Cellphone-Mate, Inc.

EMC TEST REPORT FOR

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

Tested To The Following Standards:

FCC Part 24

Report No.: 96950-15

Date of issue: July 6, 2015

A2LA 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.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Hongtao Zhan
Customer Reference Number: CKC20150529

REPORT PREPARED BY:

Morgan Tramontin
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 96950

DATE OF EQUIPMENT RECEIPT: May 19, 2015
DATE(S) OF TESTING: May 19 & June 16, 2015

Report Authorization

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

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

Test Facility Information

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

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

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.02.00
EMITest Immunity	5.02.00

Site Registration & Accreditation Information

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

SUMMARY OF RESULTS

Standard / Specification: FCC Part 24

Test procedure 935210 D05 Indus Booster Basic Meas v01, June 5, 2015		935210 D02 Signal Boosters Certification v02r01, June 5, 2015 D.3 Policy and Procedure	FCC Rule		Mods	Results
Sec #	**Guidance Description**	**Guidance Description**	**FCC Sec #**	**FCC Description**		
3.3	Out-of-Band Rejection	(l) Out of Band Rejection	NA	NA	NA	Pass
3.4	Input-vs-Output Signal Comparison	(j) Occupied Bandwidth	2.1049(l)	Occupied Bandwidth	NA	Pass
3.5	Mean Output Power and Amplifier Gain	(k) Output Power	2.1046 24.232(b)	RF Power Output: Power and Antenna Height Limit	NA	Pass
3.6.2	Out-of-Band/Block Emissions (including intermodulation) Conducted Measurement	(i) Intermodulation	Band edge	Band edge	NA	Pass
3.6.3	Spurious Emissions Conducted Measurement	h) Conducted Spurs	2.1051 24.238(a)	Spurious Emissions at Ant Terminal	NA	Pass
3.7	Frequency Stability Measurements	NA	2.1055(d) 24.235	Frequency Stability	NA	Pass
3.8	Spurious Emissions Radiated Measurements	(g) Radiated Spurs (enclosure)	2.1053 24.238(a)	Field Strength of Spurious Radiation	NA	Pass

Modifications* During Testing

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

Summary of Conditions
No modifications were made during testing.

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

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

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

Configuration 1

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

Support Equipment:

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

Configuration 3

Equipment Tested:

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

Support Equipment:

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

FCC PART 24

3.3 – Out of Band Rejection

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc.		
Specification:	**3.3 Out of Band Rejection**		
Work Order #:	**96950**	Date:	5/19/2015
Test Type:	**Conducted Power Measurement**	Time:	09:10:28
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Configuration 1
The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna.

The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port.
The Industrial booster UL and DL power and gain parameters are initially measured with WiFi transmitting at mid channel using sequentially 802.11b, g, n20 and n40 signal. Since no significant change in measured power was observed, all other parameters are obtained with WiFi transmitting at Mid channel, 802.11b.

UL: 1850-1915MHz
DL: 1930-1995MHz

All adjustable settings on the test sample are set at max.
Software: Force 7 V1.0
Firmware: V1.0
Application: MP_TEST MFC version 1.3.8.0

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

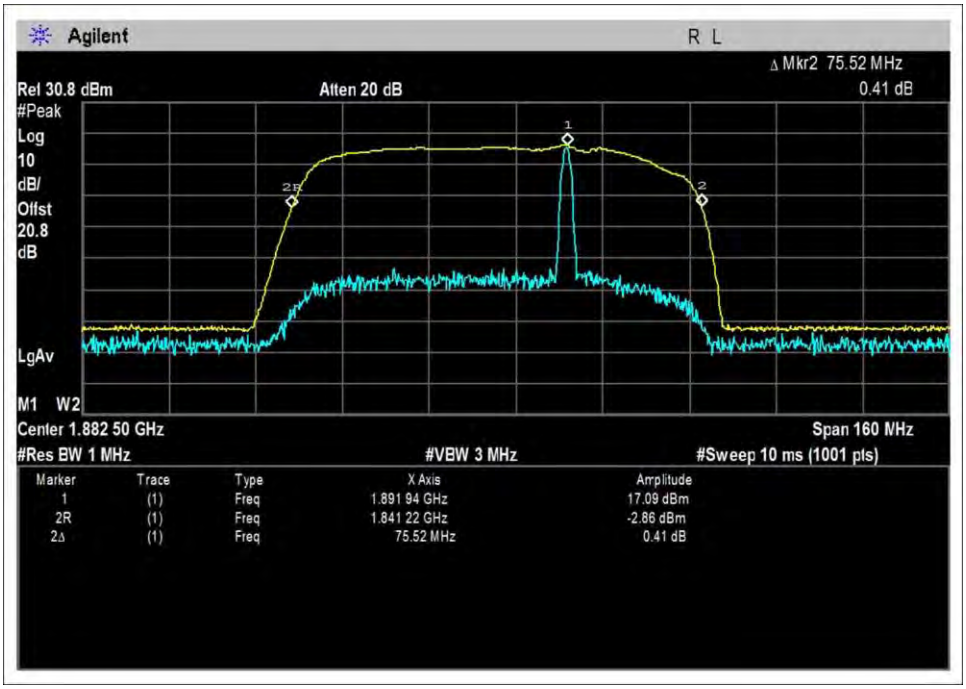
Test procedure: The test was performed in accordance with section 3.3 of the FCC document: D05 Industrial Booster Basic Measurements v01 935210 Dated June 05, 2015.

Test Equipment					
Asset #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
ANP06131	Attenuator	18N20W-20	Inmet	02/27/2014	02/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	03/24/2015	03/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	09/18/2014	09/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	09/18/2014	09/18/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/02/2013	12/02/2015

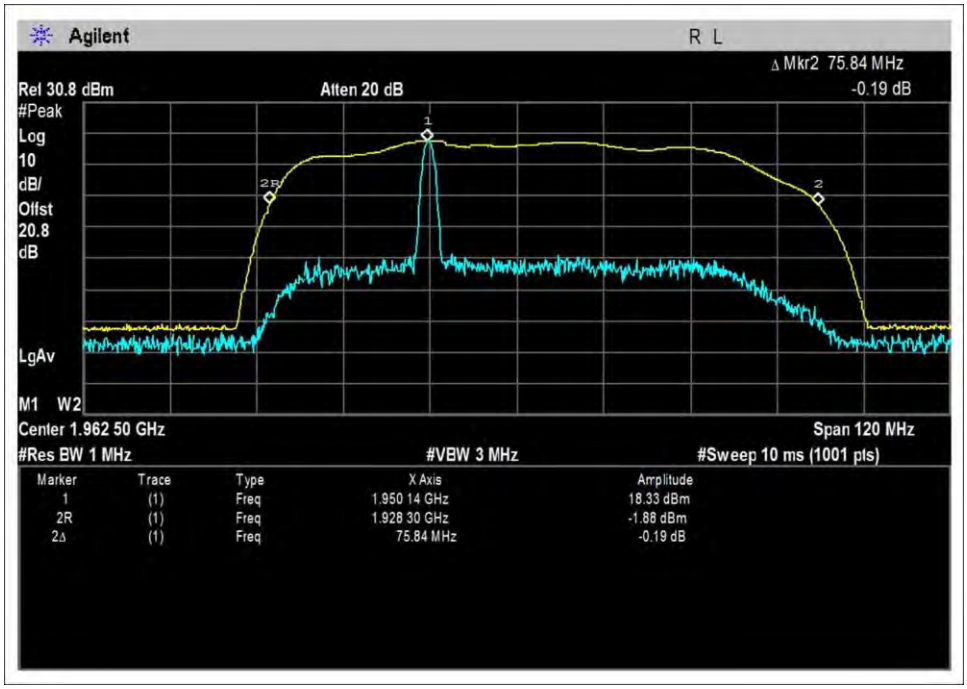
3.3 – Out of Band Rejection Summary of Results

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

Test Data



UL – 1850 – 1915MHz



DL - 1930 – 1995MHz

3.4 – Input-vs-Output Signal Comparison

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc.		
Specification:	**3.4 OBW (Input vs Output Signal Comparison)**		
Work Order #:	**96950**	Date:	5/19/2015
Test Type:	**Conducted Power Measurement**	Time:	09:10:28
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Configuration 1
The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna.
The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port.

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

UL: 1850-1915MHz
DL: 1930-1995MHz

All adjustable settings on the test sample are set at max.
Software: Force 7 V1.0
Firmware: V1.0
Application: MP_TEST MFC version 1.3.8.0

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

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

Test Equipment					
Asset #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
ANP06131	Attenuator	18N20W-20	Inmet	02/27/2014	02/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	03/24/2015	03/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	09/18/2014	09/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	09/18/2014	09/18/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/02/2013	12/02/2015

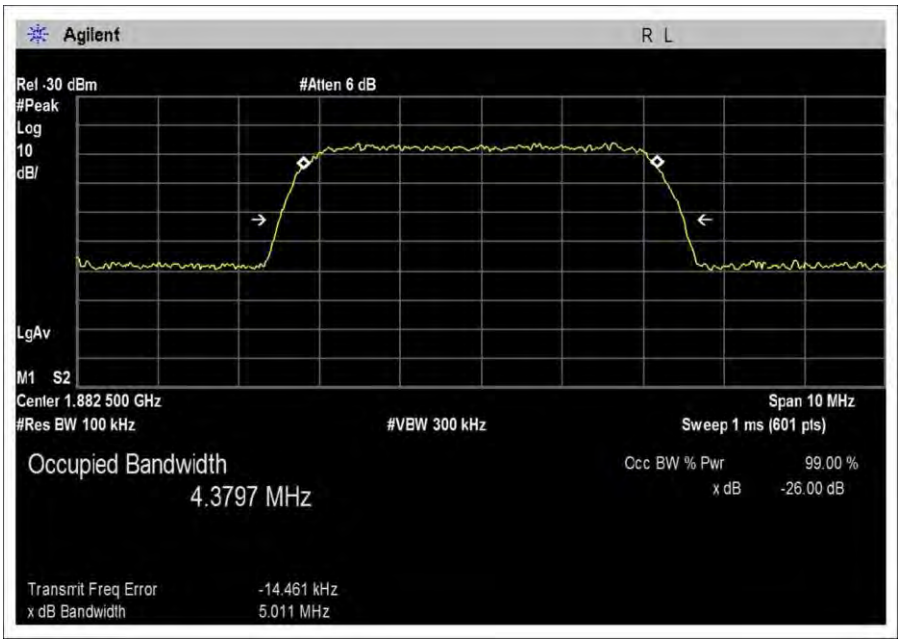
3.4 – Input-vs-Output Signal Comparison Summary of Results

Pass: As summarized in tables and plots below, the spectral shape of the output is similar to input for all modulations.
Worst case results are reported for occupied bandwidth comparison test done with and without AGC circuitry activated.

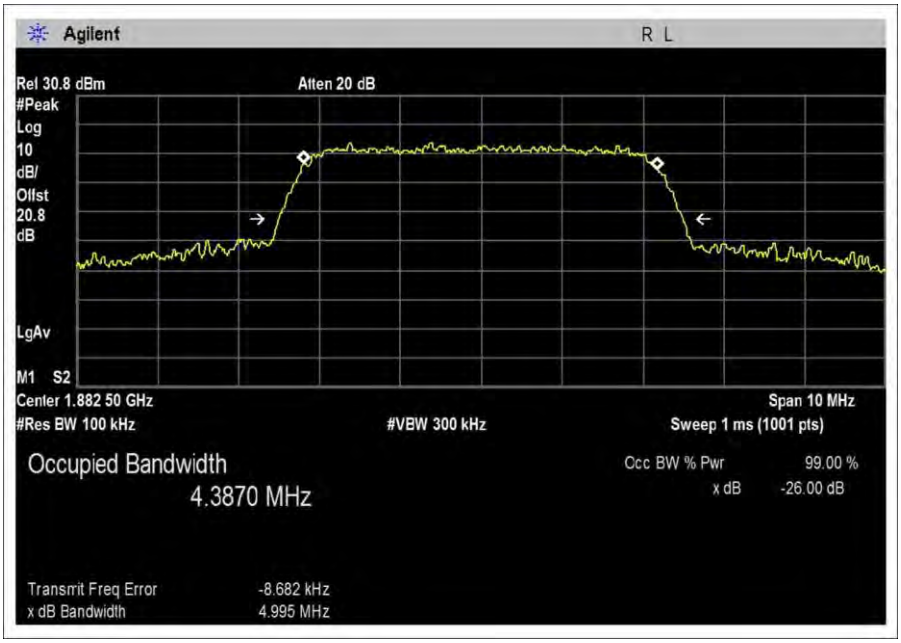
Operational Frequencies (MHz)	BB/NB Signal	Link	Freq Tuned (MHz)	OBW PreAGC (KHz)	OBW AGC+3dB (kHz)	OBW Input (kHz)	Max In&Out Diff (PreAGC)	Max In&Out Diff (AGC)
1850-1915	AWGN	Uplink	1882.5	4387	4379.8	4379.7	0.17%	0.00%
1930-1995	AWGN	Downlink	1962.5	4407.2	4399.3	4372.9	0.78%	0.60%
1850-1915	GSM	Uplink	1882.5	245.249	244.9626	244.9518	0.12%	0.00%
1930-1995	GSM	Downlink	1962.5	244.769	244.9294	244.1803	0.24%	0.31%

