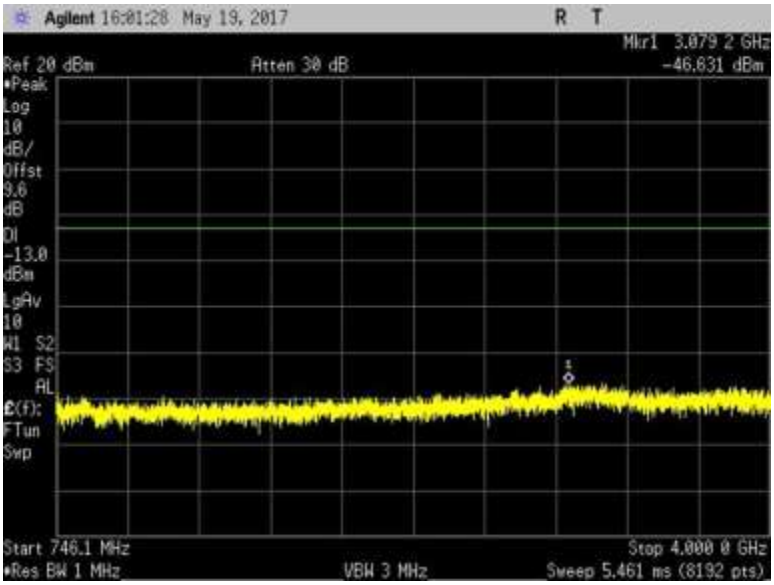
= 94 dBuV at any power level

Plots

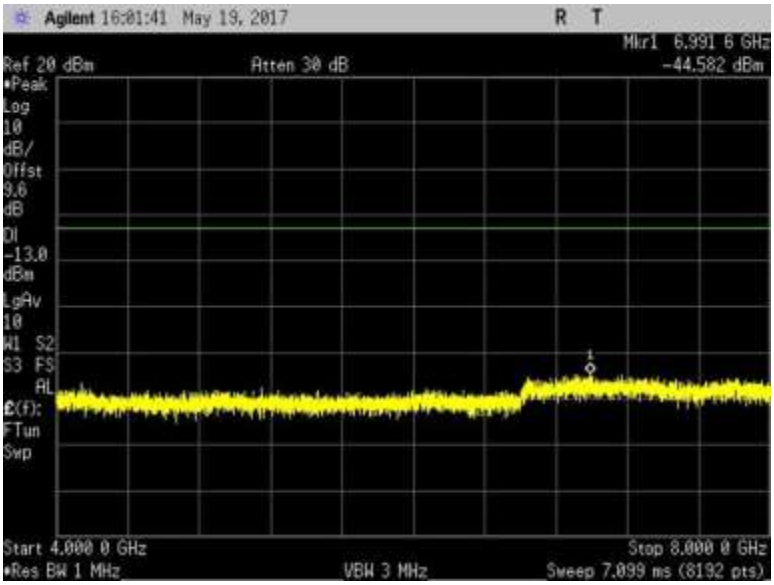
DL



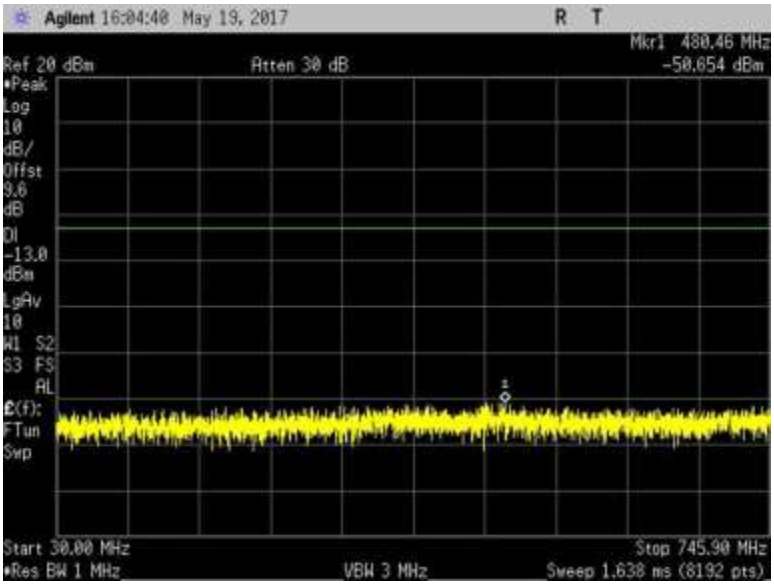
7.6_CSE_DL_728-746MHz_L



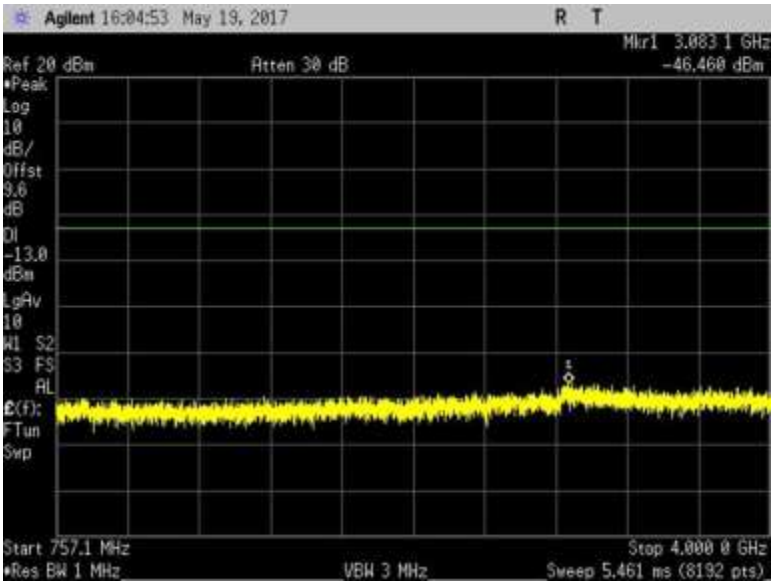
7.6_CSE_DL_728-746MHz_R1



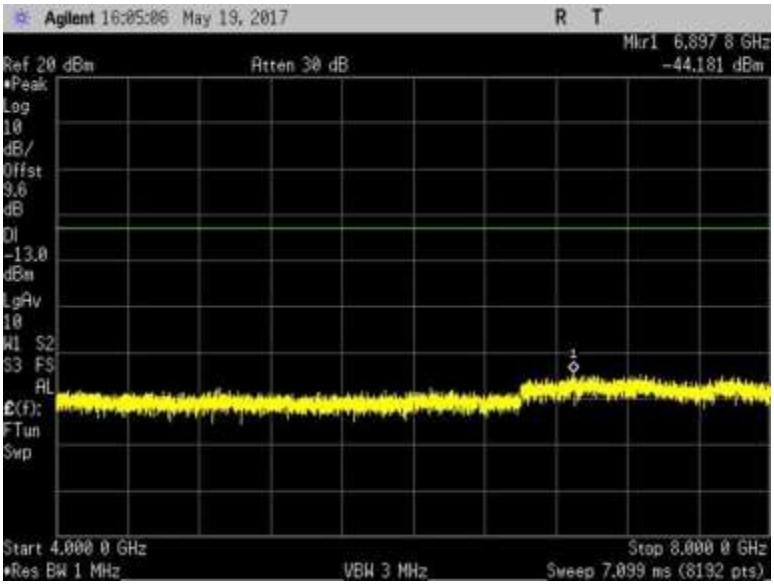
7.6_CSE_DL_728-746MHz_R2



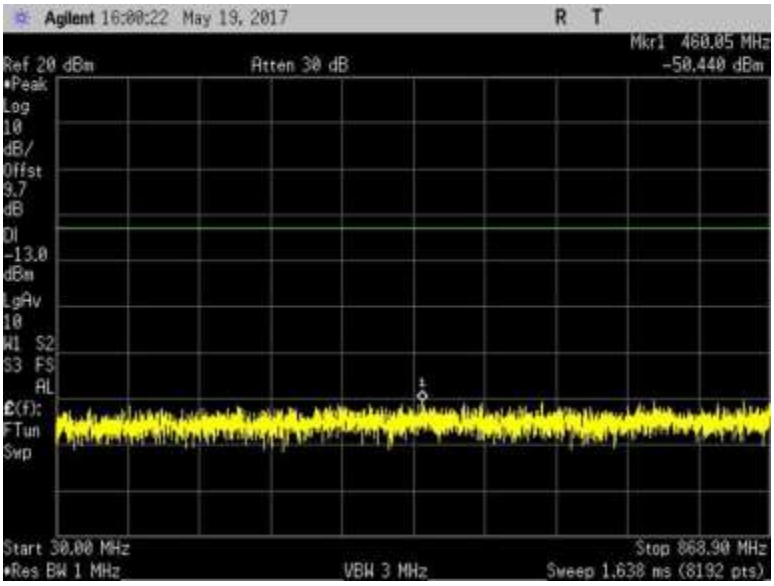
7.6_CSE_DL_746-757MHz_L



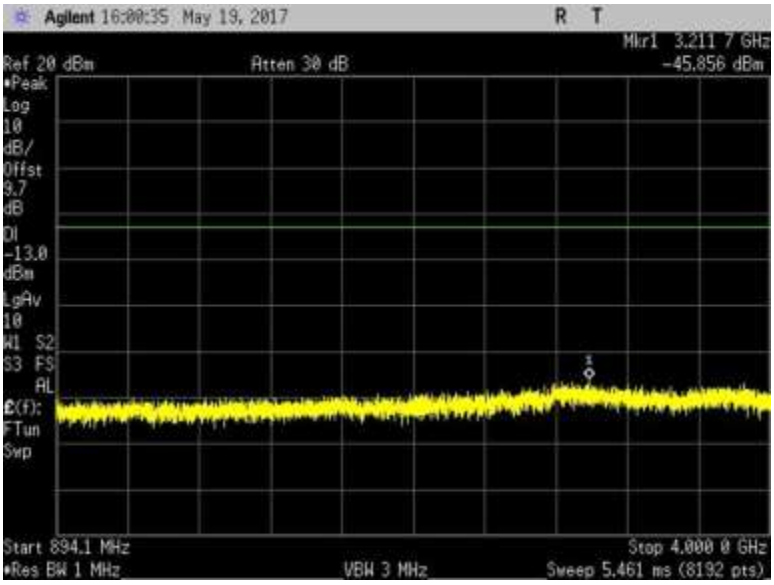
7.6_CSE_DL_746-757MHz_R1



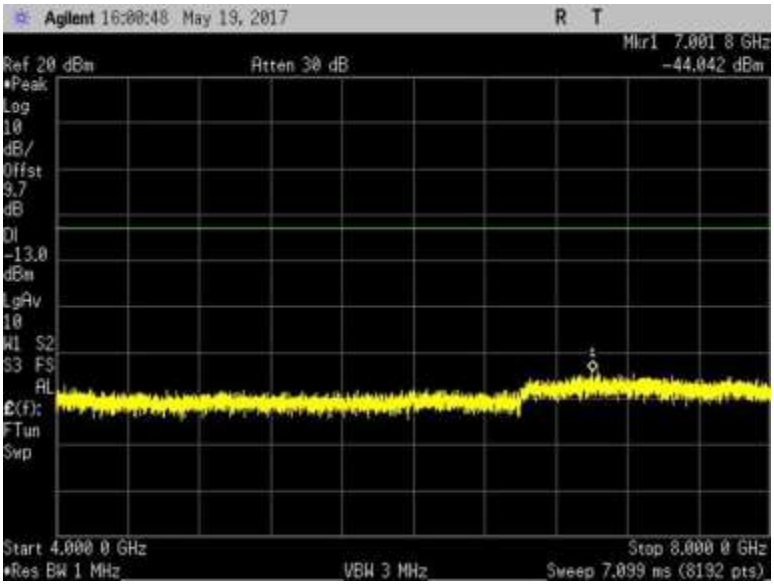
7.6_CSE_DL_746-757MHz_R2



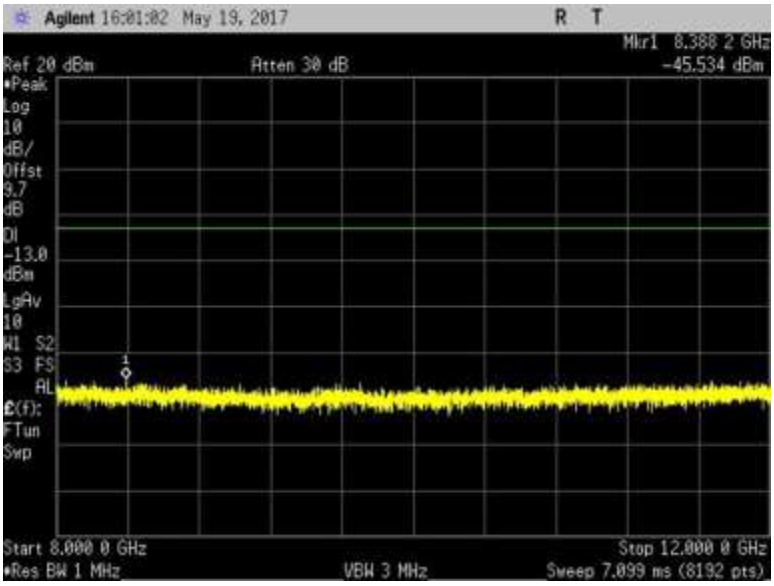
7.6_CSE_DL_869-894MHz_L



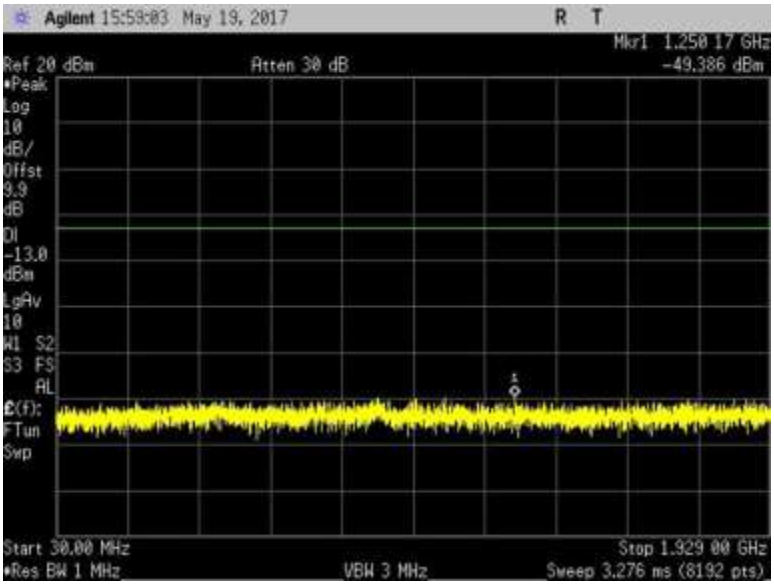
7.6_CSE_DL_869-894MHz_R1



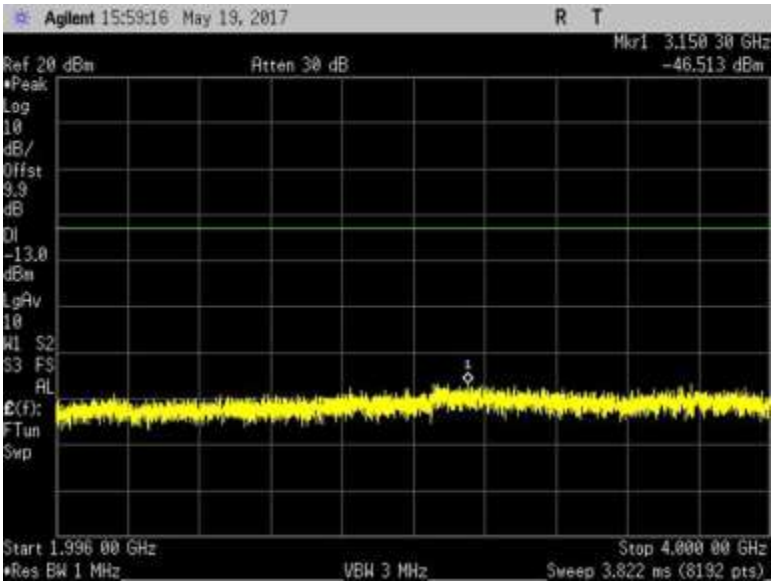
7.6_CSE_DL_869-894MHz_R2



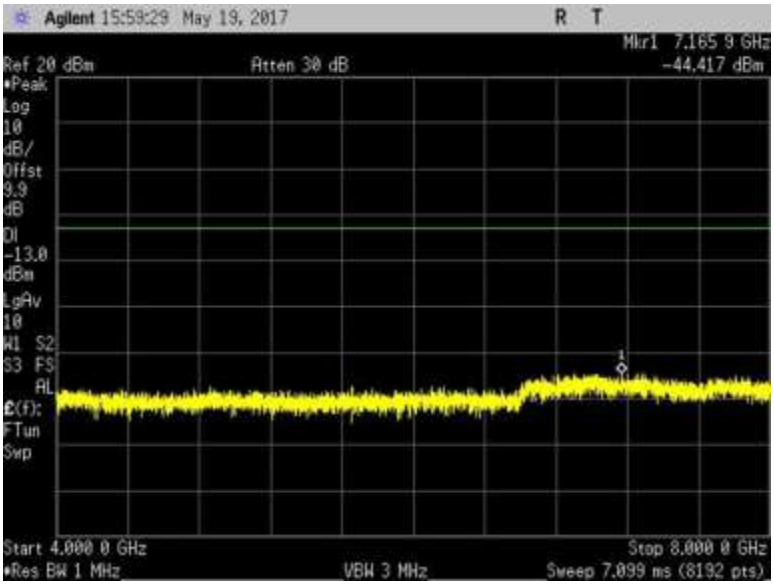
7.6_CSE_DL_869-894MHz_R3



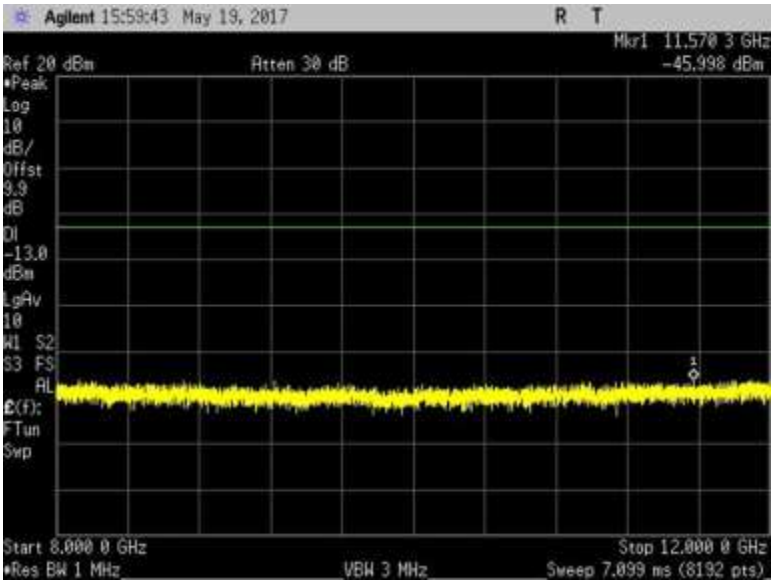
7.6_CSE_DL_1930-1995MHz_L



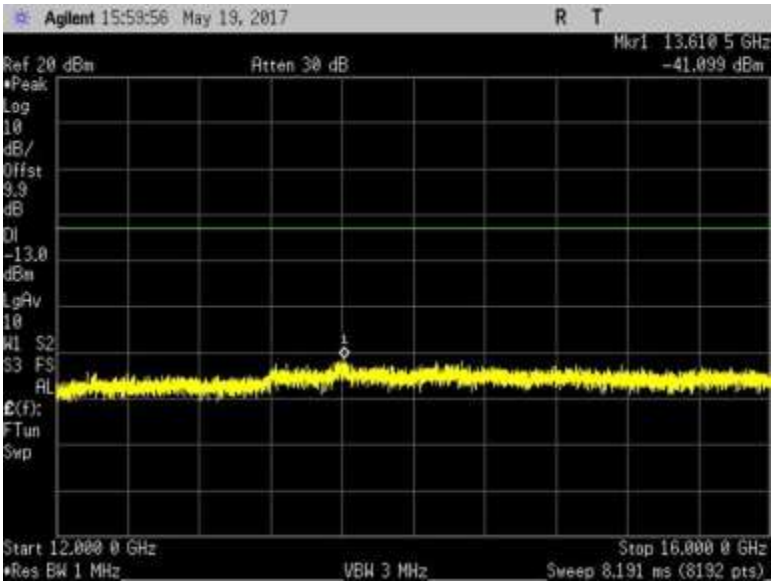
7.6_CSE_DL_1930-1995MHz_R1



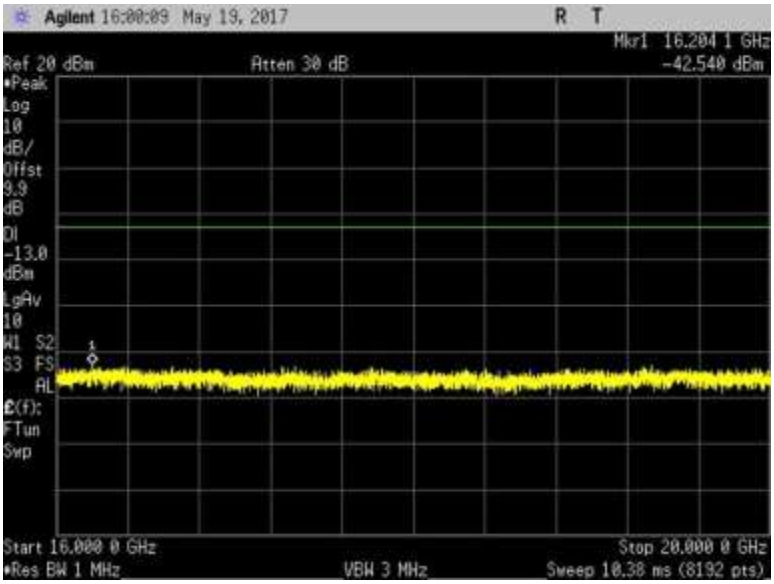
7.6_CSE_DL_1930-1995MHz_R2



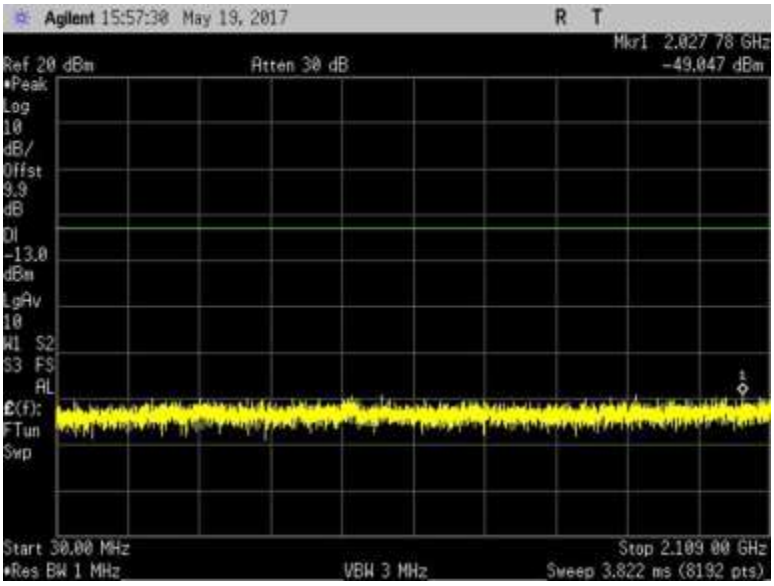
