Nextivity, Inc.

ADDENDUM TO TEST REPORT 95395-16

Provider Specific Consumer Signal Booster
Model: Cel-Fi D32-2/4

Tested To The Following Standards:

FCC Part 20.21

Report No.: 95395-16A

Date of issue: July 9, 2014

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.

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Nextivity, Inc.
12230 World Trade Dr
San Diego, CA 92128

REPRESENTATIVE: Michiel Lotter
Customer Reference Number: 001889

REPORT PREPARED BY:

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

Project Number: 95395

DATE OF EQUIPMENT RECEIPT: March 10, 2014
DATE(S) OF TESTING: March 10 - April 10, 2014

Revision History

Original: Testing of the Provider Specific Consumer Signal Booster, Cel-Fi D32-2/4 to FCC Part 20.21.
Addendum A: To correct the KDB and Wideband Consumer Signal Booster Measurement Guidance title in the Standard and Specification table. To correct the Noise Limit references in the Standard and Specification table. To correct the Noise Limit frequency tables UL 1850-1915MHz and UL 1710-1755MHz by removing the 20.21e.9.A.2.i column which applies to downlink noise power and shouldn't be in the uplink table.

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.
110 Olinda Place
Brea, CA 92823

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Brea A	US0060	SL2-IN-E-1146R	3082D-1	90473	A-0147

SUMMARY OF RESULTS

Standard / Specification: FCC Part 20.21

KDB publication 935210 D04 Provider-Specific Booster Measurements DR06-41704		FCC Part 20.21 Section Correlation		Results
Guidance Sec #	**Guidance Description**	**FCC Sec #**	**FCC Rule Description**	
7.1	Authorized Frequency Band Verification and authorized CMRS Provider	20.21(a)(4) and 20.21(e)(3)	Self-Monitoring Frequency Bands	Pass
7.2	Maximum Power Measurement	20.21(e)(9)(i)(B) and 20.21(e)(9)(i)(D)	Bidirectional Capabilities Power Limit	Pass
7.3	Maximum Booster Gain Computation	20.21(e)(9)(i)(B) and 20.21(e)(9)(i)((C)(1)	Bidirectional Capabilities	Pass
7.4	Intermodulation Product	20.21(e)(9)(i)(G)	Intermodulation Limit	Pass
7.5	Out of Band Emissions	20.21(e)(9)(i)(F)	Out of Band Emission	Pass
7.6[1]	Conducted Spurious Emission[1]	Part 22/24/27[1]	Conducted Spurious Emission[1]	NA[1]
7.7a) to g) 7.7h) to m) 7.7n) to t)	Noise Limit procedure Variable Noise Variable Noise Timing	20.21(e)(9)(i)(A) 20.21(e)(9)(i)(I)	Noise Limits Transmit power off Mode	Pass
7.8.	Uplink inactivity	20.21(e)(9)(i)(J)	Uplink inactivity	Pass
7.9a) to l) 7.9m) to s)	Variable Booster gain Variable Uplink Gain Timing	20.21(e)(8)(i)(C) (1),(2) 20.21(e)(8)(i)(H)	Booster Gain Transmit Power Off Mode	Pass
7.10	Occupied Band Width	2.1049 Part 22/24/27[1]	Occupied Bandwidth[1]	NA[1]
7.11	Oscillation Detection	20.21(e)(8)(ii)(A)	Anti-oscillation	Pass
7.12	Radiated Spurious Emission[1]	Part 22/24/27[1]	Radiated Spurious Emission[1]	NA[1]
7.13	Spectrum Block Filter	20.21(e)(9)(i)(B)	Spectrum block filtering	NA[2]
7.14	Out of Band Gain Limits	20.21(e)(9)(i)(E)	Out of Band Gain Limits	Pass
7.15	Frequency Stability[1]	2.1055 / 22/24/27[1]	Frequency Stability	NA[1]

NA[1] = A different standard applies; see applicable test report.
NA[2] = Not applicable. See the section in the report for the reason.

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

Provider Specific Consumer Signal Booster
Manuf: Nextivity, Inc.
Model: Cel-Fi D32-2/4 CU
Serial: 175406000036

Provider Specific Consumer Signal Booster
Manuf: Nextivity, Inc.
Model: Cel-Fi D32-2/4 NU
Serial: 174406000145

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Signal Generator
Manuf: Anritsu
Model: MT8820A
Serial: 620025036

Signal Generator
Manuf: Agilent
Model: E4438C
Serial: MY42082260

Power Supply
Manuf: Hon-Kwang
Model: HK-AX-120A150-US
Serial: None

Signal Generator
Manuf: Agilent
Model: E4433B
Serial: US40052164

Combiner
Manuf: Anaren
Model: 44000
Serial: C00087

FCC PART 20.21

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) CFR 47 Clause 20.21.(e)(8) requirements for Wideband Consumer Signal Boosters.

Clause 7.1.1 Authorized Frequency Band Verification / 7.1.2 Authorized CMRS Provider

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer:	**Nextivity, Inc.**		
Specification:	**7.1.1 Authorized Frequency Band Verification**		
Work Order #:	**95395**	Date:	3/12/2014
Test Type:	**Conducted Emissions**	Time:	09:37:42
Equipment:	**Provider Specific Consumer Signal Booster**	Sequence#:	1
Manufacturer:	Nextivity, Inc.	Tested By:	E. Wong
Model:	Cel-Fi D32-2/4		110V 60Hz
S/N:	175406000036, 174406000145		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Anritsu	MT8820A	6200250367
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.

Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.

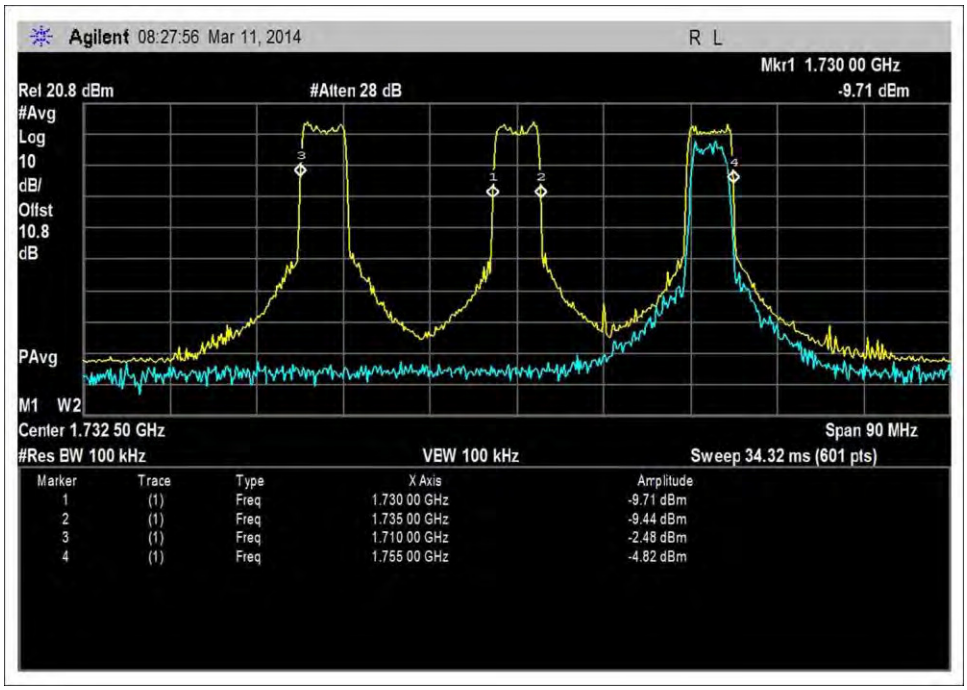
Summary of Results

Summary:
Pass, the following plots demonstrate compliance to the following requirement

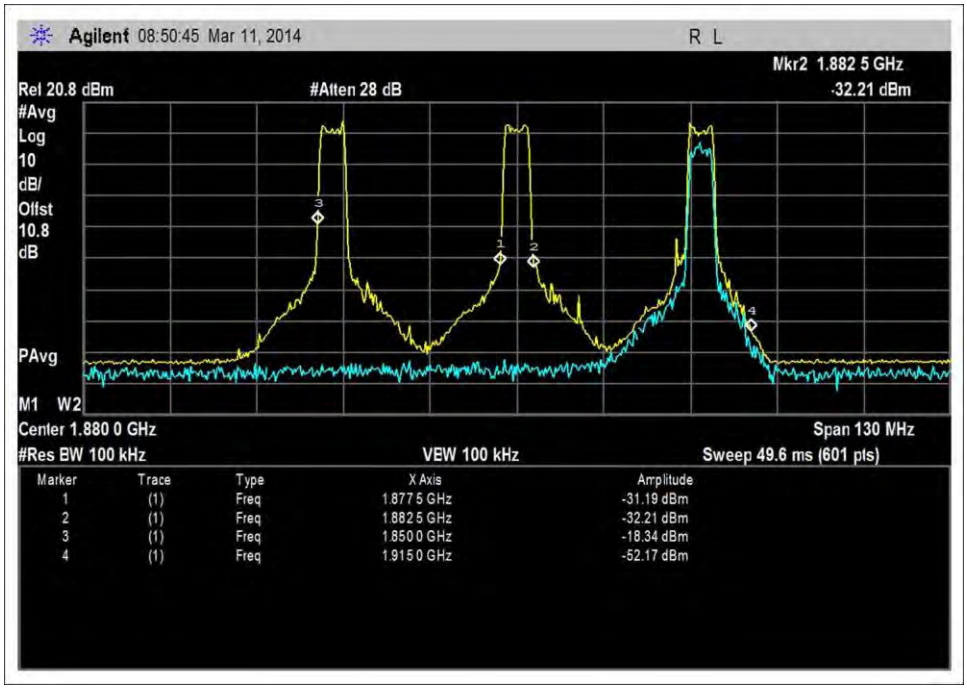
Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.1	Authorized Frequency Band Verification and authorized CMRS Provider	20.21(a)(4) and 20.21(e)(3)	Self-Monitoring Frequency Bands

The plots below demonstrated the relay frequency /channel stays within the authorized operational band of the booster.

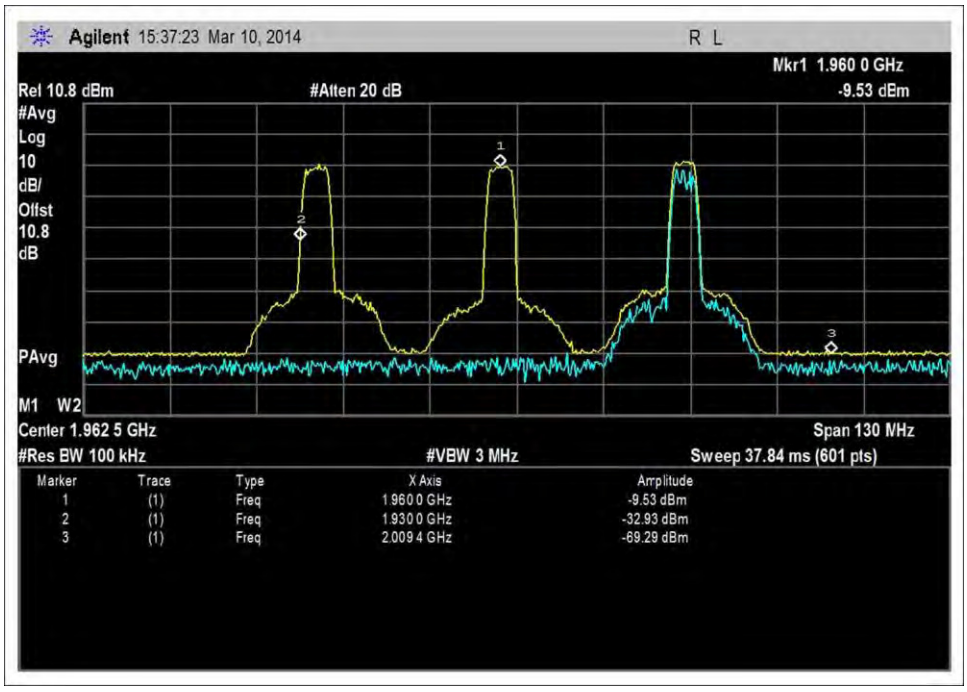
Test Data



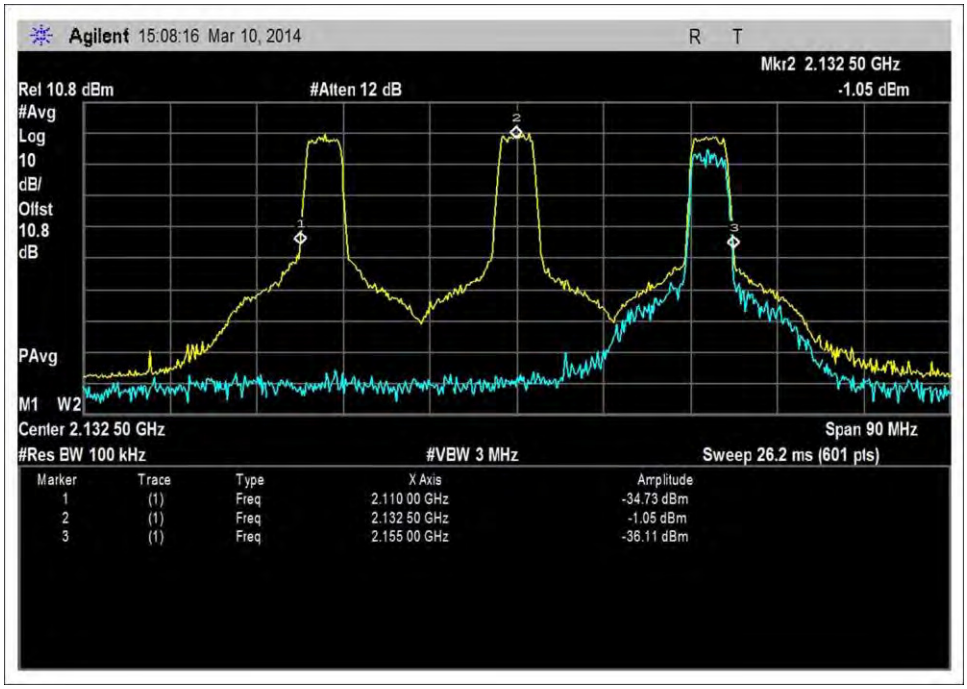
UL_1710-1755MHz



UL_1830-1915MHz_run2



DL_1930-1995MHz



DL_2110-2155MHz

Clause 7.1.2 Authorized CMRS Provider

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: **7.1.2 authorized CMRS Provider**
Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Anritsu	MT8820A	6200250367
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.

Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.

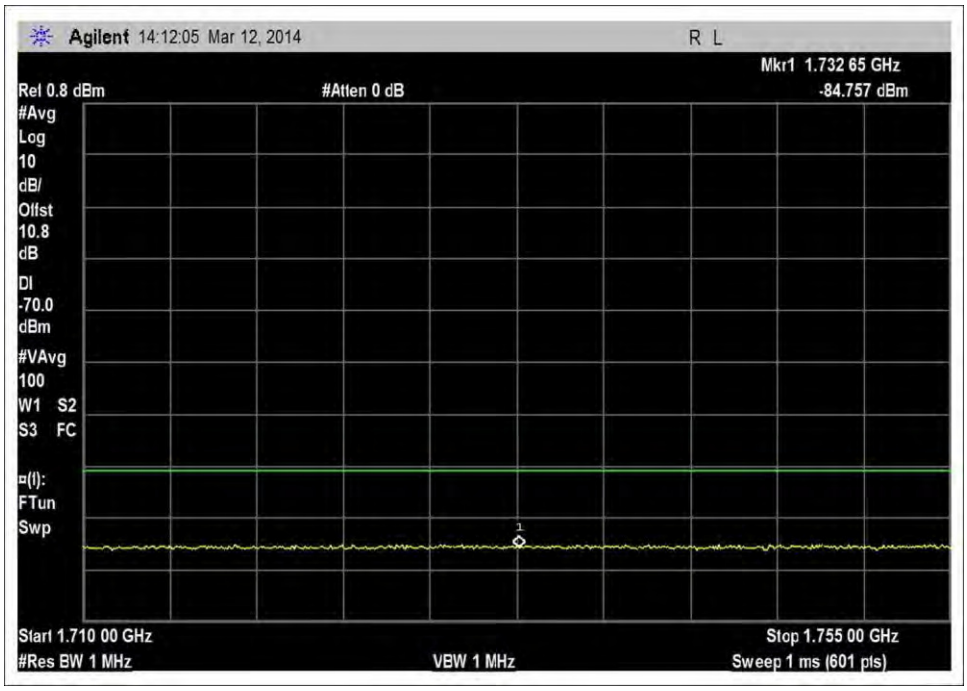
The authorized PLMN ID for this device is 260.

Summary of Results

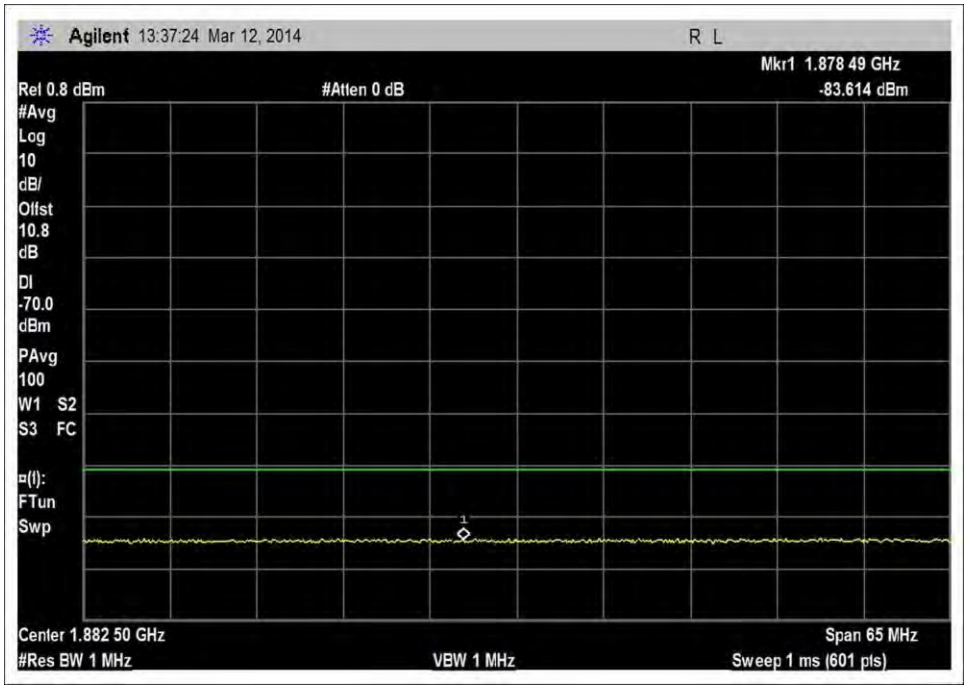
Summary:
Pass, the following plots demonstrated the device activates the relay channel upon receiving the authorized PLMNID 0f 260 while rejected 005 and 410, hence meeting the following requirement.

Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.1	Authorized Frequency Band Verification and authorized CMRS Provider	20.21(a)(4) and 20.21(e)(3)	Self-Monitoring Frequency Bands