Test Data

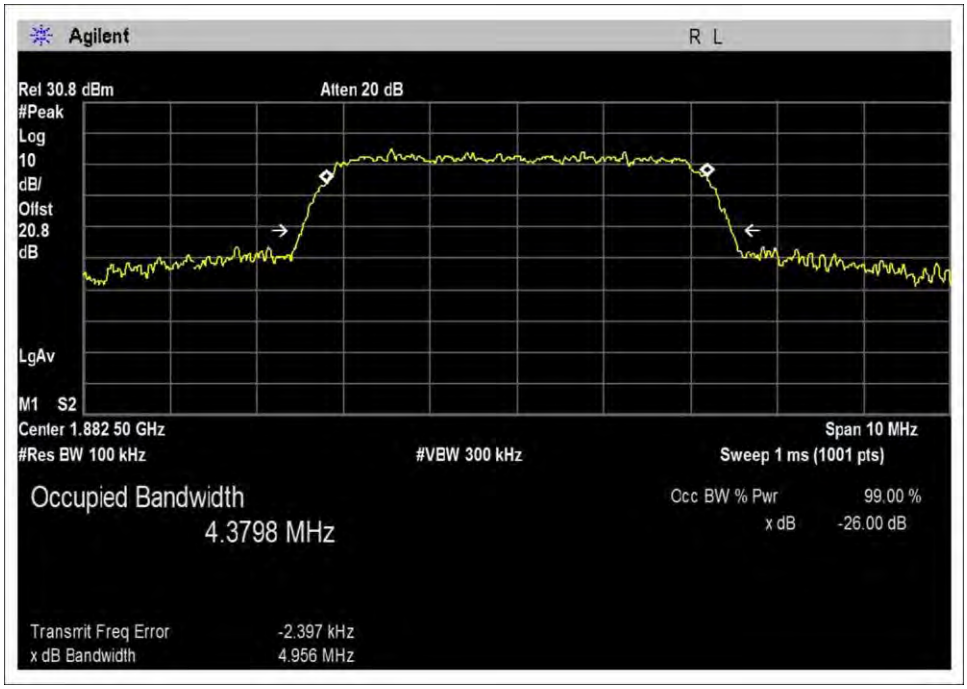
AWGN - UL



UL-1850-1915MHz-Input

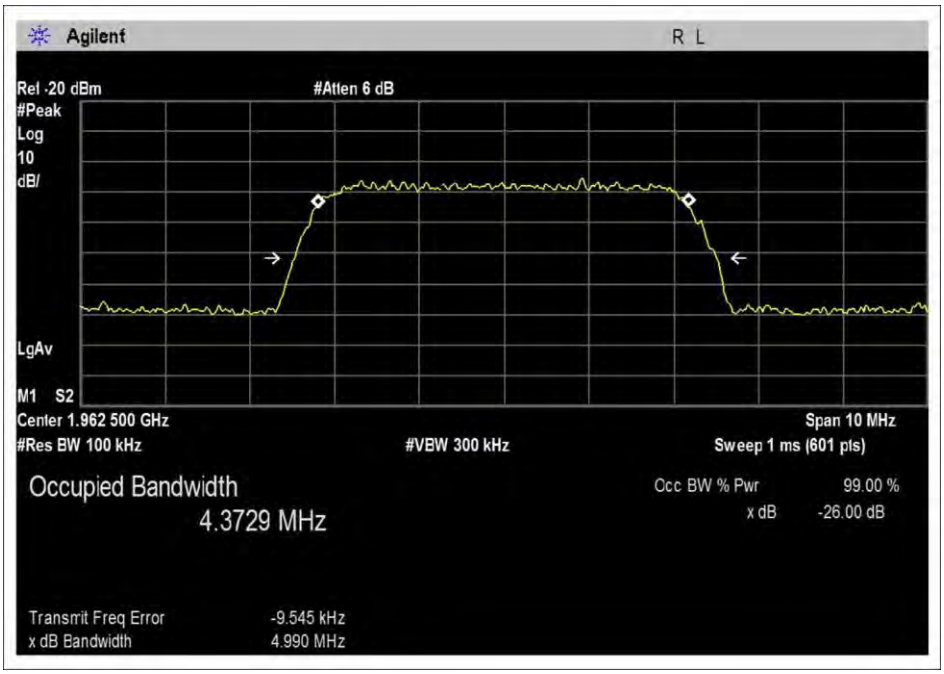


UL-1850-1915MHz-Out-41.8

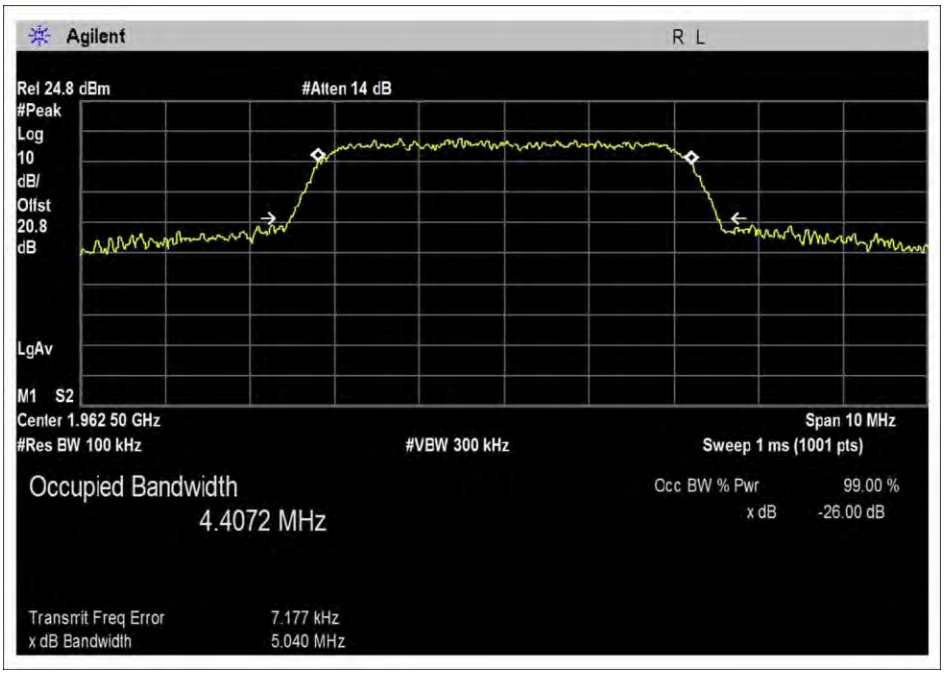


UL-1850-1915MHz-Out-AGC+3

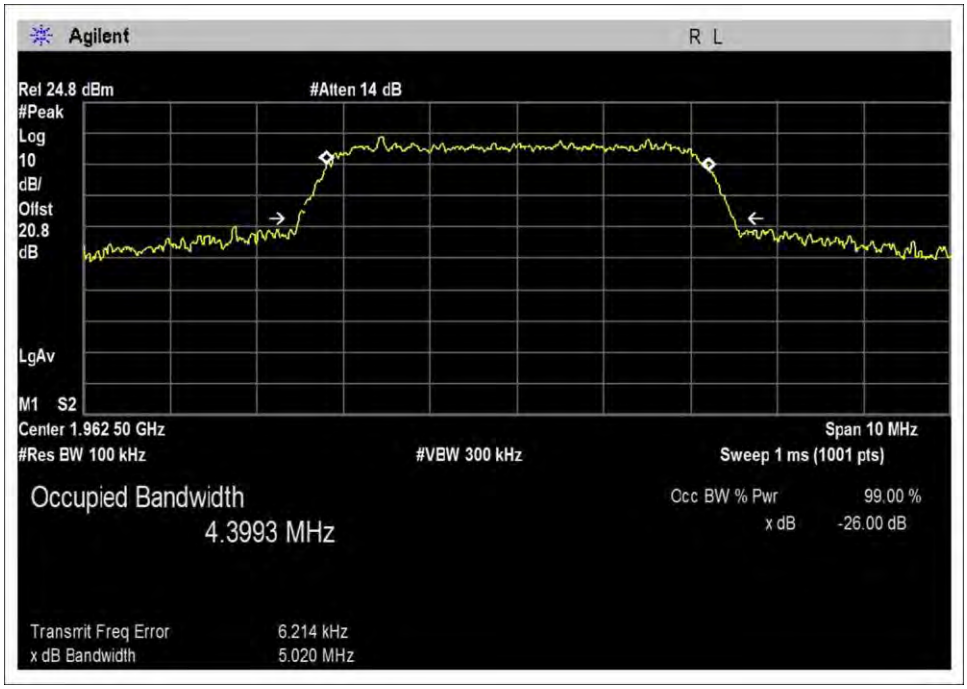
AWGN-DL



DL-1930-1995MHz-Input

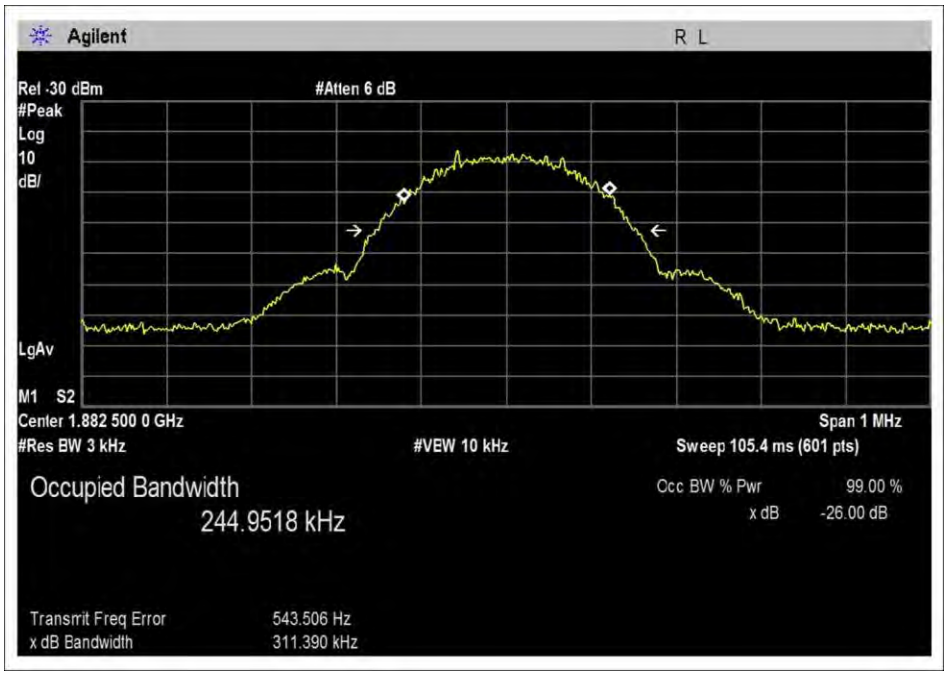


DL-1930-1995MHz-Out-471

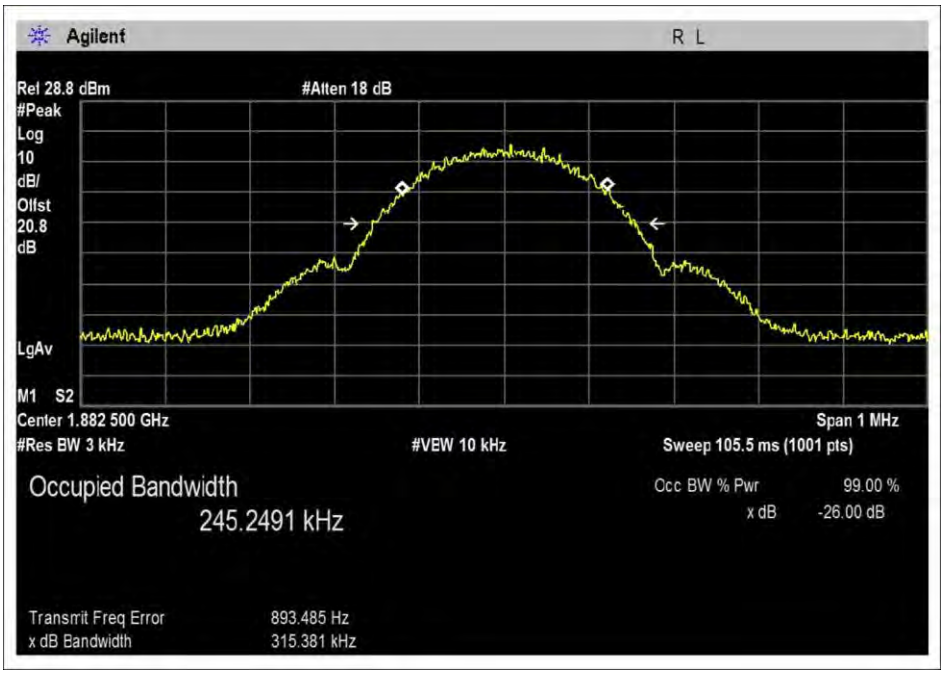


DL-1930-1995MHz-Out-AGC+3

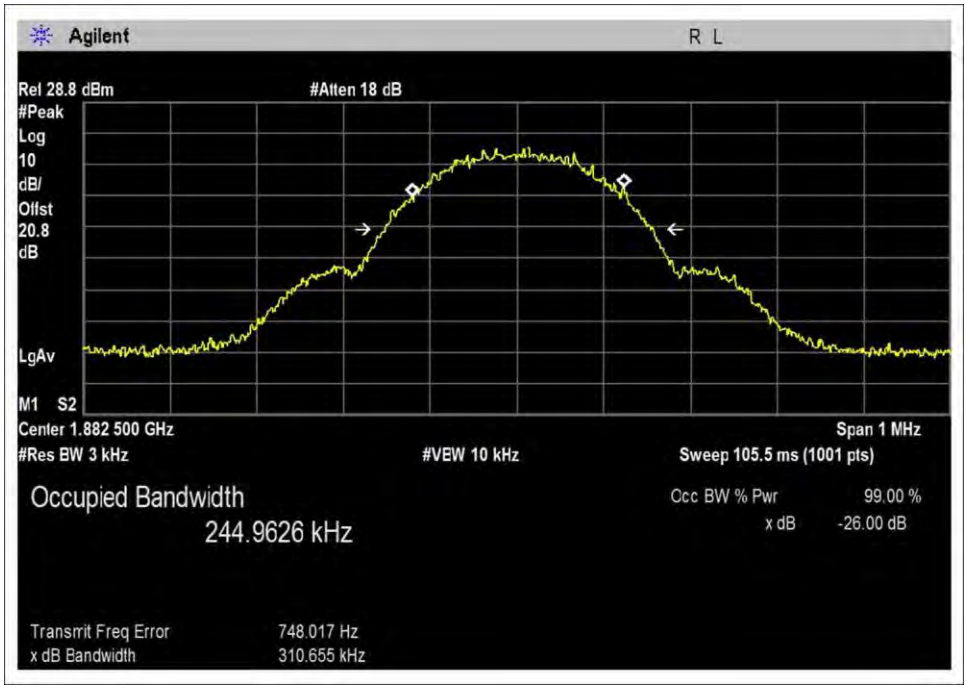
GSM-UL



UL-1850-1915MHz-M-Input

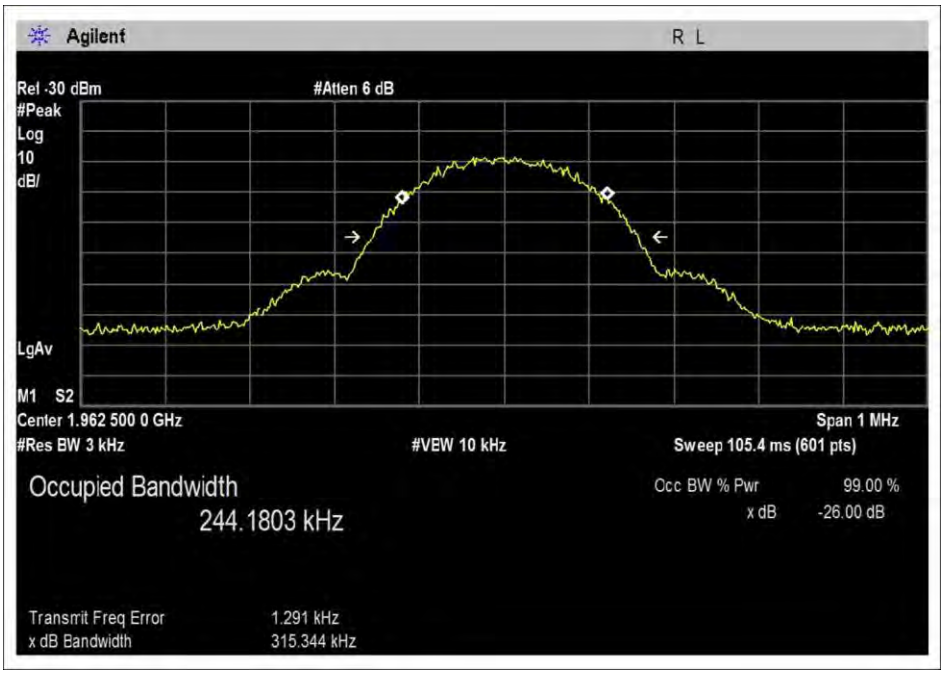


UL-1850-1915MHz-Out-41.5

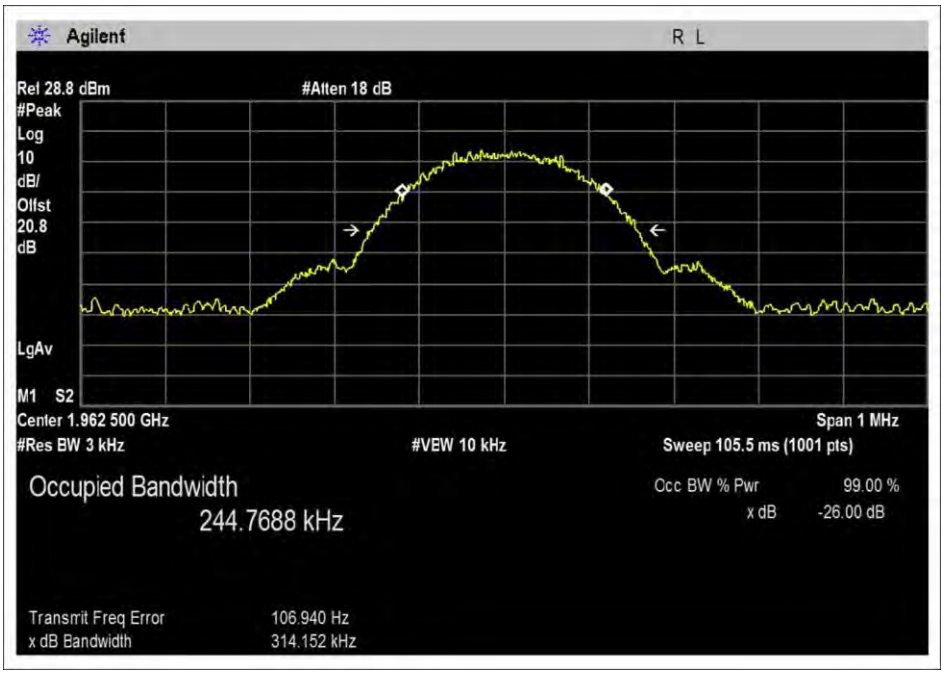


UL-1850-1915MHz-Out-AGC+3

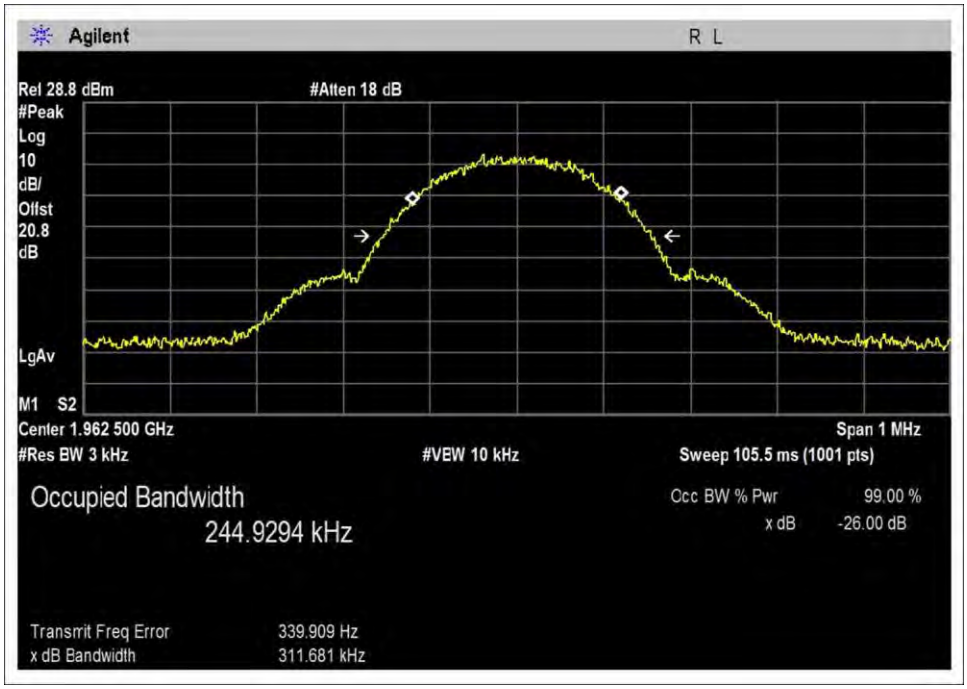
GSM-DL



DL-1930-1995MHz-Input



DL-1930-1995MHz-Out-46.3



DL-1930-1995MHz-Out-AGC+3

3.5 – Mean Output Power and Amplifier Gain

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc.		
Specification:	**3.5 EUT mean output power and amplifier gain**		
Work Order #:	**96950**	Date:	5/19/2015
Test Type:	**Conducted Power Measurement**	Time:	09:10:28
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Configuration 1
The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna.
The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port.

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

UL: 1850-1915MHz
DL: 1930-1995MHz

All adjustable settings on the test sample are set at max.
Software: Force 7 V1.0
Firmware: V1.0
Application: MP_TEST MFC version 1.3.8.0

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

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

Test Equipment					
Asset #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
ANP06131	Attenuator	18N20W-20	Inmet	02/27/2014	02/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	03/24/2015	03/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	09/18/2014	09/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	09/18/2014	09/18/2016
ANP06711	Cable	32022-29094K-29094K-132TC	AstroLab	11/21/2014	11/21/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/02/2013	12/02/2015
C00087	Combiner	44000	NA	01/09/2014	01/09/2016
AN03471	Spectrum Analyzer	E4440A	Agilent	12/19/2013	12/19/2015

Antenna Kitting Information

Force-7 (80dB)

Component	**Prod No. Description**	**Gain/Loss**							**Notes**
		HDTV	LTE-A	LTE-V	800MHz	1900MHz	1700MHz\ 2100MHz	2400-2500 MHz	
Outdoor Antenna	SC288W	/	3dBi	3dBi	3dBi	4dBi	4dBi \ 4dBi	-	With N connector
	SC230W	/	10dBi	10dBi	10dBi	10dBi	10dBi \ 10dBi	-	With N connector
Outdoor Cable	SC400-30NN 30Feet	/	2.05 dB	2.05 dB	2.12dB	2.83dB	2.68dB \ 2.98dB	-	30 Feet or longer with N connector
Indoor Antenna	SC222W	/	3dBi	3dBi	3dBi	6dBi	6dBi \ 6dBi	6dBi	with RP-TNC connector
Indoor Cable	SC400-75NN 75Feet	/	4.22 dB	4.22 dB	4.41dB	6.17dB	5.8d B\ 6.54dB	6.85 dB**	75 Feet or longer with RP-TNC connector
HDTV Outdoor Antenna	SC306W-H	3dBi	/	/	/	/	/	/	With F connector
HDTV Cable 1 & 2	SC-RG6-75								With F connector
	SC-RG6-50								
*All equivalent antennas and cables are suitable for use with the Force 7 80dB booster. **3dB coupling loss is not included.									

Note1 : Dual Indoor Antenna Kit

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

Note2 : Four Indoor Antenna Kit

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

Note3 : Multiple Indoor antenna kit is also an option.