7.6_CSE_DL_1930-1995MHz_R3



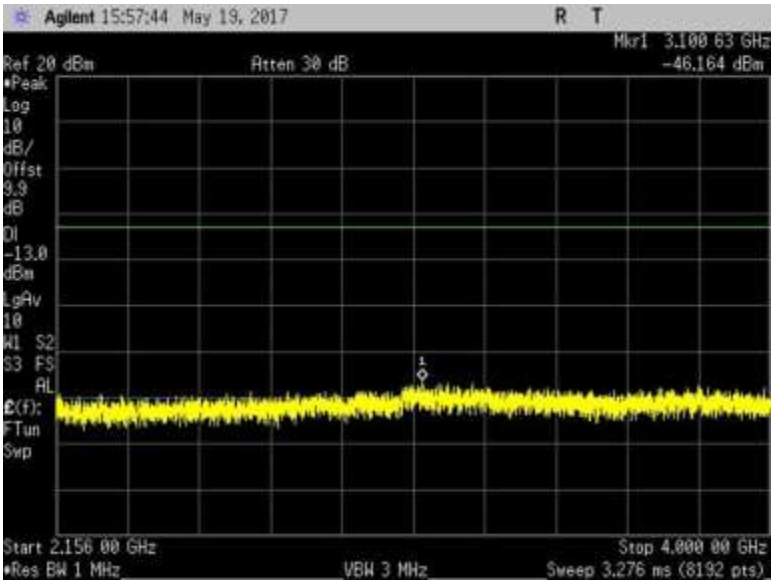
7.6_CSE_DL_1930-1995MHz_R4



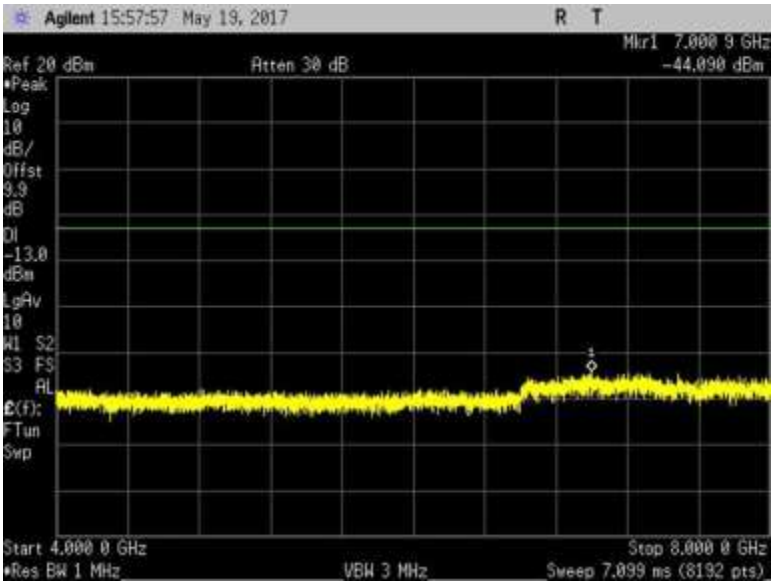
7.6_CSE_DL_1930-1995MHz_R5



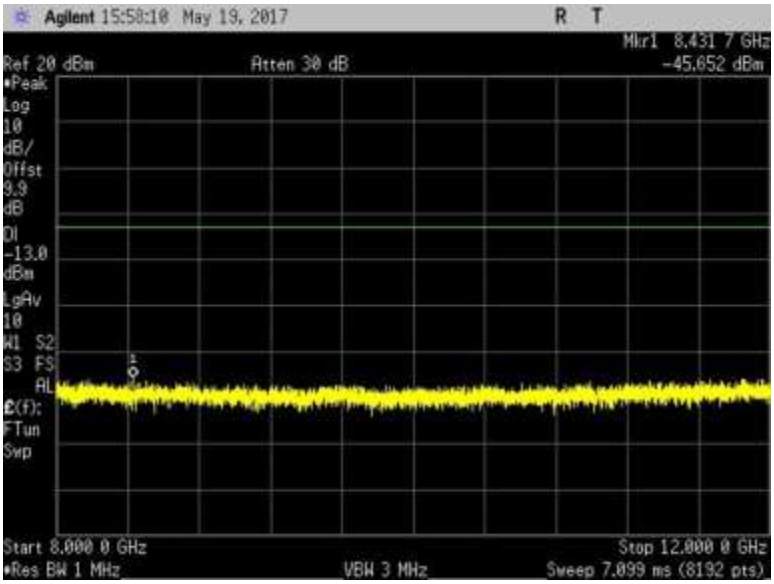
7.6_CSE_DL_2110-2155MHz_L



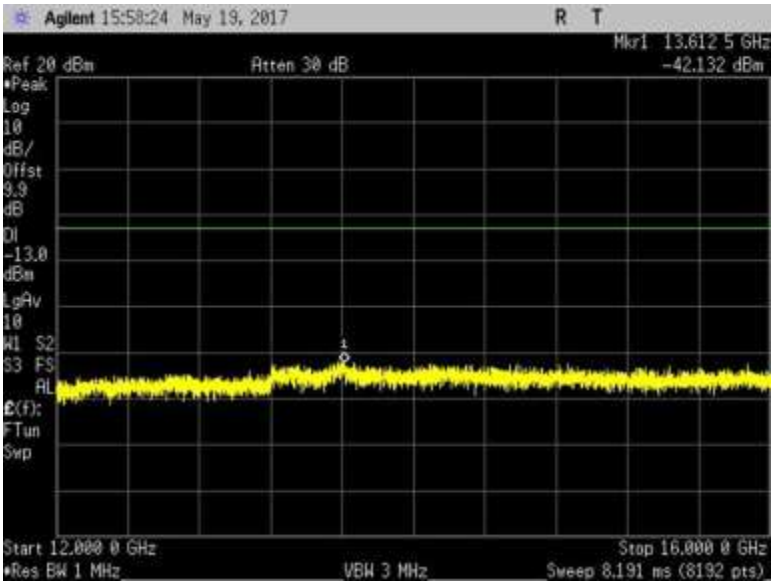
7.6_CSE_DL_2110-2155MHz_R1



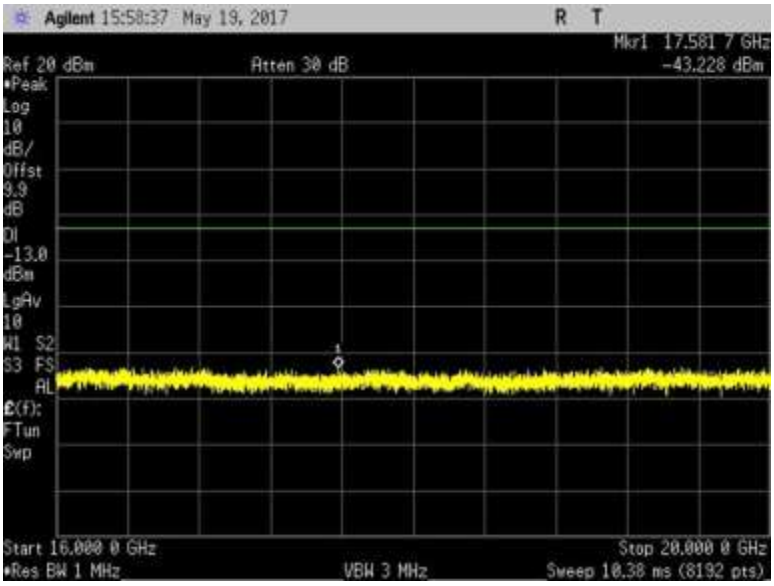
7.6_CSE_DL_2110-2155MHz_R2



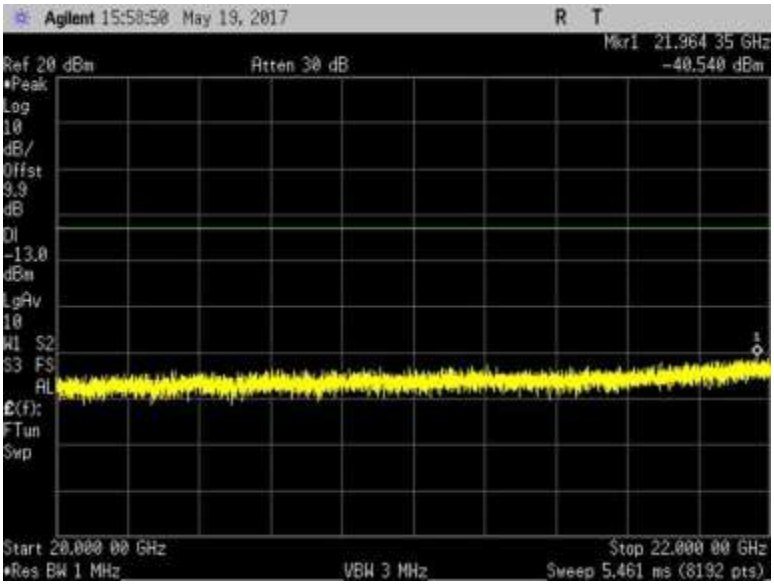
7.6_CSE_DL_2110-2155MHz_R3



7.6_CSE_DL_2110-2155MHz_R4

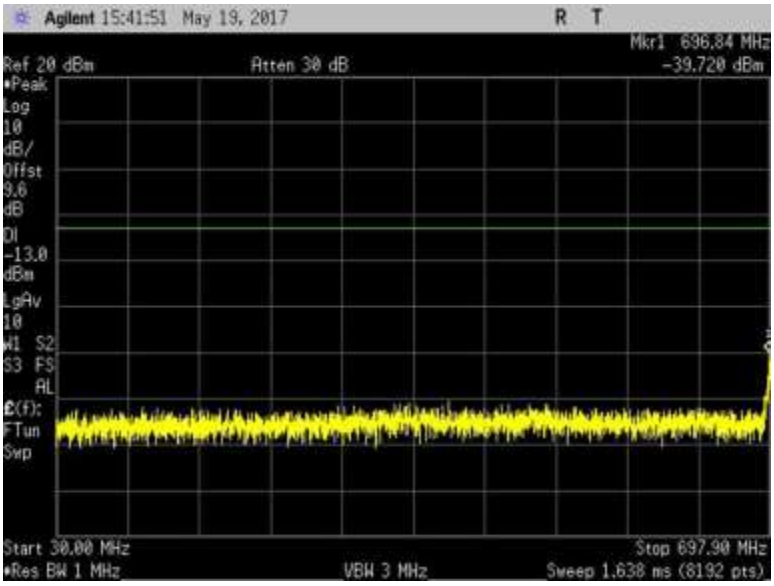


7.6_CSE_DL_2110-2155MHz_R5

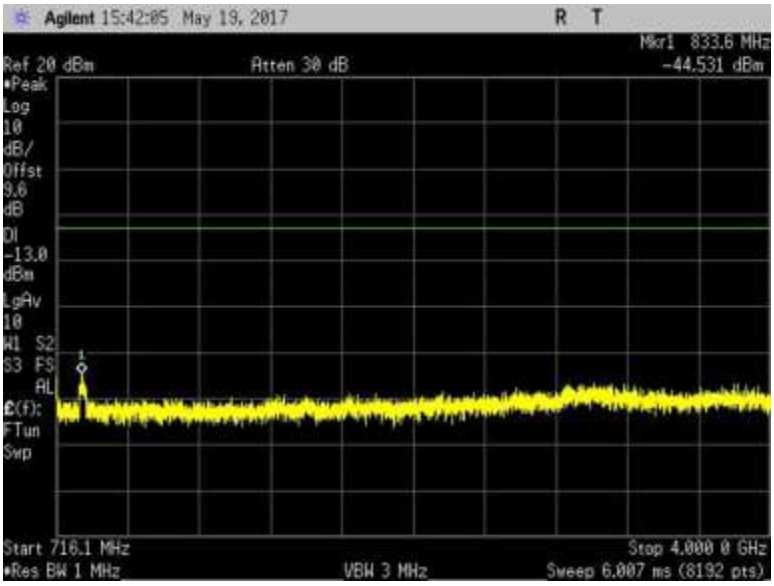


7.6_CSE_DL_2110-2155MHz_R6

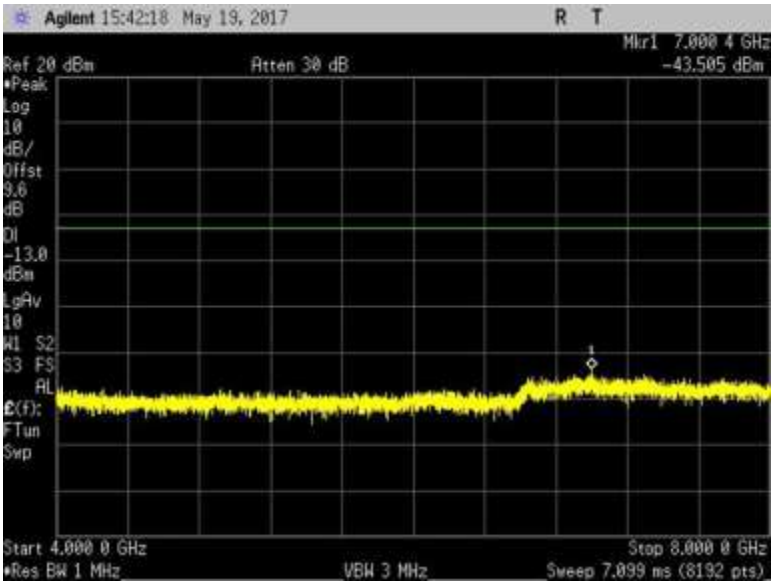
UL



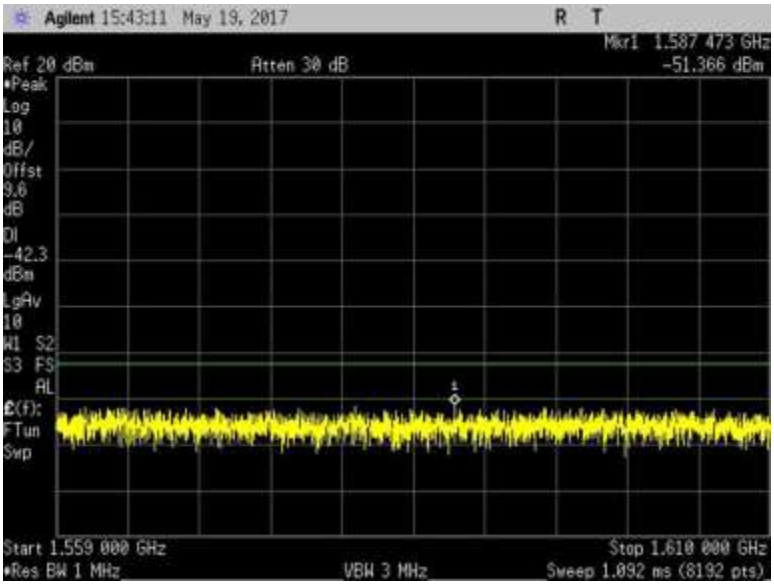
7.6_CSE_UL_698-716MHz_L



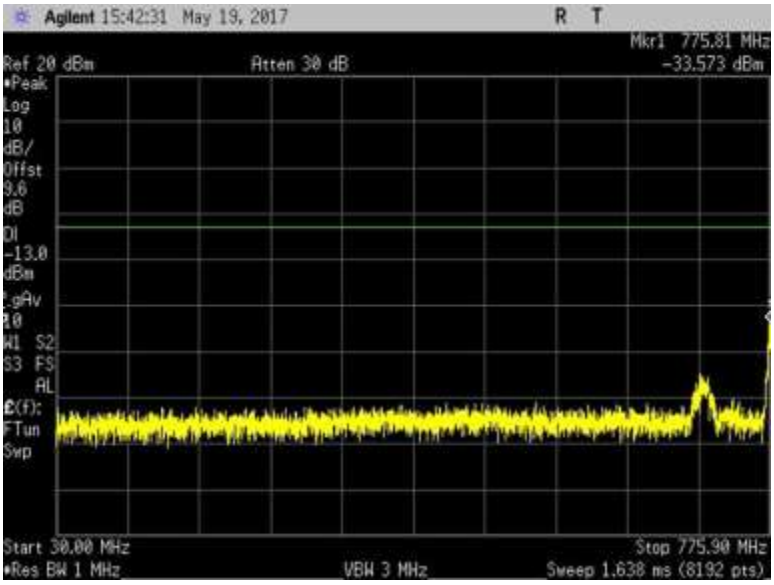
7.6_CSE_UL_698-716MHz_R1



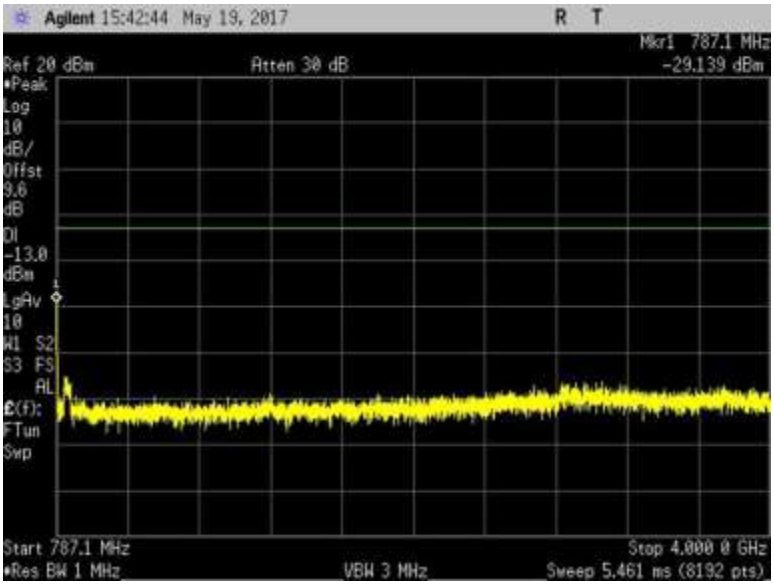
7.6_CSE_UL_698-716MHz_R2



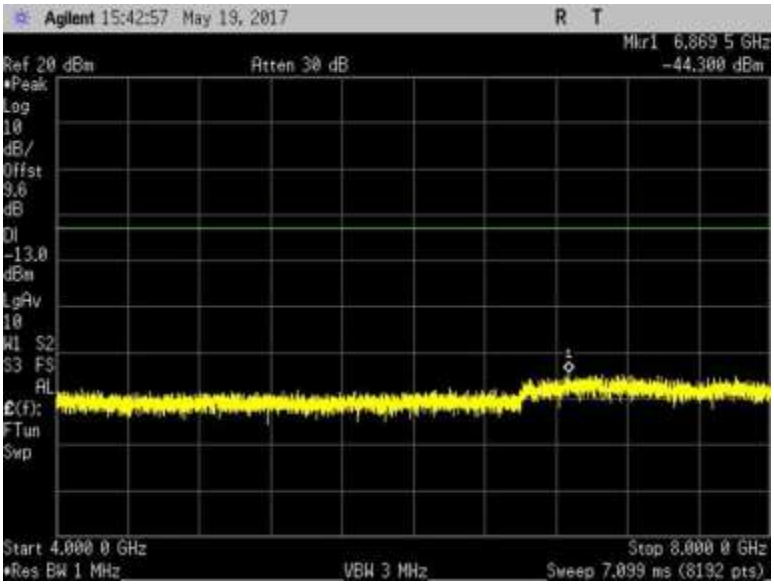
7.6_CSE_UL_776-787MHz_GPS



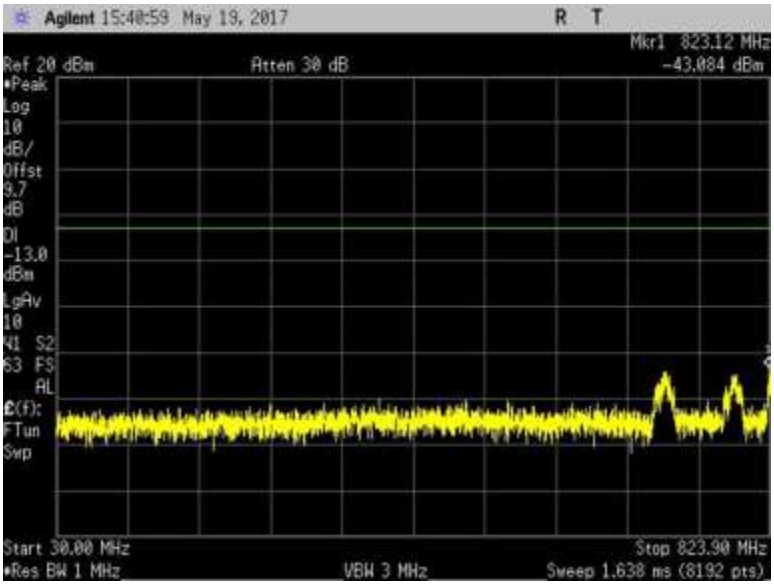
7.6_CSE_UL_776-787MHz_L



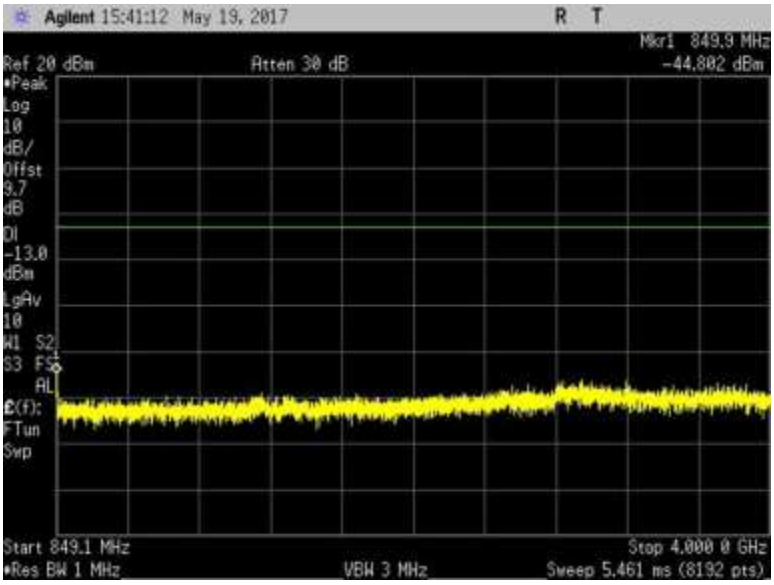
7.6_CSE_UL_776-787MHz_R1