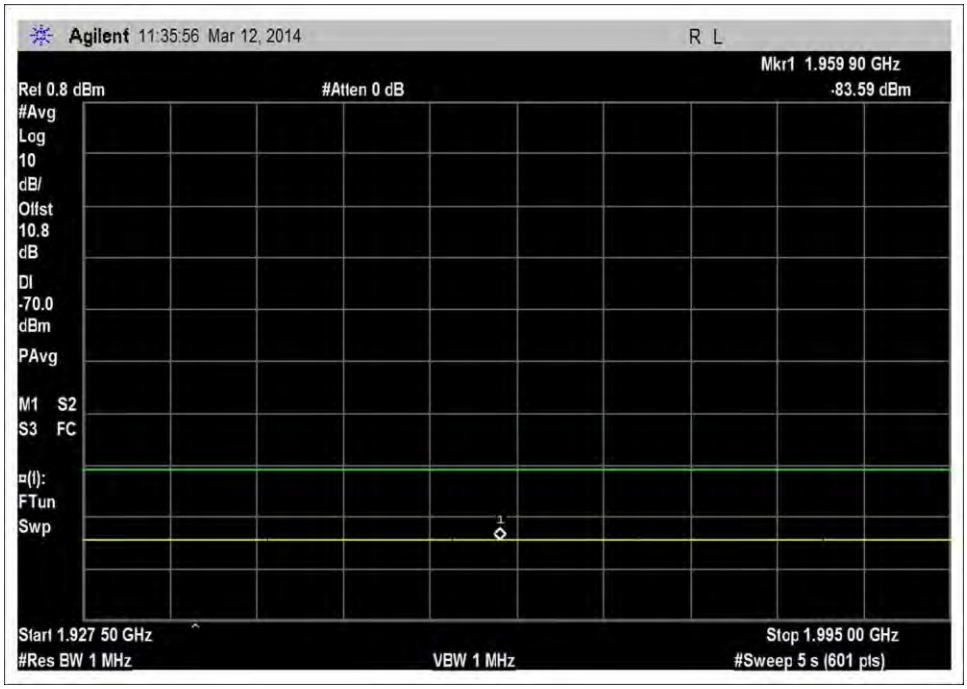
Test Data



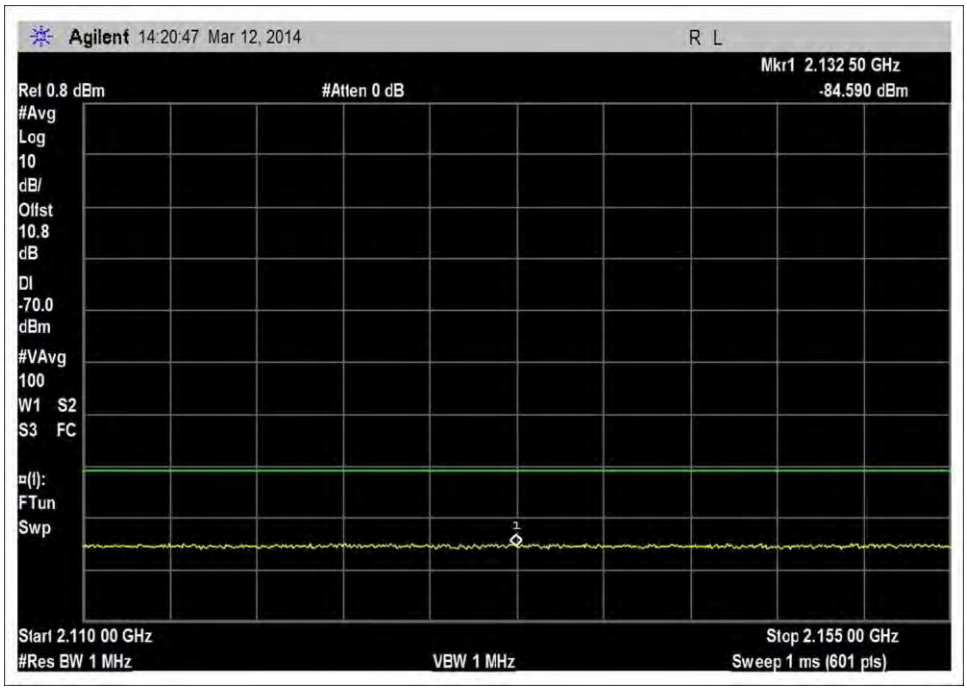
UL_1710-1755MHz_005



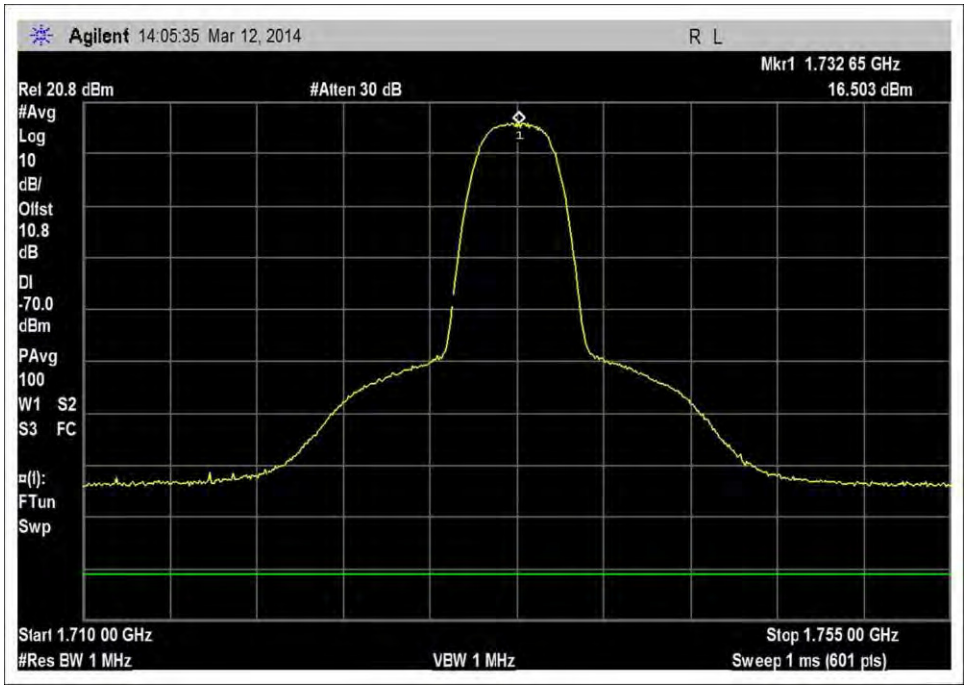
UL_1850-1915MHz_005



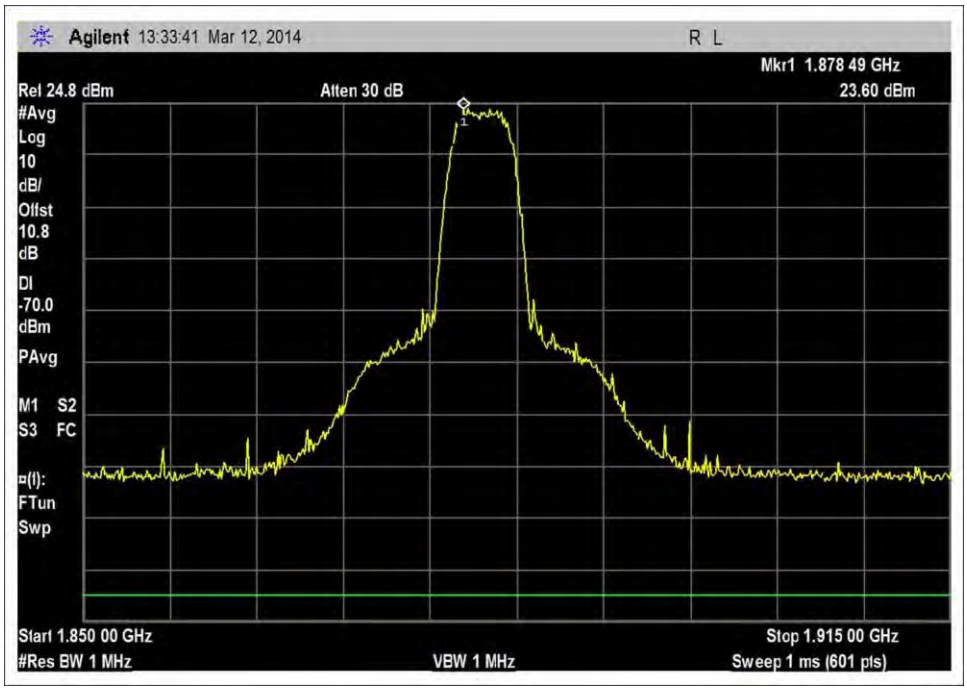
DL_1930-1995MHz_005



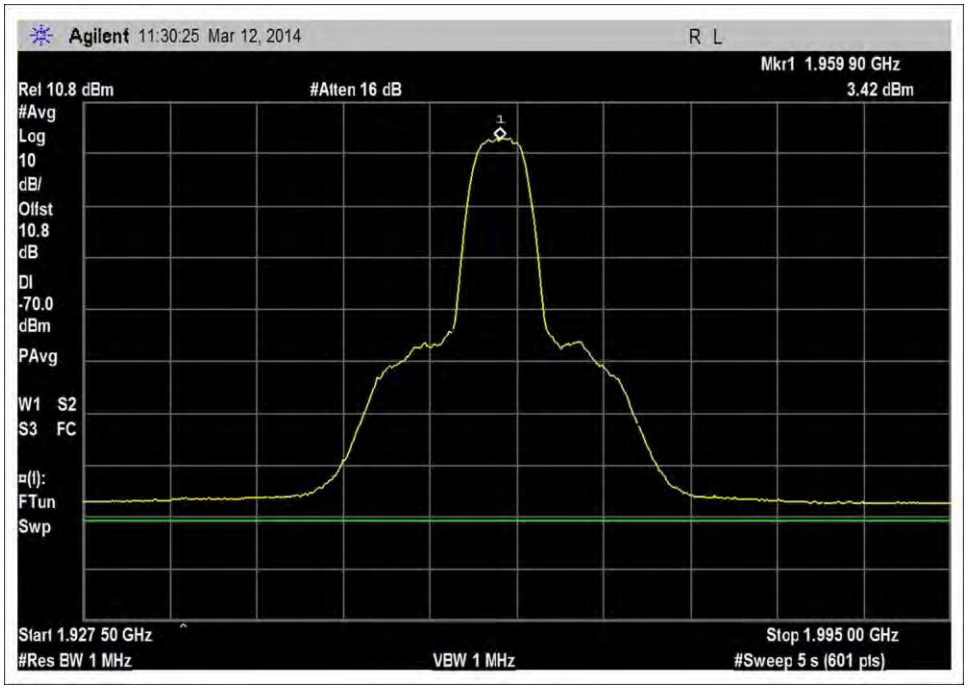
DL_2110-2155MHz_005



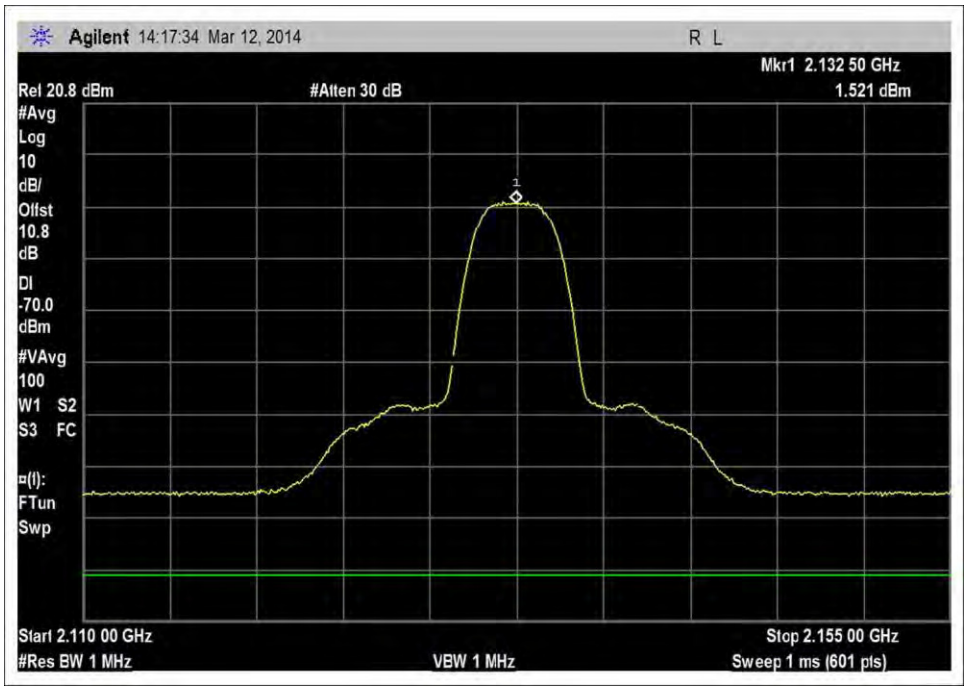
UL_1710-1755MHz_260



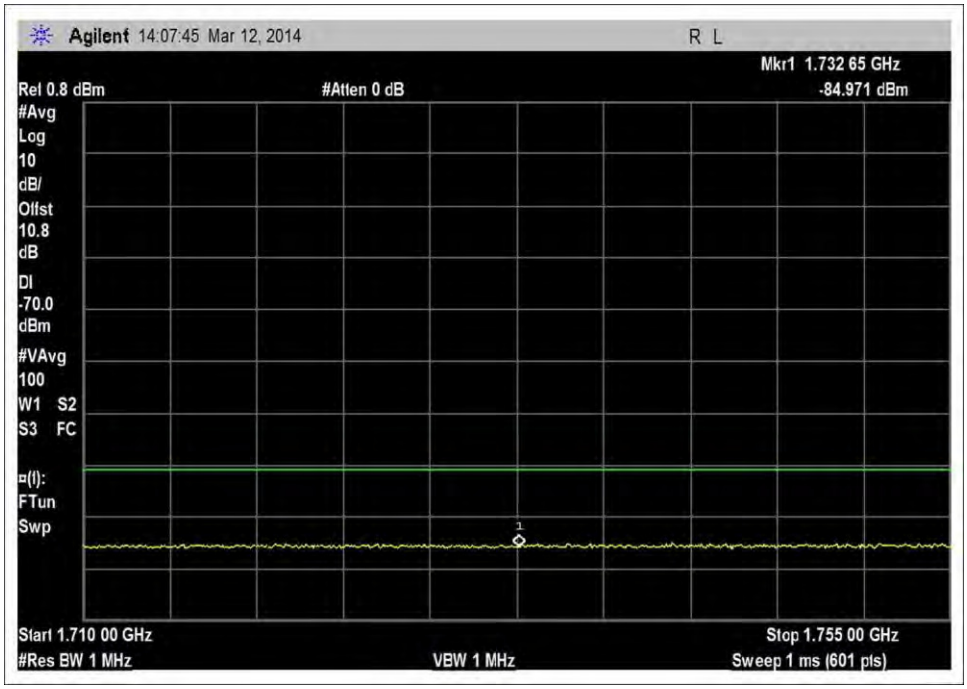
UL_1850-1915MHz_260



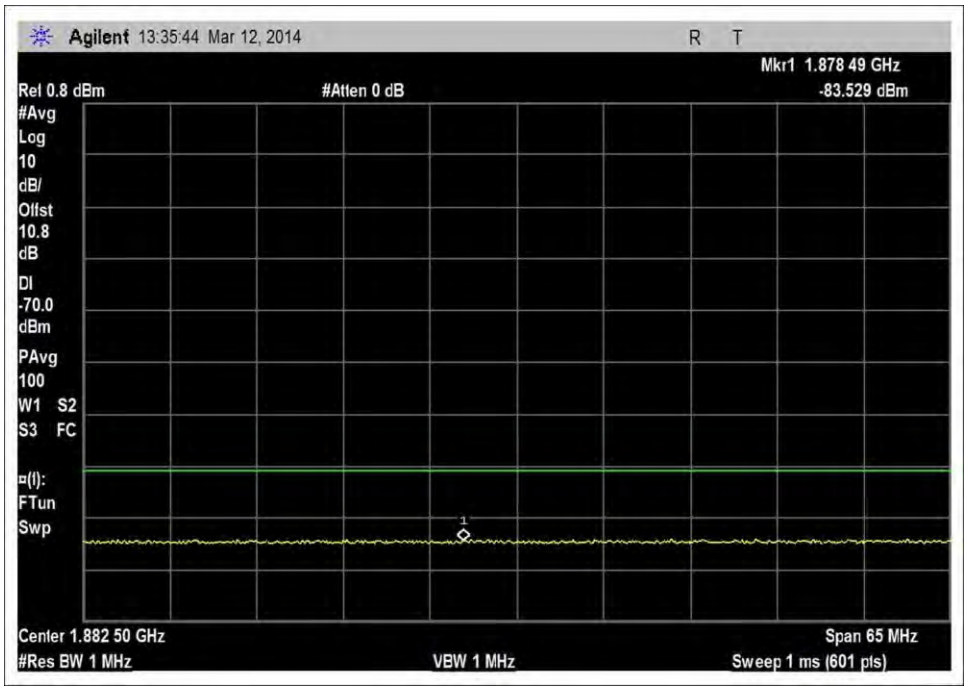
DL_1930-1995MHz_260



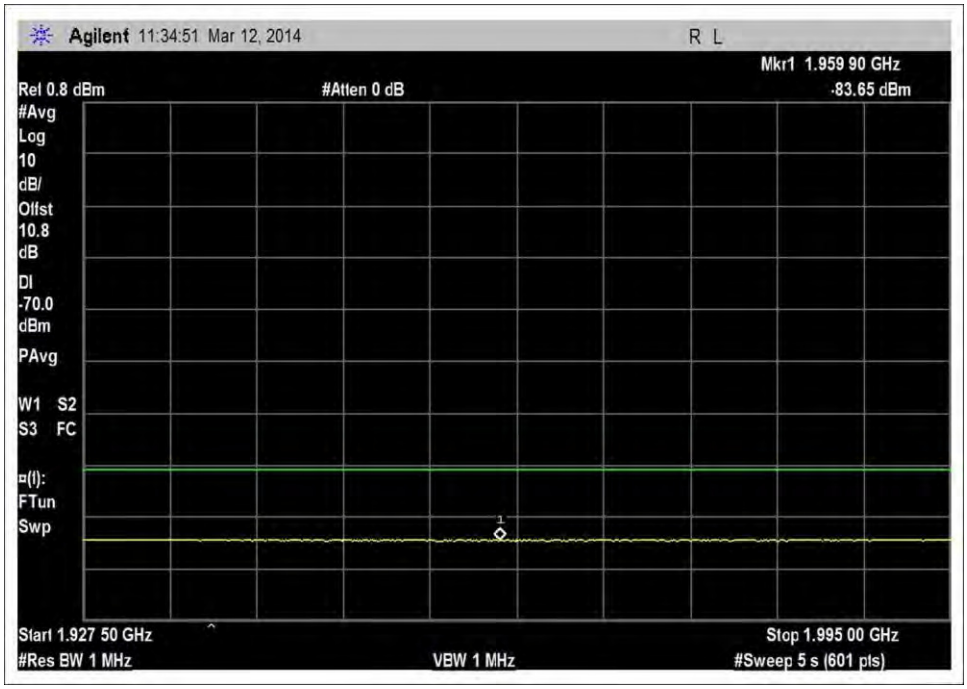
DL_2110-2155MHz_260



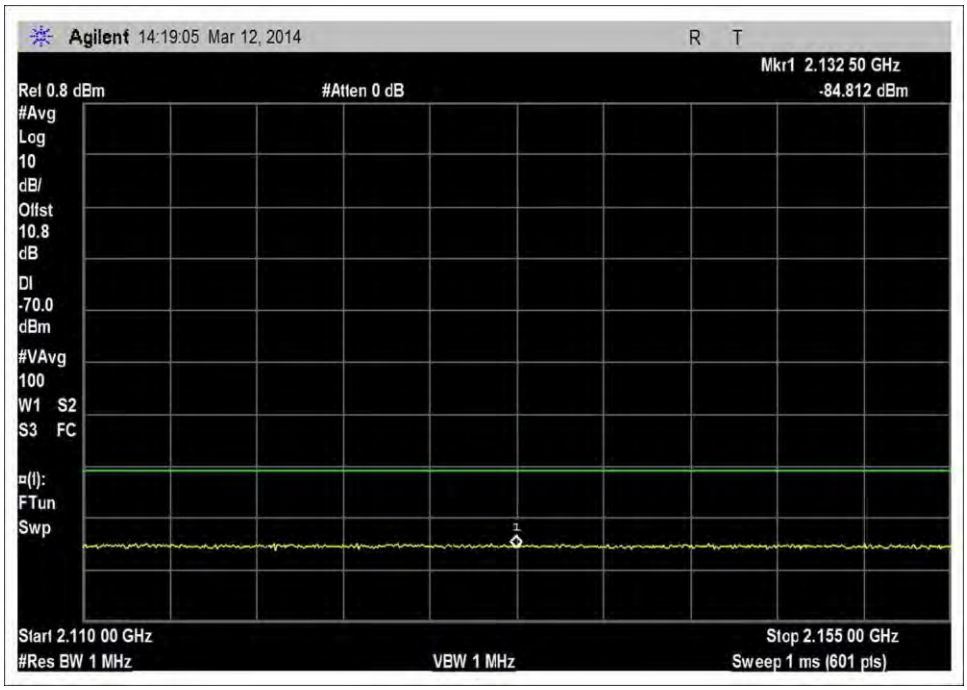
UL_1710-1755MHz_410



UL_1850-1915MHz_410



DL_1930-1995MHz_410



DL_2110-2155MHz_410

Clause 7.2 Maximum Power / 7.3 Maximum Booster Gain Computation

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: 7.2.2. Maximum Power Measurement
7.2.3 Maximum Booster Gain Computation
Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.

Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.

Note: The EUT shuts down when DL RF input power exceed -42.7 / -41.6dBm.

Summary of Results

Summary
The provided test result demonstrates compliance with the requirement listed below

Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.2	Maximum Power Measurement	20.21(e)(9)(i)(B) and 20.21(e)(9)(i)(D)	Bidirectional Capabilities Power Limit
7.3	Maximum Booster Gain Computation	20.21(e)(9)(i)(B) and 20.21(e)(9)(i)((C)(1) 20.21(e)(9)(i)((C)(2)	Bidirectional Capabilities

Results

Maximum gain, Maximum power

	4.1 MHz AWGN		
Frequency	Input(dBm)	Output (dBm)	Gain(dB)
UL 1710-1755	-80.0	20.0	100.0
UL 1850-1915	-80.0	20.0	100.0
DL 2110-2155	-90.0	10.0	100.0
DL 1930-1995	-90.0	10.0	100.0

		Limit
UL gain vs DL gain 1700/2100	0.0	9.0
UL gain vs DL gain 1800/1900	0.0	9.0

4.1MHz AWGN					
Frequency	Output Power	Ant Gain	Cable Loss	EIRP(dBm)	Limit(dBm)
UL 1710-1755	20.0	2.0	0.0	22.0	17 min/30max
UL 1850-1915	20.0	3.0	0.0	**23.0**	17min/30Max
DL 2110-2155	10.0	0.0	0.0	10.0	17 max
DL 1930-1995	10.0	0.0	0.0	10.0	17 max

Maximum Input Level IAW section 5.5

Frequency	Input(dBm)	Output (dBm)	Gain(dB)
UL 1710-1755	0.0	20.3	20.3
UL 1850-1915	0.0	20.1	20.1
DL 2110-2155	-43.7	11.8	55.5
DL 1930-1995	-42.6	11.2	53.8

Note : The booster ceased operation at DL input power of exceeding -42.7, -41.6dBm. Gain ratio requirement is not applicable when operating in Maximum input power level.

4.1MHz AWGN					
Frequency	Output Power	Ant Gain	Cable Loss	EIRP(dBm)	Limit(dBm)
UL 1710-1755	20.3	2.0	0.0	22.3	17 min/30max
UL 1850-1915	20.1	3.0	0.0	**23.1**	17min/30Max
DL 2110-2155	11.8	0.0	0.0	11.8	17 max
DL 1930-1995	11.2	0.0	0.0	11.2	17 max

Clause 7.4 Intermodulation Product

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: 7.4 Intermodulation
Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260
Combiner	Anaren	44000	C00087
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.

Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal : 4.1MHz AWGN.

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.

Note: The EUT shuts down when DL RF input power exceed -43dBm.

Note: Spike in the middle is an artifact from the DC carrier leakage and is NOT an intermodulation product.

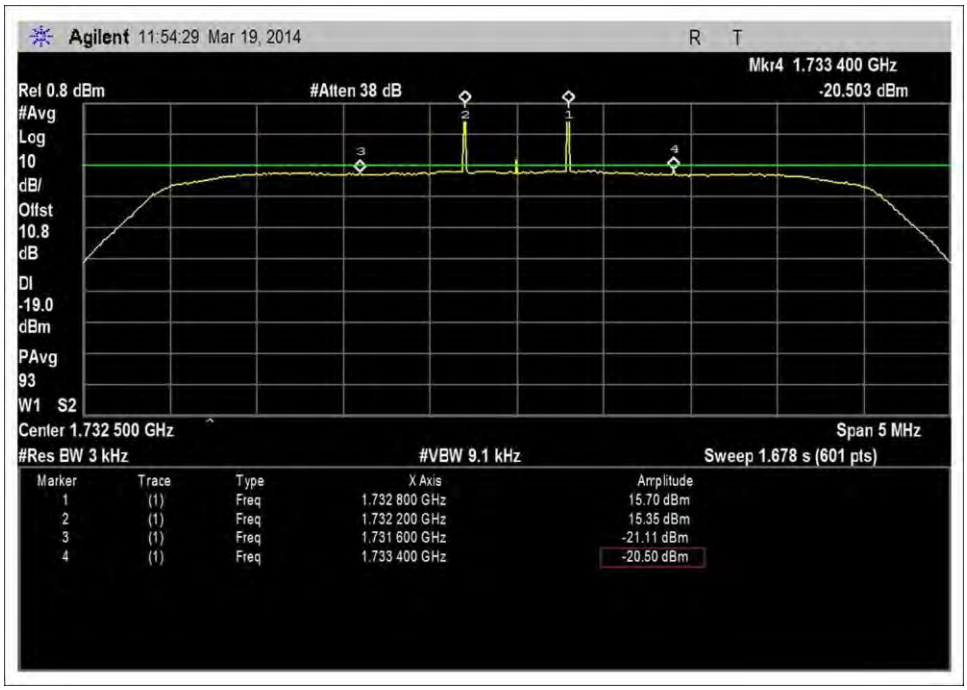
Summary of Results

Summary:
The test result demonstrates compliance with the requirement listed.