3.5 – Mean Output Power and Amplifier Gain Summary of Results

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

Operational Frequencies (MHz)	BB/NB Signal	Link	Freq Tuned (MHz)	PreAGC (dBm)	AGC+3dB (dBm)	Input (dBm)	Gain PreAGC (dB)	Gain AGC +3dB (dB)
1850-1915	AWGN	Uplink	1882.5	19.48	18.83	-57.9	77.3	73.7
1930-1995	AWGN	Downlink	1962.5	17.24	18.24	-62.9	80.2	78.2
1850-1915	GSM	Uplink	1882.5	20.37	18.77	-57.3	77.7	73.1
1930-1995	GSM	Downlink	1962.5	19.09	19.22	-61.6	80.7	77.9

GSM

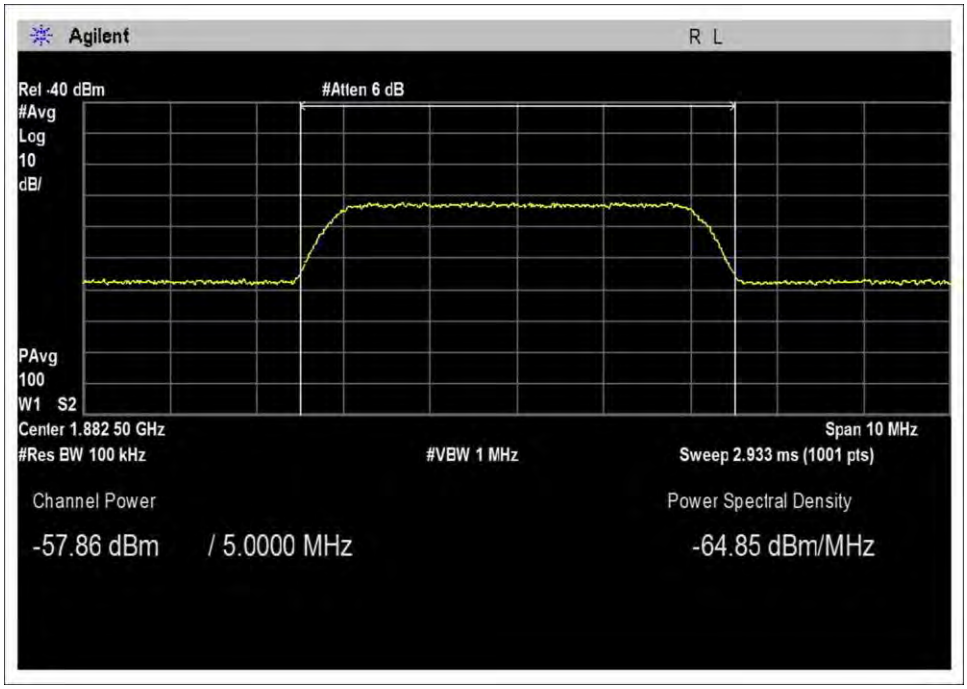
Frequency (MHz)	Output Power (dBm)	Ant Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Result
UL1850-1915	20.4	10	5.43	24.97	Compliant
DL1930-1995	19.2	10	6.17	23.03	Compliant

4.1MHz AWGN

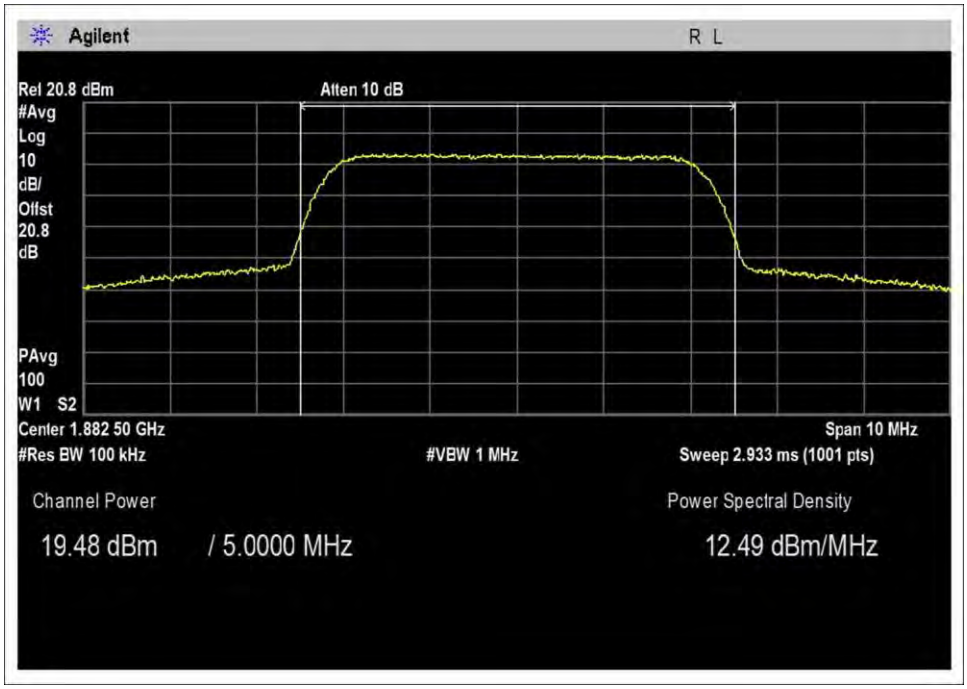
Frequency (MHz)	Output Power (dBm)	Ant Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Result
UL1850-1915	19.5	10	5.43	24.07	Compliant
DL1930-1995	18.2	10	6.17	22.03	Compliant