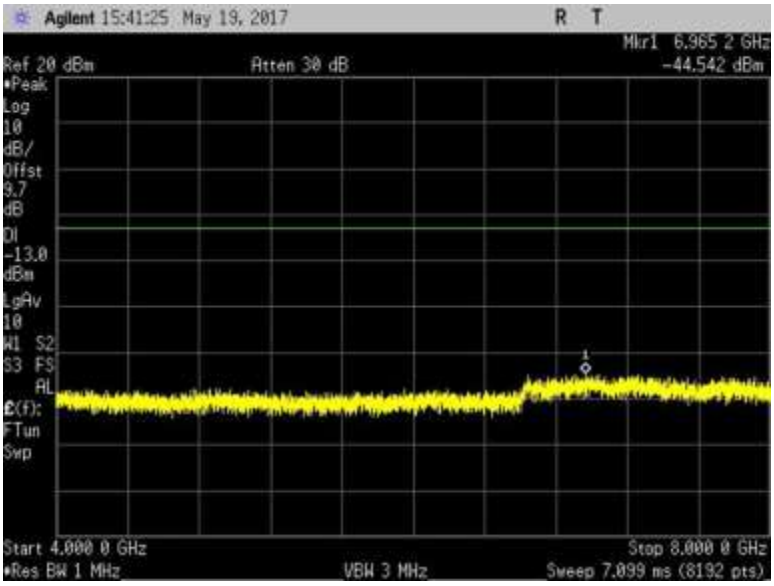
7.6_CSE_UL_776-787MHz_R2



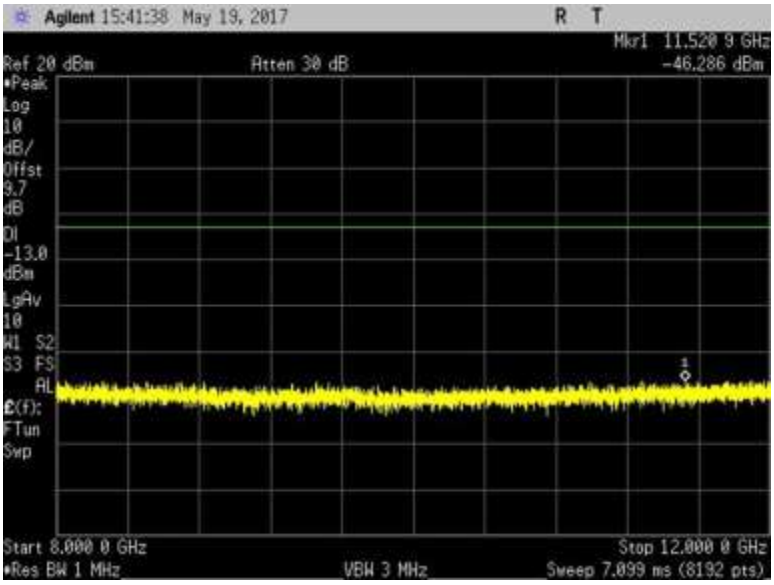
7.6_CSE_UL_824-849MHz_L



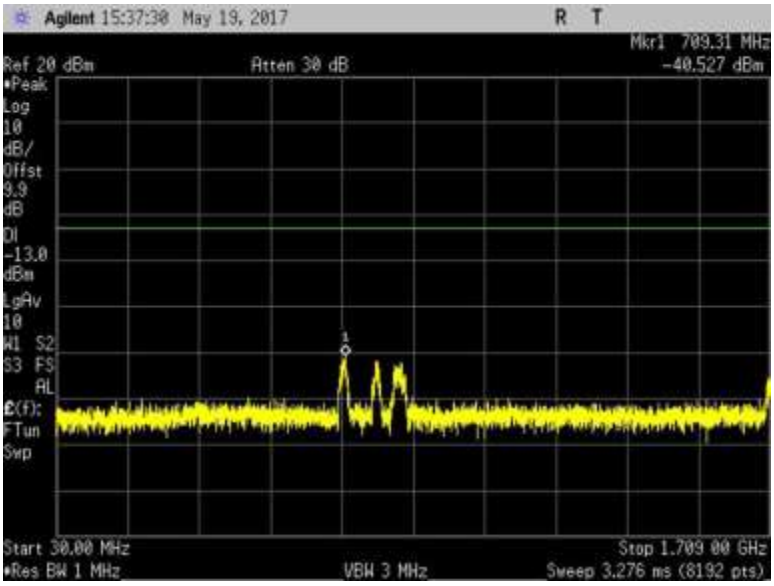
7.6_CSE_UL_824-849MHz_R1



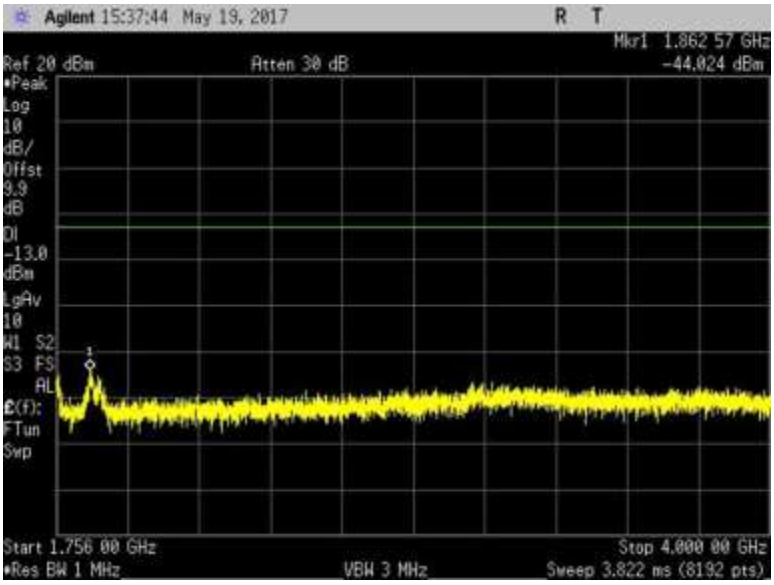
7.6_CSE_UL_824-849MHz_R2



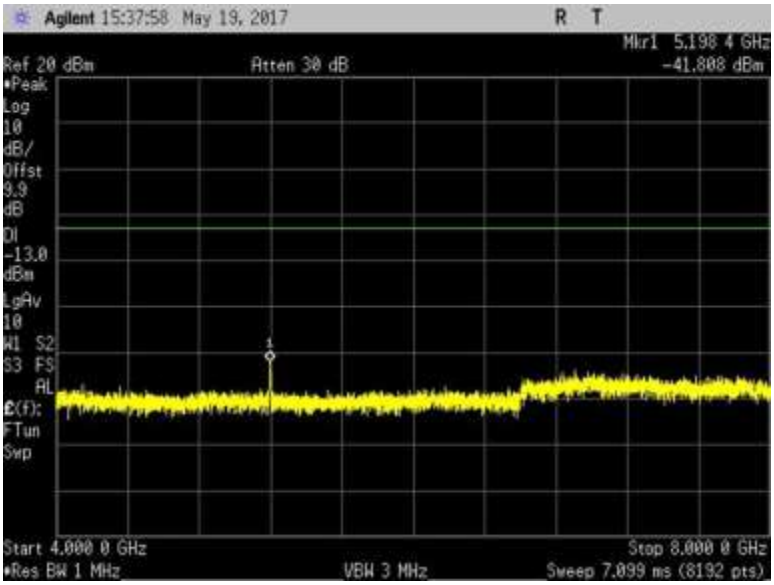
7.6_CSE_UL_824-849MHz_R3



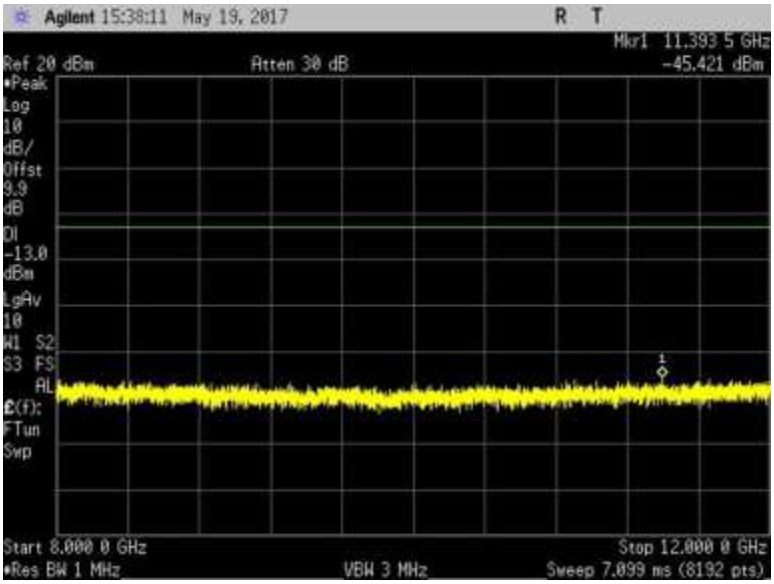
7.6_CSE_UL_1710-1755MHz_L



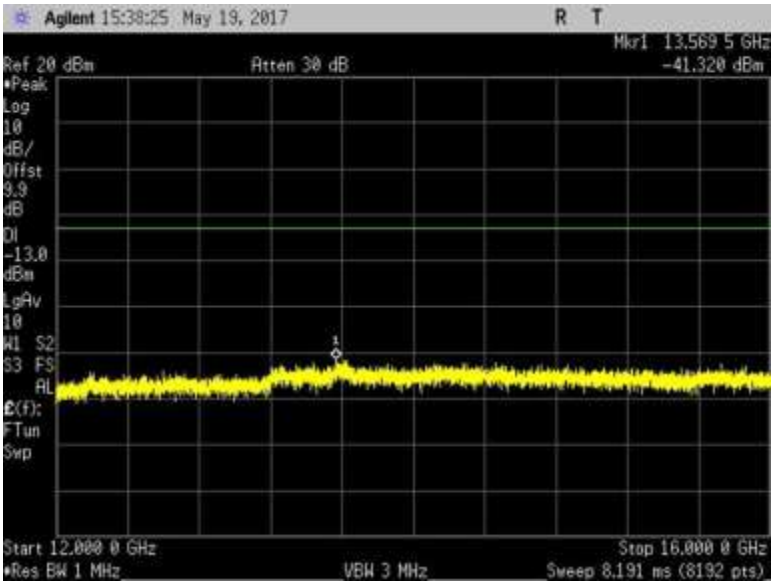
7.6_CSE_UL_1710-1755MHz_R1



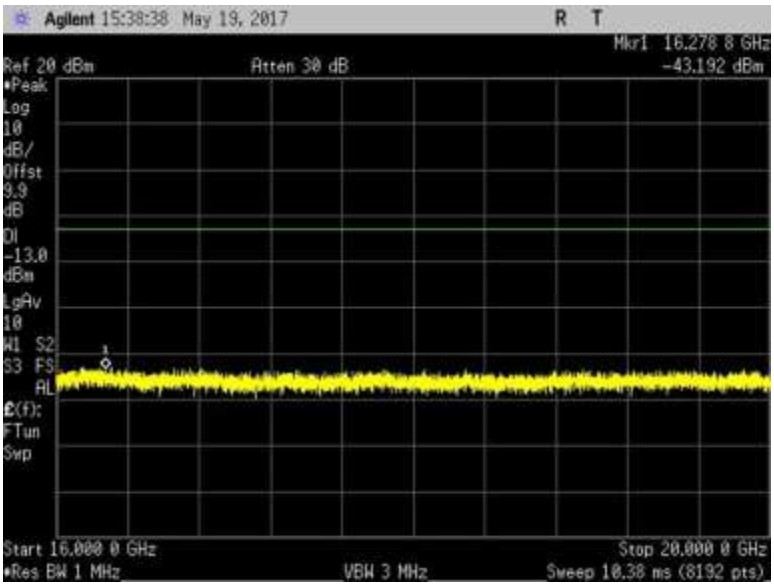
7.6_CSE_UL_1710-1755MHz_R2



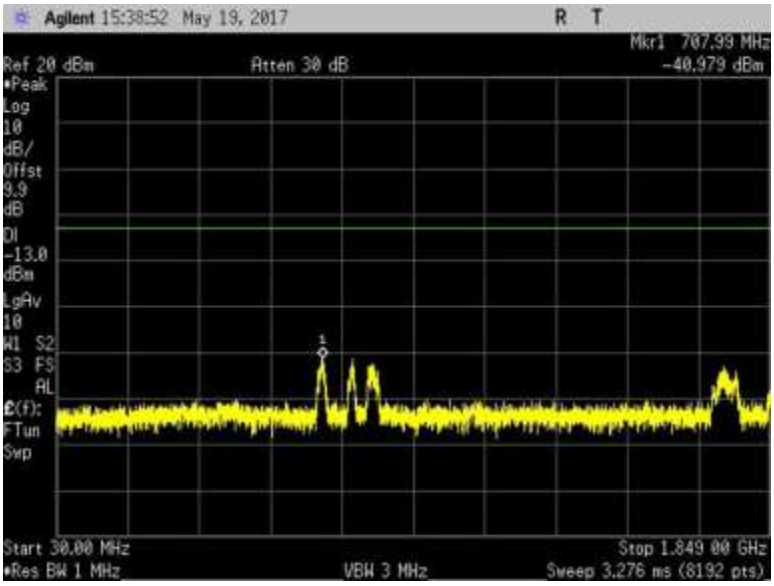
7.6_CSE_UL_1710-1755MHz_R3



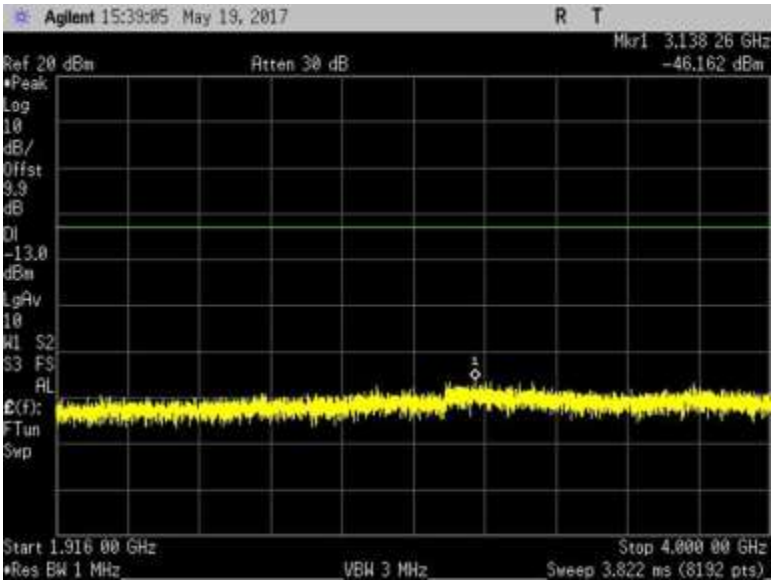
7.6_CSE_UL_1710-1755MHz_R4



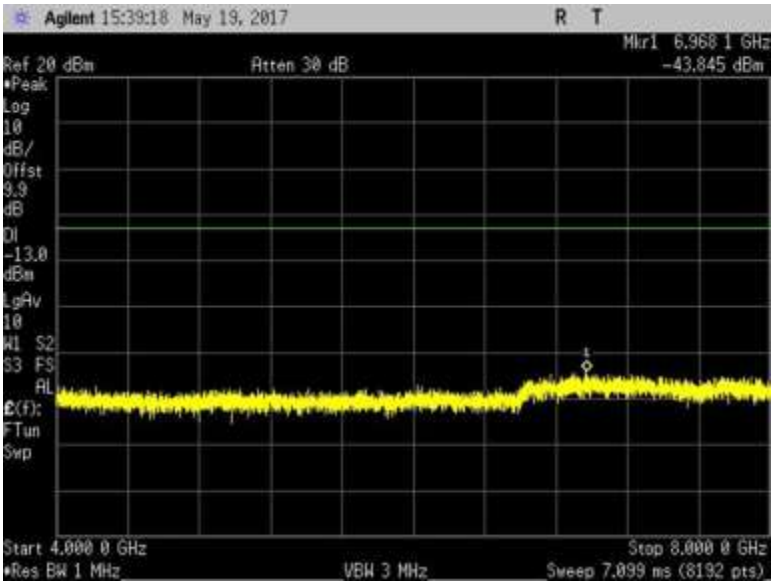
7.6_CSE_UL_1710-1755MHz_R5



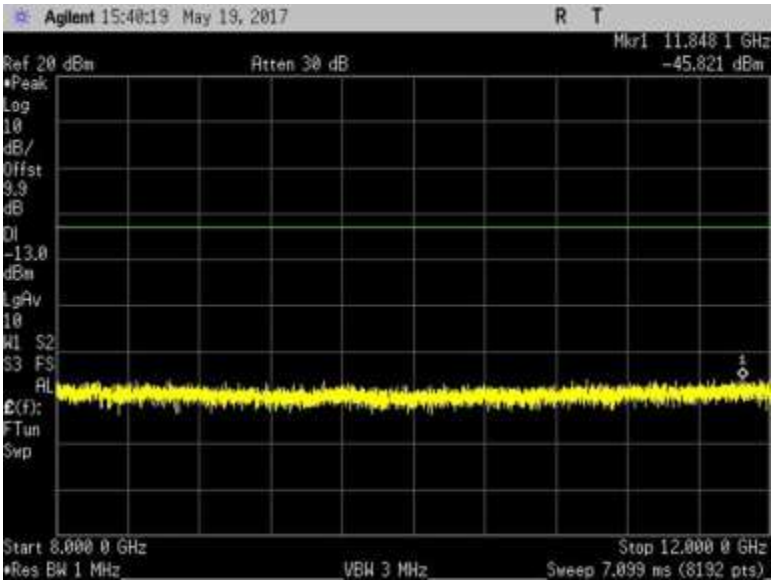
7.6_CSE_UL_1850-1915MHz_L1



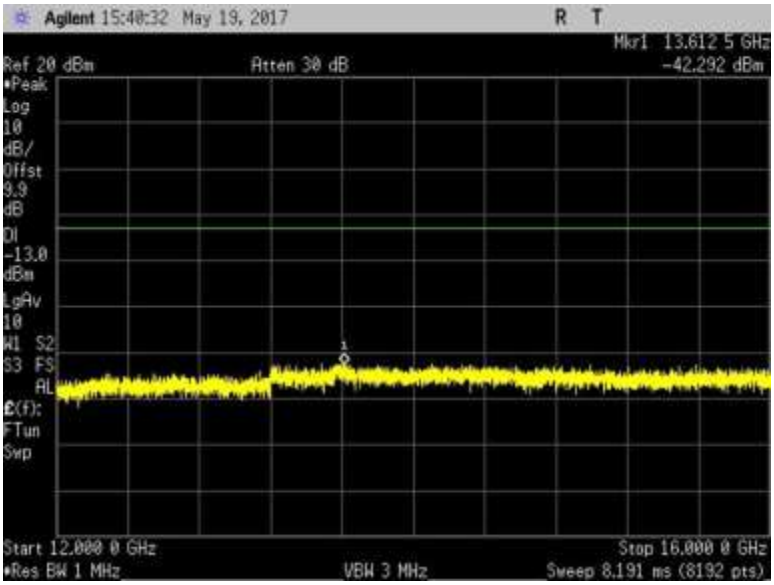
7.6_CSE_UL_1850-1915MHz_R1



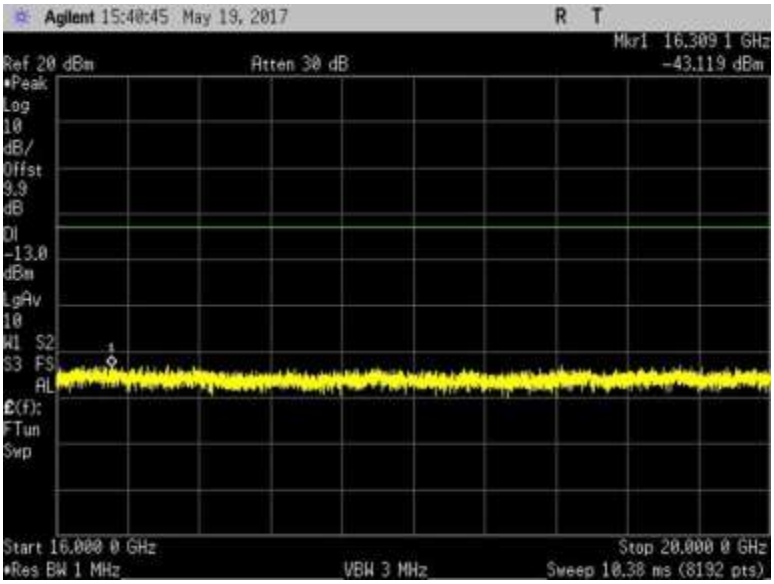
7.6_CSE_UL_1850-1915MHz_R2



7.6_CSE_UL_1850-1915MHz_R3



7.6_CSE_UL_1850-1915MHz_R4



7.6_CSE_UL_1850-1915MHz_R5