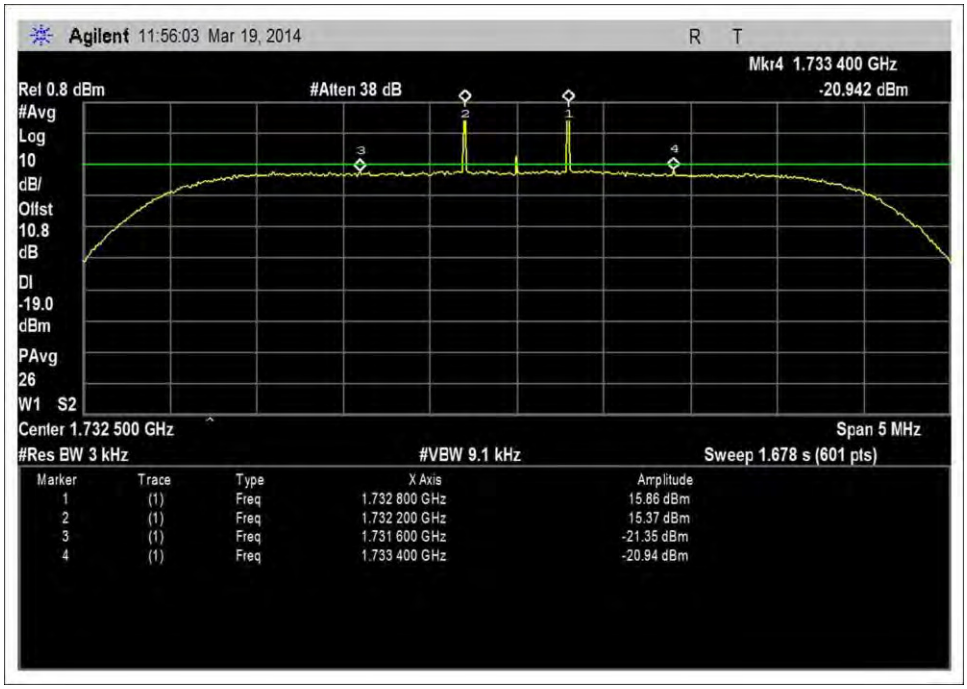
Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.4	Intermodulation Product	20.21(e)(9)(i)(G)	Intermodulation Limit

Frequency	Max Intermod dBm/3kHz	Limit dBm/3KHz	Margin dB
UL 1710-1755	-20.5	-19	**-1.5**
UL 1850-1915	-27.2	-19	-8.2
DL 2110-2155	-31.7	-19	-12.7
DL 1930-1995	-31.9	-19	-12.9

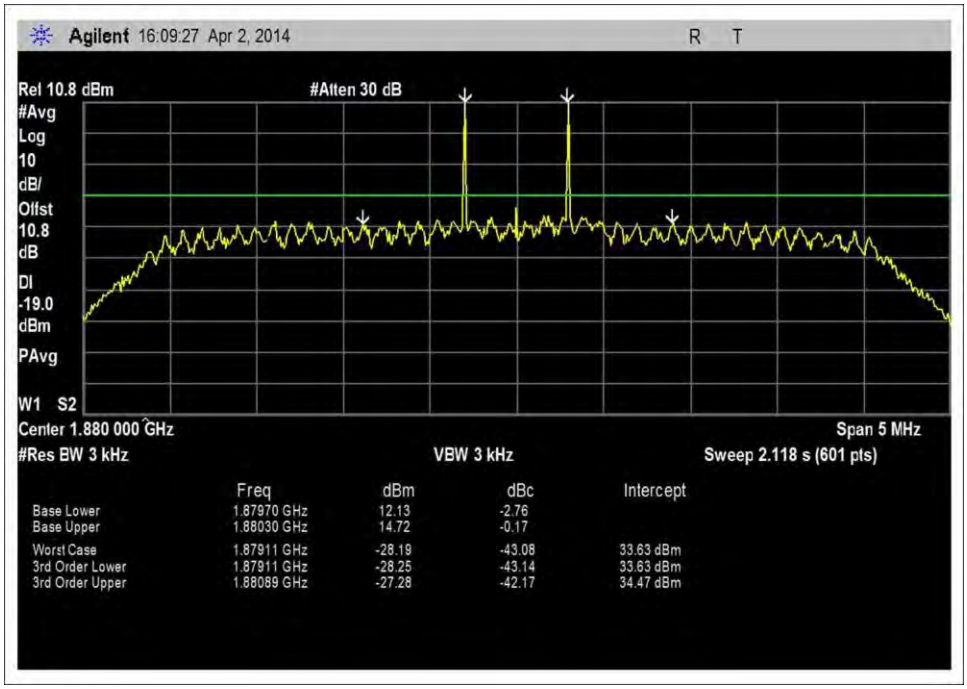
Test Data



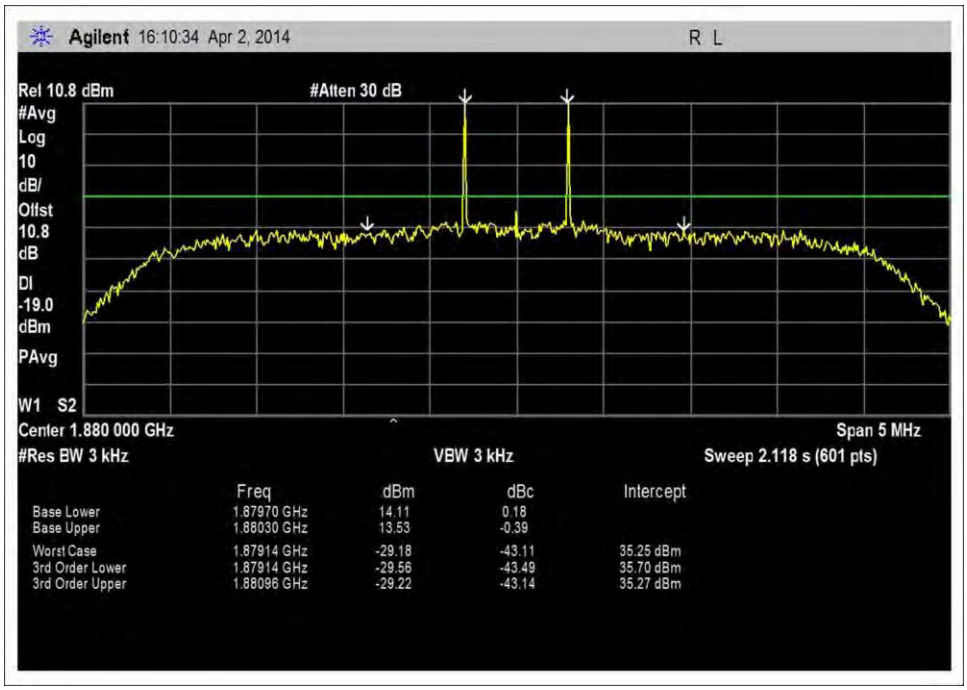
UL_1710-1755MHz



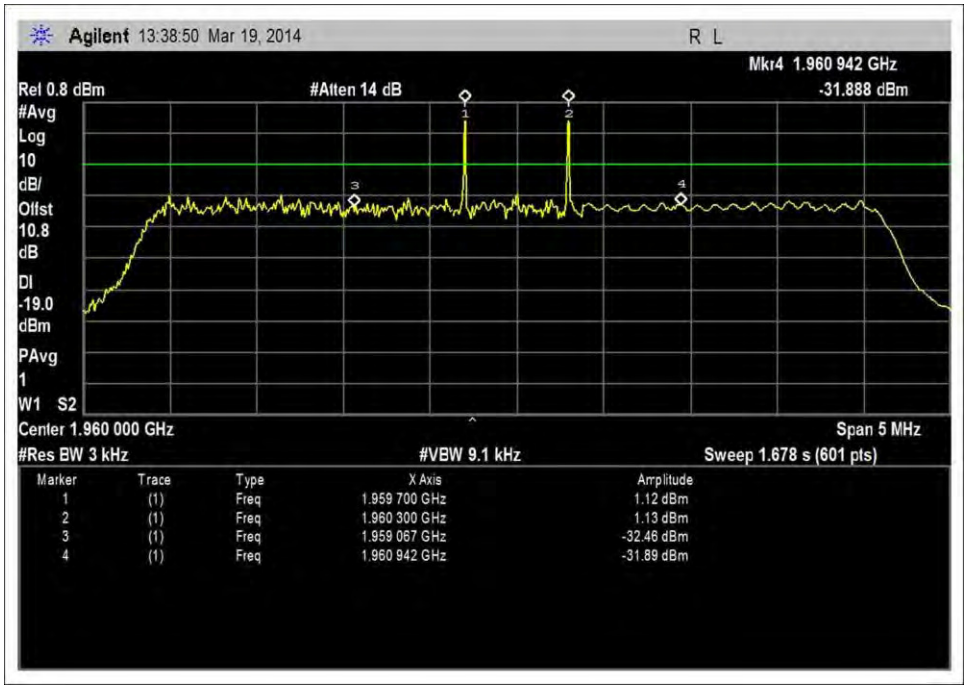
UL_1710-1755MHz_AGC+10dB



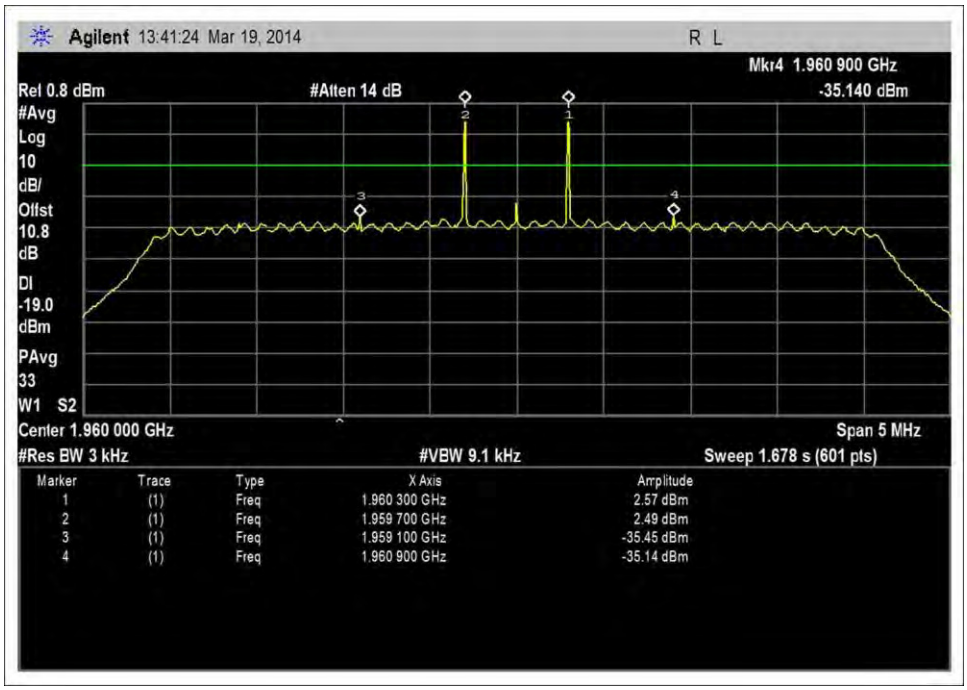
UL_1850-1915MHz



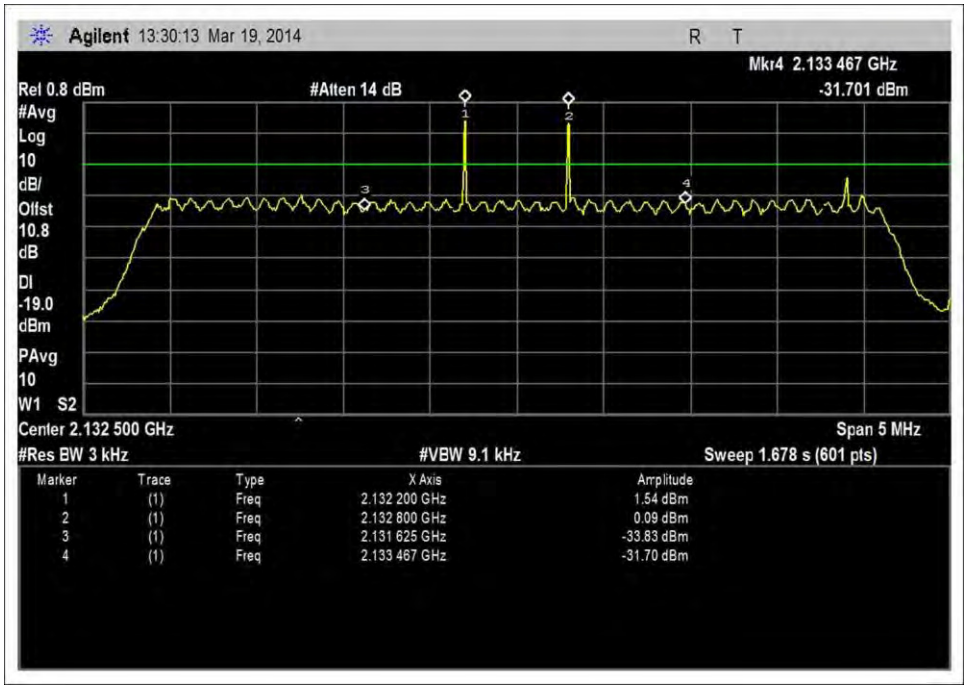
UL_1850-1915MHz_AGC+10dB.



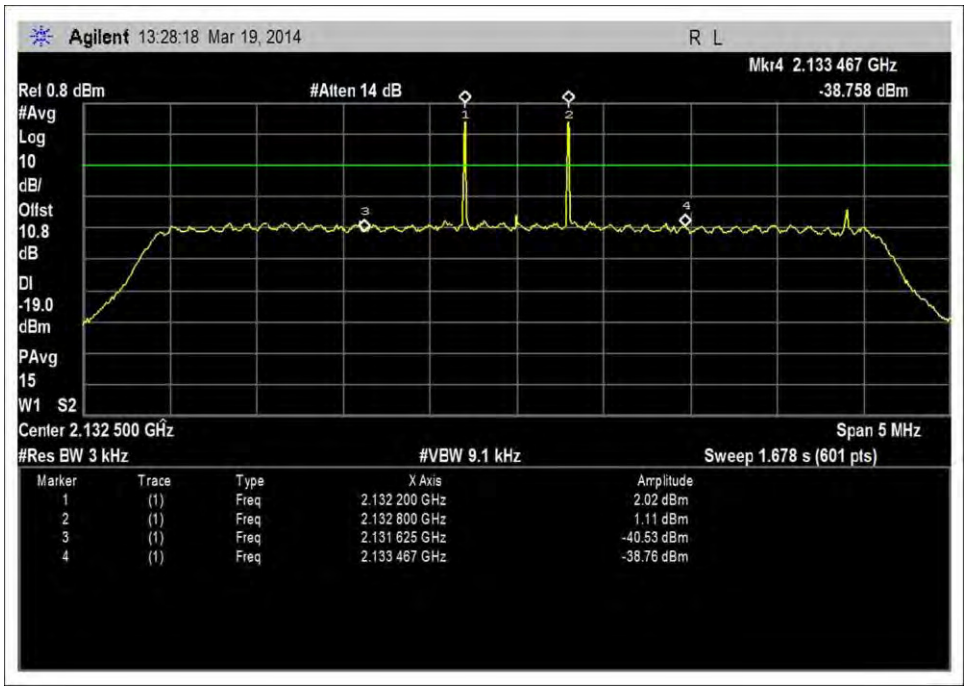
DL_1930-1995MHz



DL_1930-1995MHz_AGC+10dB



DL_2110-2155MHz



DL_2110-2155MHz_AGC+10dB

Clause 7.5 Out of Band Emissions

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: 7.5 Out of Band Emissions

Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.

Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14 with slight variation.

To Improved accuracy, the OBE was measured with Adjacent Channel Power function of the spectrum analyzer where RBW of 1% of the EBW of the signal was used and integrated into 1 MHz measurement bandwidth. The cursor on the plot indicated the upper or lower band edges as appropriate.

In the 1850 – 1915MHz and 1930-1995MHz band the center frequency is set IAW 3GPP frequency assignment.

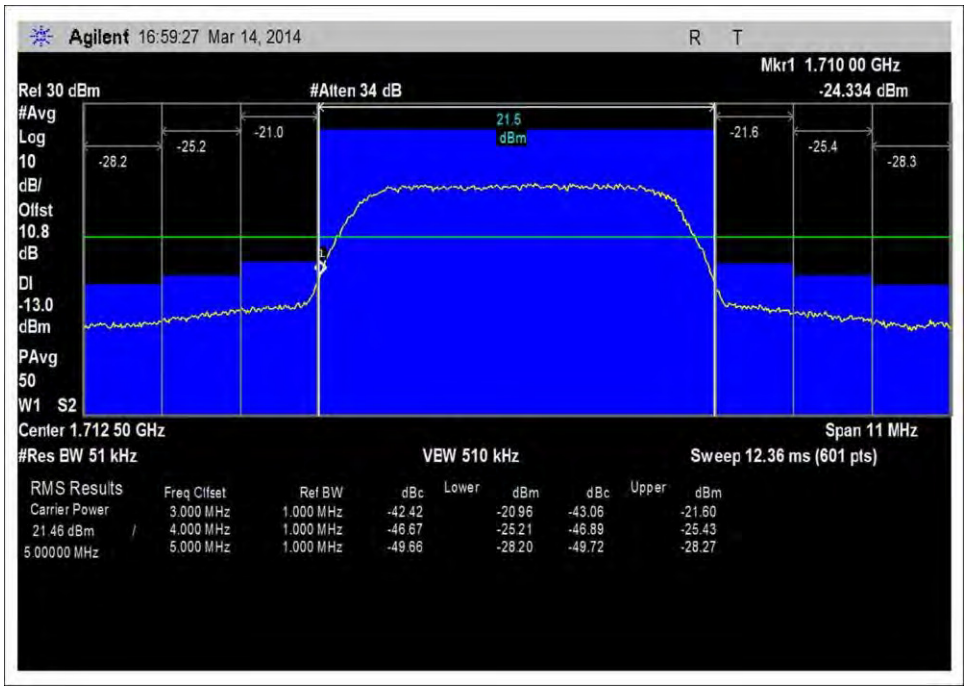
Summary of Results

Summary
The maximum measured OBE demonstrates compliance with following :

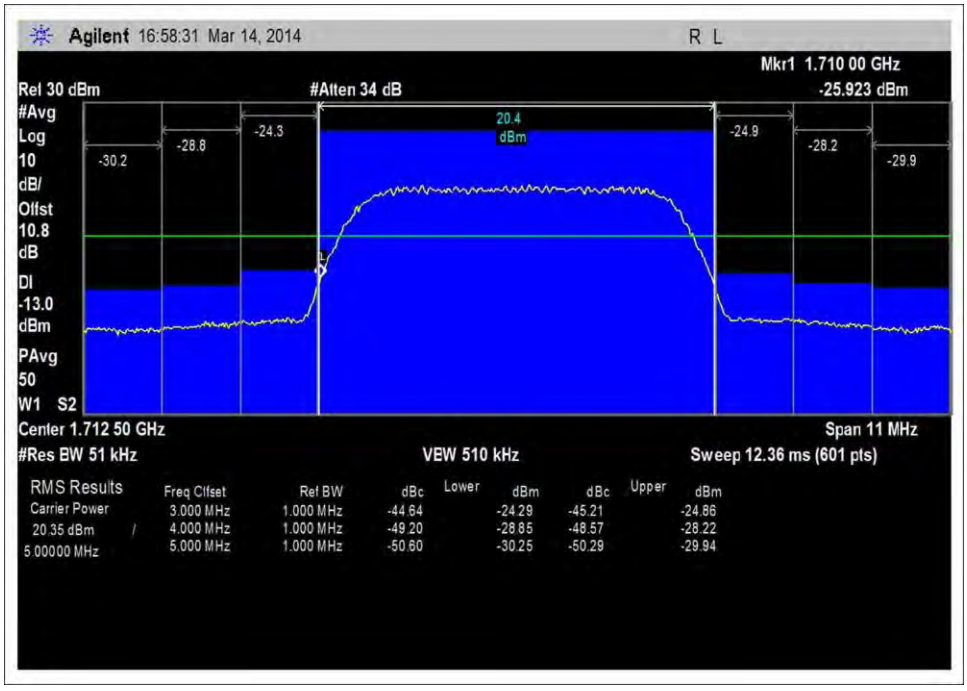
Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.5	Out of Band Emissions	20.21(e)(9)(i)(F)	Out of Band Emission

Frequency	Max OBE dBm	Limit dBm	Margin dB
UL 1710-1755	-21.0	-13.0	-8.0
UL 1850-1915	-18.2	-13.0	-5.2
DL 2110-2155	-27.2	-13.0	-14.2
DL 1930-1995	-27.1	-13.0	-14.1