Test Data

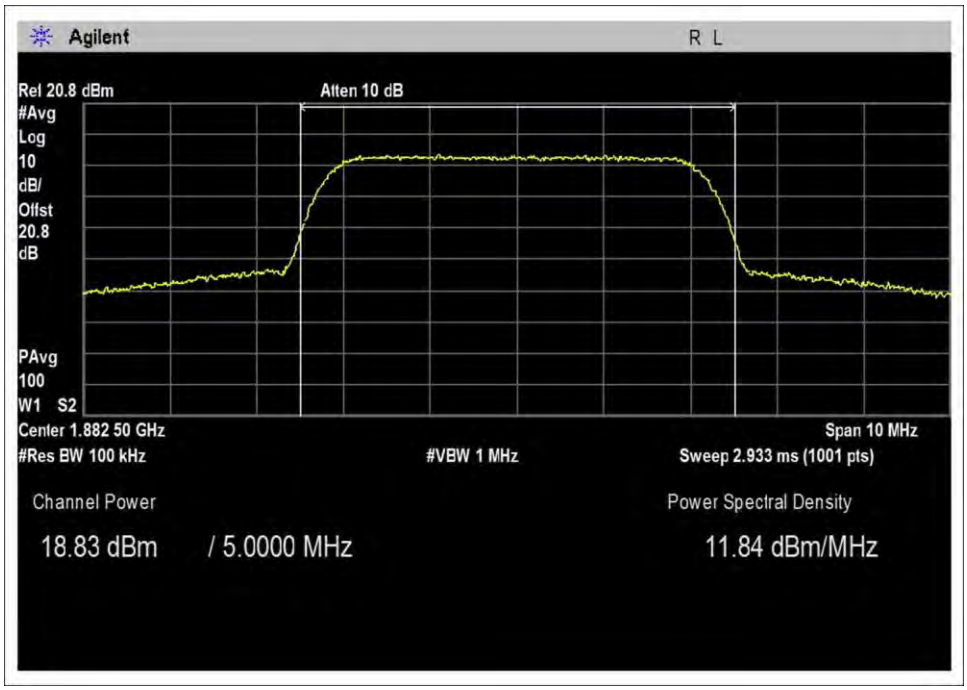
AWGN-UL



UL-1850-1915MHz-Input

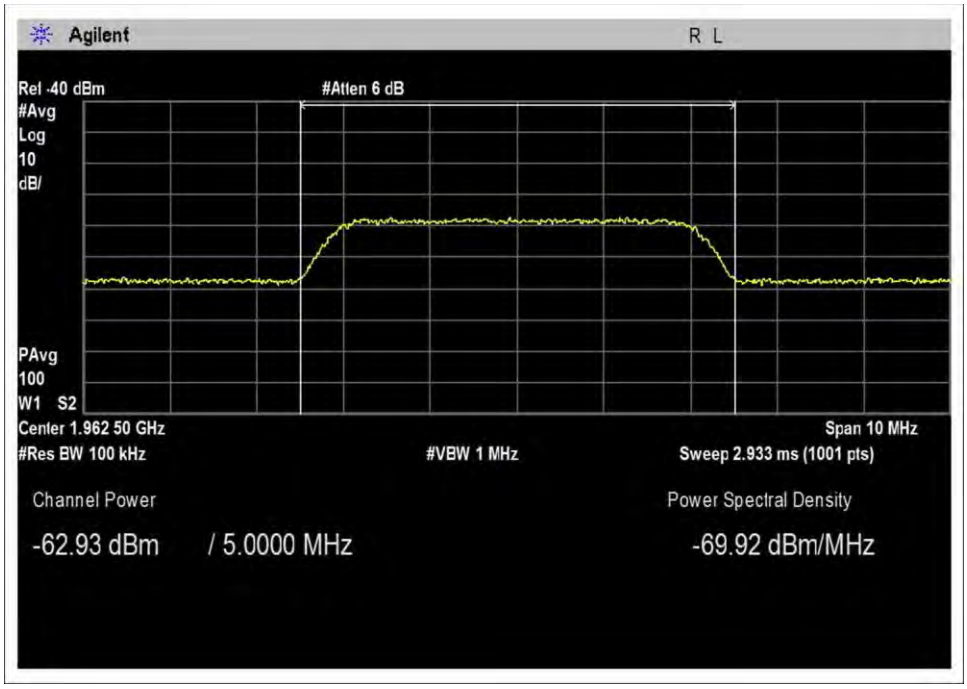


UL-1850-1915MHz-Out-41.8

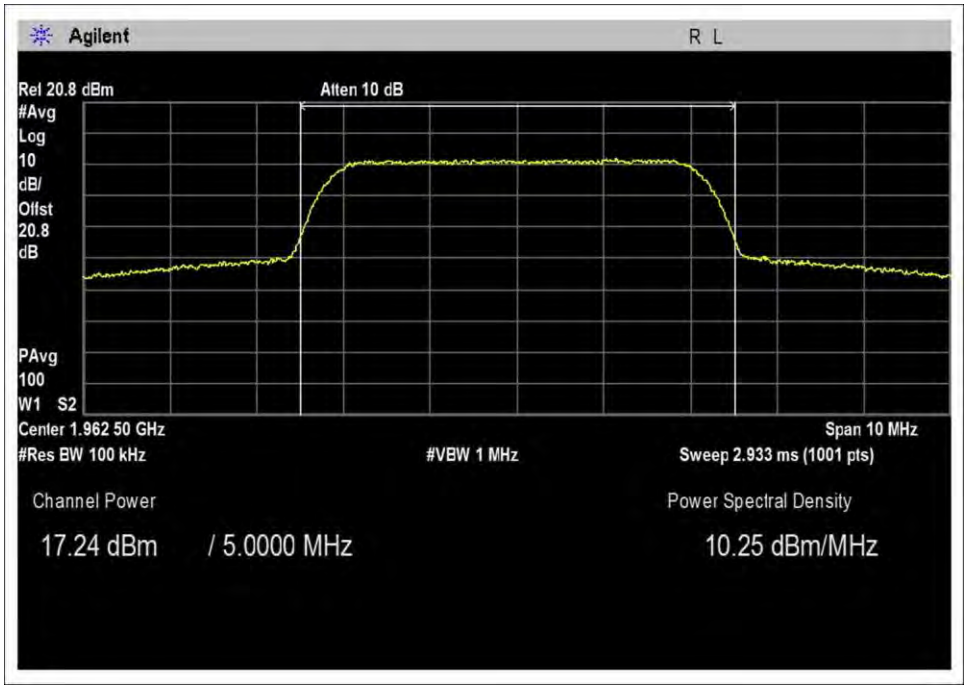


UL-1850-1915MHz-Out-AGC+3

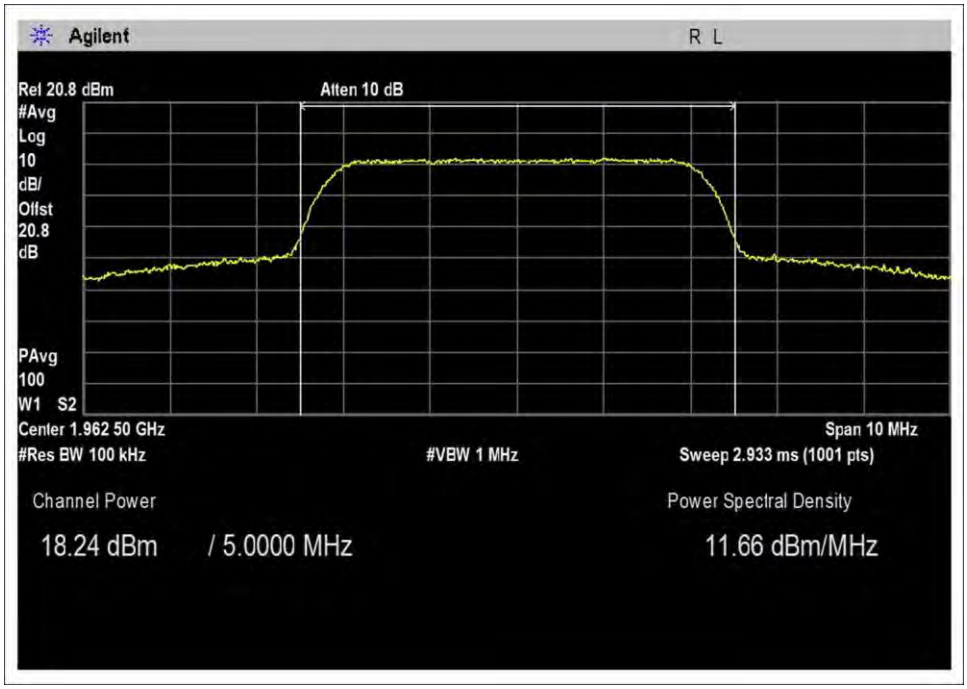
AWGN-DL



DL-1930-1995MHz-Input

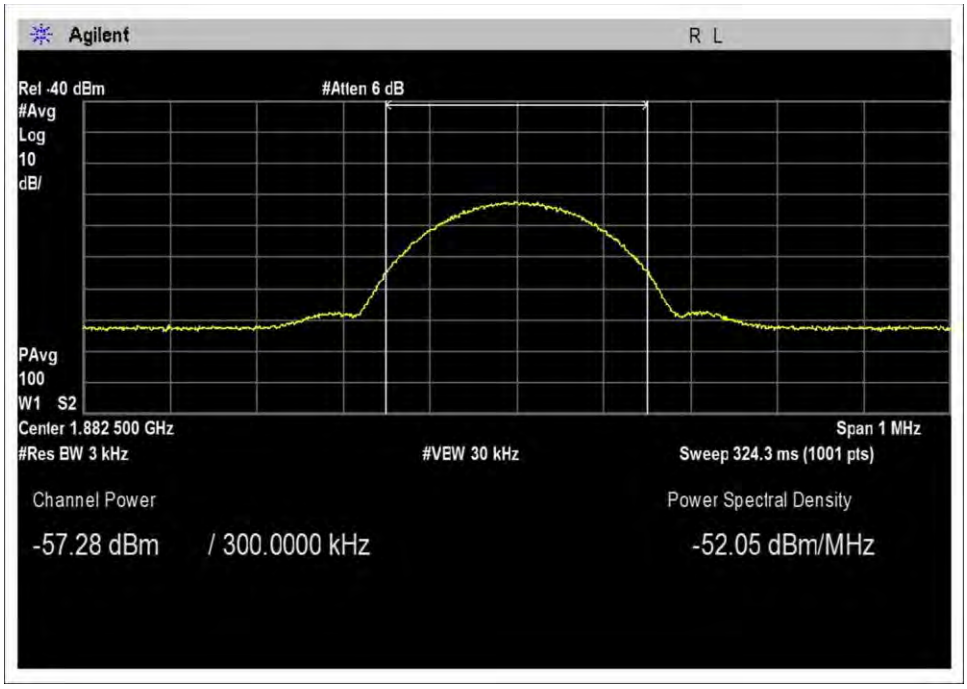


DL-1930-1995MHz-Out-47.1

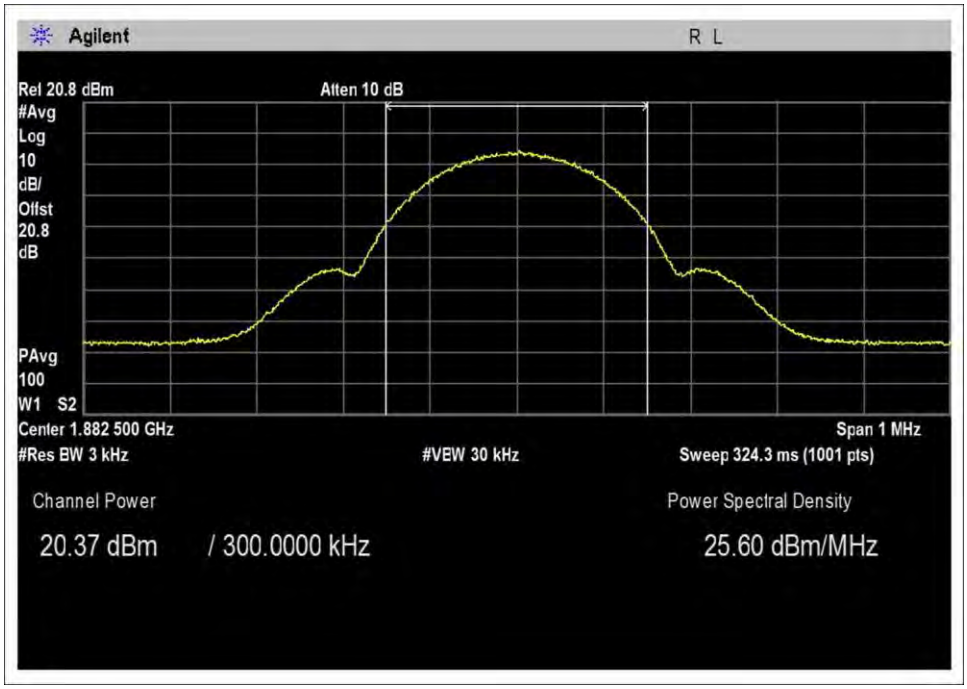


DL-1930-1995MHz-Out-AGC+3

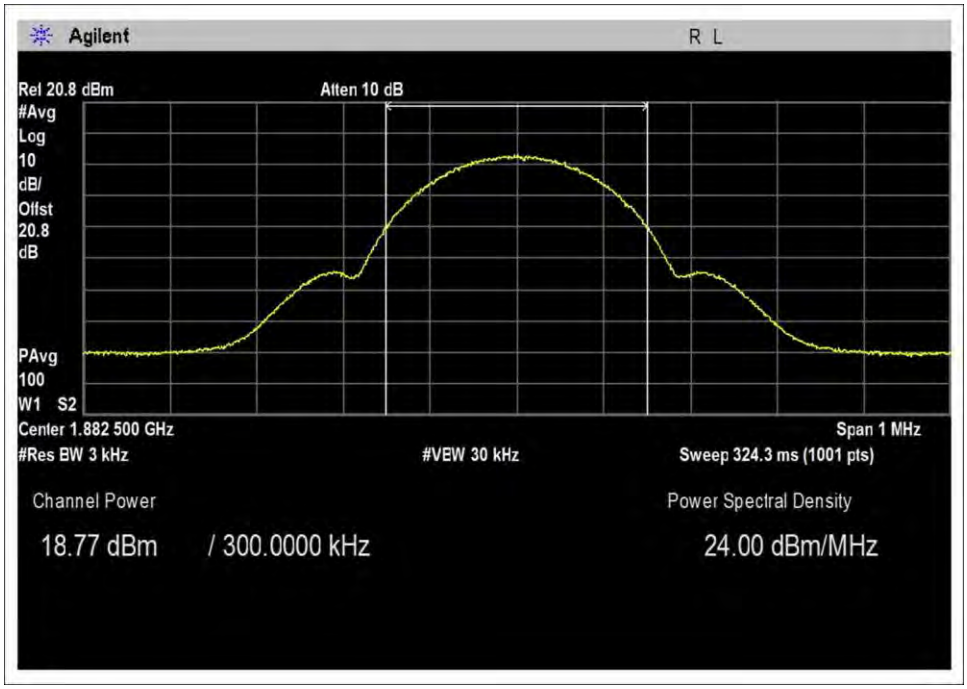
GSM-UL



UL-1850-1915MHz-Input

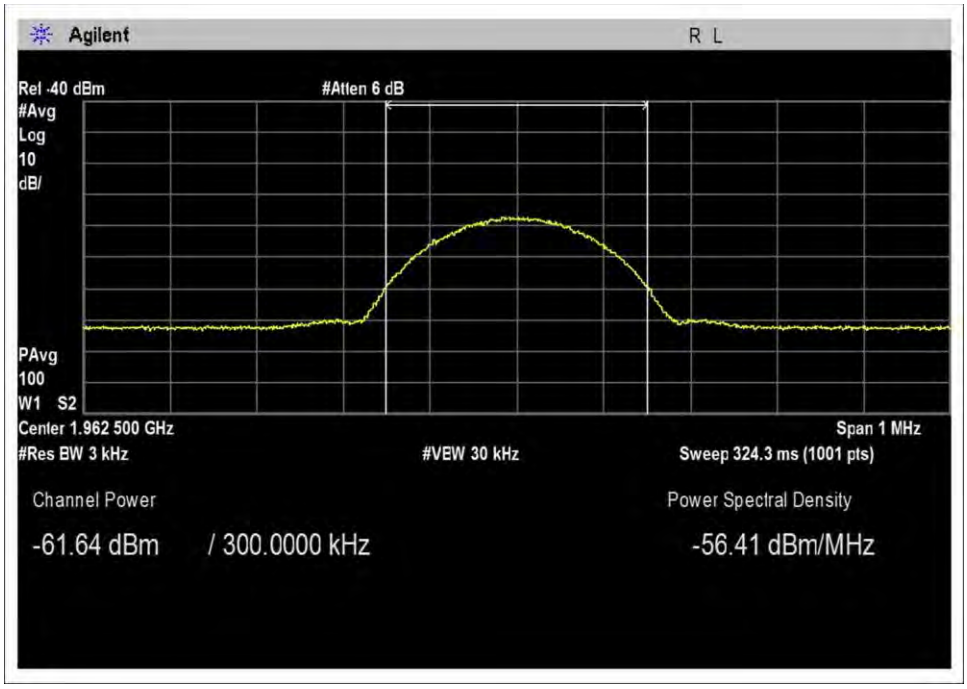


UL-1850-1915MHz-Out-41.5

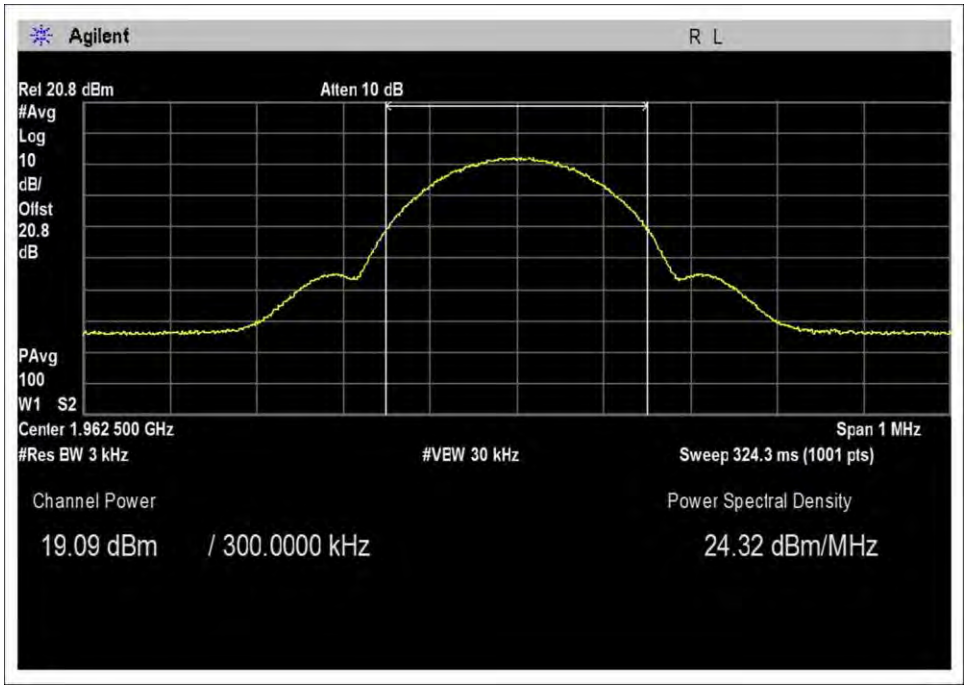


UL-1850-1915MHz-Out-AGC+3

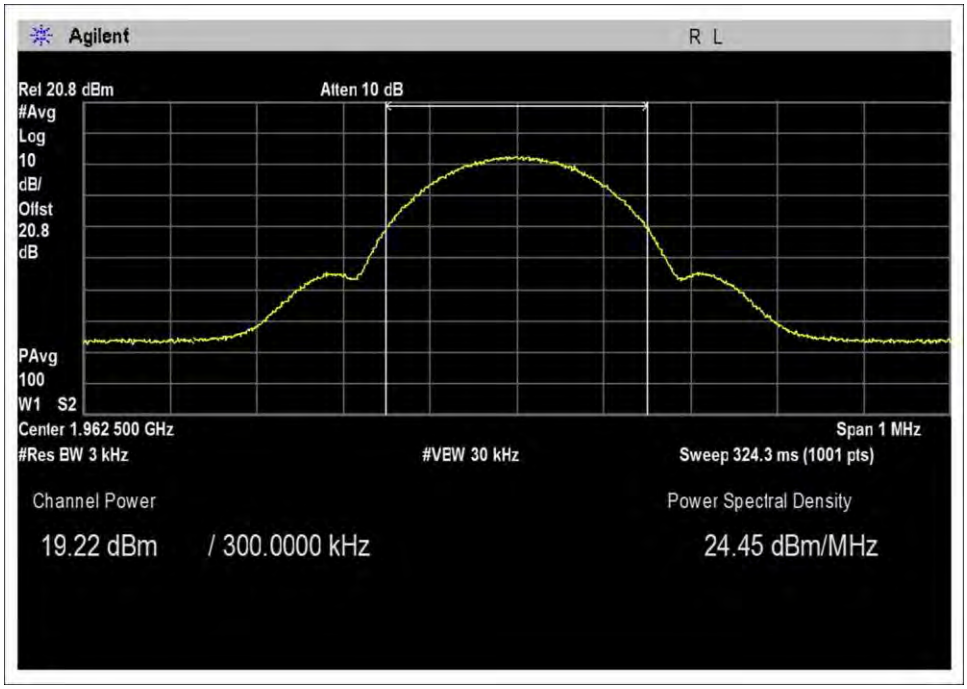
GSM-DL



DL-1930-1995MHz-Input



DL-1930-1995MHz-Out-46.3



DL-1930-1995MHz-Out-AGC+3

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

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**3.6.2 Out of Band/Block emissions conducted measurement**		
Work Order #:	**96950**	Date:	7/09/2015
Test Type:	**Conducted Power Measurement**	Time:	11:10:41
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Configuration 1
The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna.
The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port.

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

UL: 1850-1915MHz
DL: 1930-1995MHz

All adjustable settings on the test sample are set at max.
Software: Force 7 V1.0
Firmware: V1.0
Application: MP_TEST MFC version 1.3.8.0

Test environment conditions: 21 Deg C, 40% relative humidity, 101.5kPa

Test procedure:
The test was performed IAW section 3.6.2 of the FCC document: D05 Industrial Booster Basic Measurements v01 935210 Dated June 05, 2015
Note:
For frequencies above 1GHz on the uplink path, stop frequency of the spectrum analyzer is set to the upper block edge frequency plus 1MHz.
For frequencies above 1GHz on the uplink path, start frequency of the spectrum analyzer is set to the lower block edge frequency minus 1MHz.
Emissions beyond this 1MHz Span are covered by section 3.6.3 spurious emissions conducted measurement test.

UL-1850-1915L-**Sn**-preAGC: **Single** Test Signal. Denotes Left part of the lower band/block edge frequency using a signal tuned at Low Channel of the operational band.
UL-1850-1915L-**Cm**-preAGC: **Composite** Test Signal. Denotes Left part of the lower band/block edge frequency using one signal tuned at Low Channel of the operational band and a second signal tuned at the Low Channel plus 0.4MHz or 5MHz for narrowband/broadband signal respectively.

Test Equipment					
Asset #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
ANP06131	Attenuator	18N20W-20	Inmet	02/27/2014	02/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	03/24/2015	03/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	09/18/2014	09/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	09/18/2014	09/18/2016
ANP06711	Cable	32022-29094K-29094K-132TC	AstroLab	11/21/2014	11/21/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/02/2013	12/02/2015
C00087	Combiner	44000	NA	01/09/2014	01/09/2016
AN03471	Spectrum Analyzer	E4440A	Agilent	12/19/2013	12/19/2015
AN02869	Spectrum Analyzer	E4440A	Agilent	07/10/2013	07/10/2015

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

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

BB Signal (4.1MHz AWGN)

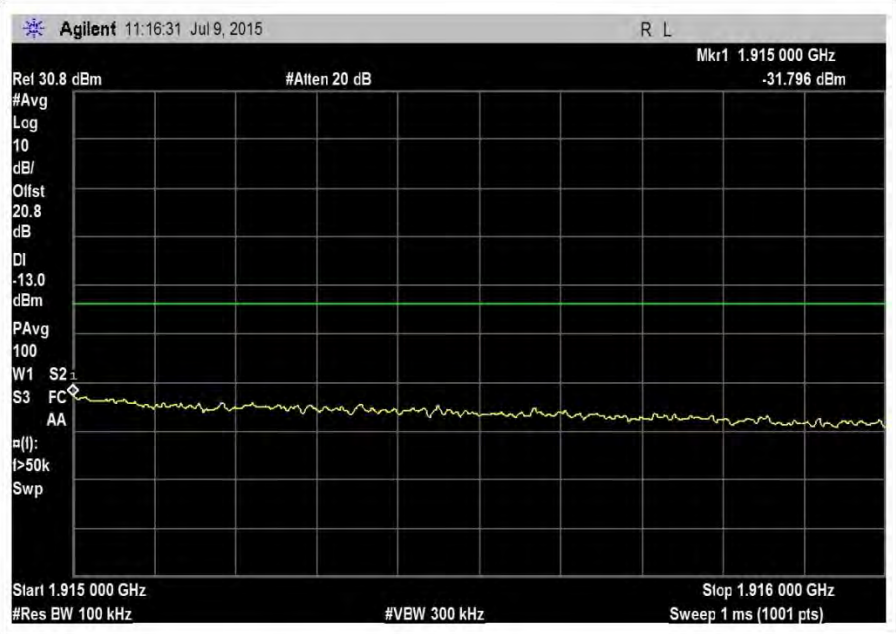
Operational Frequencies (MHz)	Link	CH	Freq1 (MHz)	Freq2 (MHz)	OOB Cm PreAGC (dBm)	OOB Cm AGC+3dB (dBm)	OOB Sn PreAGC (dBm)	OOB Sn AGC+3dB (dBm)	OOB Limit (dBm)	Margin (dB)
1850-1915	UL	H	1912.5	1907.5	-32.13	-32.06	-31.80	-29.44	-13	-16.44
1850-1915	UL	L	1852.5	1857.5	-27.95	-28.09	-26.94	-25.68	-13	-14.95
1930-1995	DL	H	1992.5	1987.5	-34.11	-33.30	-31.99	-28.04	-13	-20.30
1930-1995	DL	L	1932.5	1937.5	-31.06	-33.25	-30.04	-29.90	-13	-18.06

NB Signal (GSM)

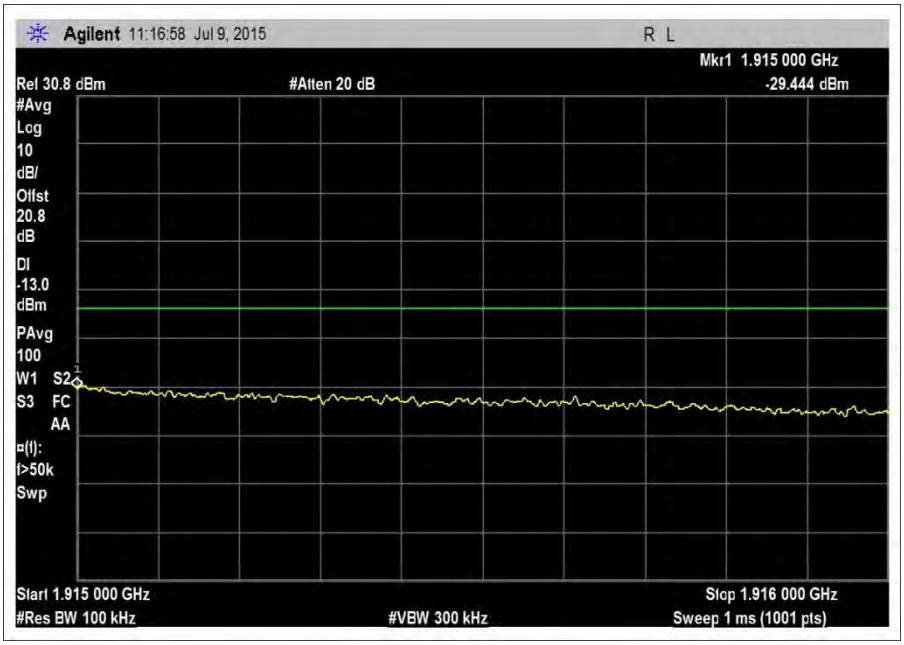
Operational Frequencies (MHz)	Link	CH	Freq1 (MHz)	Freq2 (MHz)	OOB Cm PreAGC (dBm)	OOB Cm AGC+3dB (dBm)	OOB Sn PreAGC (dBm)	OOB Sn AGC+3dB (dBm)	OOB Limit (dBm)	Margin (dB)
1850-1915	UL	L	1850.2	1850.6	-29.23	-29.75	-27.12	-26.38	-13	-16.23
1850-1915	UL	H	1914.8	1914.4	-34.83	-34.15	-31.36	-31.14	-13	-21.15
1930-1995	DL	H	1989.8	1989.4	-28.81	-28.39	-25.80	-25.79	-13	-15.39
1930-1995	DL	L	1994.8	1994.4	-29.97	-29.34	-28.34	-28.06	-13	-16.34