7.7 Noise limit

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**7.7 Noise Limit (Maximum Transmitter Noise Power Level / Variable UL Noise Timing)**		
Work Order #:	**99983**	Date:	5/22/2017
Test Type:	**Conducted Emissions**	Time:	8:28:00 AM
Tested By:	**Daniel Bertran**	Sequence#:	1
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.
The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.
The EUT Server port is a type FME connector and 50-ohm impedance.
The EUT Donor port is type FME connector and 50-ohm impedance.

Part 22
UL: 824-849MHz
DL: 869-894MHz
Part 24
UL: 1850-1915MHz
DL: 1930-1995MHz
Part 27
UL: 1710-1755MHz, 698-716MHz, 776-787MHz
DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure:
The test was performed in accordance with section 7.7 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04 Dated February 12, 2016.
Firmware: 1.7
Test environment conditions: Test environment conditions: 25°C, 45% Relative Humidity, 101.5kPa
Note:
7.7.1 Maximum Transmitter Noise Power Level
Per figure 3, input port was terminated with 50 Ohm Pasternack load (MN: PE6187 and SN: 1443).
Input donor port was terminated with 50 Ohm Pasternack load via a 75/50 Ohm impedance matching pad.

7.7.2 Variable UL Noise Timing
Per figure 4, server port was terminated with 50 Ohm Pasternack load (MN: PE6187 and SN: 1443).

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	7/30/2015	7/30/2017
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	1/4/2016	1/4/2018
	ANC00082	RF Coupler	722-10-1.500V	8/26/2015	8/26/2017

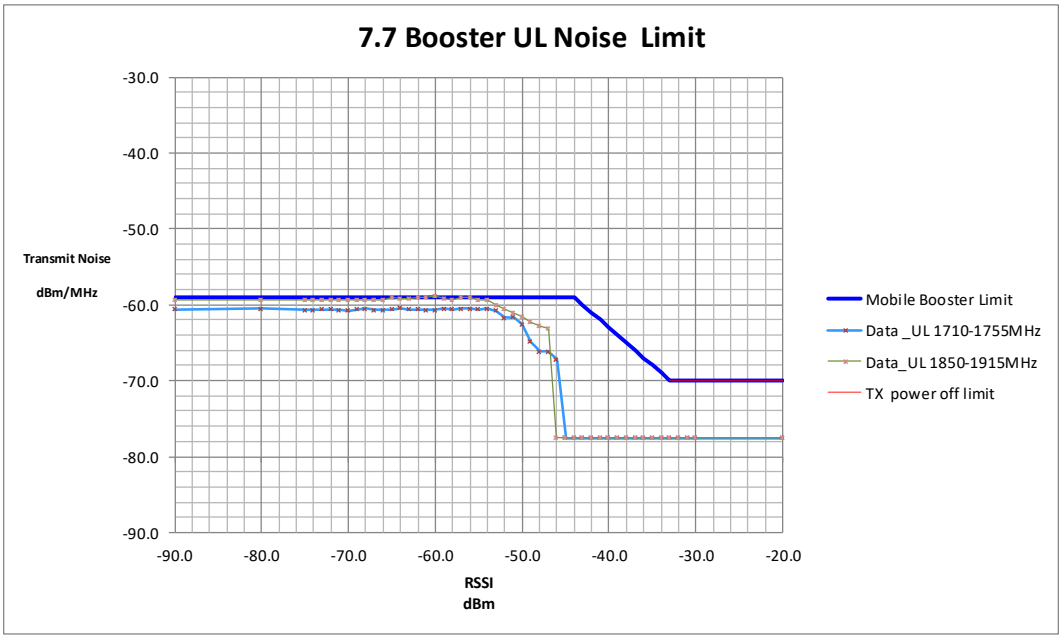
Summary of Results

7.7.1 Maximum transmitter noise power level

- 7.7.1 a-g: Maximum transmitter noise with 50-ohm shielded load

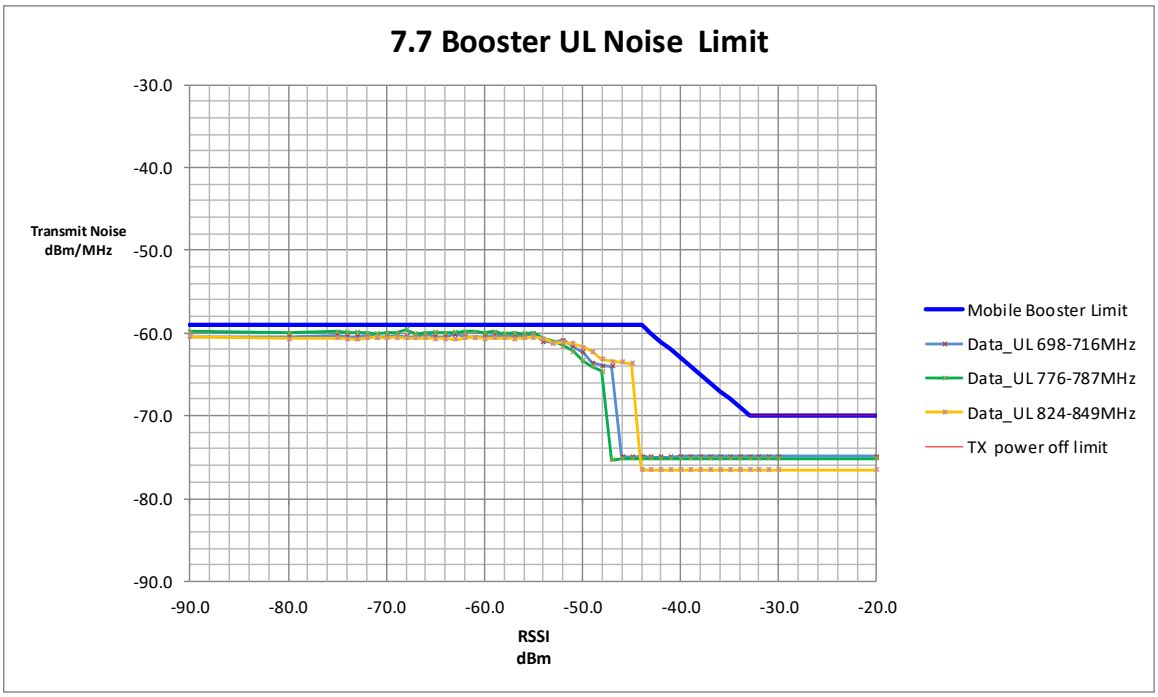
Maximum Noise Power			
Freq	**Measured**	**Limit**	**Margin**
MHz	**dBm./MHz**	**dBm/MHz**	
UL 1710-1755	-60.0	-59.0	-1.0
UL 1850-1915	-60.9	-59.0	-1.9
UL 824-849	-60.6	-59.0	-1.6
UL 698-716	-59.5	-59.0	-0.5
UL 776-787	-59.7	-59.0	-0.7
DL 2110-2155	-60.1	-59.0	-1.1
DL 1930-1995	-60.5	-59.0	-1.5
DL 869-894	-60.1	-59.0	-1.1
DL 728-746	-60.8	-59.0	-1.8
DL 746-757	-59.6	-59.0	-0.5