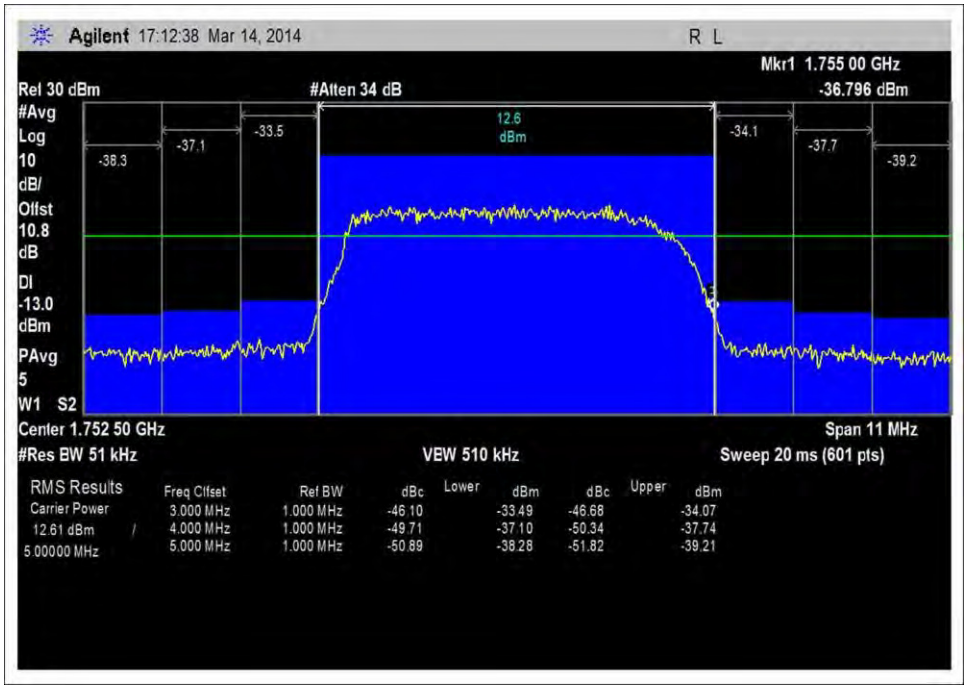
Test Data



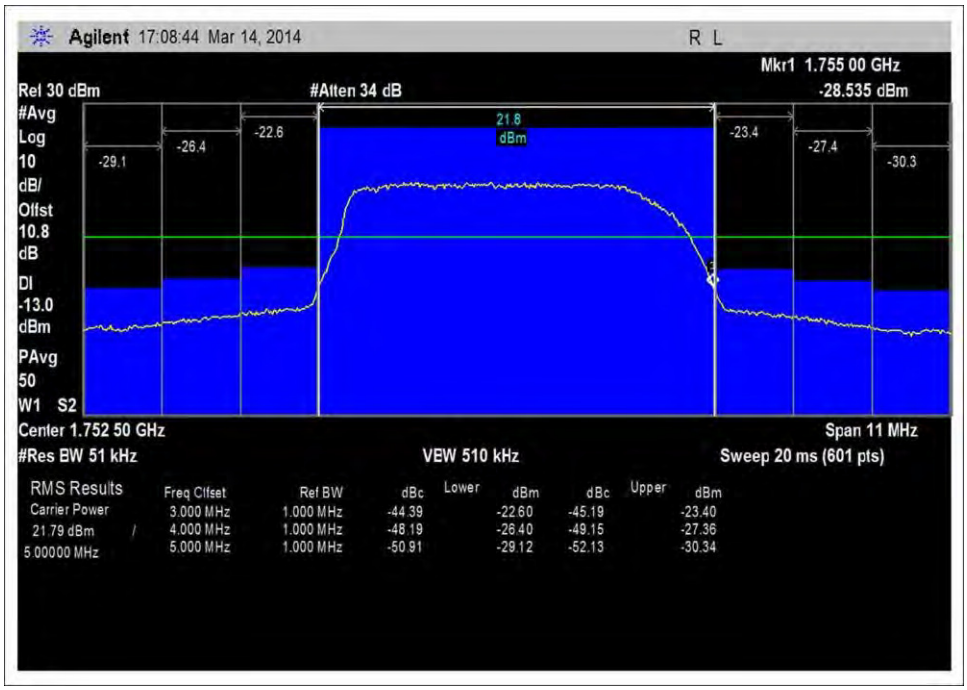
UL_1710-1755MHz_L_0dBm_ACP



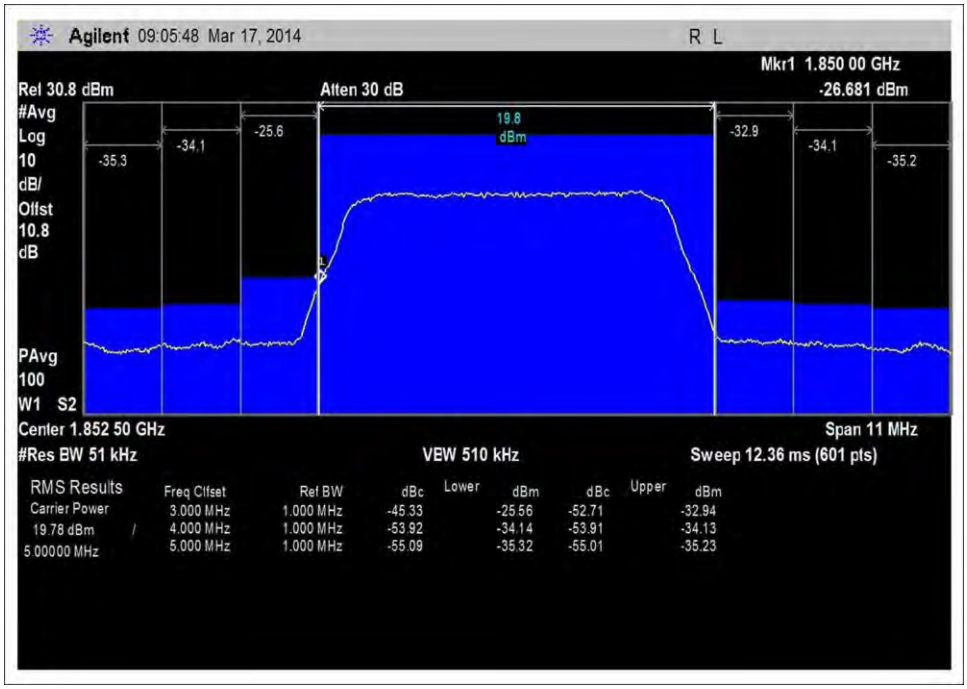
UL_1710-1755MHz_L_-80dBm_ACP



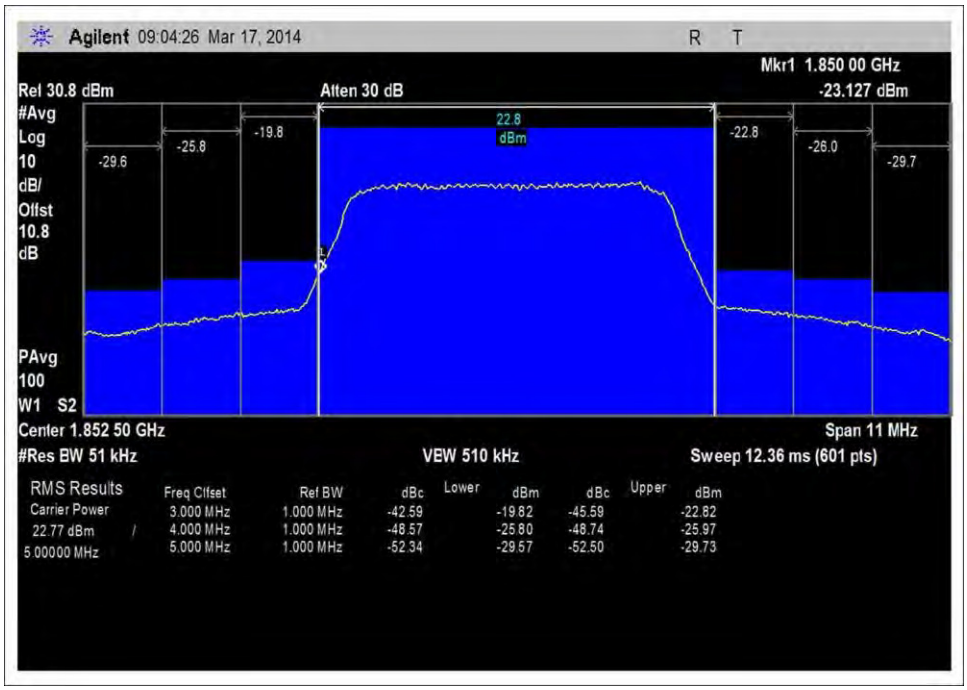
UL_1710-1755MHz_H_0dBm_ACP



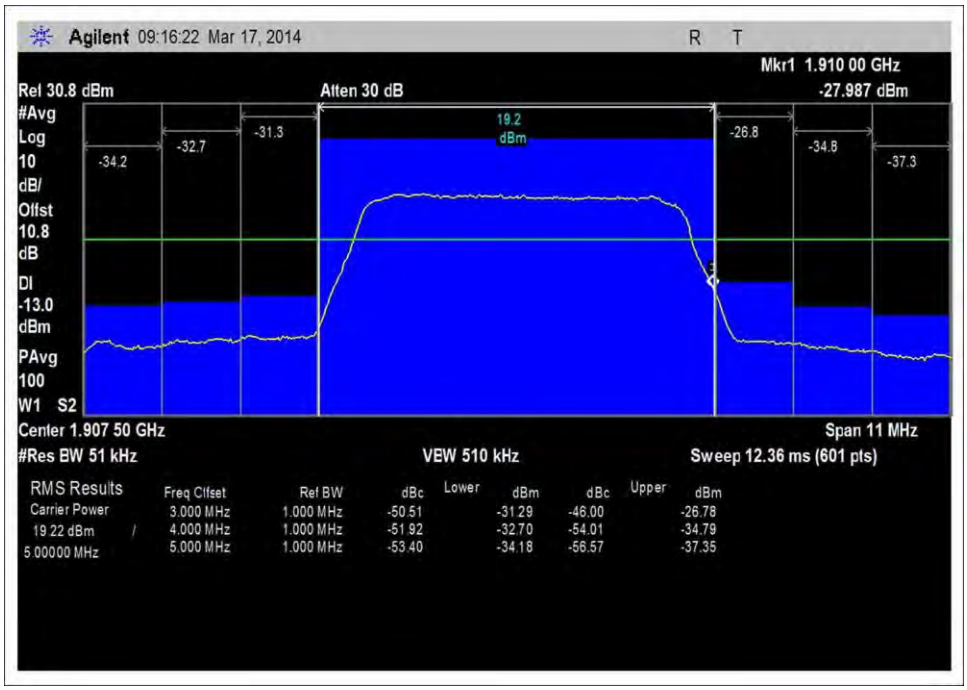
UL_1710-1755MHz_H_-80dBm_ACP



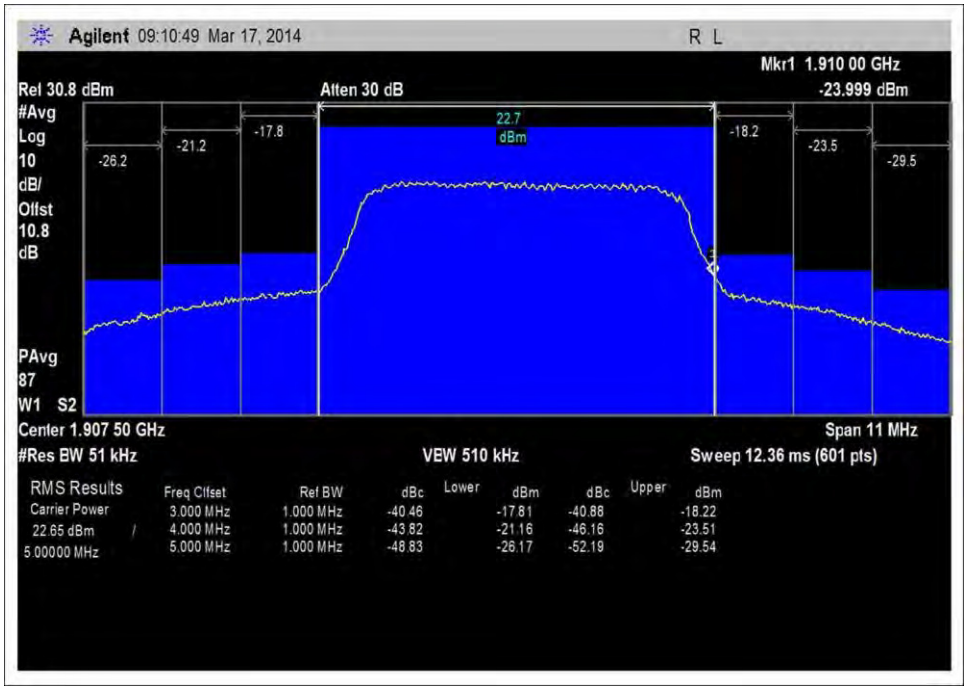
UL_1850-1915MHz_L_0dBm_ACP



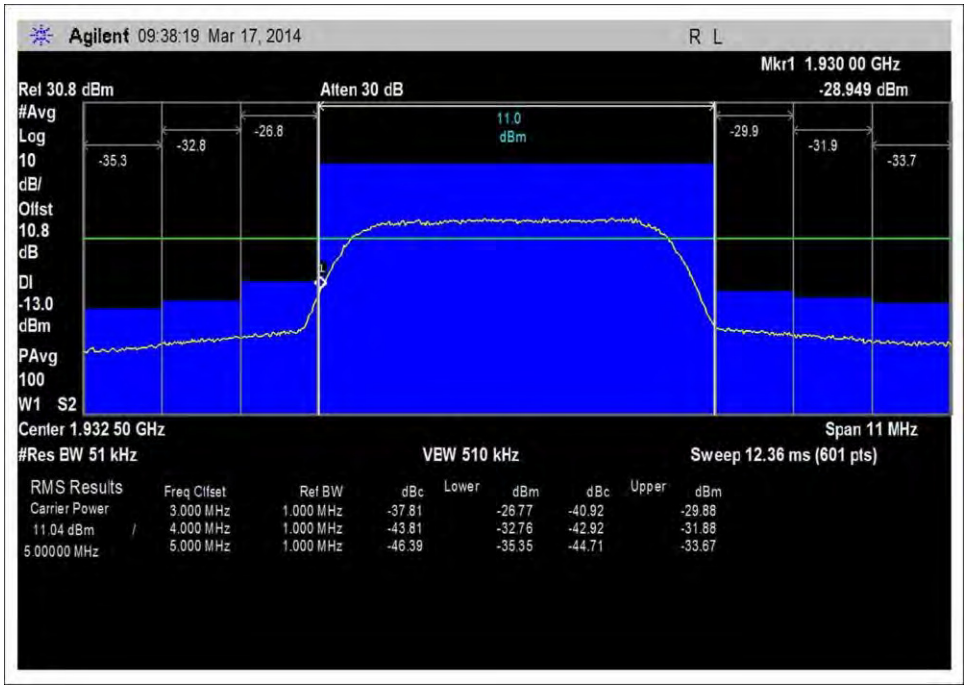
UL_1850-1915MHz_L_-80dBm_ACP



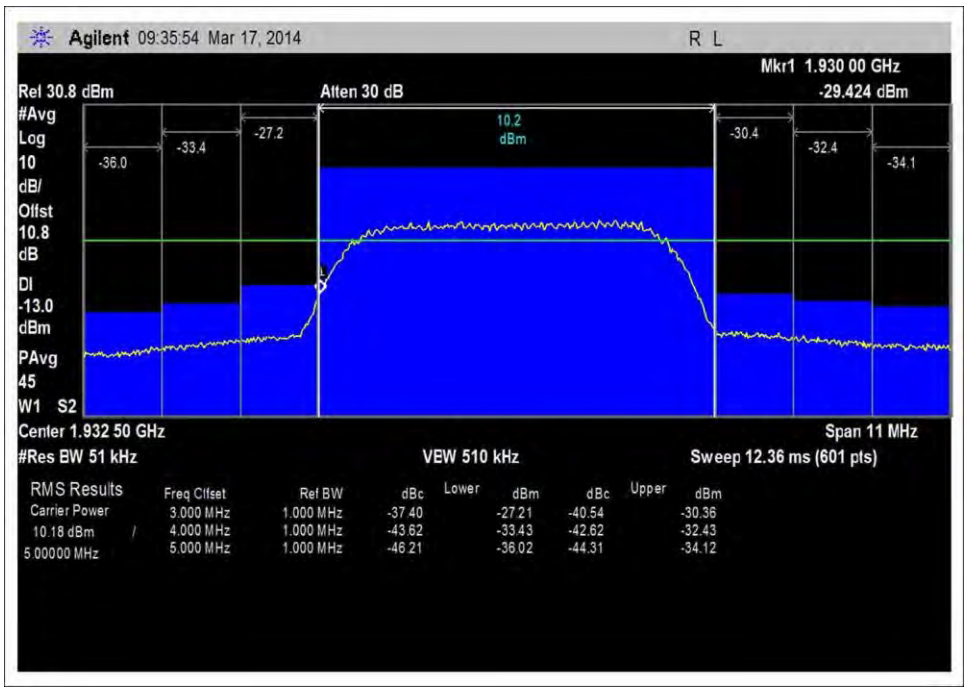
UL_1850-1915MHz_H_0dBm_ACP



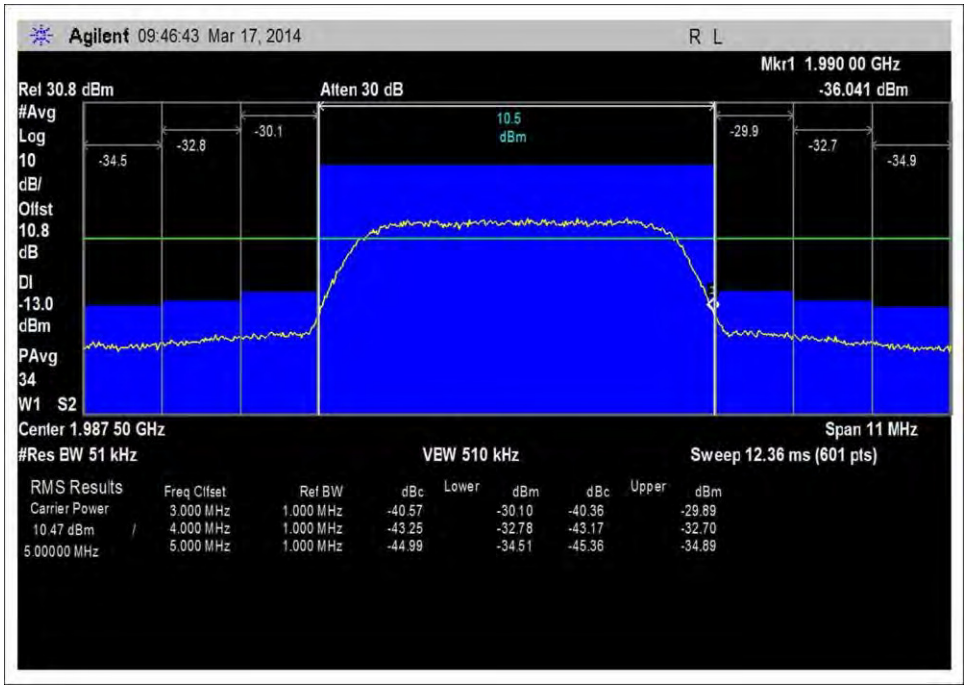
UL_1850-1915MHz_H_-80dBm_ACP



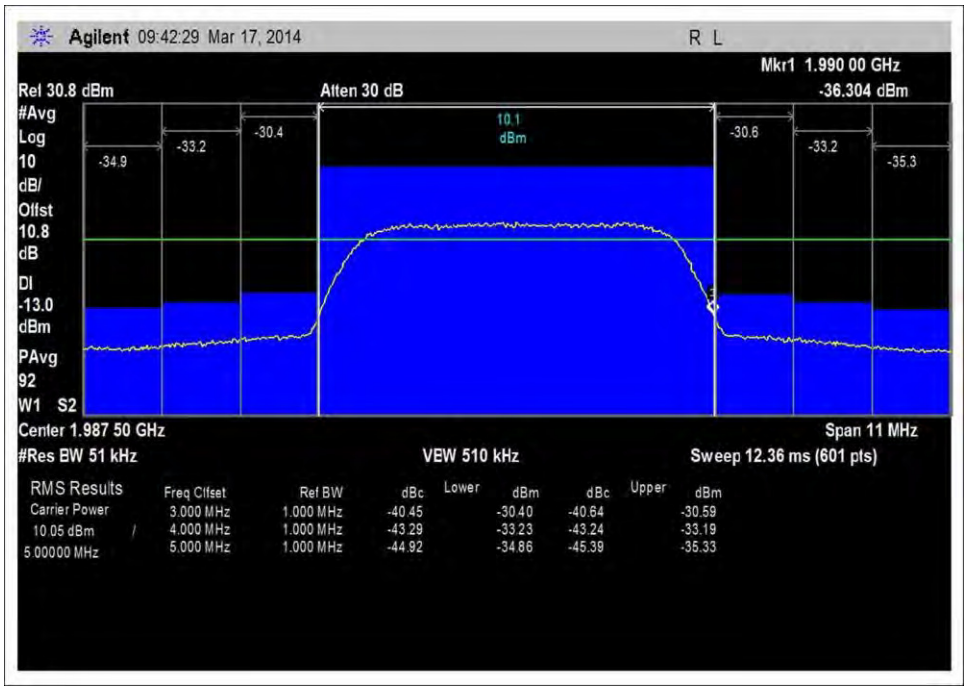
DL_1930-1995MHz_L_-43dBm_ACP



DL_1930-1995MHz_L_-90dBm_ACP



DL_1930-1995MHz_H_-43dBm_ACP



DL_1930-1995MHz_H_-90dBm_ACP

Clause 7.7 Noise limit

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: 7.7 Noise limit
Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Anritsu	MT8820A	6200250367
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5 MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.

Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN

UL = 1850-1915 MHz, 1710-1755MHz
DL = 1930-1990 MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.