Test Data

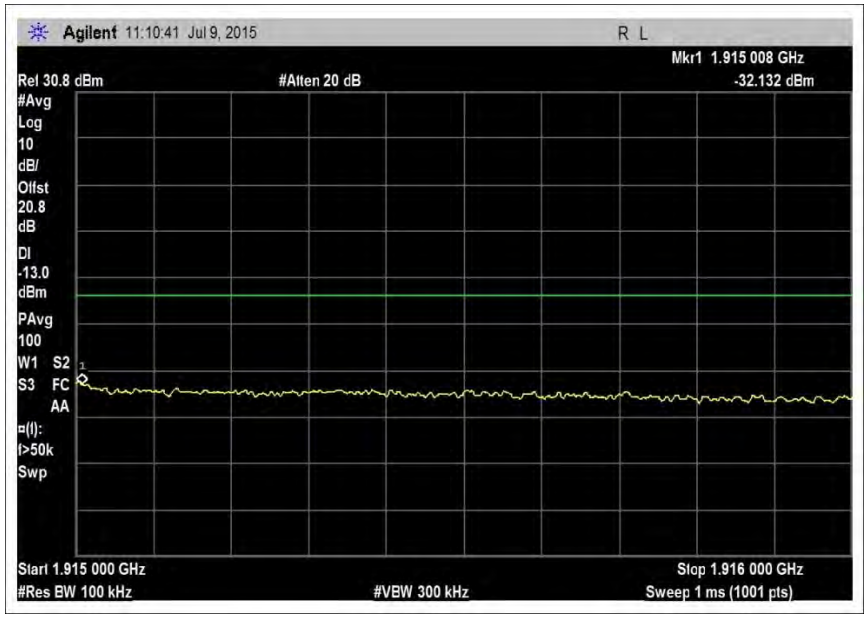
AWGN-UL



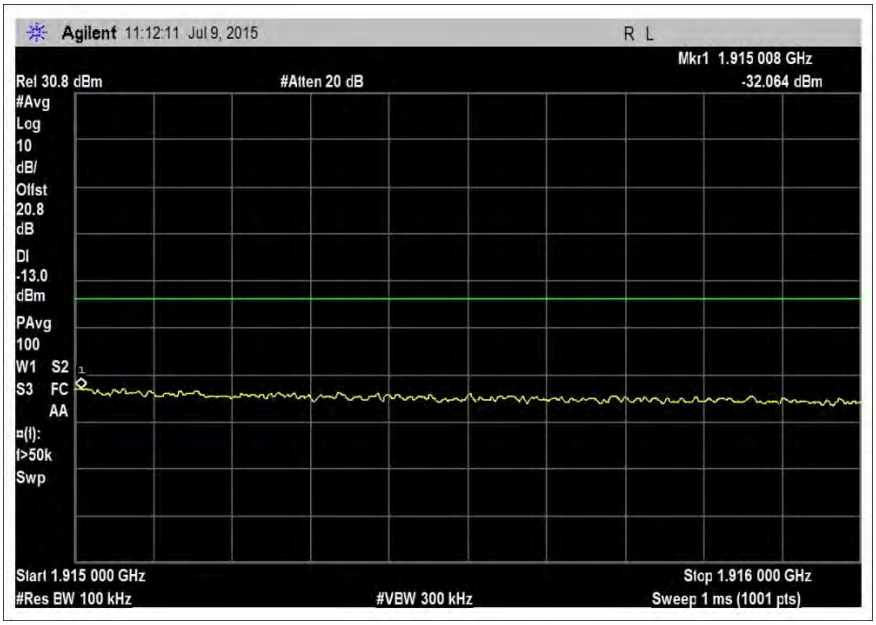
UL-1850-1915H-Sn-preAGC



UL-1850-1915H-Sn-AGC+3

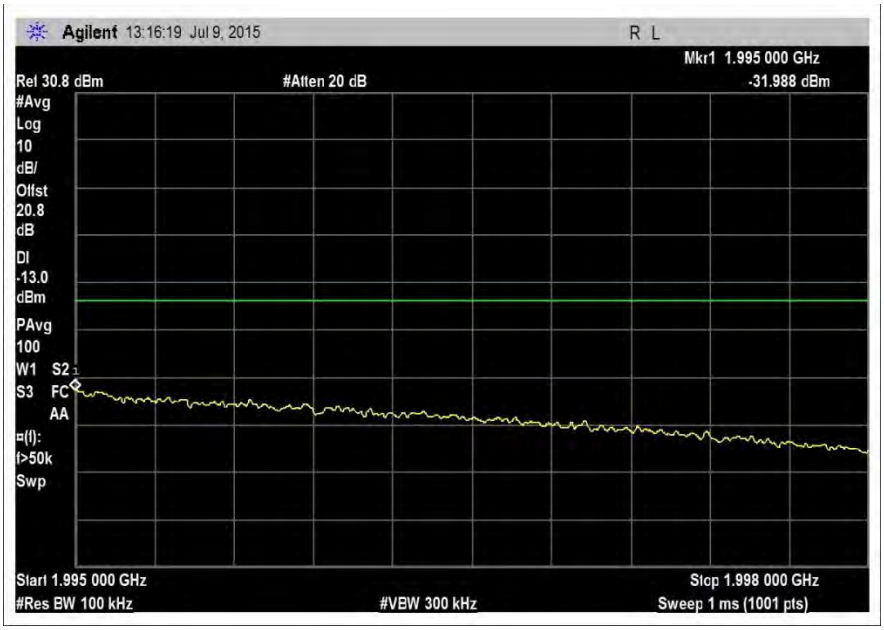


UL-1850-1915H-Cm-preAGC

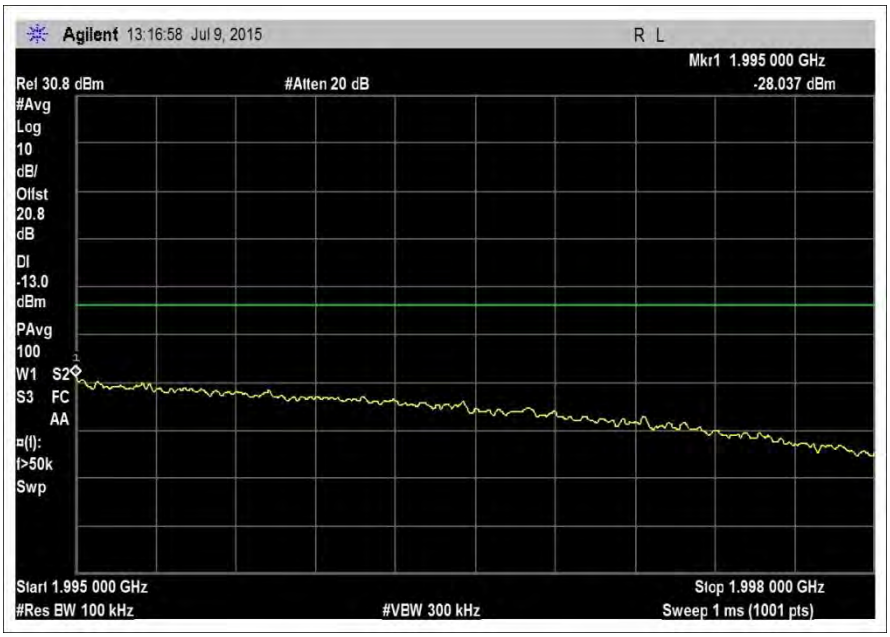


UL-1850-1915H-Cm-AGC+3

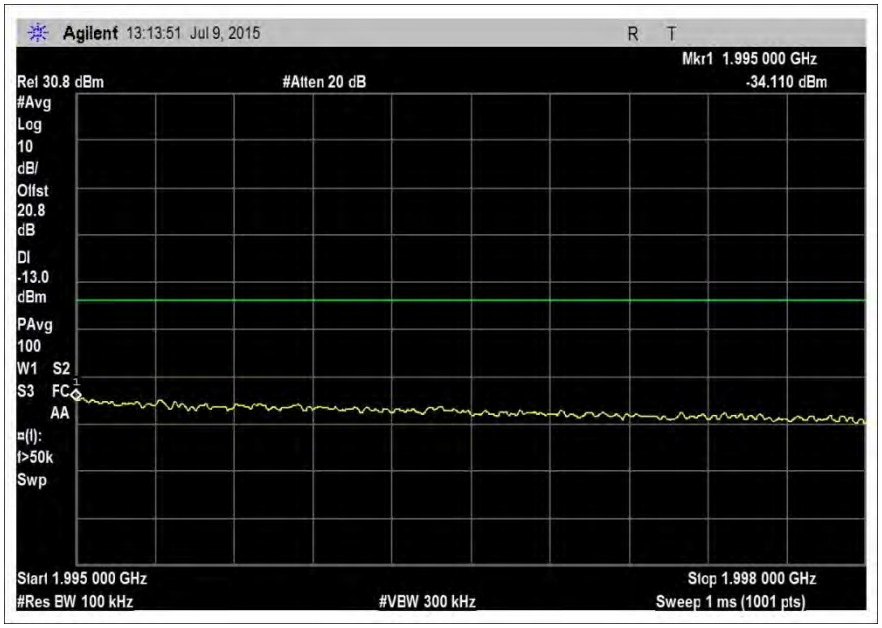
AWGN-DL



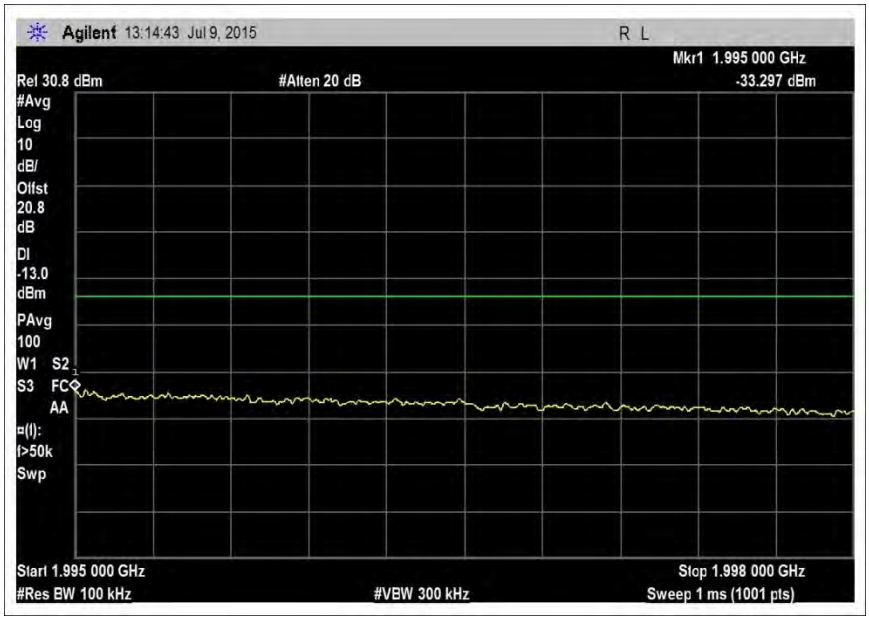
DL-1930-1995H-Sn-preAGC



DL-1930-1995H-Sn-AGC+3

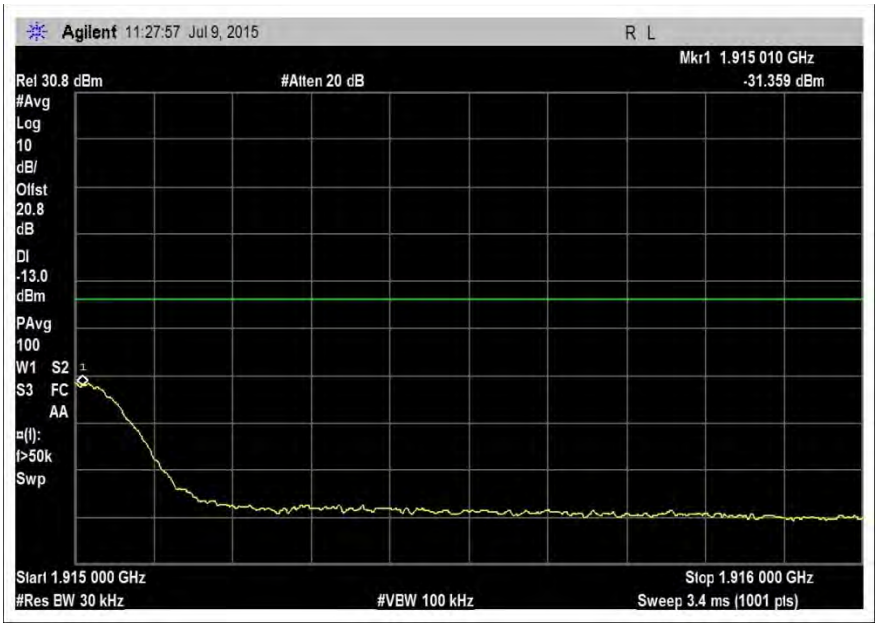


DL-1930-1995H-Cm-preAGC

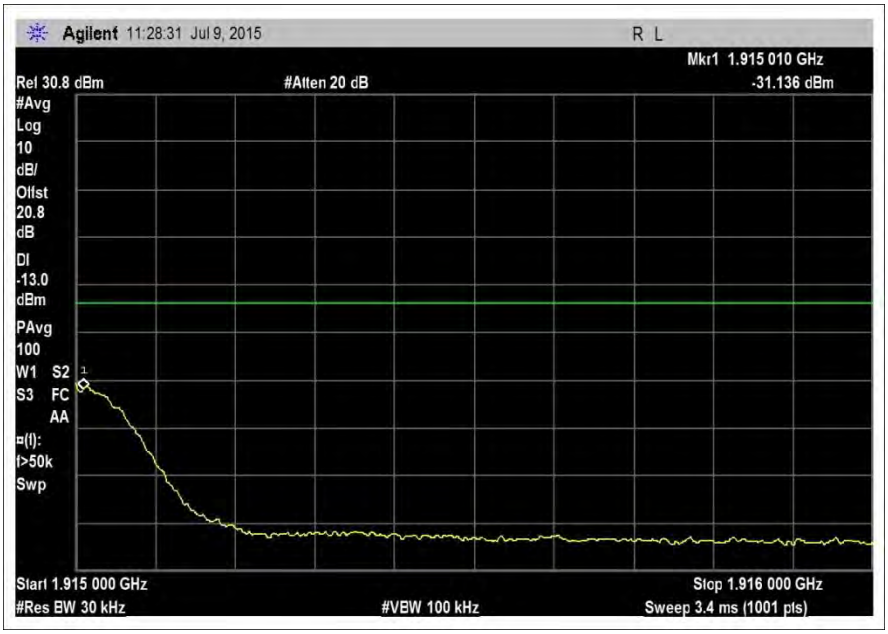


DL-1930-1995H-Cm-AGC+3

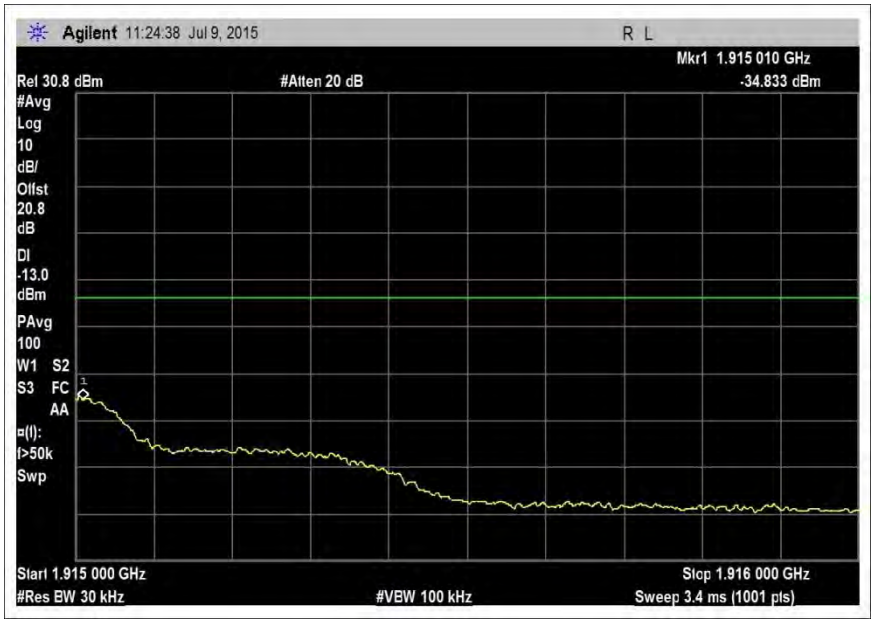
GSM-UL



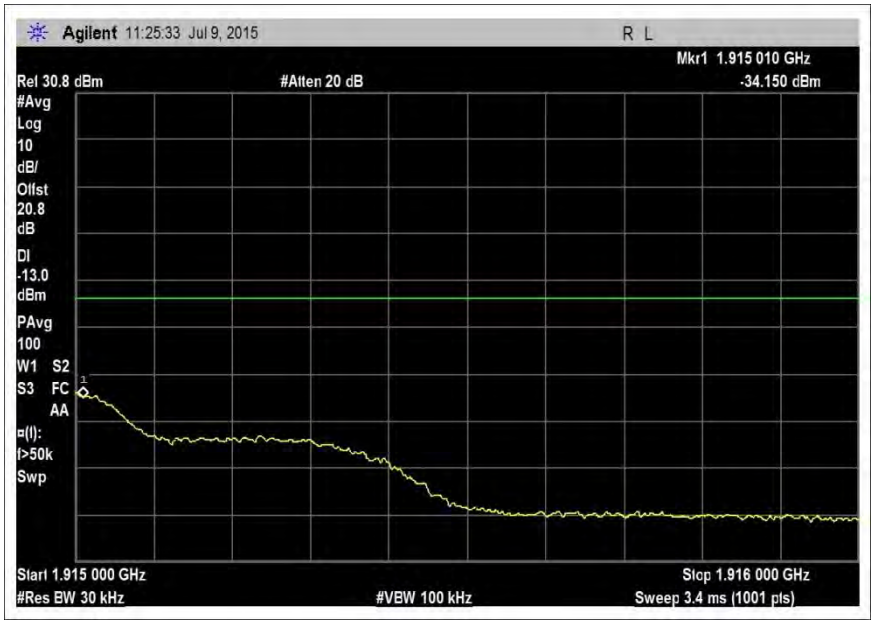
UL-1850-1915H-Sn-preAGC



UL-1850-1915H-Sn-AGC+3

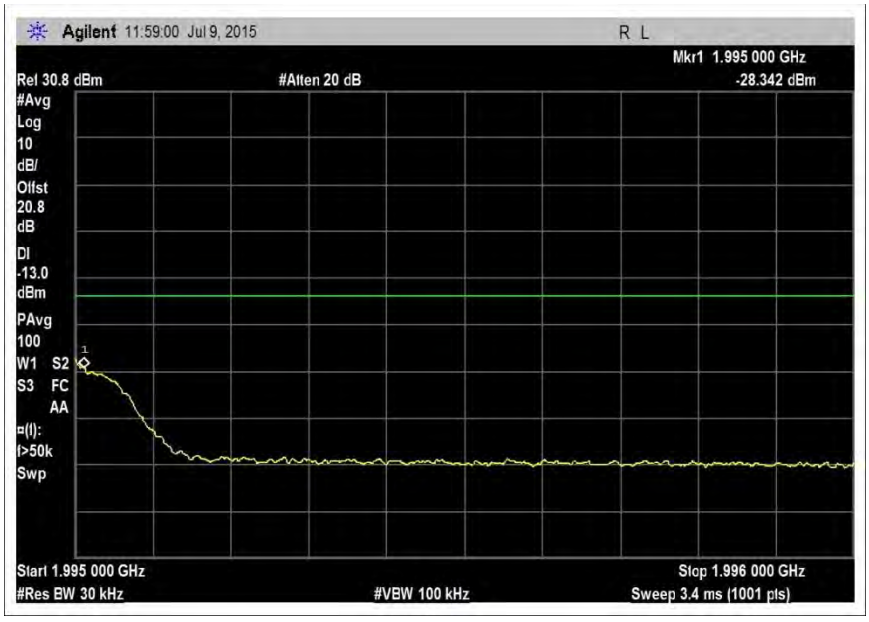


UL-1850-1915H-Cm-preAGC

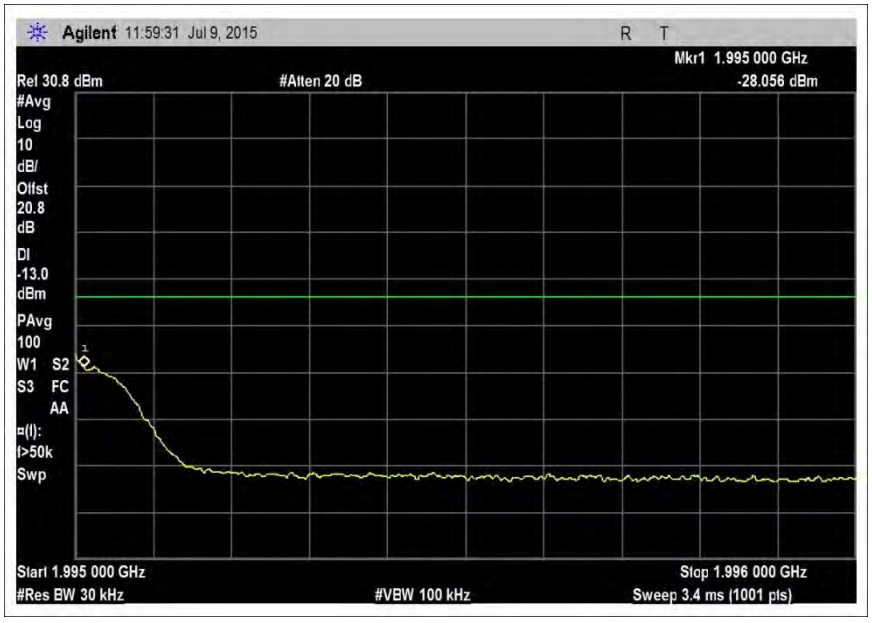


UL-1850-1915H-Cm-AGC+3

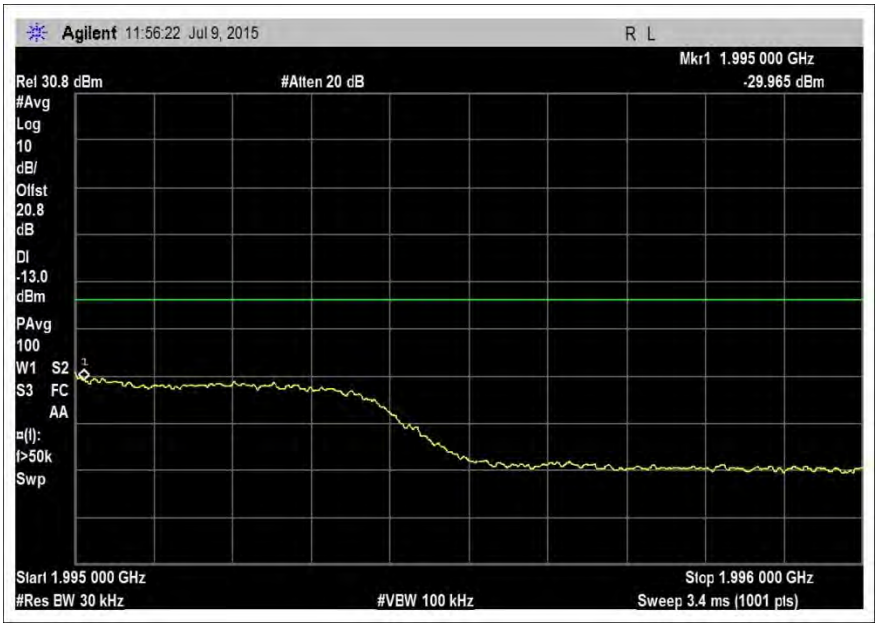
GSM-DL



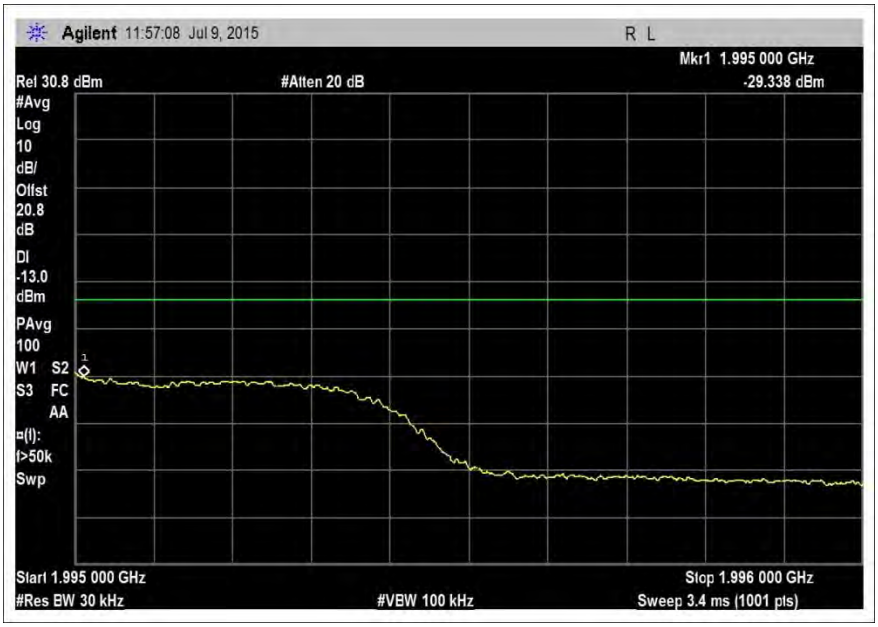
DL-1930-1995H-Sn-preAGC



DL-1930-1995H-Sn-AGC+3



DL-1930-1995H-Cm-preAGC



DL-1930-1995H-Cm-AGC+3

3.6.3 – Spurious Emissions Conducted Measurement

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc		
Specification:	**3.6.3 Spurious emissions conducted measurement**		
Work Order #:	**96950**	Date:	7/09/2015
Test Type:	**Conducted Power Measurement**	Time:	15:05:16
Tested By:	Daniel Bertran	Sequence#:	1
Software:	EMITest 5.02.00		

Equipment Tested:

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

Support Equipment:

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

Test Conditions / Notes:

Configuration 1
The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi Signal are combined at the diplexer and transmit via the indoor antenna.
The EUT is placed on the test bench. Evaluation is performed at the Outside and Inside antenna port.