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



1710.0	1755.0	MHz			
		Limit			Margin
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	Mobile Booster Limit	TX off	
-80.0	-60.5		-59.0		-1.5
-68.0	-60.5		-59.0		-1.5
-53.0	-60.8	-50.0			-10.8
-52.0	-61.7	-51.0			-10.7
-51.0	-61.6	-52.0			-9.6
-50.0	-62.6	-53.0			-9.6
-32.0	-77.6			-70	-18.6

1850.0	1915.0	MHz			
		Limit			Margin
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	Mobile Booster Limit	TX off	
-75.0	-59.4		-59.0		-0.4
-70.0	-59.4		-59.0		-0.4
-50.0	-61.6	-53.0			-8.6
-49.0	-62.3	-54.0			-8.3
-48.0	-62.8	-55.0			-7.8
-47.0	-63.1	-56.0			-7.1
-32.0	-77.6			-70	-18.6



824.0	849.0	MHz			
		Limit			Margin
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	Mobile Booster Limit	TX off	
-69.0	-60.5		-59.0		-1.5
-61.0	-60.5		-59.0		-1.5
-48.0	-63.2	-55.0			-8.2
-47.0	-63.4	-56.0			-7.4
-46.0	-63.5	-57.0			-6.5
-45.0	-63.7	-58.0			-5.7
-32.0	-76.5			-70	-17.5

698.0	716.0	MHz			
		Limit			Margin
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	Mobile Booster Limit	TX off	
-63.0	-60.2		-59.0		-1.2
-58.0	-60.3		-59.0		-1.3
-50.0	-62.3	-53.0			-9.3
-49.0	-63.6	-54.0			-9.6
-48.0	-63.9	-55.0			-8.9
-47.0	-64.0	-56.0			-8.0
-32.0	-74.9			-70	-15.9

776.0	787.0	MHz			
		Limit			Margin
RSSI (dBm)	Measured Noise (dBm/MHz)	RSSI Dependent	Mobile Booster Limit	TX off	
-68.0	-59.6		-59.0		-0.6
-62.0	-59.8		-59.0		-0.8
-51.0	-62.2	-52.0			-10.2
-50.0	-63.3	-53.0			-10.3
-49.0	-64.0	-54.0			-10.0
-48.0	-64.6	-55.0			-9.6
-32.0	-75.2			-70	-16.2

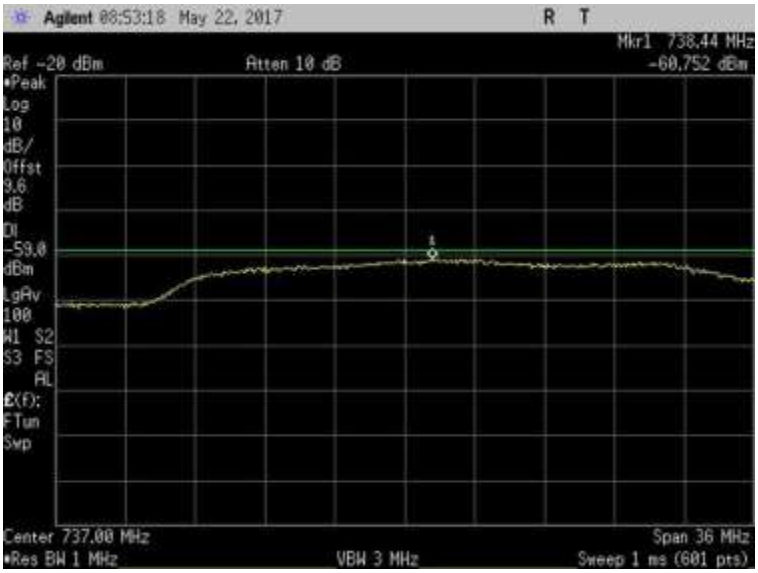
7.7.2 Variable uplink noise timing

Uplink Noise timing		
Freq	**Measured**	**Limit**
MHz	**Sec**	**sec**
UL1710-1755	0.45	1
UL1850-1915	0.42	1
UL824-849	0.43	1
UL 698-716	0.50	1
UL776-787	0.41	1

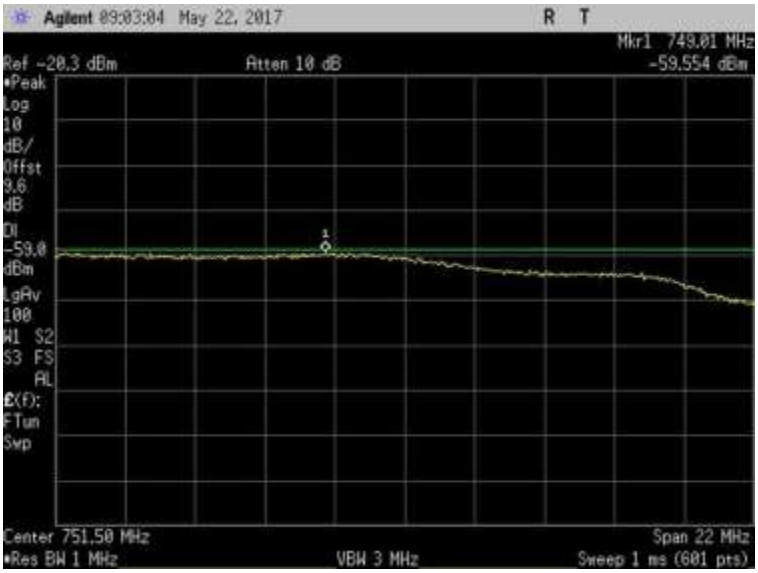
7.7.1 Maximum Transmitter Noise Power Level