Summary of Results

Summary:

The result demonstrate compliance to

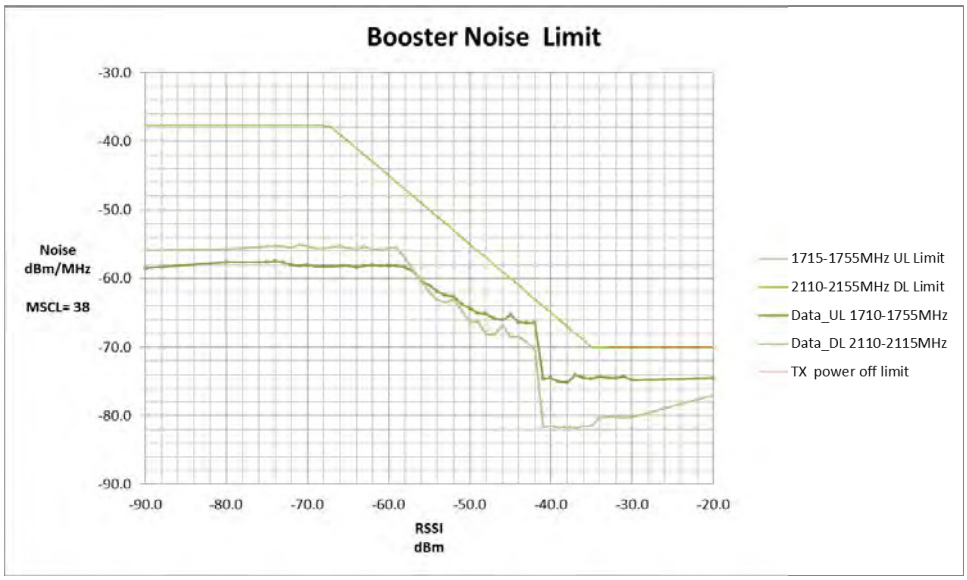
Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.7	Noise Limits	20.21(e)(9)(i)(A)(2) 20.21(e)(9)(i)(I)	Noise Limits Transmit Power Off Mode

Maximum noise

Frequency	Max Noise dBm/MHz	Limit dBm/MHz	Margin dB
UL 1710-1755	-57.3	-37.7	-19.6
UL 1850-1915	-54.0	-37.0	-17.0
DL 2110-2155	-56.0	-37.7	-18.3
DL 1930-1995	-58.4	-37.0	-21.4

Noise Timing

Frequency	Noise timing Sec	Limit Sec	Margin Sec
UL 1710-1755	0.7	3.0	-2.3
UL 1850-1915	0.4	3.0	-2.6
DL 2110-2155	1.7	3.0	-1.3
DL 1930-1995	1.8	3.0	-1.2

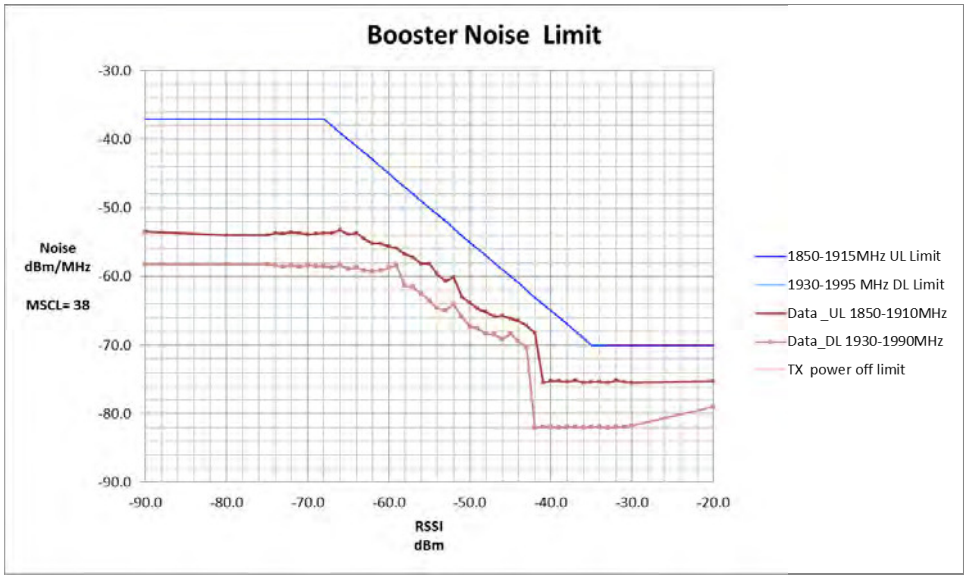


RSSI	Noise level	Limit				Margin
dBm	dBm/MHz	20.21(e)(9)(i)(A)(1) (i) &(ii)		20.21(e)(9)(i)(I)	Conditional	dB
-42.0	-66.5	-63.0		-70.0	-63.0	-3.5
-34.0	-74.3	-71.0		-70.0	-70.0	-4.3
-43.0	-66.5	-62.0		-70.0	-62.0	-4.5
-45.0	-65.3	-60.0		-70.0	-60.0	-5.3
-44.0	-66.4	-61.0		-70.0	-61.0	-5.4
-74.0	-57.5	-31.0		-70.0	-37.7	-26.5

UL 1710-1755MHz

RSSI	Noise level	Limit				Margin
dBm	dBm/MHz	20.21(e)(9)(i)(A)(1) (i) &(ii)	20.21(e)(9)(i)(A)(2)	20.21(e)(9)(i)(I)	Conditional	dB
-20.0	-77.0	-85.0	-37.7	-70	-70.0	-7.0
-43.0	-69.2	-62.0	-37.7	-70	-62.0	-7.2
-42.0	-70.4	-63.0	-37.7	-70	-63.0	-7.4
-44.0	-68.5	-61.0	-37.7	-70	-61.0	-7.5
-46.0	-66.8	-59.0	-37.7	-70	-59.0	-7.8
-71.0	-55.1	-34.0	-37.7	-70	-37.7	-17.4

DL 2110-2155MHz



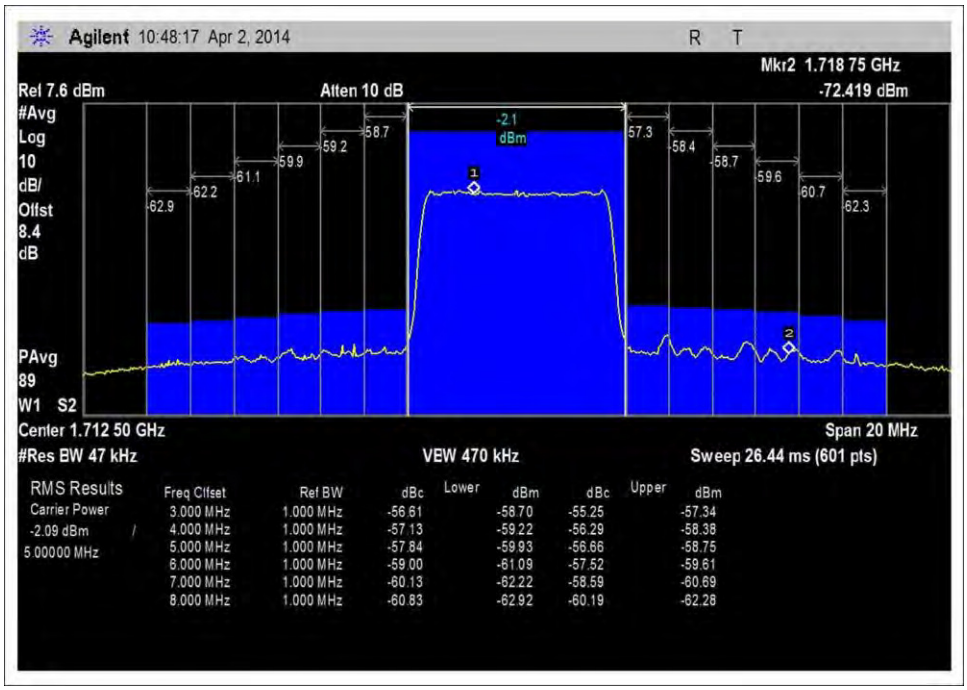
RSSI	Noise level	Limit				Margin
dBm	dBm/MHz	20.21(e)(9)(A)(i)(1) (i) &(ii)		20.21(e)(9)(i)(I)	Conditional	dB
-43.0	-67.2	-62.0		-70	-62.0	-5.2
-42.0	-68.2	-63.0		-70	-63.0	-5.2
-32.0	-75.2	-73.0		-70	-70.0	-5.2
-44.0	-66.5	-61.0		-70	-61.0	-5.5
-45.0	-66.2	-60.0		-70	-60.0	-6.2
-90.0	-53.4	-15.0		-70	-37.0	-16.4

UL 1850-1915MHz

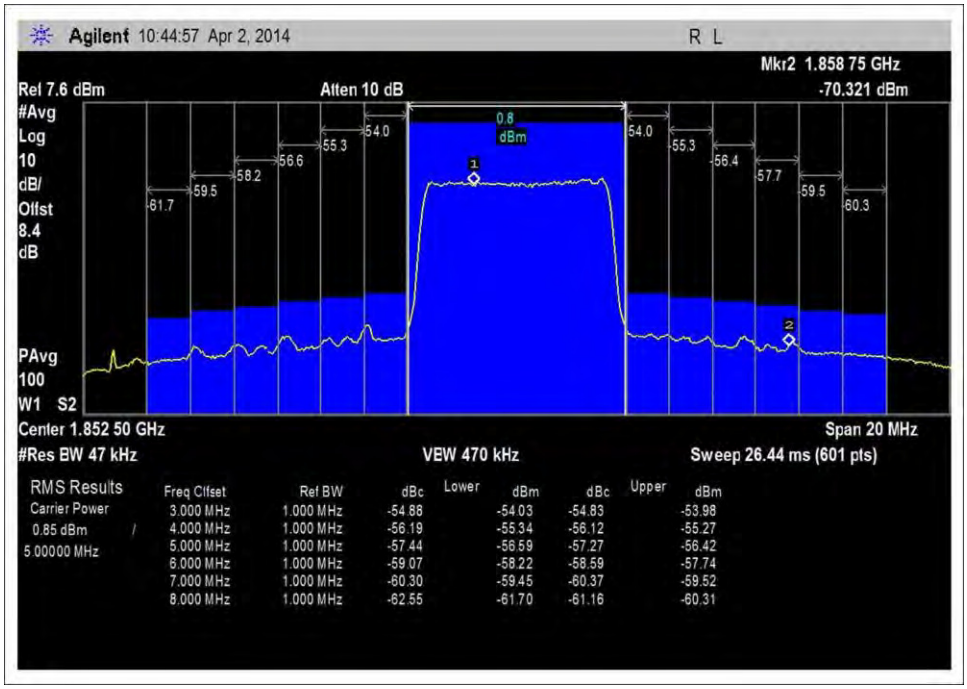
RSSI	Noise level	Limit				Margin
dBm	dBm/MHz	20.21(e)(9)(A)(i)(1) (i) &(ii)	20.21(e)(9)(A)(i)(2)	20.21(e)(9)(i)(I)	Conditional	dB
-43.0	-70.3	-62.0	-37.0	-70	-62.0	-8.3
-45.0	-68.4	-60.0	-37.0	-70	-60.0	-8.4
-44.0	-69.4	-61.0	-37.0	-70	-61.0	-8.4
-20.0	-79.0	-85.0	-37.0	-70	-70.0	-9.0
-46.0	-69.1	-59.0	-37.0	-70	-59.0	-10.1
-90.0	-58.3	-15.0	-37.0	-70	-37.0	-21.3

DL 1930-1955MHz

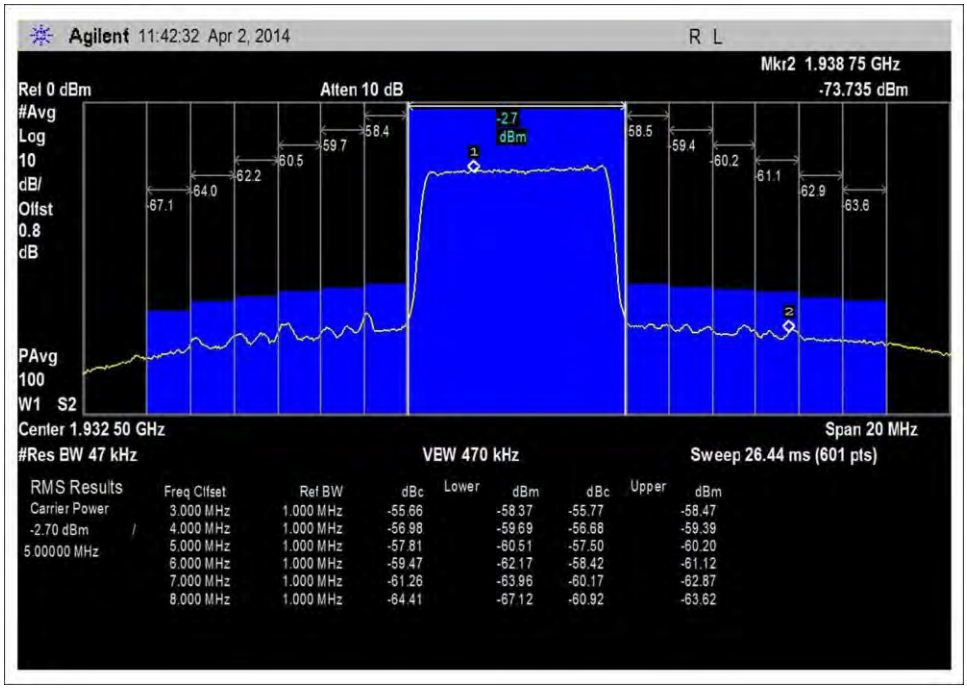
Test Data



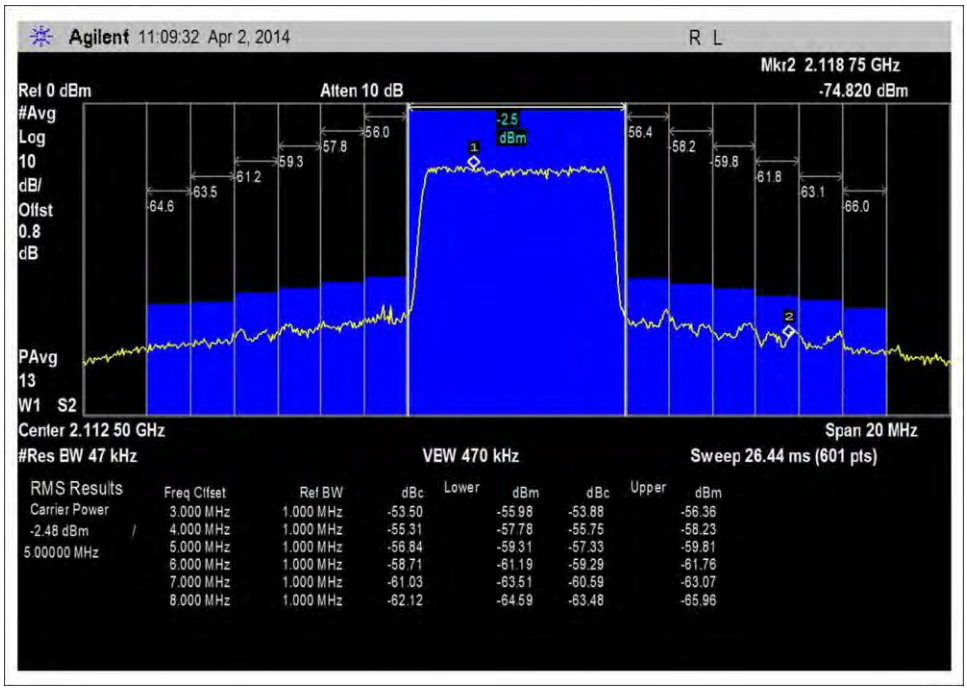
UL_1710-1755MHz_ACP



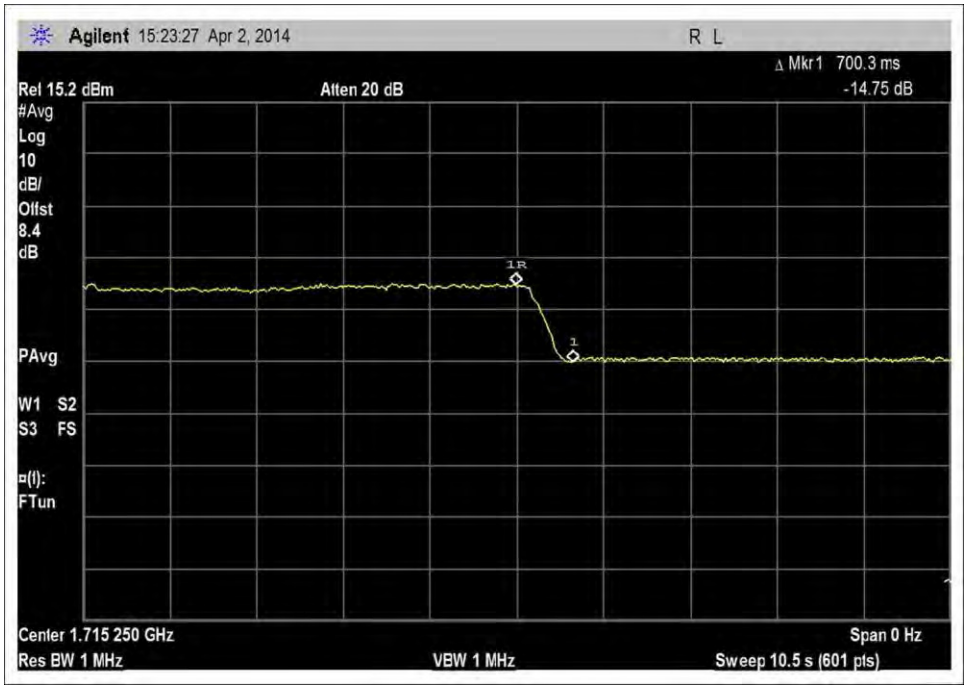
UL_1850-1915MHz_ACP



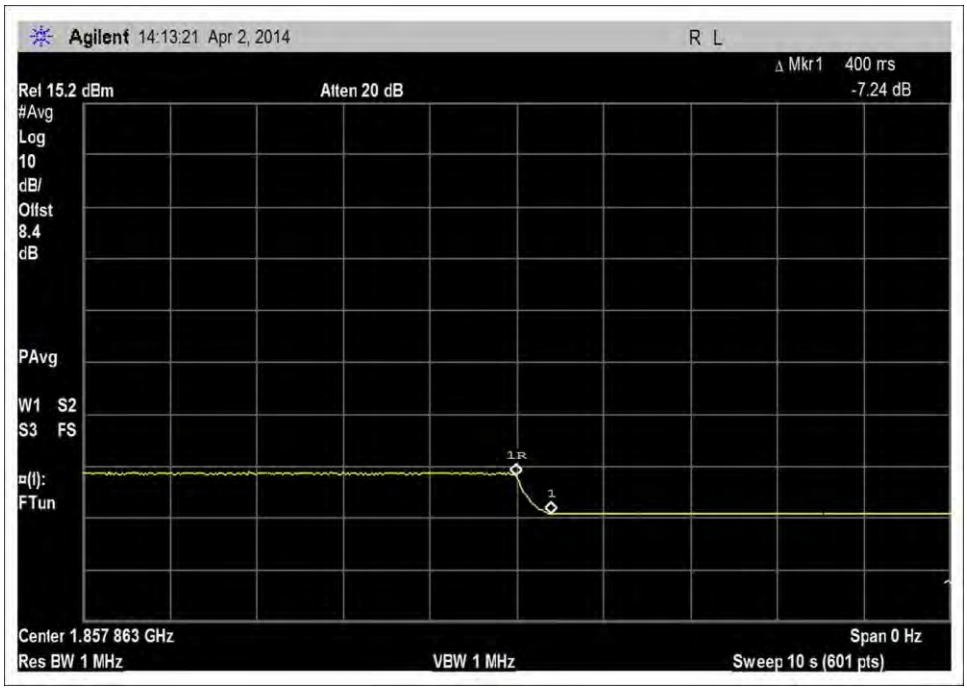
DL_1930-1995MHz_ACP



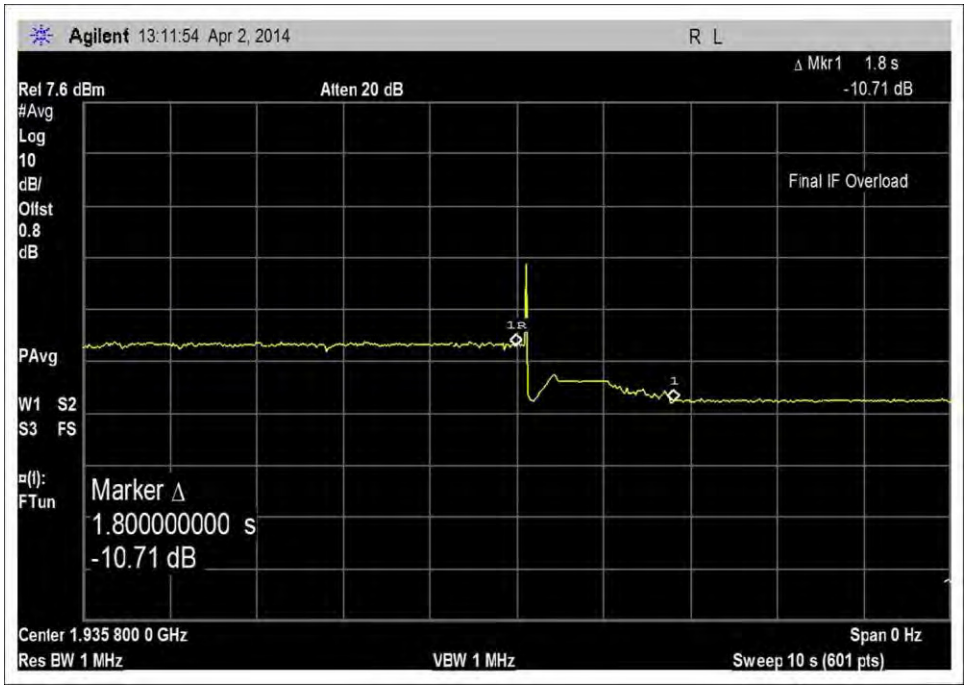
DL_2110-2155MHz_ACP



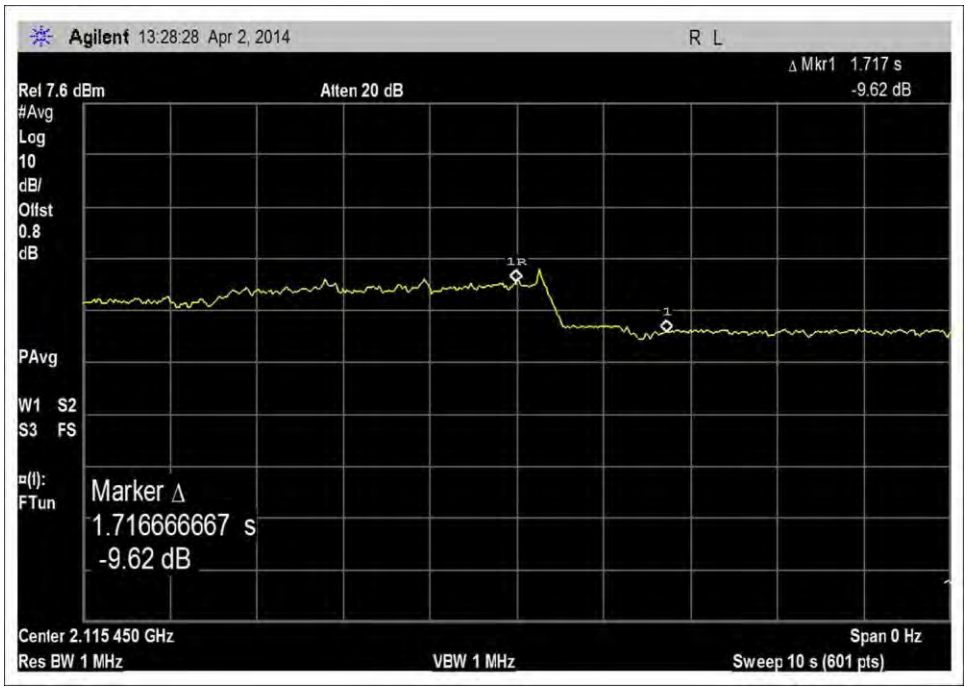
UL_1710-1755MHz_noise timing



UL_1850-1915MHz_noise timing



DL_1930-1995MHz_noise timing



DL_2110-2155MHz_noise timing

Clause 7.8 Uplink Inactivity

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: 7.8 Uplink Inactivity
Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5 MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.

Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN.

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.

Summary of Results

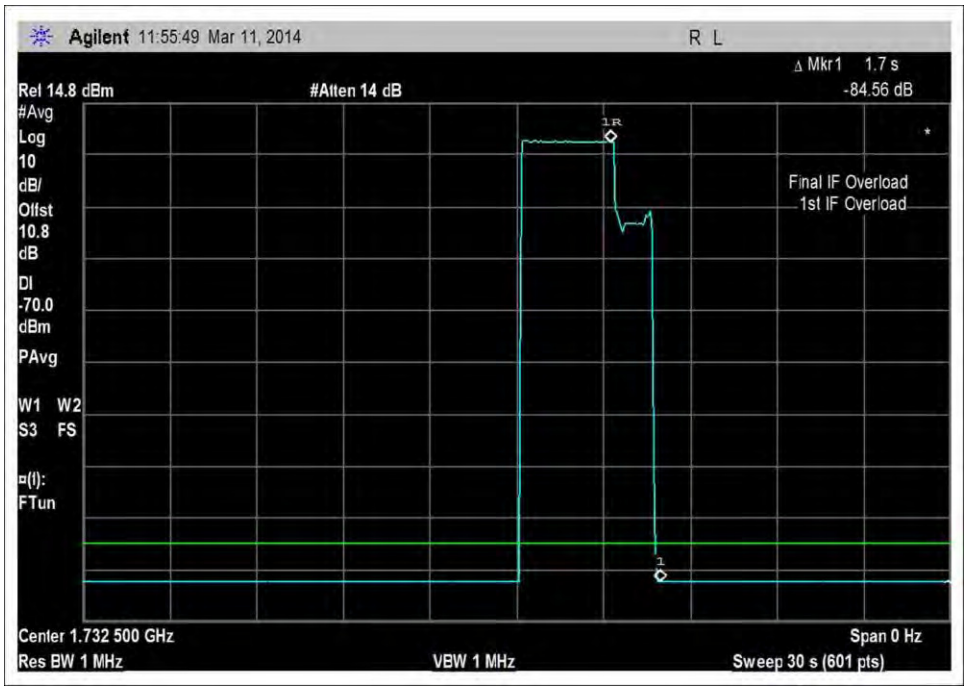
Summary:

Pass, The measured uplink inactive timing was measured, both band show the noise level is below -70dBm/MHz in the inactive stage, meeting the limit of 5 sec and -70dBm/MHz IAW the following requirement.