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

UL: 1850-1915MHz
DL: 1930-1995MHz

All adjustable settings on the test sample are set at max.
Software: Force 7 V1.0
Firmware: V1.0
Application: MP_TEST MFC version 1.3.8.0

Test environment conditions: 21 Deg C, 40% relative humidity, 101.5kPa

Test procedure:
The test was performed IAW section 3.6.3 of the FCC document: D05 Industrial Booster Basic Measurements v01 935210 Dated June 05, 2015

Note:

Lower RBW was used as applicable per rule part to show compliance in instances where accuracy can be improved.
No emissions below 600MHz were found within 20dB of the limit.
Emissions between 1GHz and 4GHz are found below the limit, excluding the WiFi transmitting at Mid channel, 802.11b at maximum power (63dB attenuator option was selected on the remote application MP_TEST MFC version 1.3.8.0).
No emissions above 4GHz were found within 20dB of the limit.

Test Equipment

Asset #	Description	Model	Manufacturer	Cal Date	Cal Due
ANP06131	Attenuator	18N20W-20	Inmet	2/27/2014	2/27/2016
ANP05713	Attenuator	PE7015-20	Pasternack	3/24/2015	3/24/2017
ANP06709	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
ANP06710	Cable	32026-29094K-29094K-72TC	AstroLab	9/18/2014	9/18/2016
ANP06711	Cable	32022-29094K-29094K-132TC	AstroLab	11/21/2014	11/21/2016
AN03470	Spectrum Analyzer	E4440A	Agilent	12/2/2013	12/2/2015
AN02869	Spectrum Analyzer	E4440A	Agilent	7/10/2014	7/10/2015
C00087	Combiner	44000	Anaren	01/09/14	01/9/2016

3.6.3 – Spurious Emissions Conducted Measurement Summary of Results

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

30MHz-600MHz

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

600MHz-1000MHz

Operational Frequencies (MHz)	BB/NB Signal	Link	CH	Tunned Freq (MHz)	Freq Pk (MHz)	Amp Pk (dBm)	CSE Limit (dBm)	Margin (dB)
1850-1915	GSM	Uplink	L	1850.2	NA	NA	-13	>20dB
1850-1915	AWGN	Uplink	L	1852.5	NA	NA	-13	>20dB
1850-1915	AWGN	Uplink	M	1882.5	NA	NA	-13	>20dB
1850-1915	GSM	Uplink	M	1882.5	NA	NA	-13	>20dB
1850-1915	AWGN	Uplink	H	1912.5	NA	NA	-13	>20dB
1850-1915	GSM	Uplink	H	1914.8	NA	NA	-13	>20dB
1930-1995	GSM	Downlink	L	1930.2	NA	NA	-13	>20dB
1930-1995	AWGN	Downlink	L	1932.5	NA	NA	-13	>20dB
1930-1995	AWGN	Downlink	M	1962.5	NA	NA	-13	>20dB
1930-1995	GSM	Downlink	M	1962.5	NA	NA	-13	>20dB
1930-1995	AWGN	Downlink	H	1992.5	NA	NA	-13	>20dB
1930-1995	GSM	Downlink	H	1994.8	NA	NA	-13	>20dB

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

1000MHz-4000MHz

Operational Frequencies (MHz)	BB/NB Signal	Link	Channel	Tunned Freq (MHz)	Freq Pk (MHz)	Amp Pk (dBm)	CSE Limit (dBm)	Margin (dB)
1850-1915	GSM	Uplink	L	1850.2	NA	NA	-13	>20dB
1850-1915	AWGN	Uplink	L	1852.5	NA	NA	-13	>20dB
1850-1915	AWGN	Uplink	M	1882.5	NA	NA	-13	>20dB
1850-1915	GSM	Uplink	M	1882.5	NA	NA	-13	>20dB
1850-1915	AWGN	Uplink	H	1912.5	NA	NA	-13	>20dB
1850-1915	GSM	Uplink	H	1914.8	NA	NA	-13	>20dB
1930-1995	GSM	Downlink	L	1930.2	2140.64	-29.958	-13	16.96
1930-1995	AWGN	Downlink	L	1932.5	2140.64	-28.838	-13	15.84
1930-1995	AWGN	Downlink	M	1962.5	2140.64	-28.244	-13	15.24
1930-1995	GSM	Downlink	M	1962.5	2140.64	-29.754	-13	16.75
1930-1995	AWGN	Downlink	H	1992.5	1996.00	-25.761	-13	12.76
1930-1995	GSM	Downlink	H	1994.8	2141.57	-29.823	-13	16.82

4000MHz-25000MHz

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

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

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

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

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

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

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

$$\text{Attenuation} = 43 + 10 \text{ Log } P$$

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

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

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

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

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

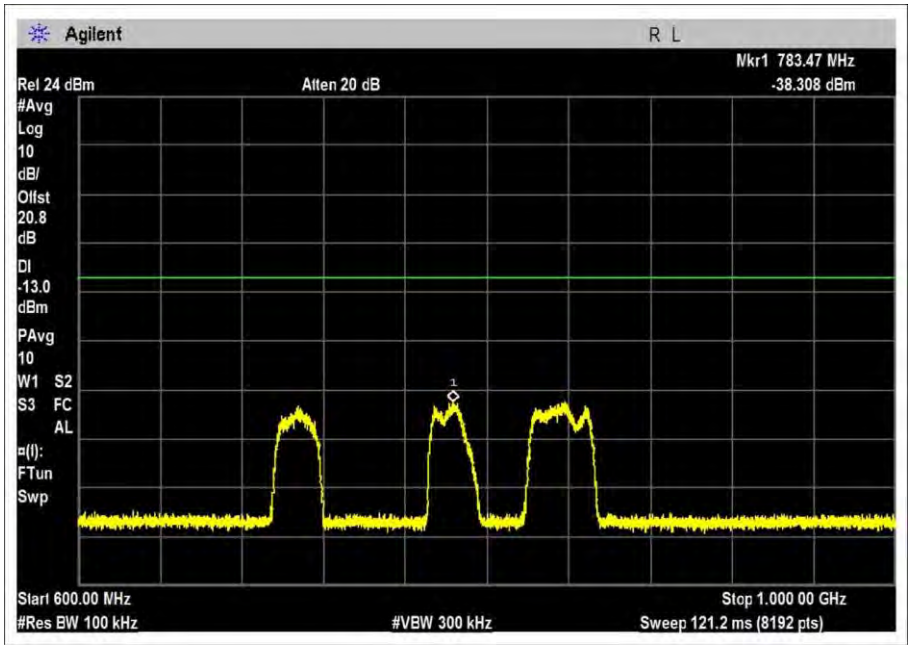
= 120 – 43 + 10 Log 50 Note: R = 50 Ω

= 120 –43 + 16.897

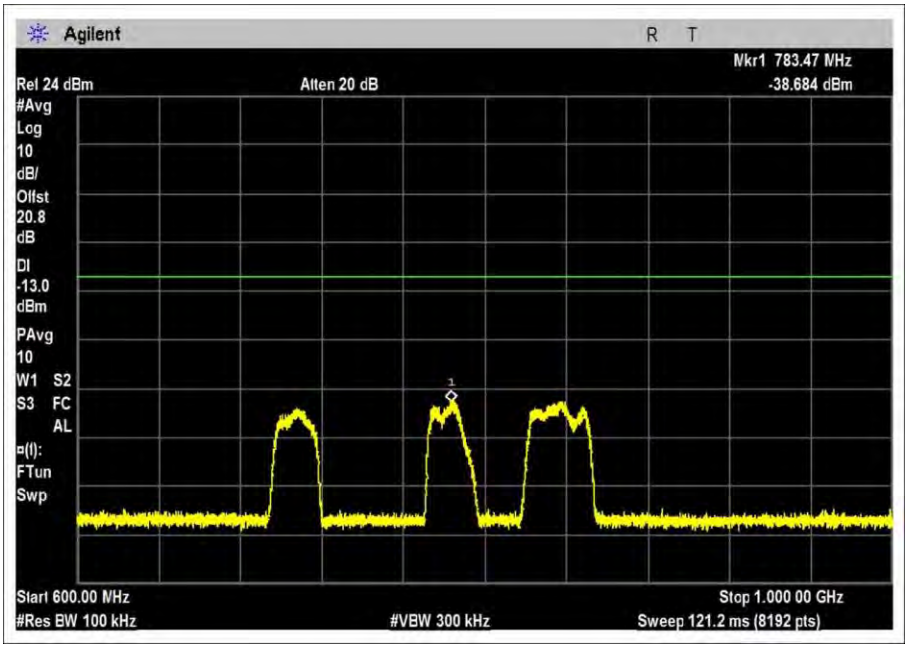
= 94 dBuV (-13dBm) at any power level

Test Data

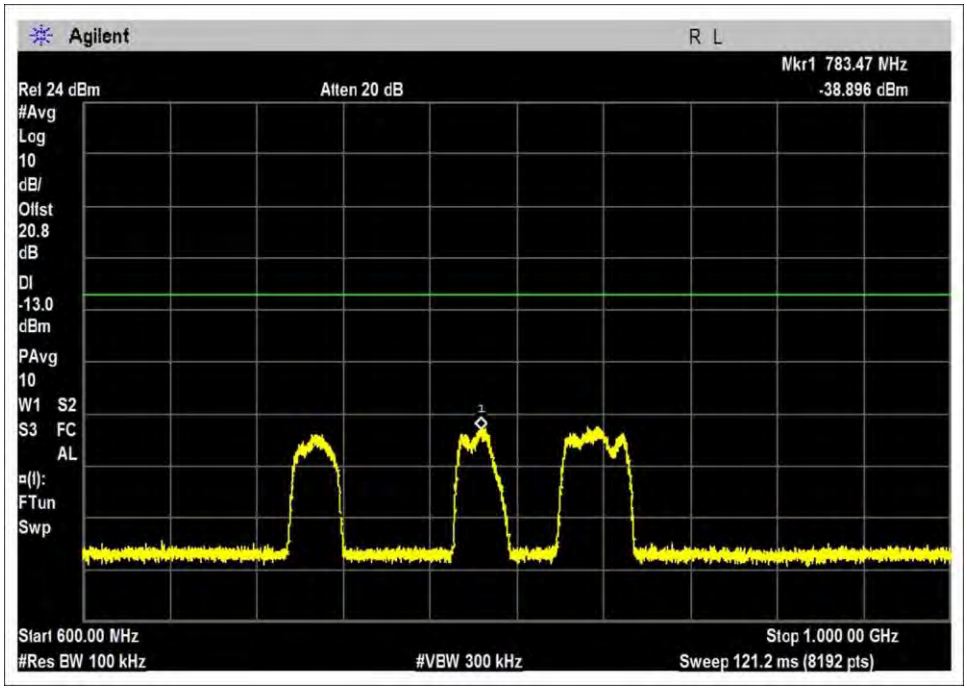
AWGN-UL / 600MHz-1GHz



UL-1850-1915-AWGN-L

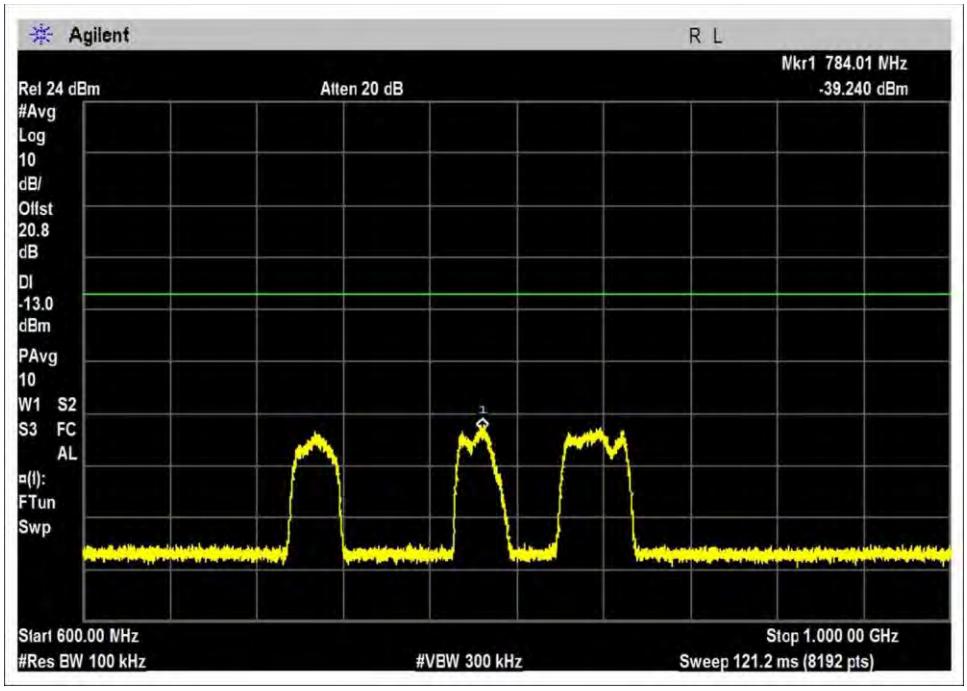


UL-1850-1915-AWGN-M

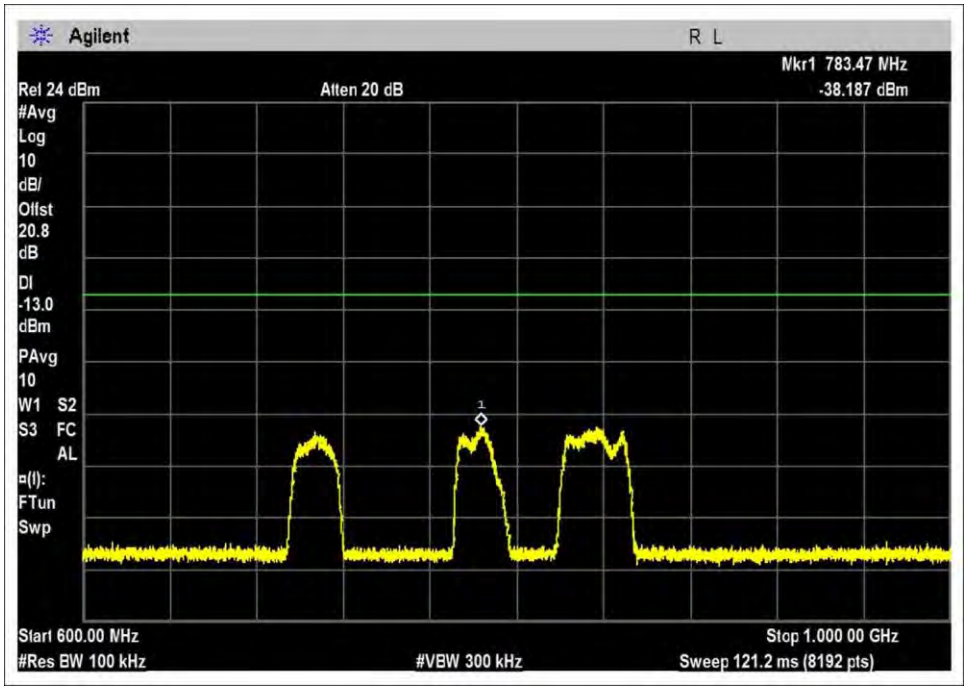


UL-1850-1915-AWGN-H

GSM-UL / 600MHz-1GHz



UL-1850-1915-GSM-L



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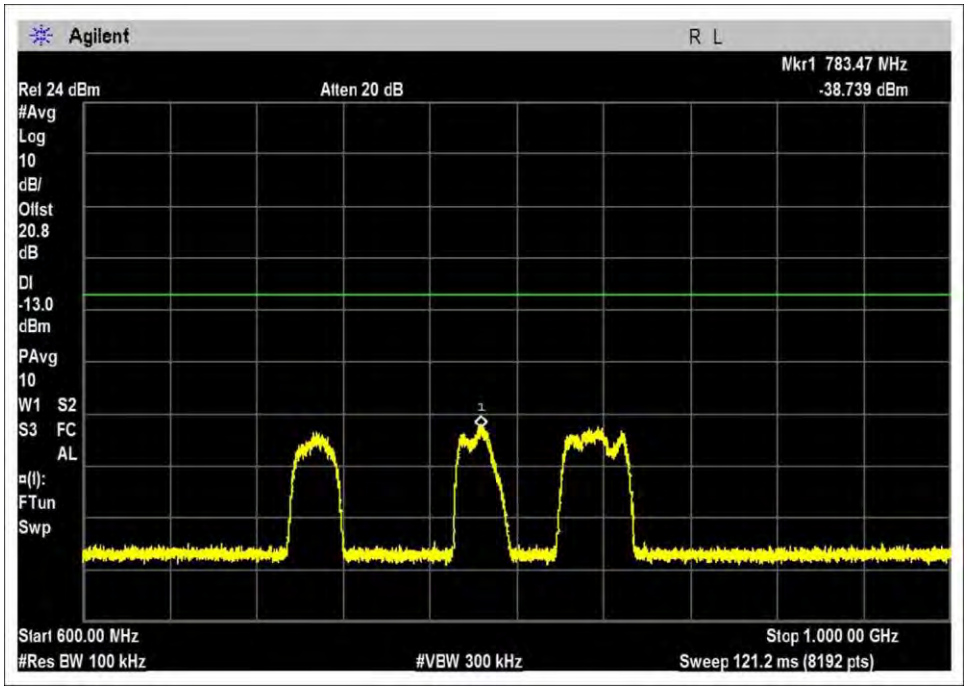
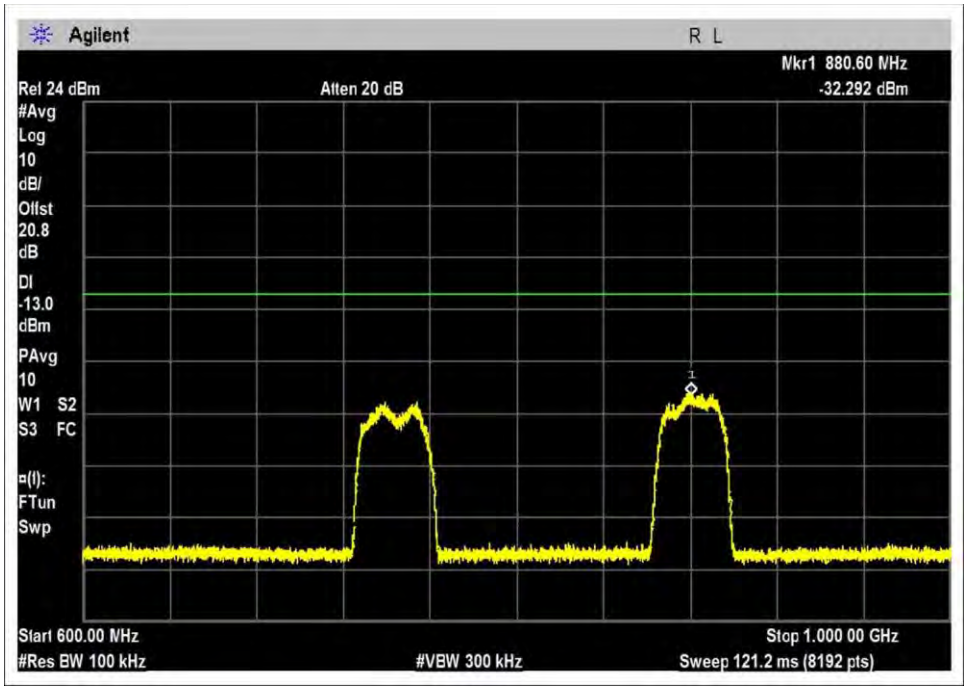