Plots

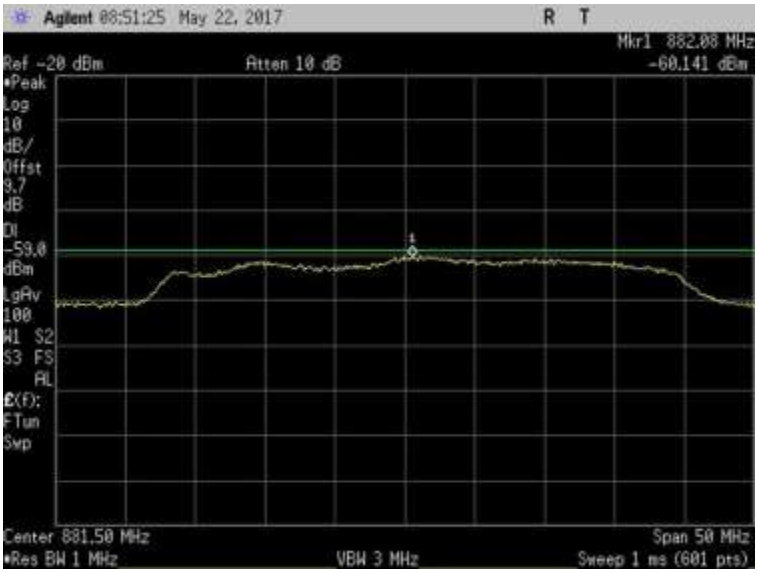
DL



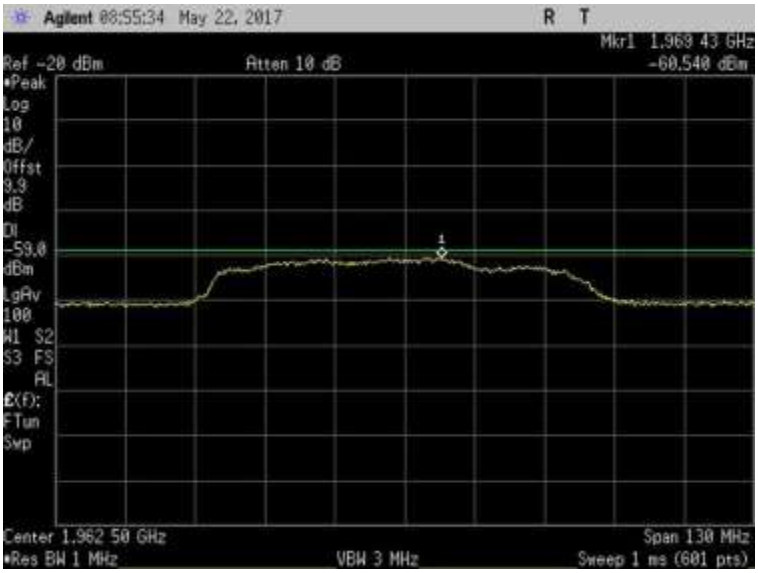
7.7.1_Noise_DL_728-746MHz



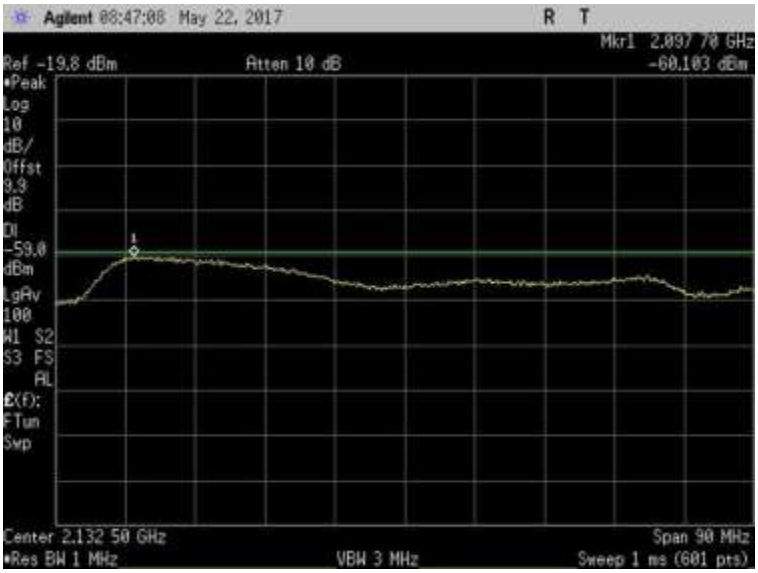
7.7.1_Noise_DL_746-757MHz



7.7.1_Noise_DL_869-894MHz

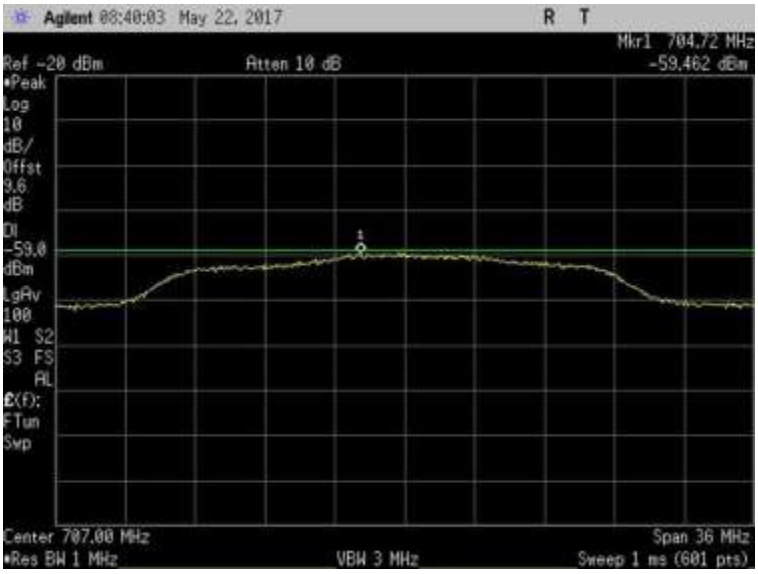


7.7.1_Noise_DL_1930-1995MHz

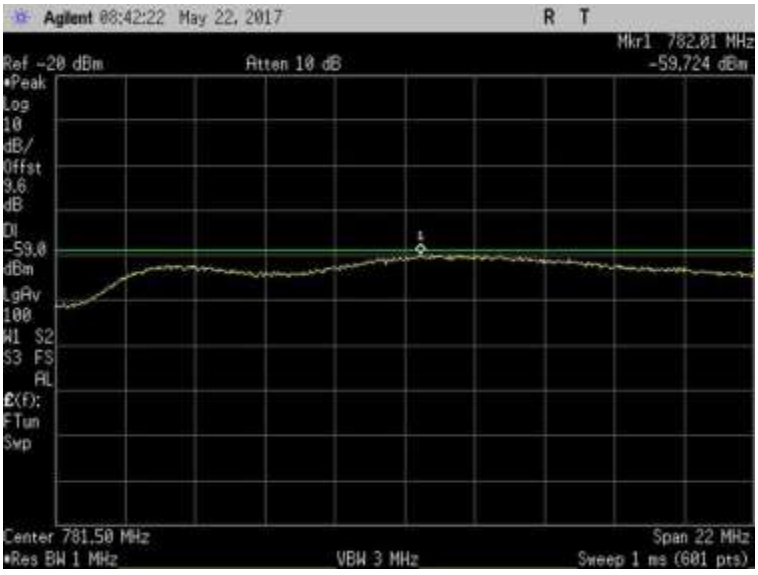


7.7.1_Noise_DL_2110-2155MHz

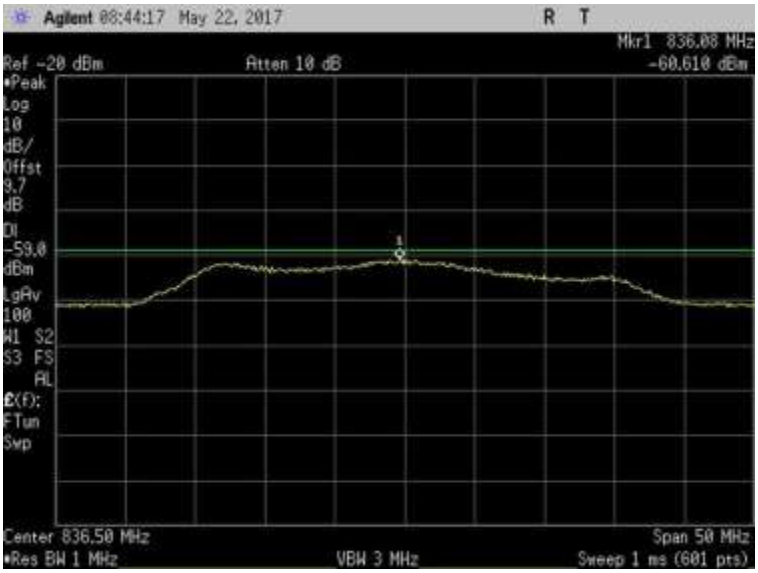
UL



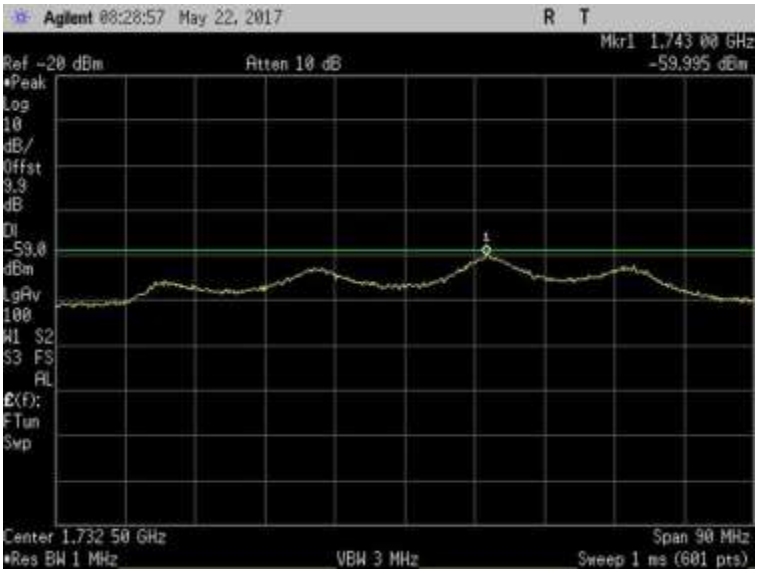
7.7.1_Noise_UL_698-716MHz



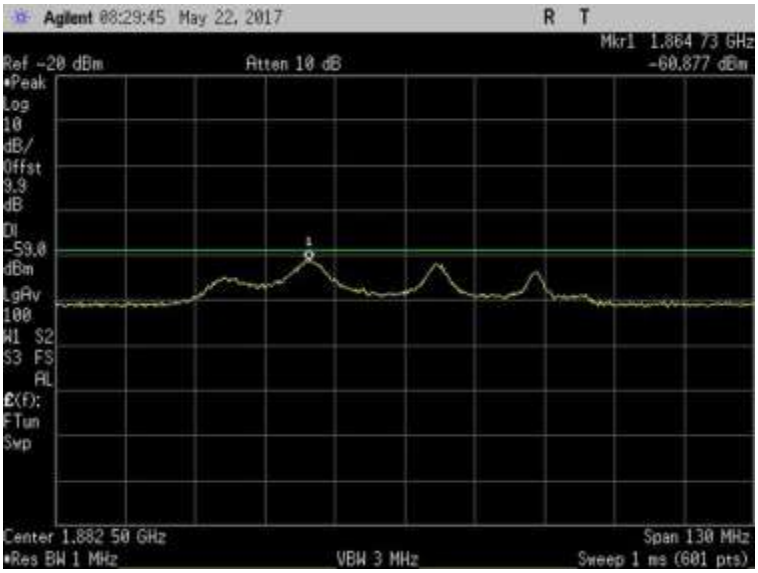
7.7.1_Noise_UL_776-787MHz



7.7.1_Noise_UL_824-849MHz



7.7.1_Noise_UL_1710-1755MHz

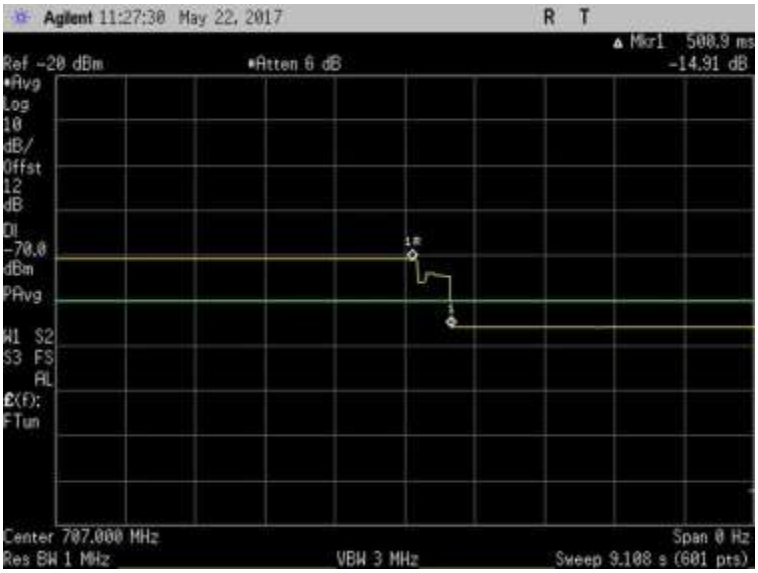


7.7.1_Noise_UL_1850-1915MHz

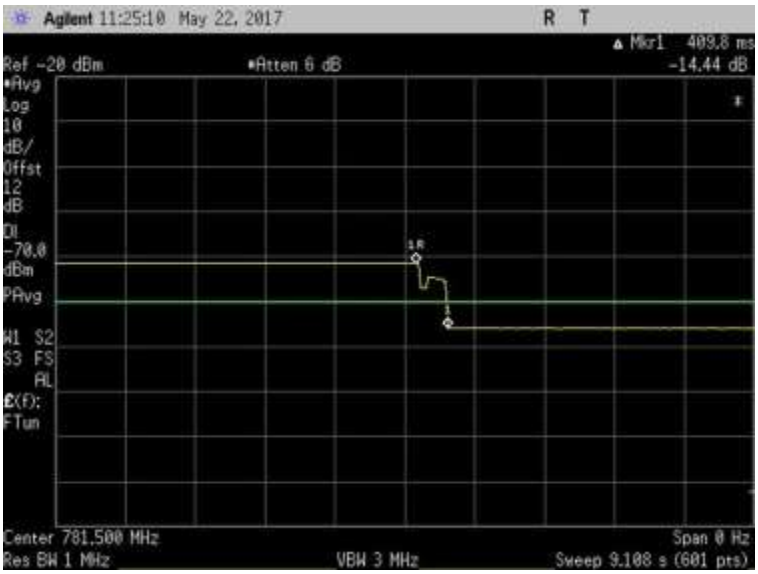
7.7.2 Variable UL Noise Timing

Plots

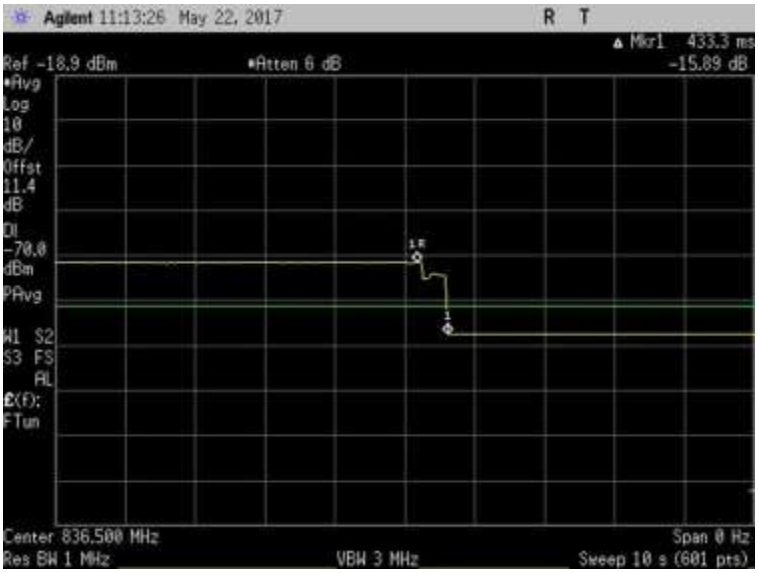
UL



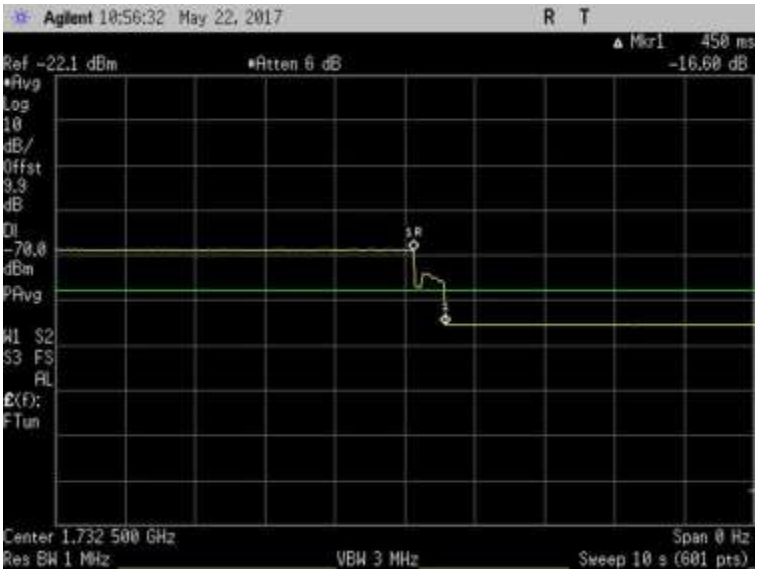
7.7.2_VarNoise_UL_698-716MHz



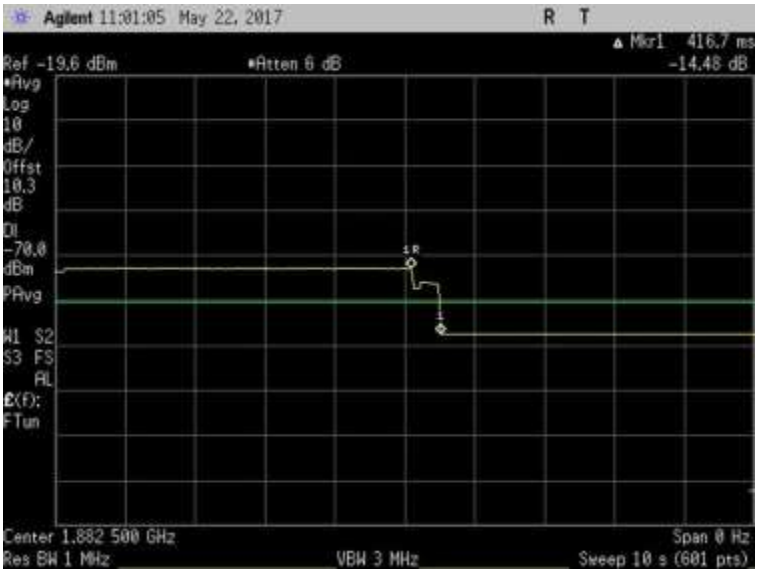
7.7.2_VarNoise_UL_776-787MHz



7.7.2_VarNoise_UL_824-849MHz



7.7.2_VarNoise_UL_1710-1755MHz



7.7.2_VarNoise_UL_1850-1915MHz

7.8 Uplink Inactivity

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**7.8 Uplink Inactivity**		
Work Order #:	**99983**	Date:	5/22/2017
Test Type:	**Conducted Emissions**	Time:	11:49:00 AM
Tested By:	**Daniel Bertran**	Sequence#:	1
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.
The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.
The EUT Server port is a type FME connector and 50-ohm impedance.
The EUT Donor port is type FME connector and 50-ohm impedance.
Part 22
UL: 824-849MHz
DL: 869-894MHz
Part 24
UL: 1850-1915MHz
DL: 1930-1995MHz
Part 27
UL: 1710-1755MHz, 698-716MHz, 776-787MHz
DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure:
The test was performed in accordance with section 7.8 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04 Dated February 12, 2016.
Firmware: 1.7
Test environment conditions: Test environment conditions: 25°C, 45% Relative Humidity, 101.5kPa

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	7/30/2015	7/30/2017
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	1/4/2016	1/4/2018

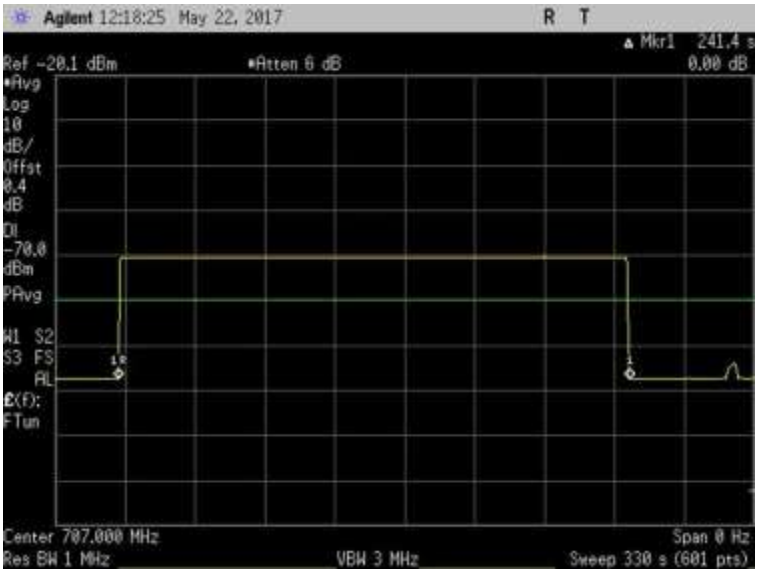
Summary of Results

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

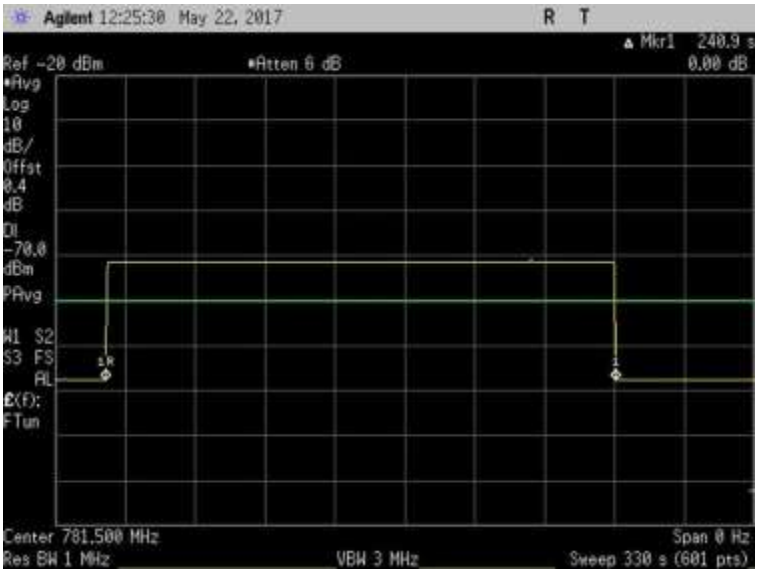
Uplink Inactivity		
Freq	**Measured**	**Limit**
MHz	**Min**	**Min**
UL1710-1755	4.0	5.0
UL1850-1915	4.0	5.0
UL824-849	4.0	5.0
UL 698-716	4.0	5.0
UL776-787	4.0	5.0