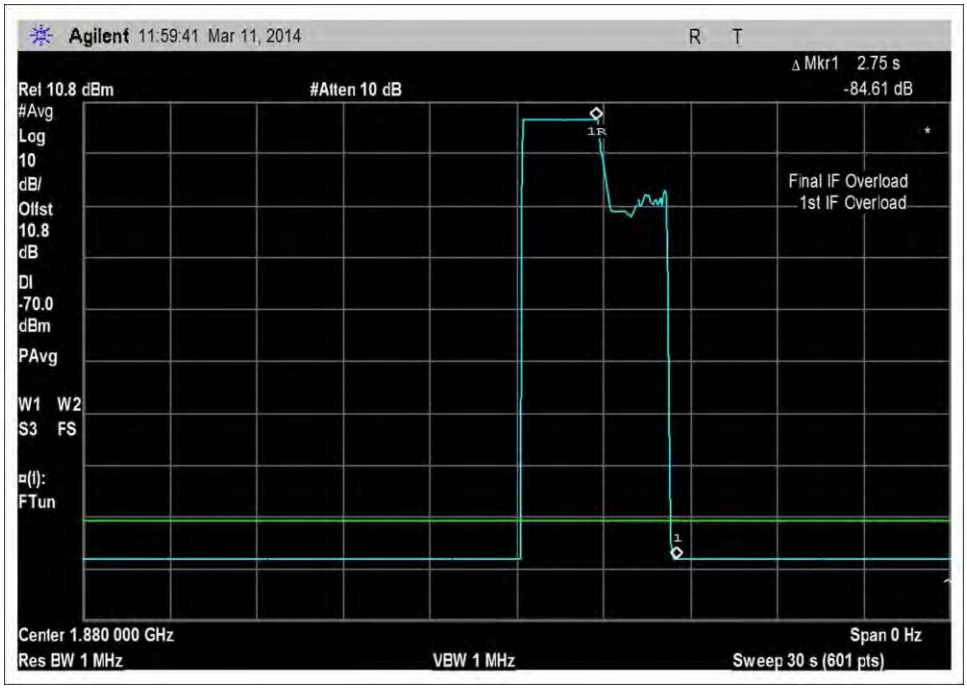
Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.8	Uplink Inactivity	20.21(e)(9)(i)(J)	Uplink Inactivity

Frequency	UL Inactive time Sec	Limit Sec	Margin Sec
UL 1710-1755	1.7	5.0	-3.3
UL 1850-1915	2.8	5.0	-2.3

Test Data



UL_inactive_1710-1755MHz



UL_inactive_1850-1915MHz

Clause 7.9 Booster Gain Limit

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: 7.9 Variable Booster Gain
Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Anritsu	MT8820A	6200250367
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.

Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.

The Base station simulator was set up with the following parameter:
Total Output Power = -20dBm
CPICH Tx power = +30dBm.
Atten = 70
CPICH Power (CPICH-EC/I0R)= -10dB

BSCL=+ 70 +30 -(-20 + (-10)) = 130dB
RSCP= -30 = accrual transmission level -20 dBm (RSSI) + - 10 (ECI0)
ECI0 = Signal power to noise power.

BSCL=Max attenuator setting + CPITH Tx Power level setting – Total output power – Pilot Channel (CPICH)
RSSI = Total output power – Max attenuator setting

Note: In intended operation, the booster shuts off and ceased relaying at RSSL of exceeding -40dBm. UL gain was evaluated only up to RSSI/BSCL of -40dBm / 80dB.

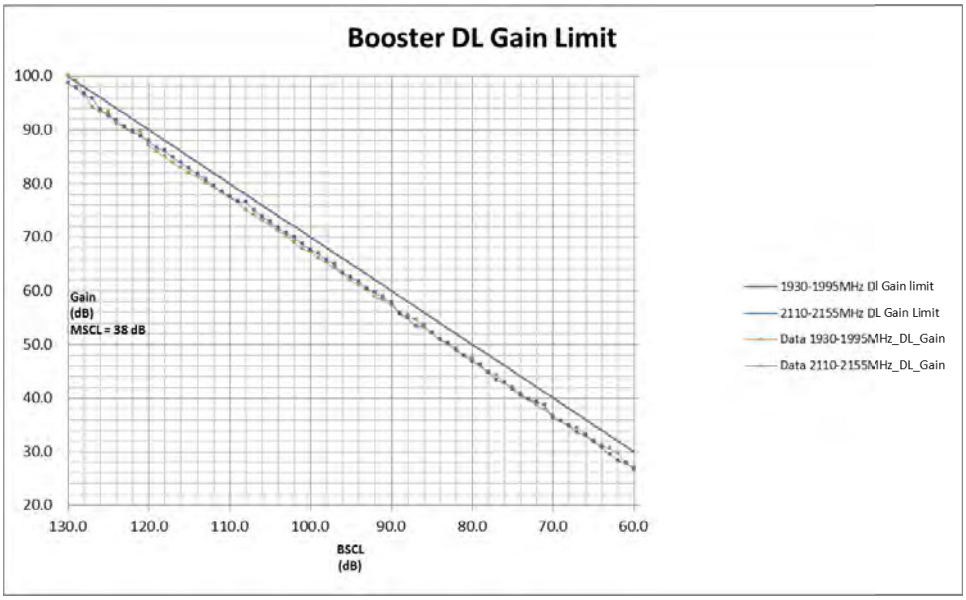
Summary of Results

Summary

Pass, the device complies with the following requirement.

Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.9	Variable Booster Gain	20.21(e)(9)(i)(C)(1)/(2) 20.21(e)(9)(i)(I)	Booster Gain Transmit Power Off Mode

Result

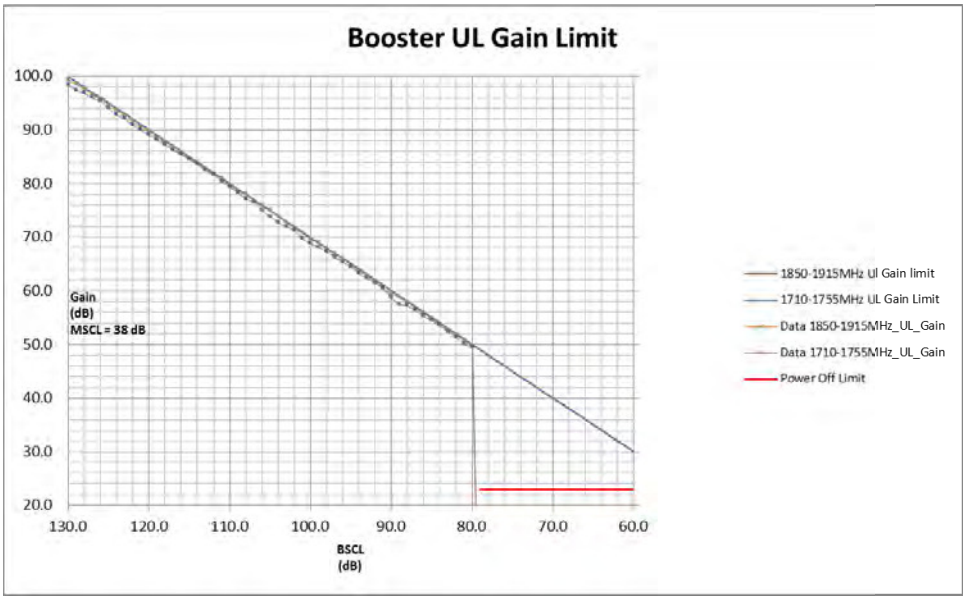


DL

RPCH Power Ant port (dBm)	BSCL	CH power	Gain	Limit	Margin
-87.0	127.0	8.8	95.8	97.0	-1.2
-89.0	129.0	8.7	97.7	99.0	-1.3
-90.0	130.0	8.6	98.6	100.0	-1.4
-88.0	128.0	8.5	96.5	98.0	-1.5
-68.0	108.0	8.4	76.4	78.0	-1.6
-78.0	118.0	8.0	86.0	88.0	-2.0

DL

RPCH Power Ant port (dBm)	BSCL	Ch power	Gain	Limit	Margin
-90.0	130.0	10.0	100.0	100.0	0.0
-88.0	128.0	8.7	96.7	98.0	-1.3
-81.0	121.0	8.6	89.6	91.0	-1.4
-85.0	125.0	8.2	93.2	95.0	-1.8
-83.0	123.0	7.6	90.6	93.0	-2.4
-47.0	87.0	7.6	54.6	57.0	-2.4



UL

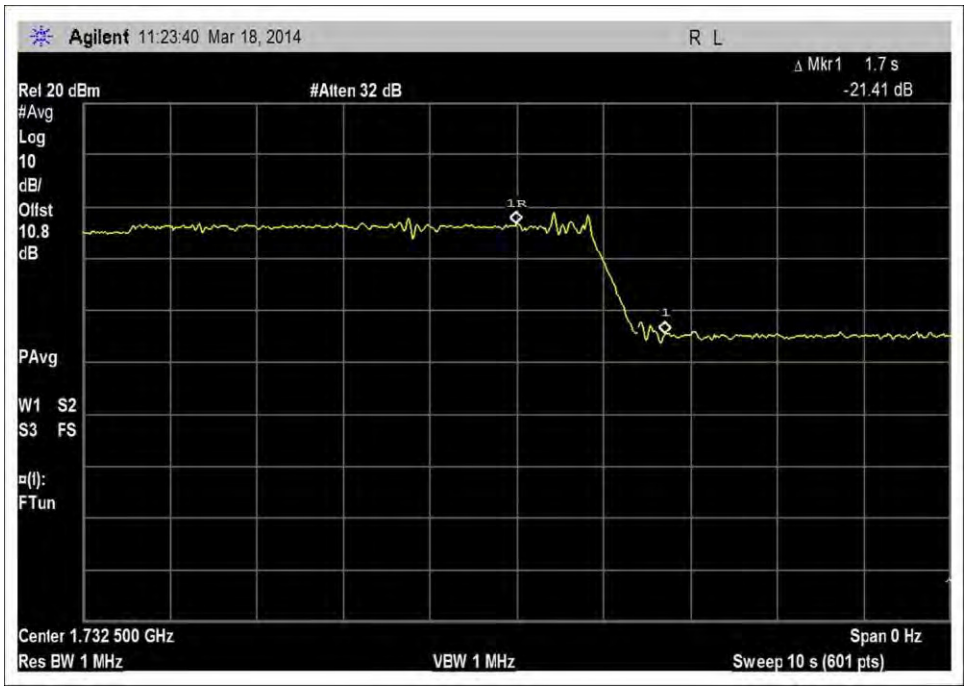
RPCH Power at Ant port (dBm)	BSCL	Ch Power	Gain	Limit	Margin
-44.0	84.0	-24.3	53.7	54.0	-0.3
-51.0	91.0	-17.4	60.6	61.0	-0.4
-75.0	115.0	6.6	84.6	85.0	-0.4
-74.0	114.0	5.6	83.6	84.0	-0.4
-72.0	112.0	3.6	81.6	82.0	-0.4
-76.0	116.0	7.5	85.5	86.0	-0.5

UL

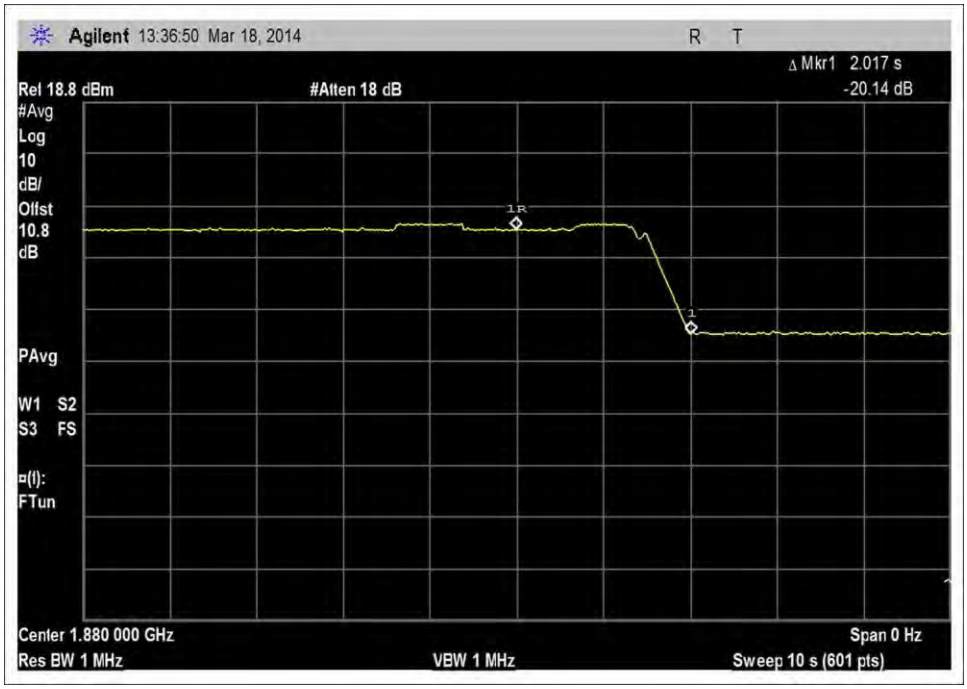
RPCH Power at Ant port (dBm)	BSCL	Ch Power	Gain	Limit	Margin
-68.0	108.0	-0.1	77.9	78.0	-0.1
-65.0	105.0	-3.1	74.9	75.0	-0.1
-59.0	99.0	-9.1	68.9	69.0	-0.1
-58.0	98.0	-10.1	67.9	68.0	-0.1
-46.0	86.0	-22.1	55.9	56.0	-0.1
-45.0	85.0	-23.1	54.9	55.0	-0.1

Frequency	UL Gain timing Sec	Limit Sec	Margin Sec
UL 1710-1755	1.7	3.0	-1.3
UL 1850-1915	2.0	3.0	-1.0

Test Data



UL_1710-1755MHz.



UL_1850-1995MHz

Clause 7.11 Oscillation Detection

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: 7.11 Oscillation Detection.
Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter , Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.
Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity - 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.

Summary of Results

Summary

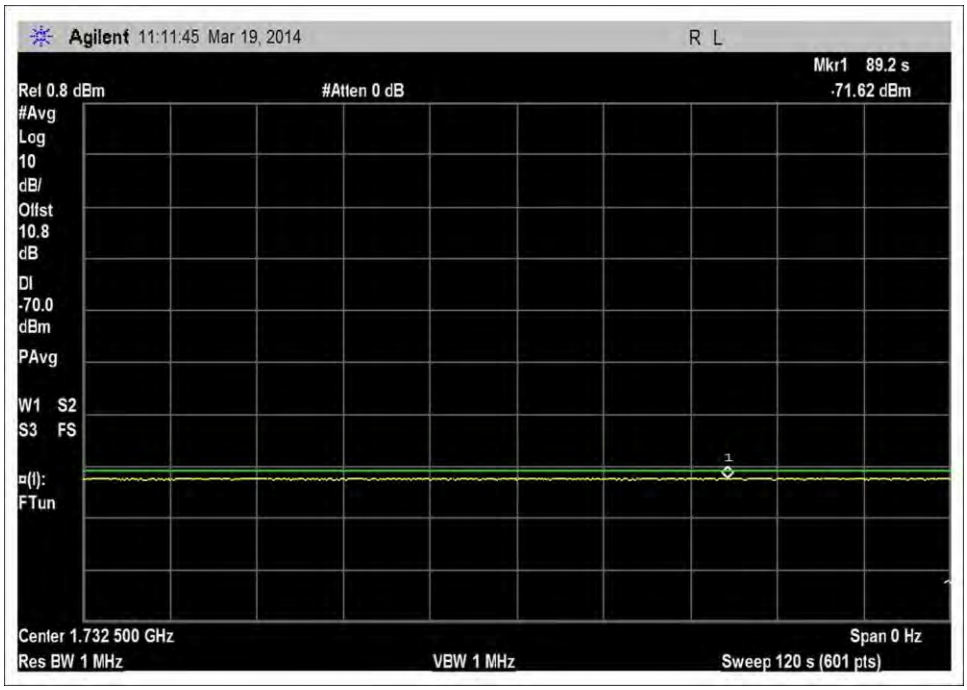
Pass, the device complies with the following requirement.

Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.11	Oscillation Detection	20.21(e)(9)(ii)(A)	Anti-Oscillation

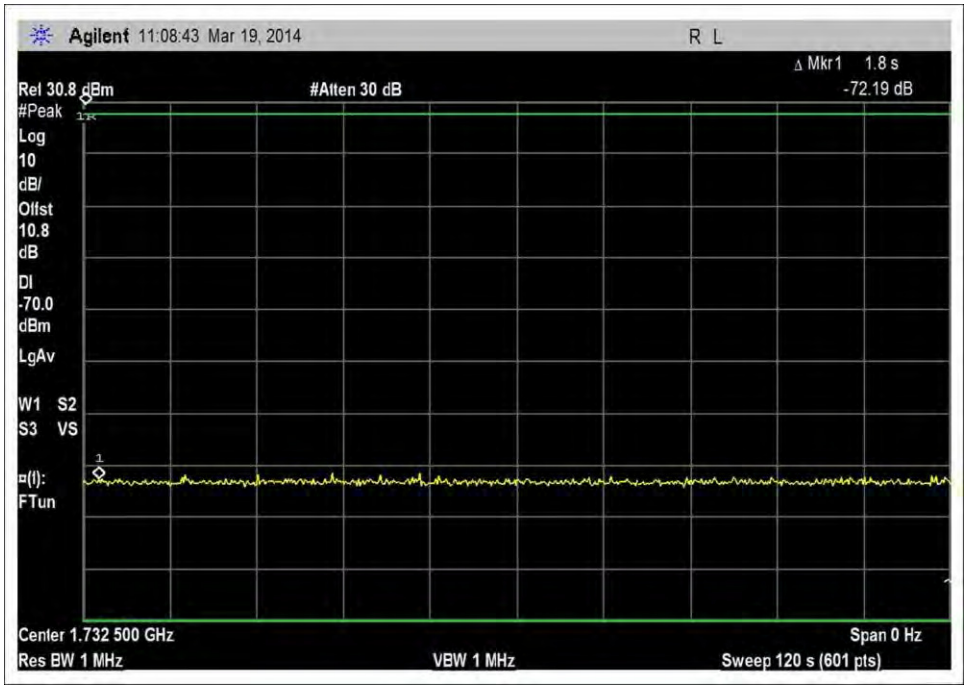
Frequency	Mitigation time Sec	Limit Sec	Margin Sec
UL 1710-1755	0.2083	0.3	-0.1
UL 1850-1915	0.1333	0.3	-0.2
DL 2110-2155	0.1410	1.0	-0.9
DL 1930-1995	0.1000	1.0	-0.9

Frequency	Re-try event	Limit Event	Margin dB
UL 1710-1755	0.0	5.0	-5.0
UL 1850-1915	0.0	5.0	-5.0
DL 2110-2155	0.0	5.0	-5.0
DL 1930-1995	0.0	5.0	-5.0