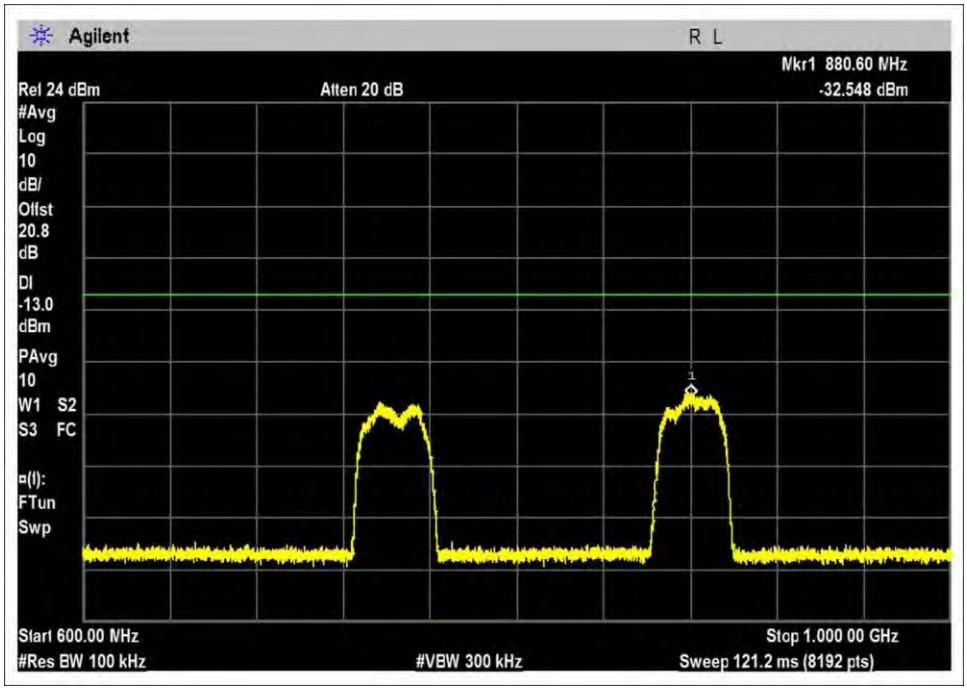
UL-1850-1915-GSM-H

AWGN-DL / 600MHz-1GHz



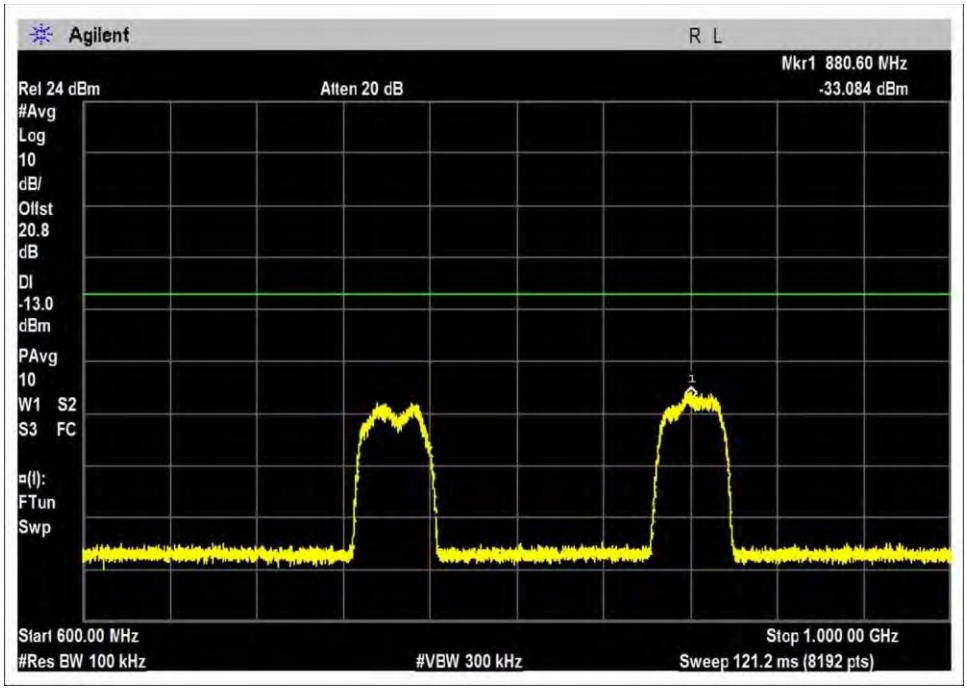
DL-1930-1995-AWGN-L

DL-1930-1995-AWGN-M

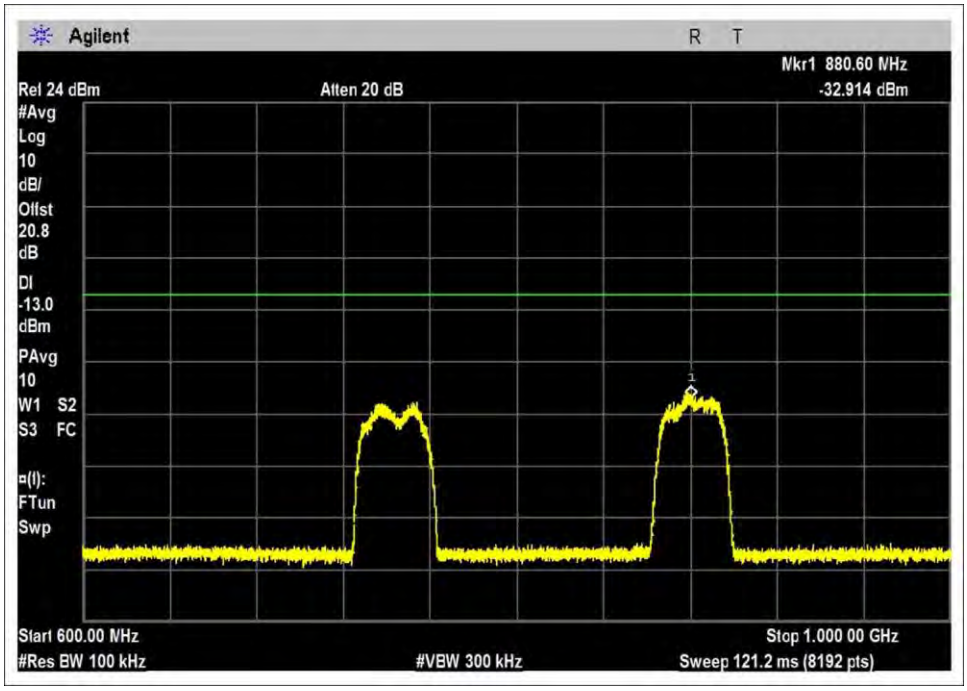


DL-1930-1995-AWGN-H

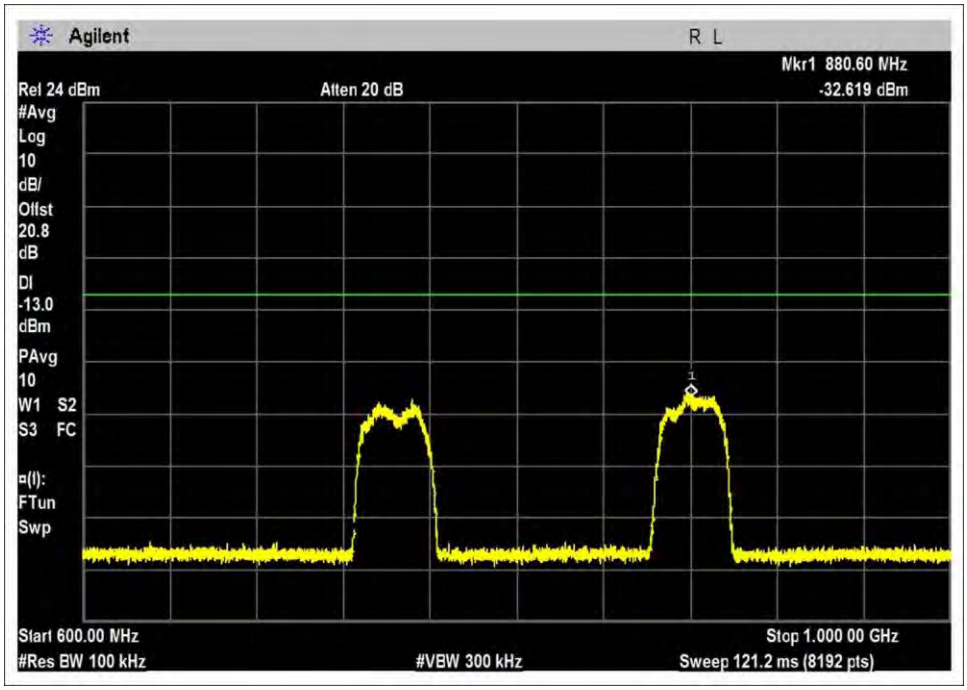
GSM-DL / 600MHz-1GHz



DL-1930-1995-GSM-L

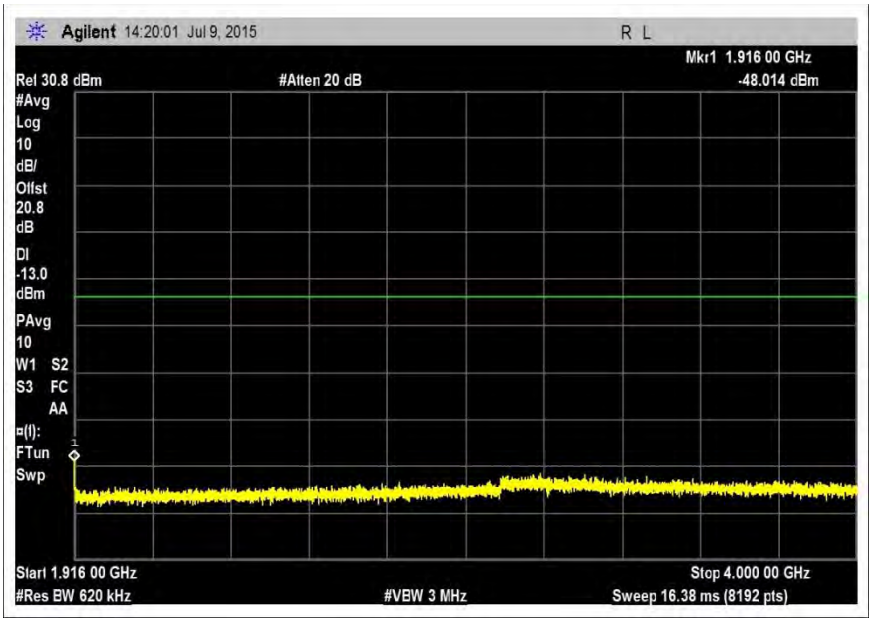


DL-1930-1995-GSM-M

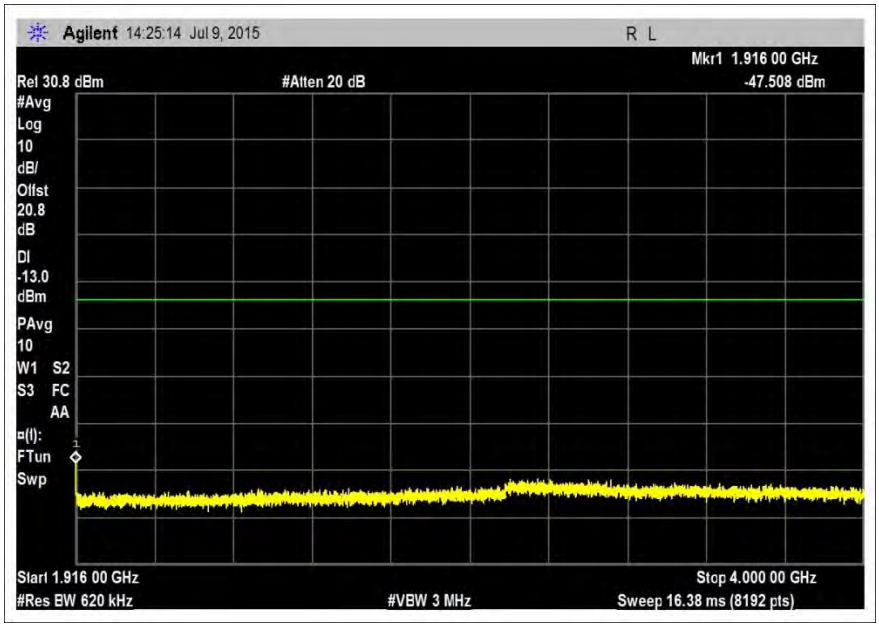


DL-1930-1995-GSM-H

AWGN-UL / 1-4GHz



UL-1850-1915R-AWGN-L



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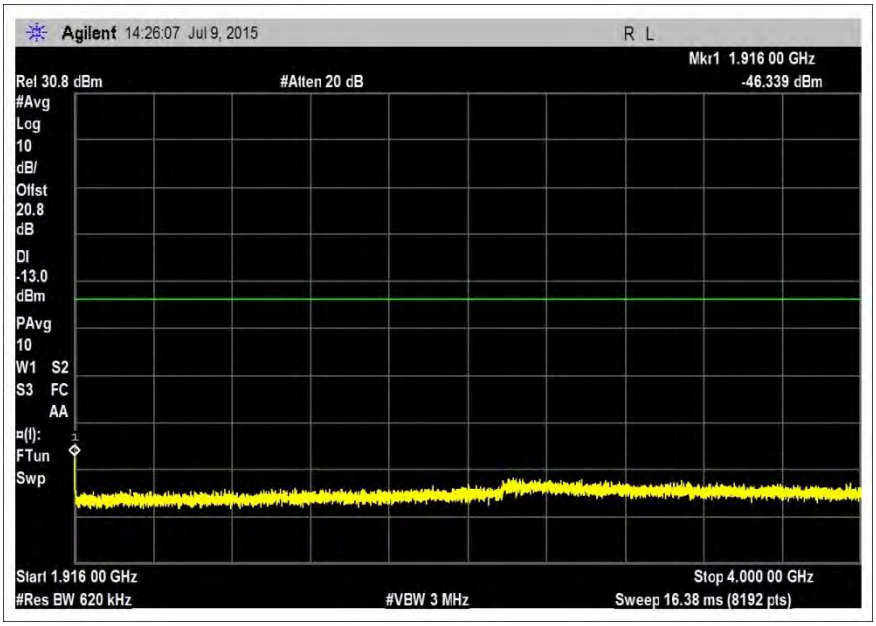
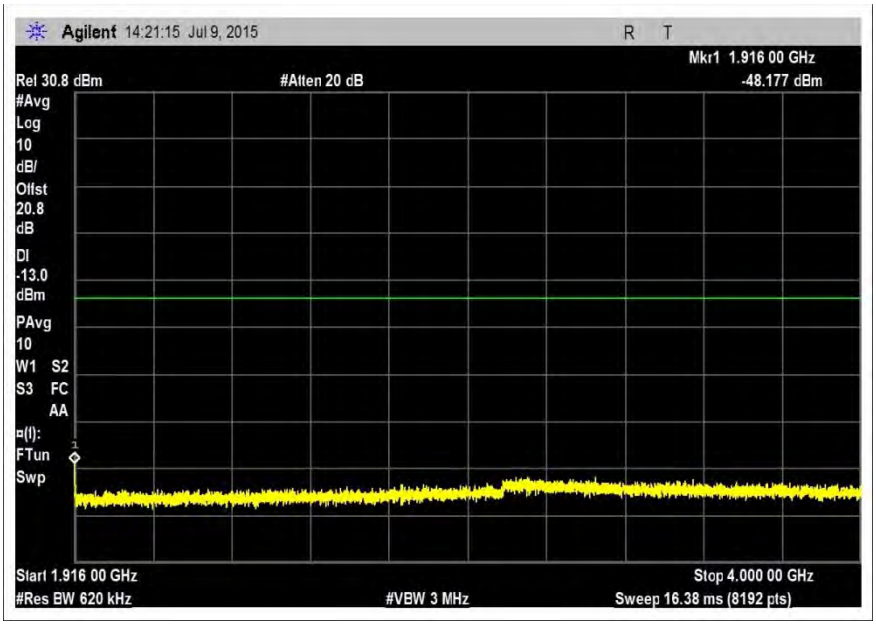


UL-1850-1915R-AWGN-H

GSM-UL / 1-4GHz



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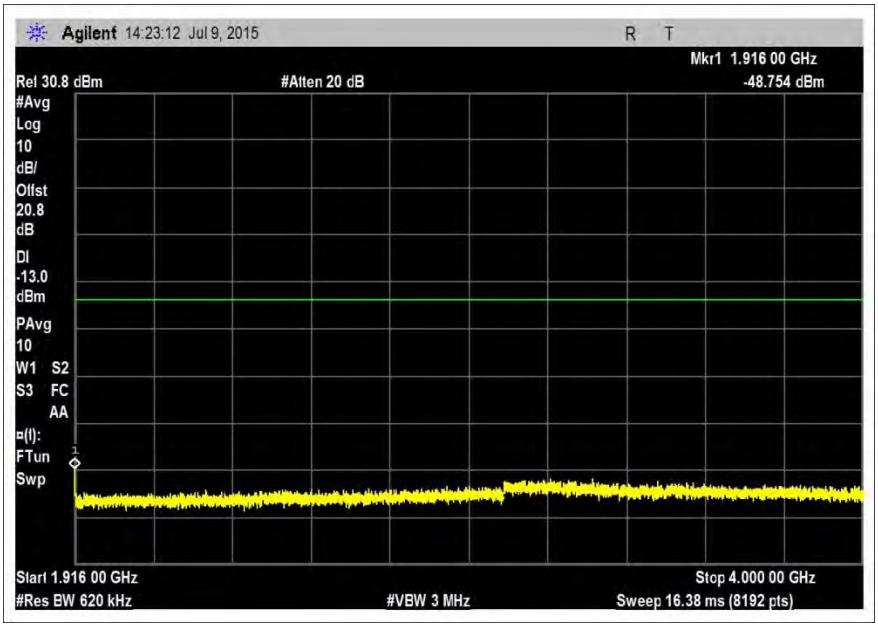