Plots

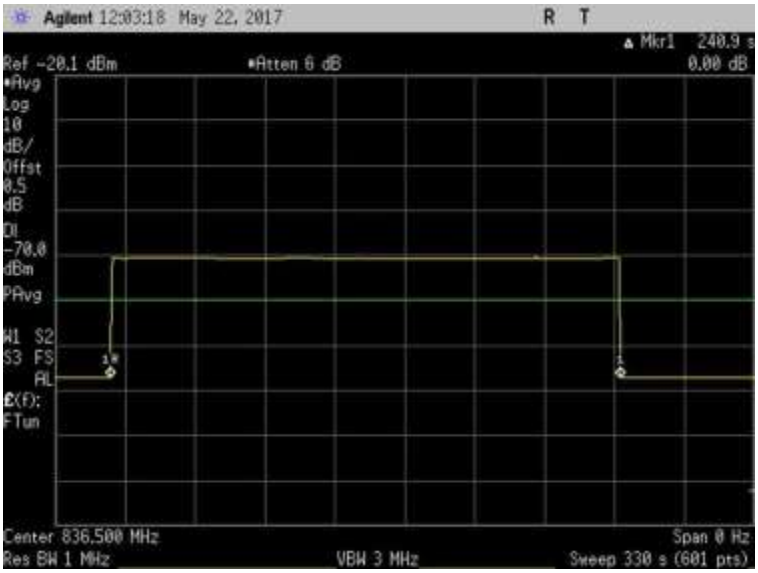
UL



7.8_InactivityUL_698-716MHz

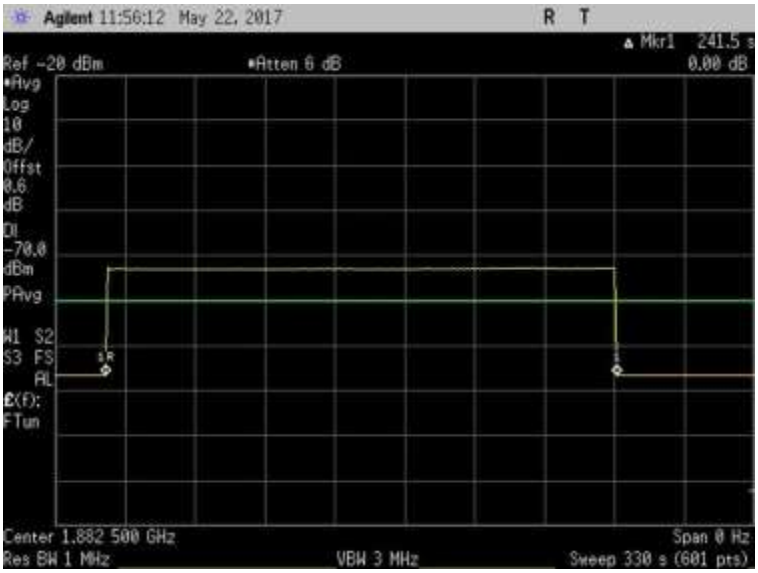


7.8_InactivityUL_776-787MHz



7.8_InactivityUL_824-849MHz

7.8_InactivityUL_1710-1755MHz



7.8_InactivityUL_1850-1915MHz

7.9 Booster Gain Limit

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**7.9 Variable Booster gain(Max Gain / Variable Uplink Gain Timing)**		
Work Order #:	**99983**	Date:	5/23/2017
Test Type:	**Conducted Emissions**	Time:	13:53:00 PM
Tested By:	**Daniel Bertran**	Sequence#:	1
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is a Mobile Wideband Consumer Booster.
The EUT is placed on the test bench. Evaluation performed at the Outside (Donor) and Inside (Server) antenna port.
The EUT Server port is a type FME connector and 50-ohm impedance.
The EUT Donor port is type FME connector and 50-ohm impedance.
Part 22
UL: 824-849MHz
DL: 869-894MHz
Part 24
UL: 1850-1915MHz
DL: 1930-1995MHz
Part 27
UL: 1710-1755MHz, 698-716MHz, 776-787MHz
DL: 2110-2155MHz, 728-746MHz, 746-757MHz

Test procedure:
The test was performed in accordance with section 7.9 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04 Dated February 12, 2016.
Firmware: 1.7
Test environment conditions: Test environment conditions: 25°C, 45% Relative Humidity, 101.5kPa
Note:
Used MSCL provided by the manufacture's antenna kitting.

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

L P = 20logf + 20logd – 27.5
Where:
L P = basic free space path loss,
f = Center frequency,
d = 1 meter.

MSCL

Frequency (MHz)	MSCL (dB)
1850-1915	37.9
824-849	32.6
698-716	31.8
779-787	30.9
1710-1755	37.0

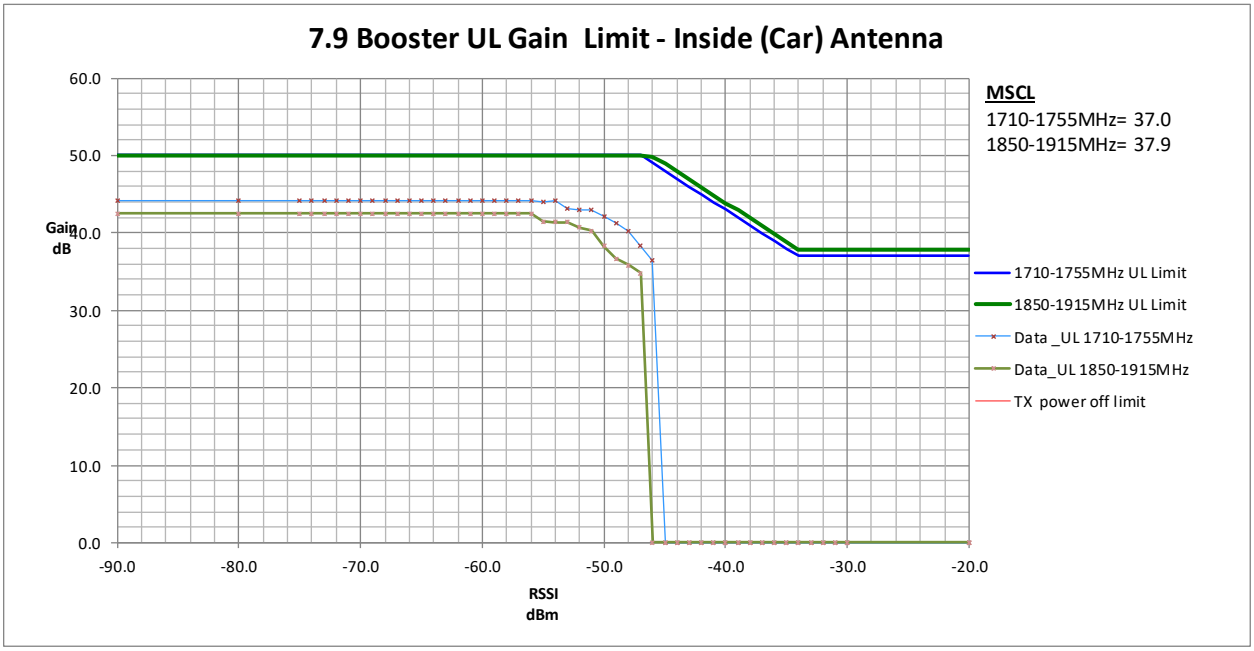
Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN03418	Signal Generator	E4438C	7/30/2015	7/30/2017
	ANP06239	Attenuator	54A-10	8/8/2016	8/8/2018
	ANP06897	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP06898	Cable	32022-29094K-29094K-48TC	12/30/2015	12/30/2017
	ANP05411	Attenuator	54A-10	1/18/2016	1/18/2018
	AN03471	Spectrum Analyzer	E4440A	1/4/2016	1/4/2018
	ANC00082	RF Coupler	722-10-1.500V	8/26/2015	8/26/2017
	C00032	Signal Generator	E4438B	2/26/2016	2/26/2018

Summary of Results

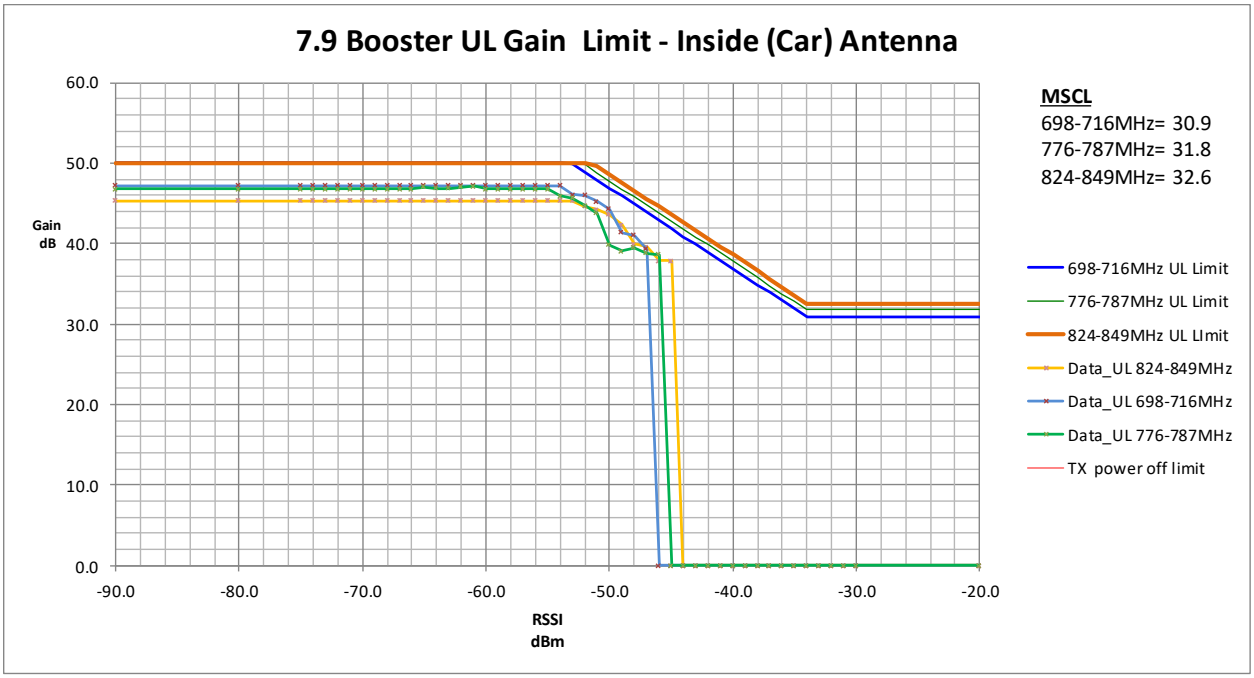
Pass: As demonstrated, computed gains are within the gain limit. All maximum variable uplink gain timings are within 3 second limit.

7.9.1 Maximum gain



1710.0			1755.0 MHz				
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-75.0	-27.1	17.1	44.2		50.0		-5.8
-71.0	-27.1	17.1	44.2		50.0		-5.8
-46.0	-27.1	9.3	36.4	49.0			-12.6
-38.0	-27.1	-57.0	0.0	41.0			-41.0
-37.0	-27.1	-57.0	0.0	40.0			-40.0
-36.0	-27.1	-57.0	0.0	39.0			-39.0

1850.0			1915.0 MHz				
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-70.0	-28.0	14.5	42.5		50.0		-7.5
-56.0	-28.0	14.5	42.5		50.0		-7.5
-38.0	-28.0	-57.0	0.0	41.9			-41.9
-37.0	-28.0	-57.0	0.0	40.9			-40.9
-36.0	-28.0	-57.0	0.0	39.9			-39.9
-35.0	-28.0	-57.0	0.0	38.9			-38.9



824.0			849.0 MHz				
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-70.0	-29	16.3	45.3		50.0		-4.7
-57.0	-29	16.3	45.3		50.0		-4.7
-51.0	-29	15.2	44.2	49.6			-5.4
-50.0	-29	14.6	43.6	48.6			-5.0
-49.0	-29	13.3	42.3	47.6			-5.3
-45.0	-29	8.9	37.9	43.6			-5.7

698.0			716.0 MHz				
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-73.0	-31.2	16.0	47.2		50.0		-2.8
-64.0	-31.2	16.0	47.2		50.0		-2.8
-52.0	-31.2	14.8	46.0	48.9			-2.9
-51.0	-31.2	14.0	45.2	47.9			-2.7
-50.0	-31.2	13.1	44.3	46.9			-2.6
-48.0	-31.2	9.8	41.0	44.9			-3.9

776.0			787.0 MHz				
				Limit			Margin
RSSI (dBm)	Input (dBm)	Measured Output (dBm)	Measured Gain (dBm)	RSSI Dependent	Mobile Booster Limit	TX off	
-65.0	-30.0	17.0	47.0		50.0		-3.0
-61.0	-30.0	17.1	47.1		50.0		-2.9
-52.0	-30.0	14.7	44.7	49.8			-5.1
-51.0	-30.0	13.8	43.8	48.8			-5.0
-47.0	-30.0	8.8	38.8	44.8			-6.0
-46.0	-30.0	8.6	38.6	43.8			-5.2

7.9.2 Variable uplink gain timing

Uplink Gain Timing		
Frequency (MHz)	**Measured (Sec)**	**Limit (Sec)**
UL 1710-1755	0.55	1
UL 1850-1915	0.45	1
UL 824-849	0.32	1
UL 698-716	0.40	1
UL 776-787	0.30	1

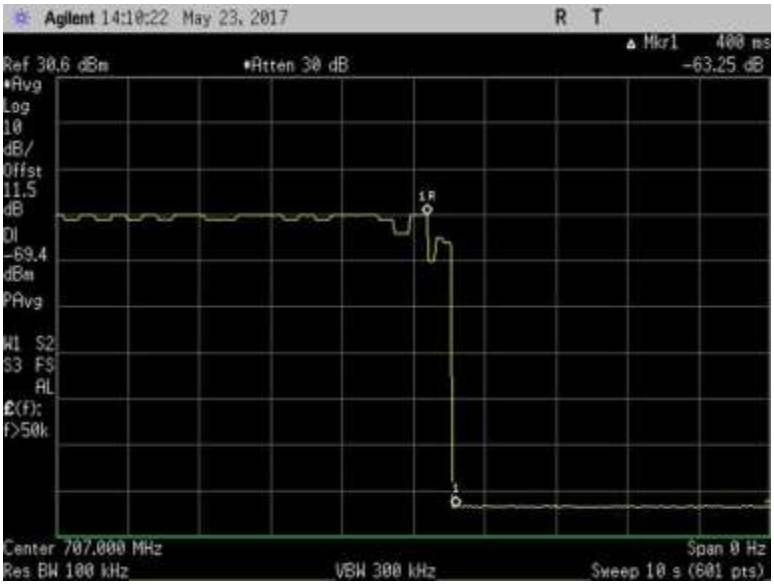
7.9.1 Maximum Gain

For this subsection, see summary of results of 7.9
7.9.1 Maximum gain

7.9.2 Variable uplink Gain Timing

Plots

UL



7.9.2_VarULGainTiming_UL_698-716MHz