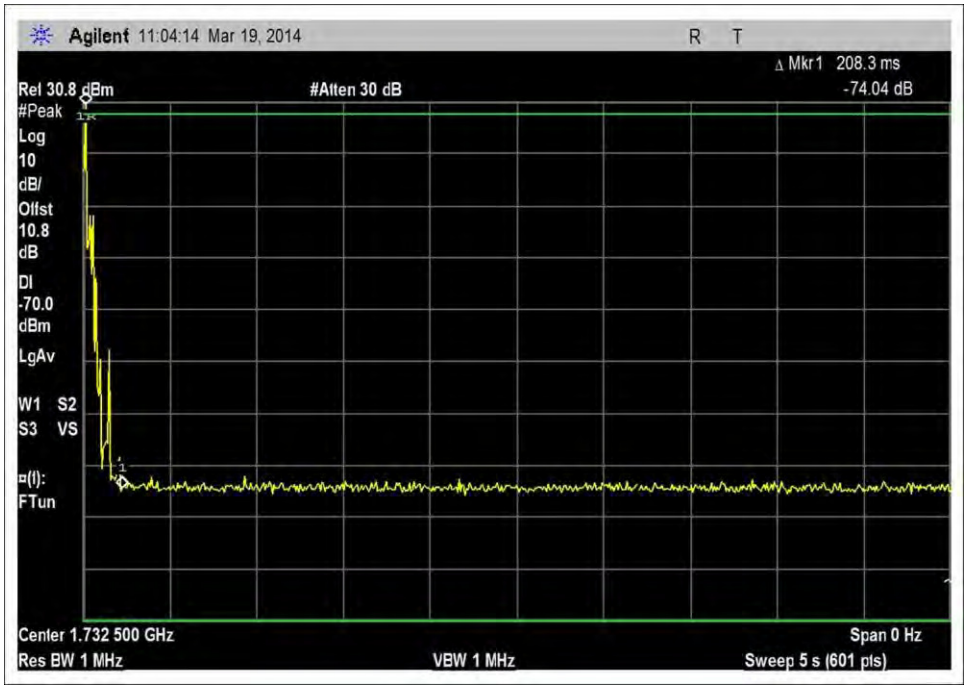
Test Data



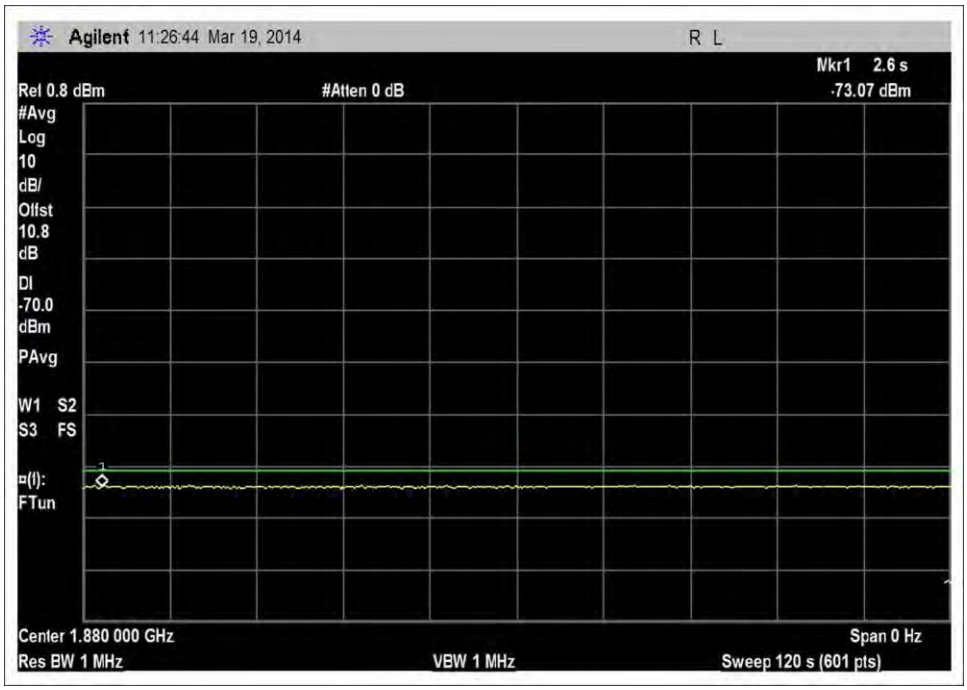
UL-1710-1755MHz_-70dBm



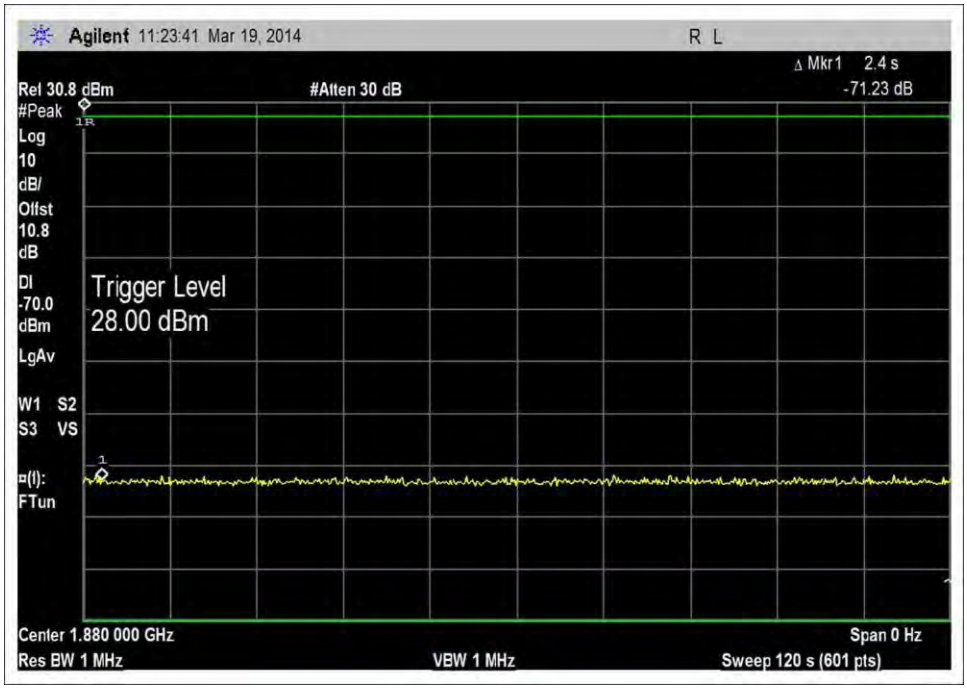
UL-1710-1755MHz_120sec



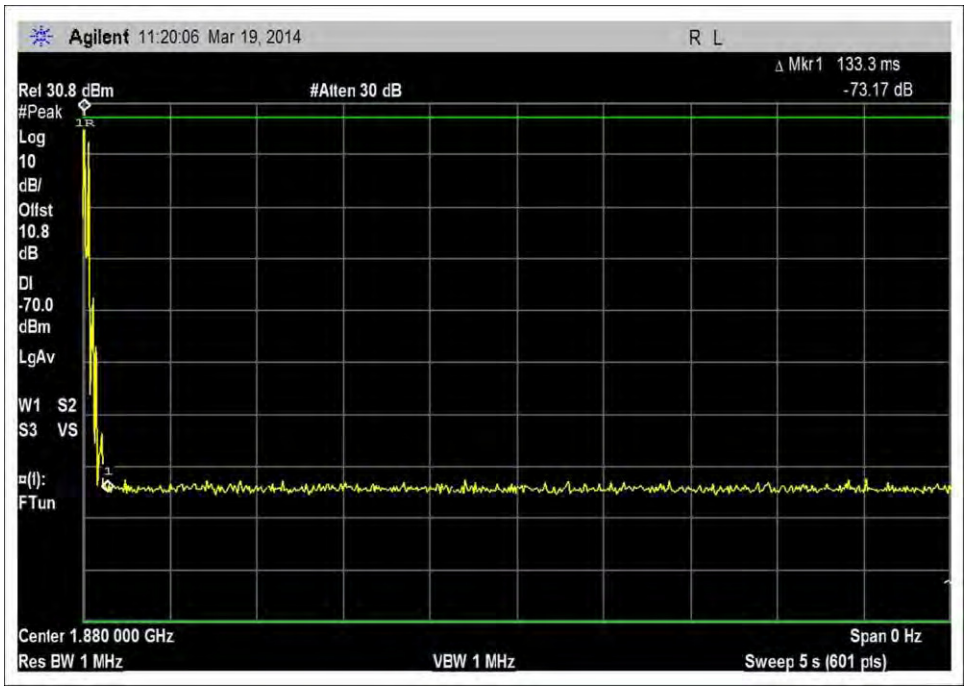
UL-1710-1755MHz_time



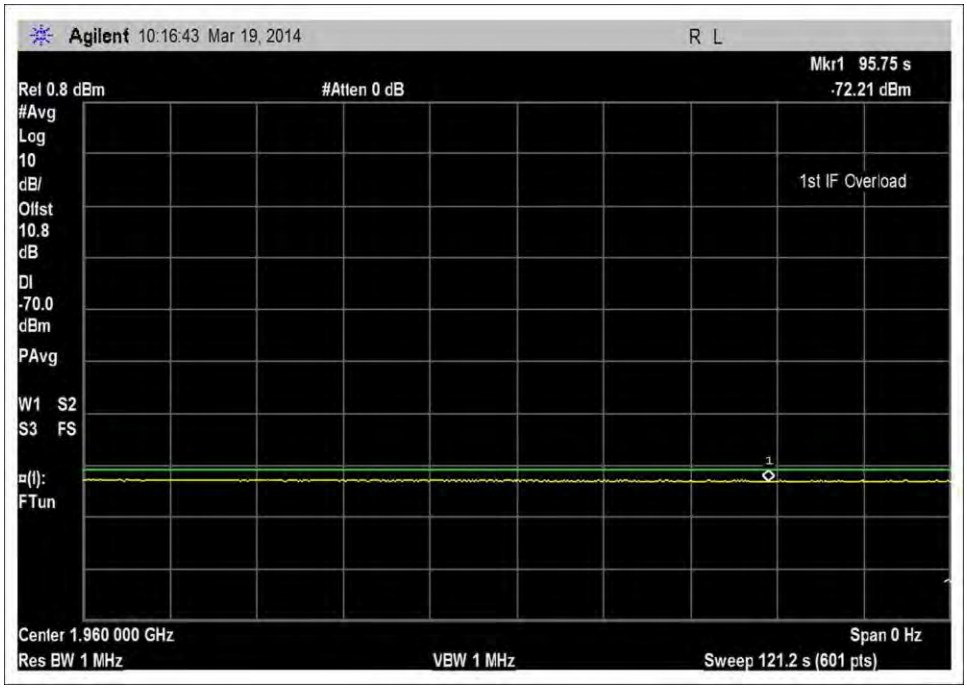
UL-1850-1915MHz_-70dBm



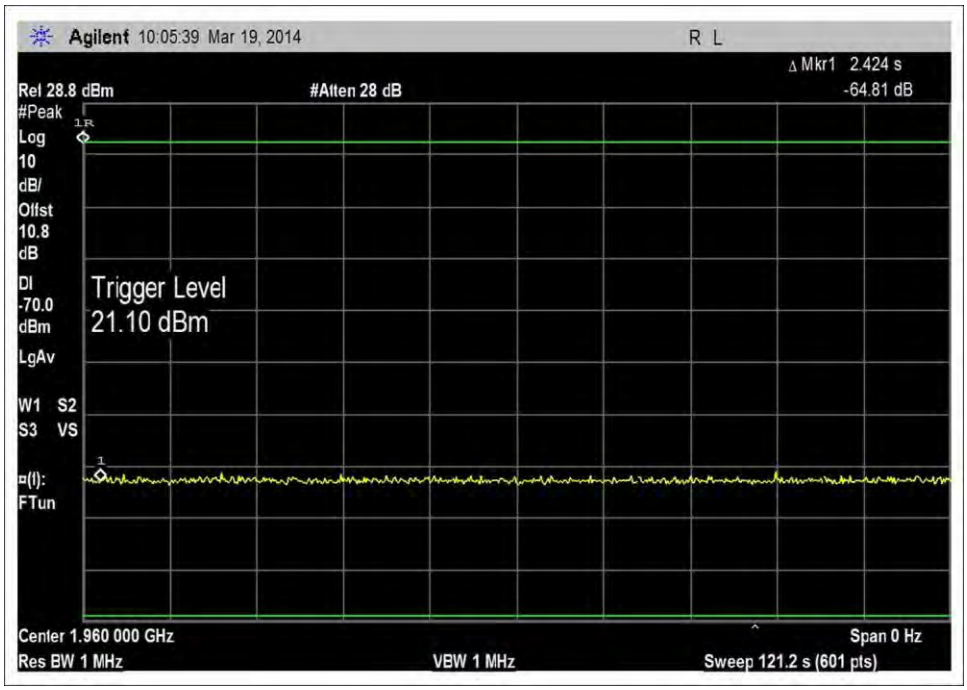
UL-1850-1915MHz_120sec



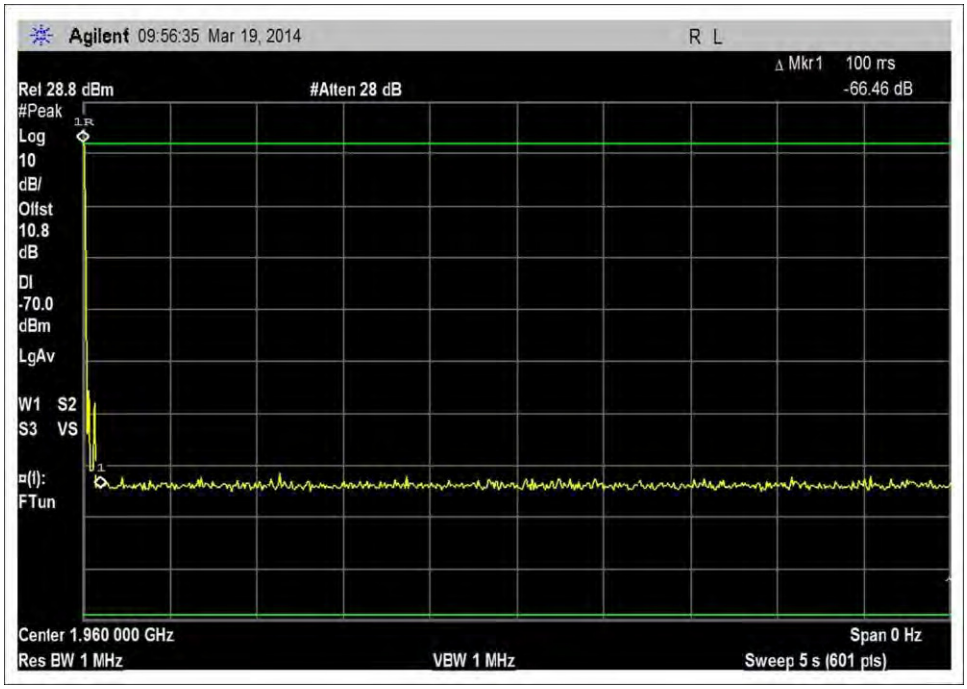
UL-1850-1915MHz_time



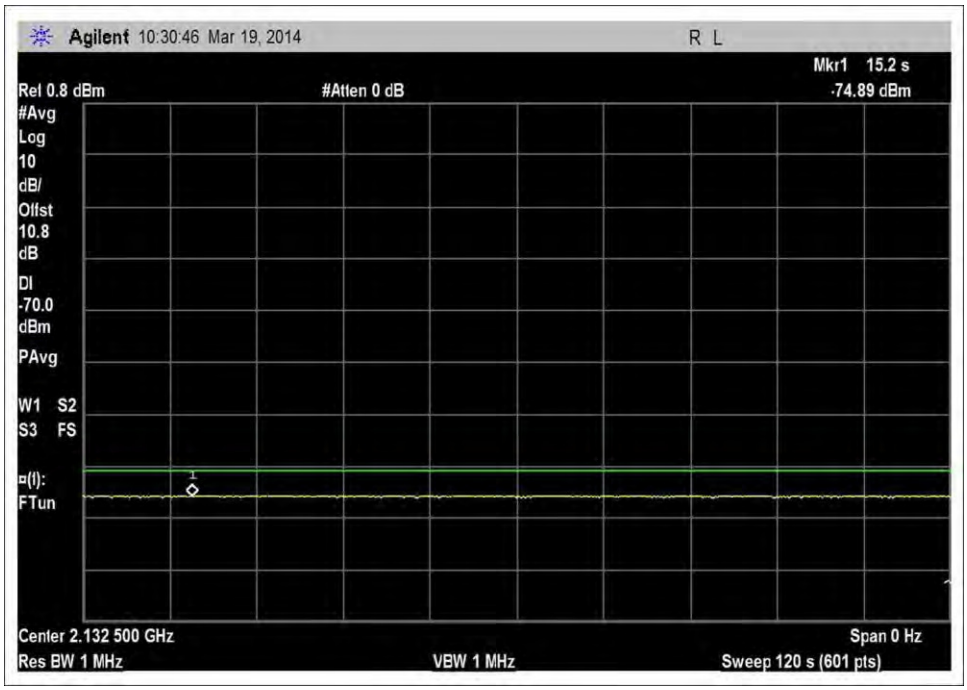
DL-1930-1995MHz_time_-70dBm



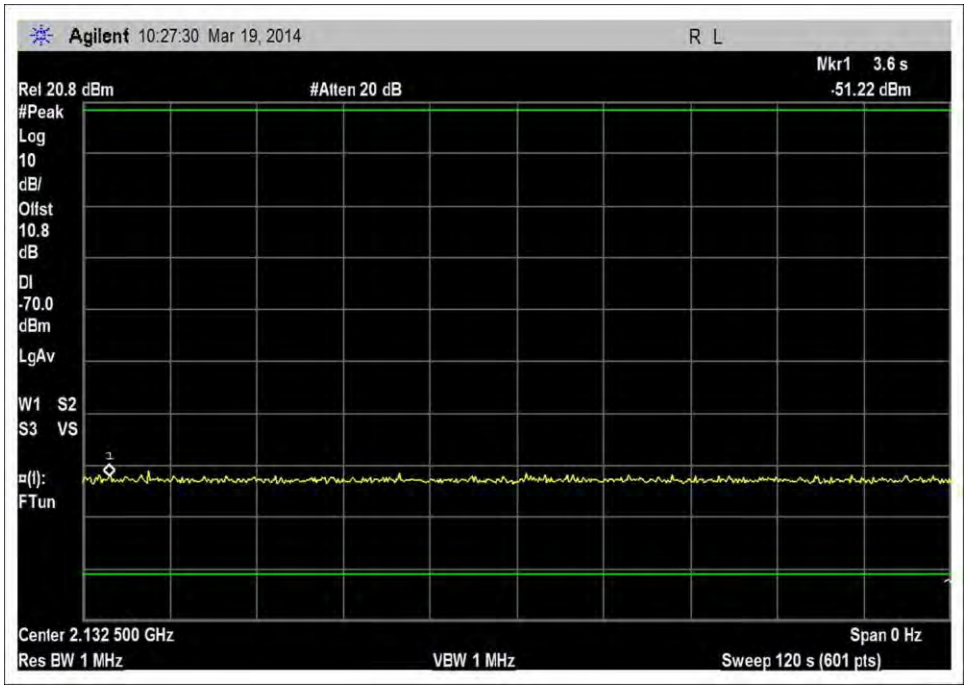
DL-1930-1995MHz_time_120sec



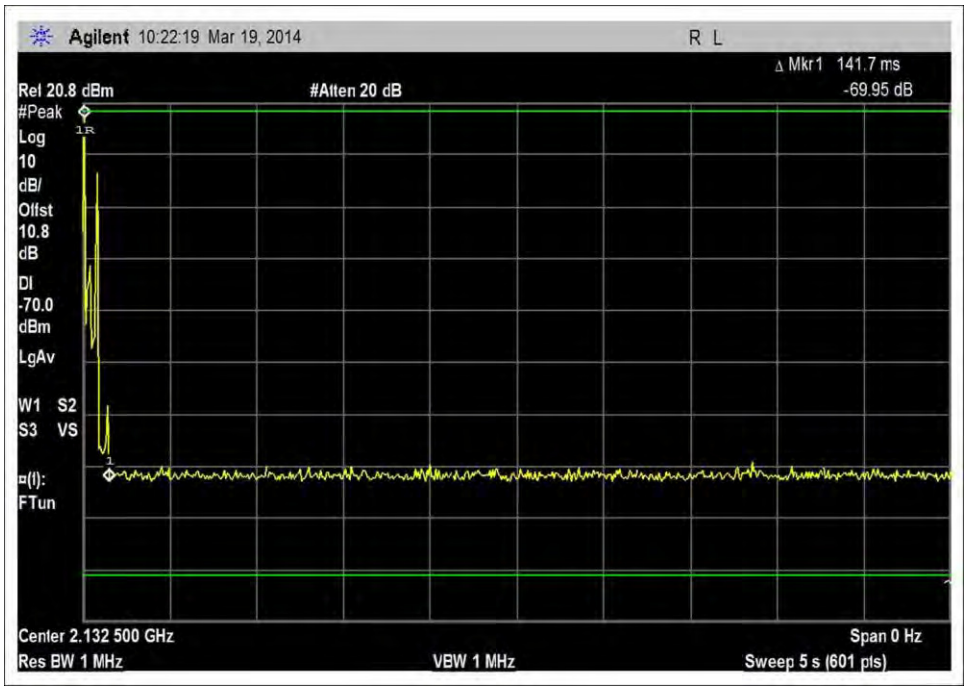
DL-1930-1995MHz_time



DL-2110-2155MHz_time_-70dBm



DL-2110-2155MHz_time_120sec



DL-2110-2155MHz_time

Clause 7.13 Spectrum Block Filter

Section 7.13 not applicable because the EUT does not utilize spectrum block filtering.

Clause 7.14 Out of Band Gain Limits

Test Conditions / Setup

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **Nextivity, Inc.**
Specification: 7.14 Out of Band Gain Limits
Work Order #: **95395** Date: 3/12/2014
Test Type: **Conducted Emissions** Time: 09:37:42
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 1
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi D32-2/4 110V 60Hz
S/N: 175406000036, 174406000145

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN03430	Attenuator	75A-10-12	9/5/2013	9/5/2015
T3	ANP06543	Cable	32022-29094K-29094K-24TC	11/20/2013	11/20/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster*	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA
Power Supply	Hon-Kwang	HK-AX-120A150-US	NA

Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8GHz Wireless interface.

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15MHz and 20MHz within the CMRS band by setting the bandwidth and center frequency of programmable Spectrum Block Filter, Gain and other operational parameter based on received public land mobile network (PLMN) ID. For testing purposes, only spectrum block filter of 5MHz will be evaluated.

The two EUT are placed on the test bench, connected via coax cable, combiner and 50 dB attenuators. The unit not under evaluation is placed in shielded enclosure to improve RF isolation.
UNII Tx /RX port of NU is connected to UNII TX/RX port of CU.
Evaluation are conducted at Donor power Port band 2 and band 4, Server port band 2 and band 4.

Signal: 4.1MHz AWGN

UL = 1850-1915MHz, 1710-1755MHz
DL = 1930-1990MHz, 2110-2155MHz

Test environment conditions:
Temperature - 24°C
Relative Humidity 21%
Pressure - 100kPa

Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14. With slight deviation.

Due to the intended 100dB of s system gain, in order to accurately measure the out of band without introducing measurement artifact. The device was tested in the following manner.

Two signals were injected into the RF input port via a combiner. The 4.1MHz AWGN was set at the center of the band, while the booster establishes the maximum system gain. A 200kHz AWGN with frequency set at frequency offset IAW the specification was established with signal level at 20dB above the PAGC level, while maintaining the stability of the system. The spectrum analyzer trace was placed in max hold. Which the 200kHz AWGN signal was set to the other three Frequency offset. The captured level of the 200kHz AWGN signal was recorded.

The EUT was then removed from the set up and the measurement was repeated, capturing the signal of the 200kHz AWGN at the frequency offset.

The Gain at the frequency offset was then computed.