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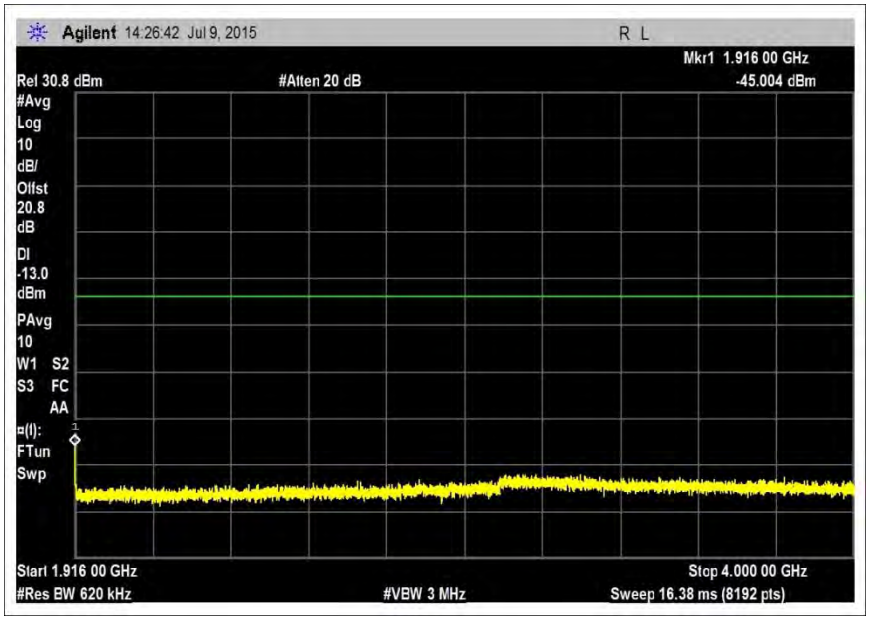
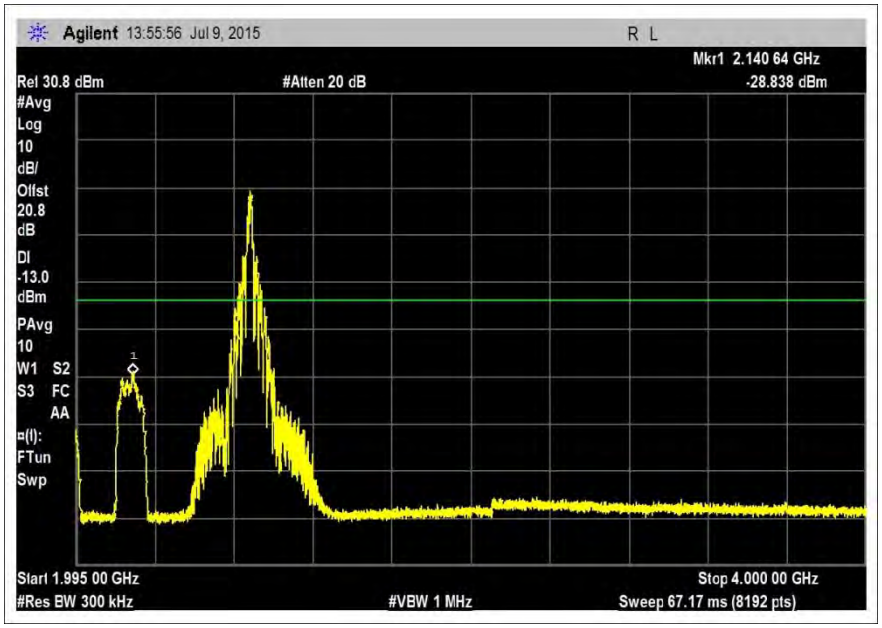
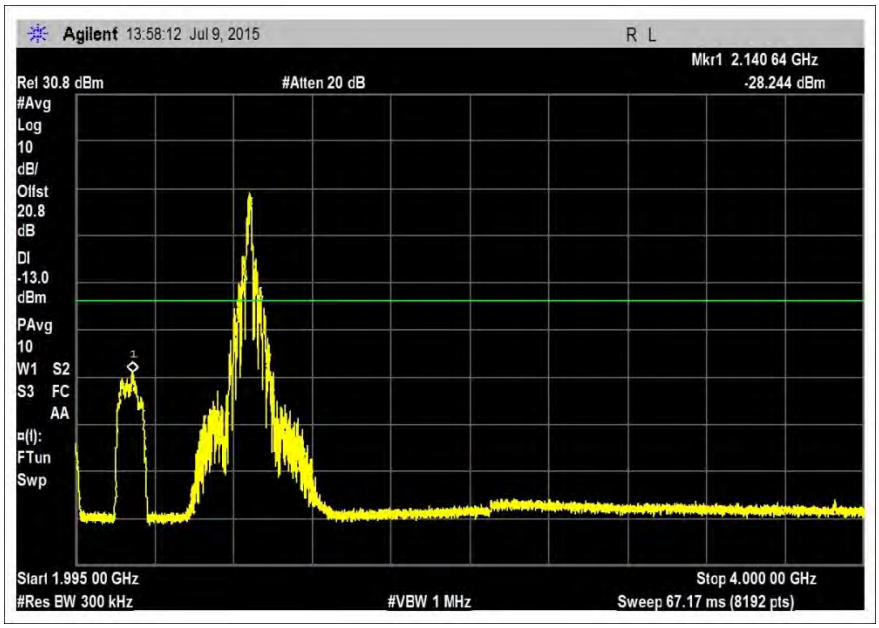


UL-1850-1915R-GSM-H

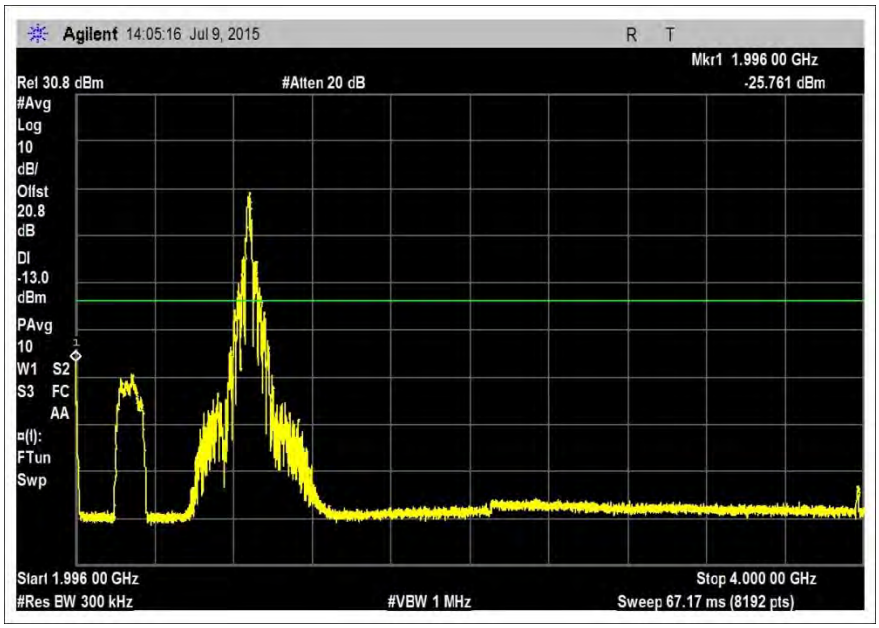
AWGN-DL / 1-4GHz



DL-1930-1995R-AWGN-L

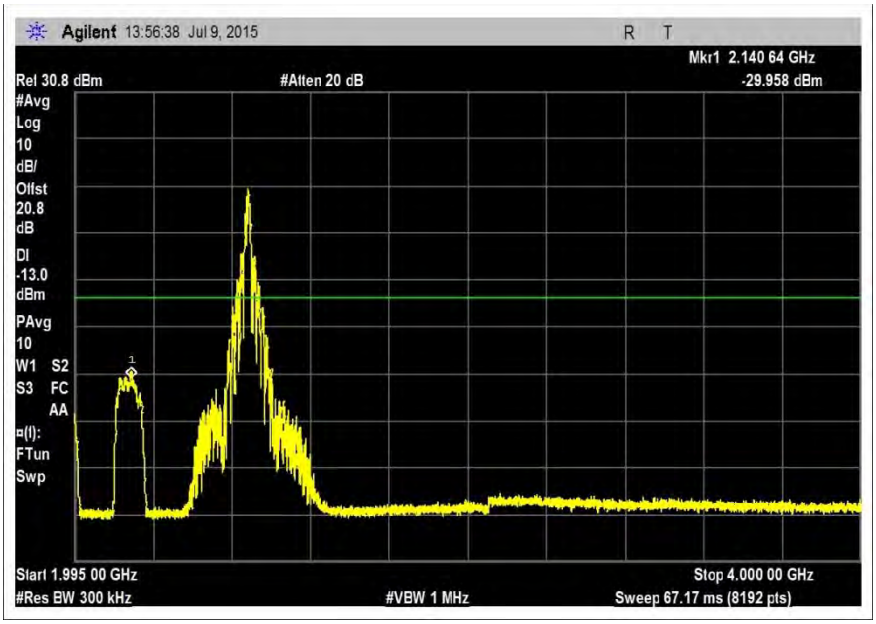


DL-1930-1995R-AWGN-M



DL-1930-1995R-AWGN-H

GSM-DL / 1-4GHz



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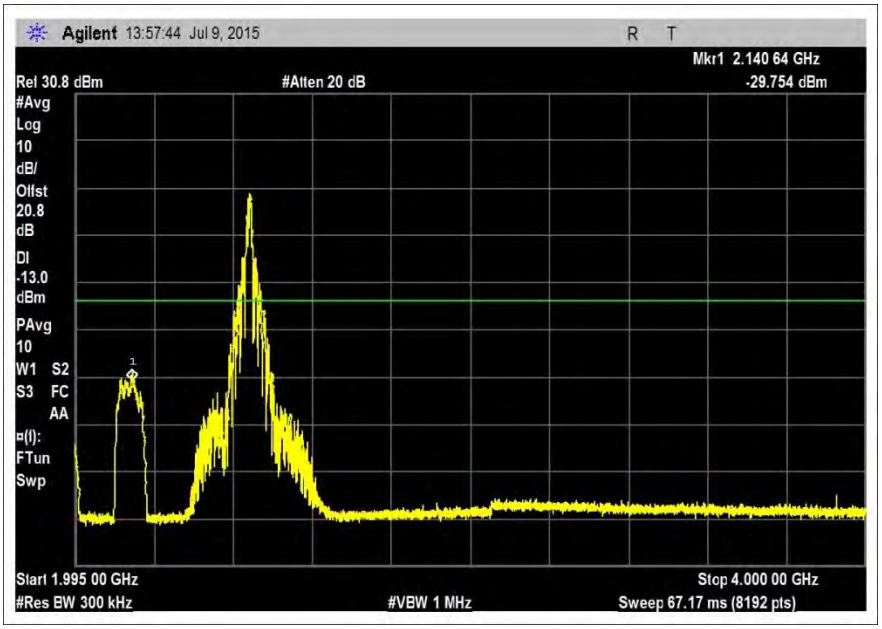

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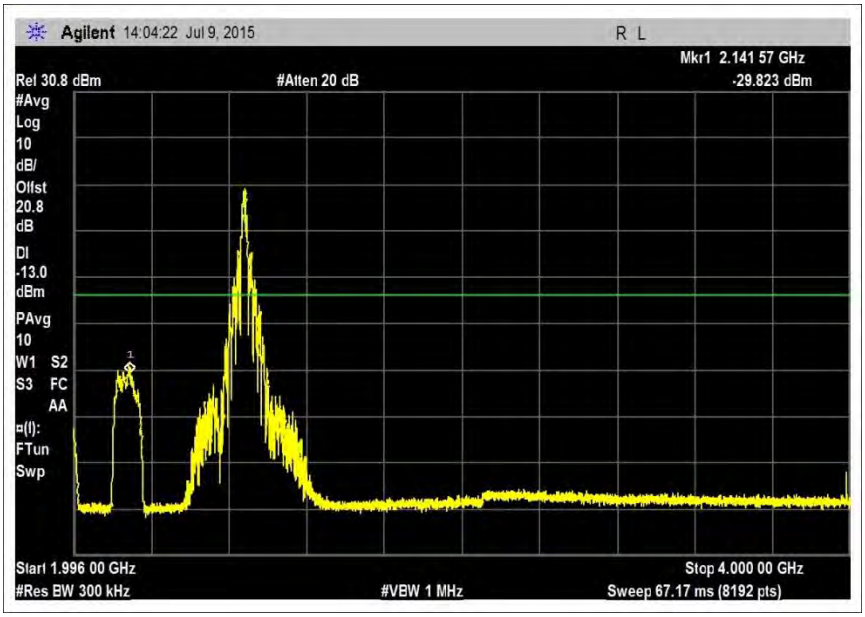


DL-1930-1995R-GSM-H

3.7 – Frequency Stability Measurements

Note: Not Applicable because the EUT does not process an input signal in a manner that can influence the output signal frequency/frequencies.

3.8 – Spurious Emissions Radiated Measurements

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170		
Customer:	Cellphone-Mate, Inc.		
Specification:	**47 CFR §24.238 Spurious Emissions**		
Work Order #:	**96950**	Date:	6/16/2015
Test Type:	**Maximized Emissions**	Time:	6:07:13 PM
Tested By:	Daniel Bertran	Sequence#:	62
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 3			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 3			

Test Conditions / Notes:

Configuration 3
The equipment under test (EUT) is a single enclosure CMRS Industrial booster with a Wifi Router and TV amplifier installed. The CMRS DL signal and the Wifi signal are combined at the diplexer and are transmitted via the indoor antenna in normal operation.

During testing, the (EUT) is placed on the Styrofoam table top.
A remotely located signal generator is connected to input port of EUT.
A second remotely located signal generator is connected to HDTV port of EUT with a 6MHz AWGN signal. And both HDTV output ports are terminated with a 75 ohm.

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

Evaluation of DL path was performed with signal fed into the Outside antenna port while Inside antenna port terminated with 50 Ohm load.
Evaluation of UL path was performed with signal fed into the Inside antenna port while Outside antenna port terminated with 50 Ohm load.

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

Frequency range of measurement = 9 kHz- 25GHz.

9 kHz	- 150 kHz ->	RBW=200 Hz	VBW=200 Hz
150 kHz	- 30 MHz ->	RBW=9 kHz	VBW=9 kHz
30 MHz	- 1000MHz ->	RBW=120 kHz	VBW=120 kHz
1000 MHz-25000MHz ->		RBW=1 MHz	VBW=1 MHz

All adjustable settings on the test sample are set at max.
Software: Force 7 V1.0
Firmware: V1.0
Application: MP_TEST MFC version 1.3.8.0

Test environment conditions: Temperature: 22°C, Relative Humidity: 50%, Atmospheric Pressure: 100.5kPa

Test procedure:
The test was performed in accordance with section 3.8 of the FCC document: D05 Industrial Booster Basic Measurements v01 935210 Dated June 05, 2015.

Note:
No emissions below 30MHz were found within 20dB of the limit line.
No emissions above 30MHz were found within 20dB of the limit line excluding emissions generated by the WiFi part which are evaluated on test report 96950-13.

Test Equipment

Asset #	Description	Model	Manufacturer	Cal Date	Cal Due
AN02157	Horn Antenna-ANSI C63.5 Calibration	3115	EMCO	12/02/2014	12/02/2016
ANP06712	Cable	32022-29094K-29094K-48TC	AstroLab	09/18/2014	09/18/2016
AN03114	Preamp	AMF-7D-00101800-30-10P	Miteq	04/22/2015	04/22/2017
ANP06126	Cable	32022-29094K-29094K-168TC	Astrolab	03/18/2015	03/18/2017
AN03302	Cable	32026-29094K-29094K-72TC	Astrolab	03/24/2014	03/24/2016
AN03471	RF Characteristics Analyzer	E4440A	Agilent	12/19/2013	12/19/2015
ANP00880	Cable	RG214U	Pasternack	06/13/2014	06/13/2016
ANP06691	Cable	PE3062-180	Pasternack	08/08/2014	08/08/2016
ANP01183	Cable	CNT-195	Andrews	09/03/2013	09/03/2015
AN00686	Preamp	8447D Opt 010	HP	05/27/2014	05/27/2016
AN00852	Biconilog Antenna	CBL 6111C	Schaffner	11/24/2014	11/24/2016
ANP00928	Cable	various	various	01/23/2014	01/23/2016
ANP00929	Cable	various	various	01/23/2014	01/23/2016
AN00432	Loop Antenna	6502	EMCO	05/08/2015	05/08/2017

3.8 – Spurious Emissions Radiated Measurements Summary of Results

Pass: No data provided since all emissions were found more than 20dB below the limit.

Test Data

Limit line for Spurious Radiated Emission

Required Attenuation = 43+10 Log P (dB)

For radiated spurious emission measured at 3 meter test distance,

Required attenuation = 43+10 Log $P_{t\ at\ 3\ meter}$ dB
Limit line (dBuV) = E_{dBuv} - Attenuation

E_{dBuv} = Measured field strength at 3 meter in dBuV/m

Power Density (Isotropic)

$$P_D = \frac{P_t}{4\pi r^2}$$

P_D = Power Density in Watts /m^2
Pt = Average Transmit Power
r = Test distance

Field Intensity E (V/m)

$$E = \sqrt{P_D \times 377}$$

$$E = \frac{\sqrt{P_t \times 377}}{4\pi r^2}$$

$$E = \sqrt{\frac{P_t \times 30}{r^2}}$$

$$P_t = \left(\frac{E^2 \text{ x } r^2}{30} \right)$$

10 Log P_t = 10 Log E^2 (V/m)+ 10 Log r^2 – 10 Log 30

10 Log P_t = 20 Log E (V/m) + 20 Log r – 10 Log 30

At 3 meter, r = 3 m

10 Log P_t = 20 Log E (V/m) + 20 Log 3 – 10 Log 30

10 Log P_t = 20 Log E (V/m) + 9.54 – 14.77

10 Log P_t = 20 Log E (V/m) - 5.23

*Since 20 Log E (V/m) = 20 Log E (**u**V/m) –120*

10 Log P_t = 20 Log E (uV/m) - 120 - 5.23

10 Log P_t = 20 Log E (uV/m) –125.23

Limit line (dBuV) at 3 meter = E_{dBuv} – Attenuation

= E_{dBuv} - (43+10 Log $P_{t \text{ at 3 meter}}$)

= E_{dBuv} - 43 - 10 Log $P_{t \text{ at 3 meter}}$

= E_{dBuv} - 43 – (20 Log E (uV/m) –125.23)

= E_{dBuv} - 43 - 20 Log E (uV/m) + 125.23

= E_{dBuv} - 20 Log E (uV/m) + 82.23

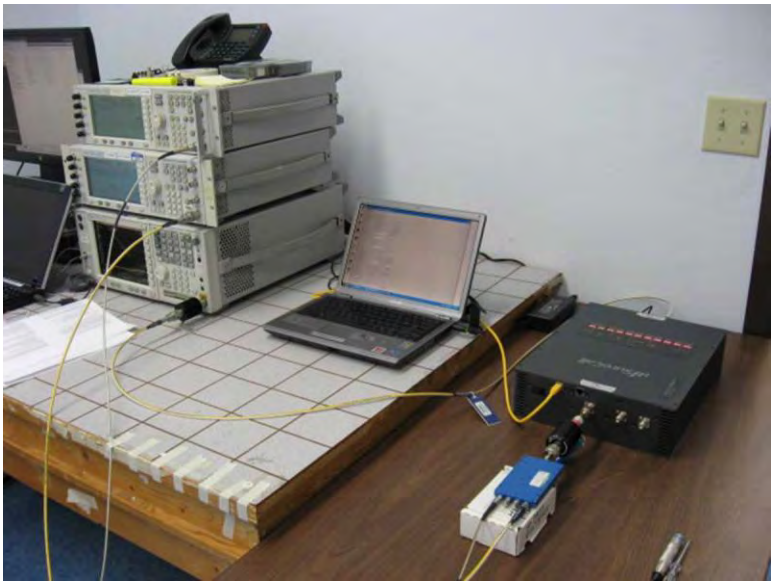
Since 20 Log E (uV/m) = E in dBuV/m

= ~~E_{dBuv}~~ - ~~E_{dBuv}~~ + 82.23

Radiated Emission limit 3 meter = 82.23 dBuV at any power level measured in dBuV

EXHIBIT A: TEST SETUP PHOTOS

Sections 3.3, 3.4, & 3.5



Sections 3.6.2 & 3.6.3

Section 3.8

Section 3.8