Summary of Results

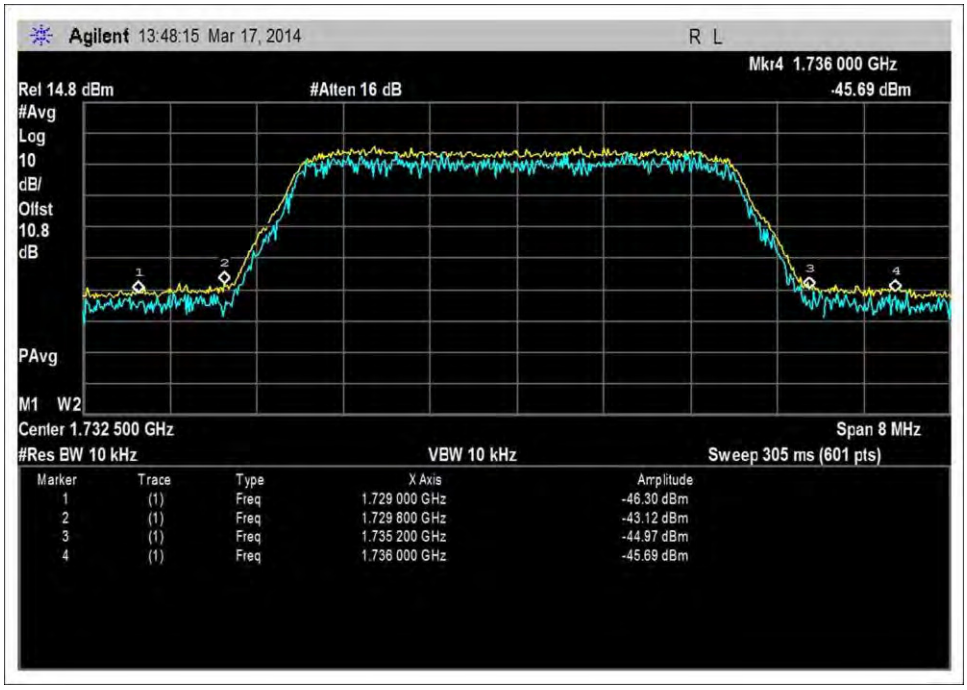
Summary:

Pass, the computed gain at the frequency offsets meet the requirement

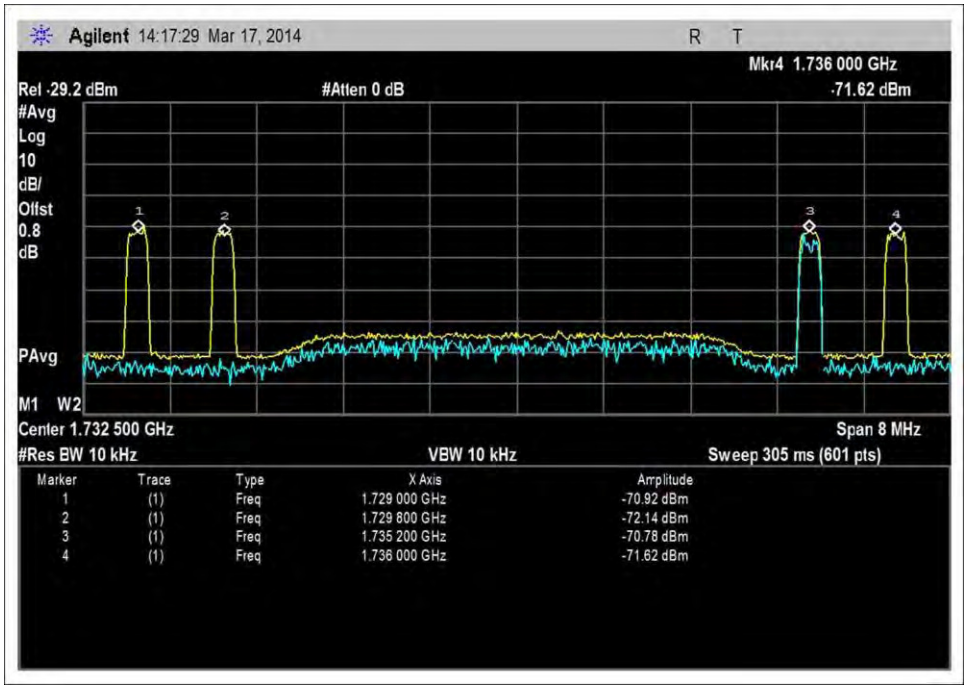
Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
7.14	Out of Band Gain Limits	20.21(e)(9)(i)(E)	Out of Band Gain Limits

Input				
	-1 MHz	-0.2 MHz	0.2MHz	1MHz
UL: 1710-1755MHz	-70.9	-72.1	-70.8	-71.6
UL: 1850-1915MHz	-70.7	-70.0	-69.7	-70.4
DL: 2110-2155MHz	-79.9	-80.0	-81.8	-80.7
DL: 1930-1995MHz	-78.7	-78.7	-80.1	-80.3
Output				
	-1MHz	-0.2 MHz	0.2MHz	1MHz
UL: 1710-1755MHz	-46.3	-43.1	-45.0	-45.7
UL: 1850-1915MHz	-42.0	-40.8	-38.5	-42.5
DL: 2110-2155MHz	-48.5	-46.6	-47.5	-47.9
DL: 1930-1995MHz	-54.8	-52.8	-53.7	-54.6
Gain				
	-1 MHz	-0.2 MHz	0.2MHz	1MHz
UL: 1710-1755MHz	24.6	29.0	25.8	25.9
UL: 1850-1915MHz	28.7	29.2	31.2	27.9
DL: 2110-2155MHz	31.4	33.4	34.3	32.8
DL: 1930-1995MHz	23.9	25.9	26.4	25.7
Limit	**45.0**	**60.0**	**60.0**	**45.0**
Margin				
UL: 1710-1755MHz	-20.4	-31.0	-34.2	-19.1
UL: 1850-1915MHz	-16.3	-30.8	-28.9	-17.1
DL: 2110-2155MHz	-13.6	-26.6	-25.7	-12.2
DL: 1930-1995MHz	-21.1	-34.1	-33.6	-19.3

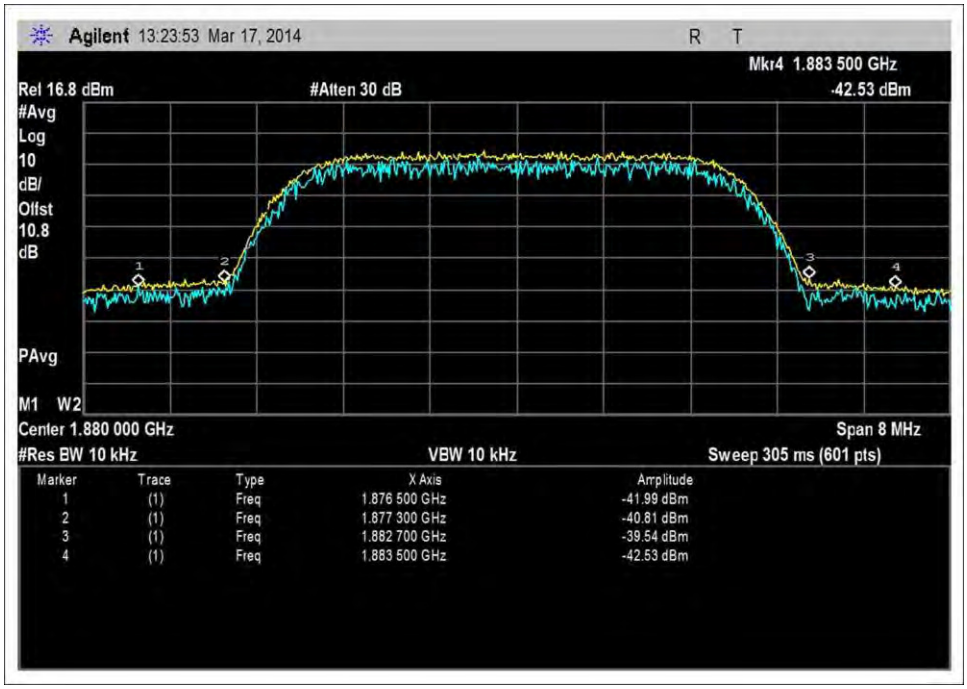
Test Data



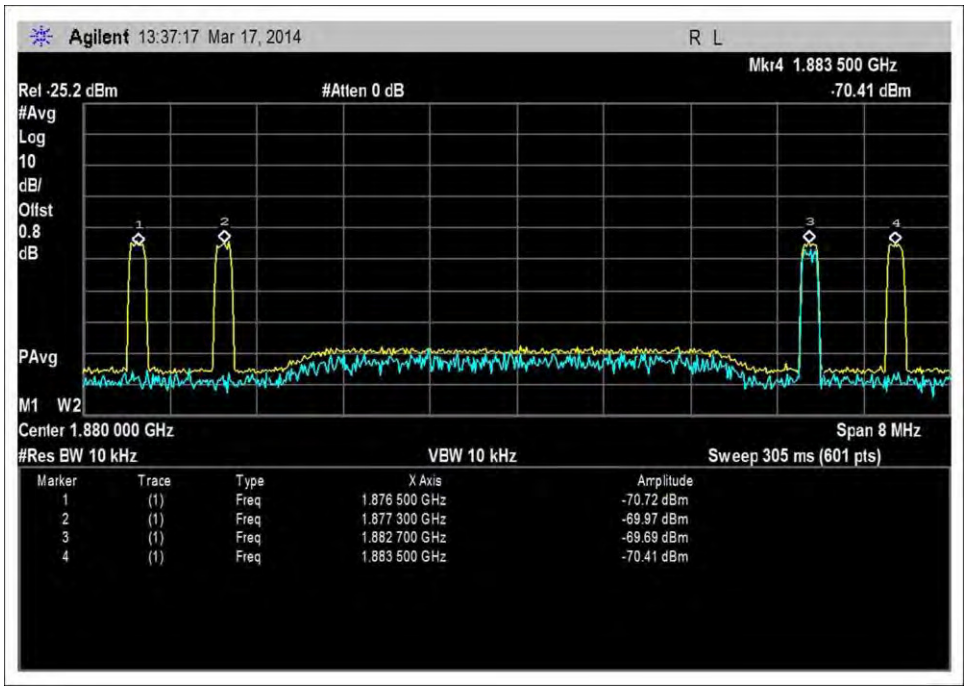
UL_1710-1755MHz



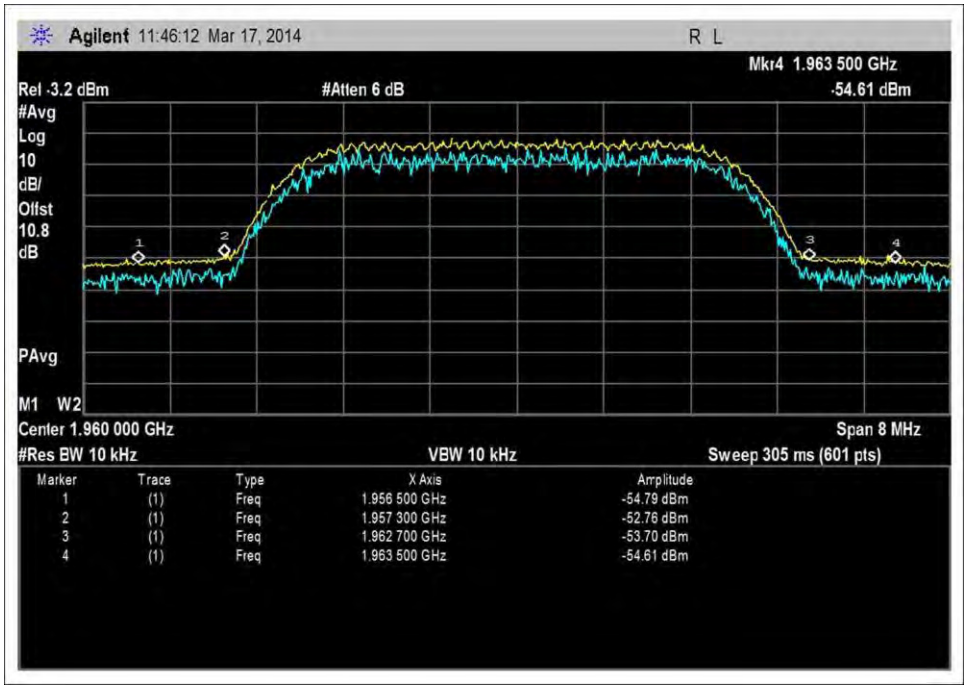
UL_1710-1755MHz_reference



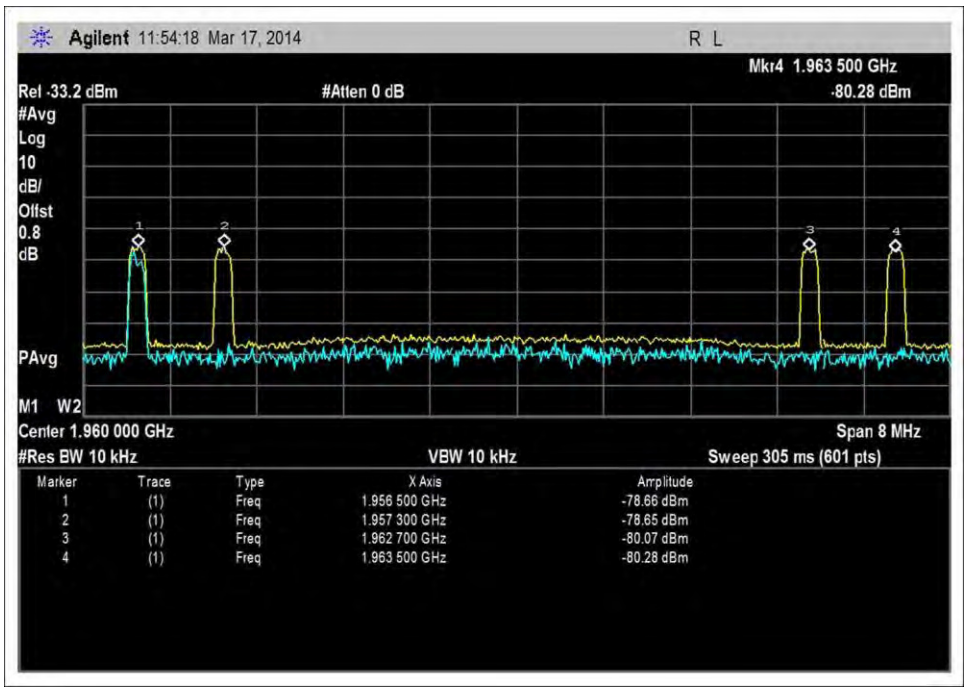
UL_1850-1915MHz



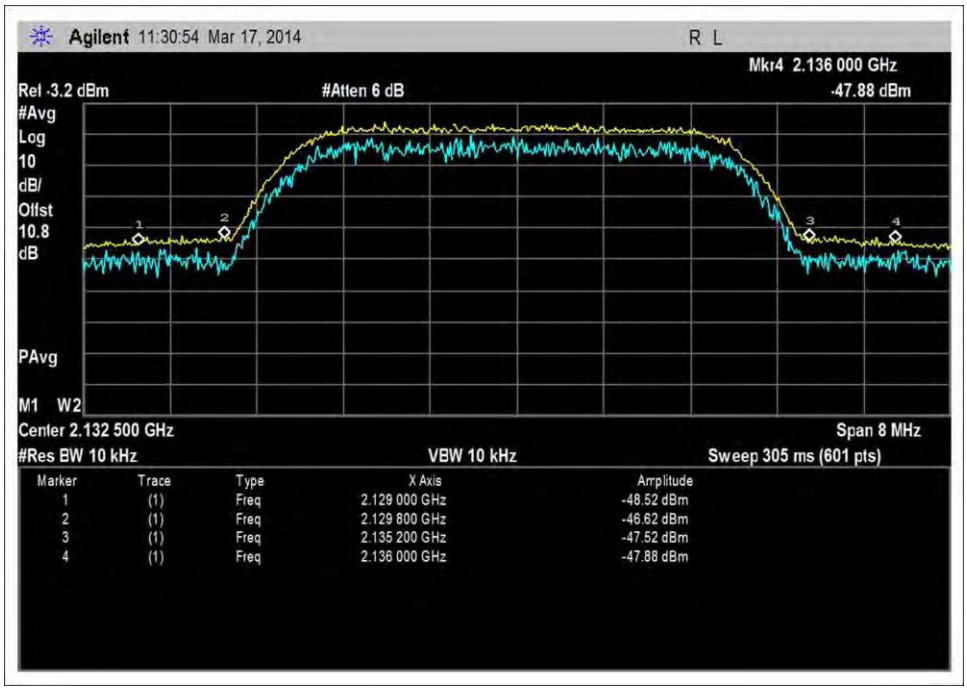
UL_1850-1915MHz_reference



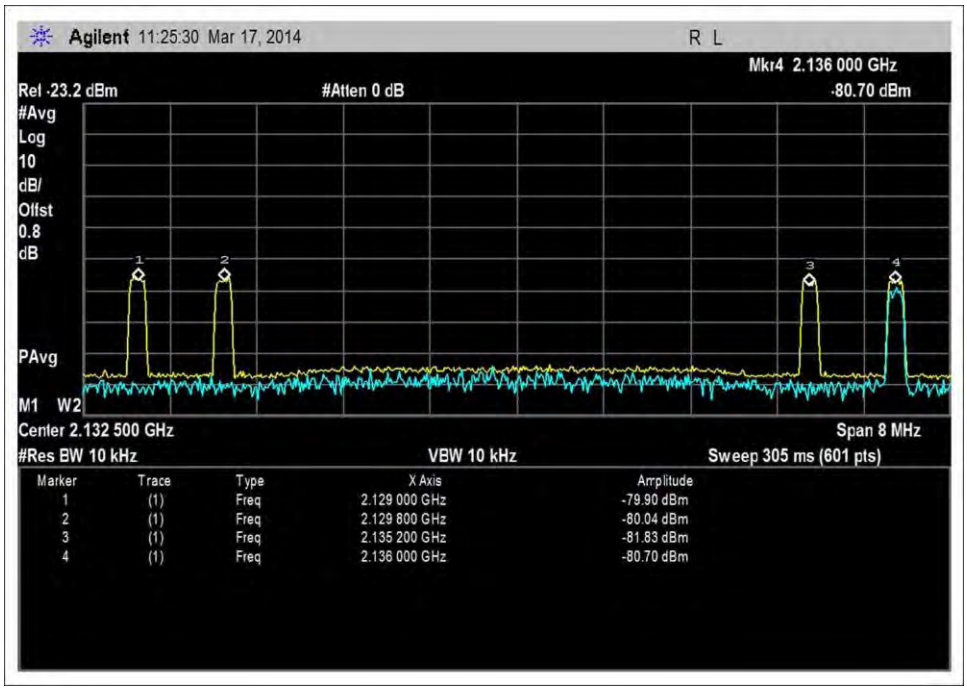
DL_1930-1995MHz



DL_1930-1995MHz_reference

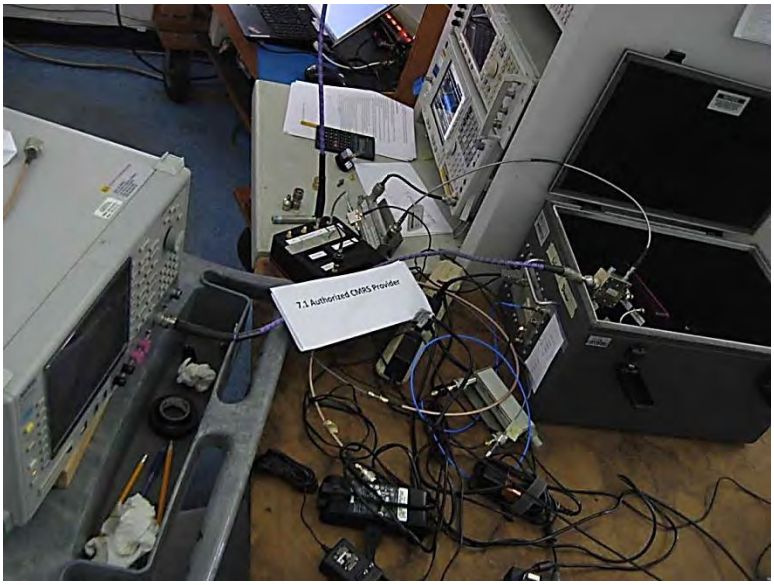


DL_2110-215MHz

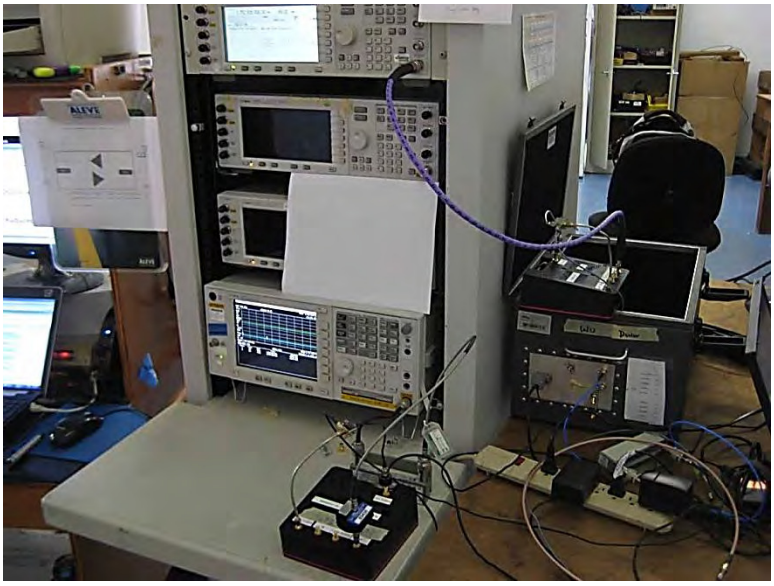


DL_2110-215MHz_reference

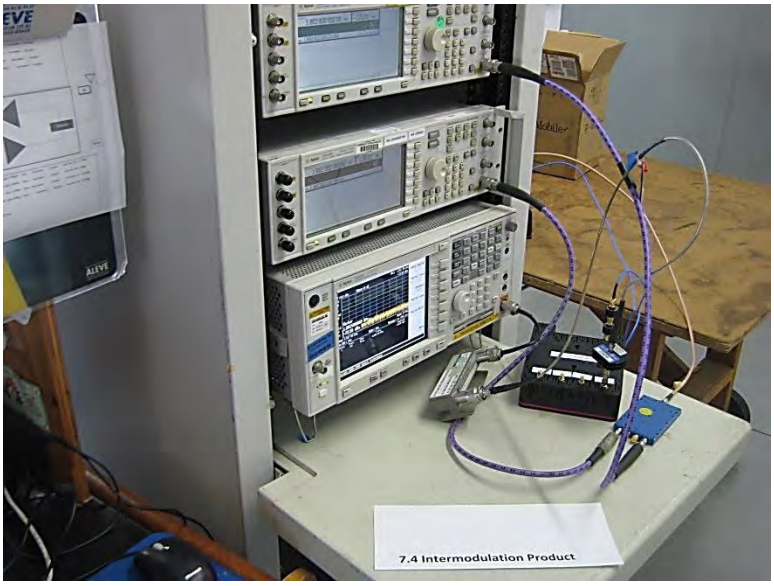
Test Setup Photos



Note: The above test setup photo applies to section 7.1



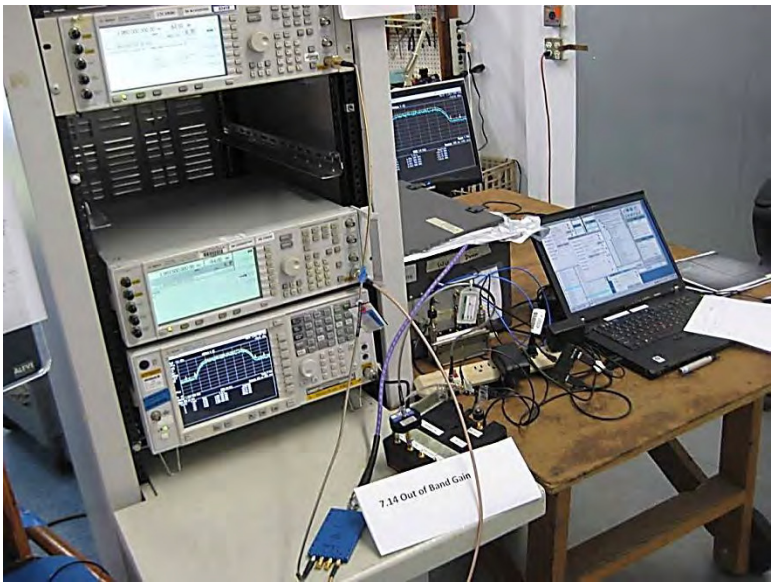
Note: The above test setup photo applies to Sections 7.1, 7.2, 7.3, 7.5, 7.7, and 7.8.



Note: The above test setup photo applies to section 7.4

Note: The above test setup photo applies to section 7.9

Note: The above test setup photo applies to section 7.11



Note: The above test setup photo applies to section 7.14.