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



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:

Nextivity, Inc. 12230 World Trade Dr San Diego, CA 92128 **REPORT PREPARED BY:**

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

REPRESENTATIVE: Michiel Lotter Customer Reference Number: 001889

DATE OF EQUIPMENT RECEIPT: DATE(S) OF TESTING: Project Number: 95395

March 10, 2014 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 -7 Bel

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 9	35210 D04 Provider-Specific			
Booster Measure	ments DR06-41704	FCC Part 20.21 Section	Correlation	Results
Guidance Sec #	Guidance Description	FCC Sec #	FCC Rule Description	
7.1	Authorized Frequency Band	20.21(a)(4) and	Self-Monitoring	Pass
	Verification and authorized	20.21(e)(3)	Frequency Bands	
	CMRS Provider			
7.2	Maximum Power	20.21(e)(9)(i)(B) and	Bidirectional Capabilities	Pass
	Measurement	20.21(e)(9)(i)(D)	Power Limit	
7.3	Maximum Booster Gain	20.21(e)(9)(i)(B) and	Bidirectional Capabilities	Pass
	Computation	20.21(e)(9)(i)((C)(1)		
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	Part 22/24/27 ¹	Conducted Spurious	NA ¹
	Emission ¹		Emission ¹	
7.7a) to g)	Noise Limit procedure	20.21(e)(9)(i)(A)	Noise Limits	Pass
7.7h) to m)	Variable Noise	20.21(e)(9)(i)(l)		
7.7n) to t)	Variable Noise Timing		Transmit power off Mode	
7.8.	Uplink inactivity	20.21(e)(9)(i)(J)	Uplink inactivity	Pass
7.9a) to l)	Variable Booster gain	20.21(e)(8)(i)(C) (1),(2)	Booster Gain	Pass
7.9m) to s)	Variable Uplink Gain Timing	20.21(e)(8)(i)(H)	Transmit Power Off Mode	
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	NA ¹
			Emission 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

NA¹ = 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

Power Supply

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

Combiner

Manuf: Anaren Model: 44000 Serial: C00087

Signal Generator

Manuf: Agilent Model: E4438C Serial: MY42082260

Signal Generator

Manuf: Agilent Model: E4433B Serial: US40052164



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 Verifi	ication	
Work Order #:	95395	Date:	3/12/2014
Test Type:	Conducted Emissions	Time:	09:37:42
Equipment:	Provider Specific Consumer Signal	Sequence#:	1
	Booster		
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
Т3	ANP06543	Cable	32022-29094K- 29094K-24TC	11/20/2013	11/20/2015

Equipment Under Test (* :	= EUT):		
Function	Manufacturer	Model #	S/N
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Signal Booster*			
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145
Signal Booster	-		
Support Devices:			
Function	Manufacturer	Model #	S/N
Signal Congrator	Apritan	MT9920A	6200250267

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	20.21(a)(4) and	Self-Monitoring
	and authorized CMRS Provider	20.21(e)(3)	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 •	Bre	ea, CA 92823	•	714-993-6112
----------------	------------------	---	--------------------	-----	--------------	---	--------------

Customer: Specification:	Nextivity, Inc. 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	Sequence#:	1
	Booster		
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
Т3	ANP06543	Cable	32022-29094K-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test (* = EUT):				
Function	Manufacturer	Model #	S/N	
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036	
Signal Booster*				
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145	
Signal Booster				
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 of 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	20.21(a)(4) and	Self-Monitoring
	and authorized CMRS Provider	20.21(e)(3)	Frequency Bands





#Atten 0 dB			Mkr1 1.878 49 GHz -83.614 dBm
			_
	1-1		
······	~~~ & ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	





Test Data







DL_1930-1995MHz_005

Agilent 11:35:56 I	R L	
Ret 0.8 dBm	#Atten 0 dB	-83.59 dBm
Avg		
og		
0		
B/		
Diist		
B		
70.0		
iBm		
PAvg		
V1 S2		
S3 FC		
4(I): Tun		
Swp	1	
	Q	
Start 1.927 50 GHz		Stop 1.995 00 GHz
Res BW 1 MHz	VBW 1 MHz	#Sweep 5 s (601 pts)







UL_1710-1755MHz_260



UL_1850-1915MHz_260



DL_2110-2155MHz_260



DL_1930-1995MHz_260



Testing the Future

LABORATORIES, INC.

CKC







			Mkr1 1.732 65 GHz		
Ref 0.8 dBm	#Atten 0 dB			-84.971 dBm	
Avg					
.og					
0					
IB/					
B					
70.0					
IBm					
VAvg					
00					
V1 S2					
53 FC					
u(1):					
Tun					
wp				m	
Start 1.710 00 GHz			S	top 1.755 00 GHz	







DL_1930-1995MHz_410

Aglient 11:34:51	Mar 12, 2014	R L	
Ret 0.8 dBm	#Atten 0 dB	-83.65 dBm	
Avg			
og			
0			
IB/			
Difst			
0.8			
IB			
DI			
70.0			
iBm			
PAvg			
N1 S2			
S3 FC			
=(i):			
Tun			
Swp			
Start 1.927 50 GHz		Stop 1.995 00 GHz	
Res BW 1 MHz	VBW 1 MHz	#Sweep 5 s (601 pts)	





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	Sequence#:	1
	Booster		
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
Т3	ANP06543	Cable	32022-29094K-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test	t (* = EUT):	
Function	Manufacturer	Model #
Provider Specific Consu	mer Nextivity. Inc.	Cel-Fi D32-2/4 CU

Provider Specific Consumer Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Signal Booster*		
Provider Specific Consumer Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145
Signal Booster		

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

S/N



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	Bidirectional Capabilities
		20.21(e)(9)(i)(D)	Power Limit
7.3	Maximum Booster Gain	20.21(e)(9)(i)(B) and	
	Computation	20.21(e)(9)(i)((C)(1)	Bidirectional Capabilities
		20.21(e)(9)(i)((C)(2)	



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
ULgain vs DLgain 1700/2100	0.0	9.0
ULgain vs DLgain 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					
			Cable		
Frequency	Output Power	Ant Gain	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: Specification:	Nextivity, Inc. 7.4 Intermodulation		
Work Order #:	95395	Date:	3/12/2014
Test Type:	Conducted Emissions	Time:	09:37:42
Equipment:	Provider Specific Consumer Signal	Sequence#:	1
	Booster		
Manufacturer:	Nextivity, Inc.	Tested By:	E. Wong
Model:	Cel-Fi D32-2/4		110V 60Hz
S/N:	175406000036, 174406000145		

Hon-Kwang

Test Equipment:

Power Supply

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
Т3	ANP06543	Cable	32022-29094K-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test (* = EUT):					
Function	Manufacturer	Model #	S/N		
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036		
Signal Booster*					
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145		
Signal Booster	-				
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		

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	Limit	Margin
	dBm/3kHz	dBm/3KHz	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 • B	rea, CA 92823 • 71	4-993-6112
Customer: Specification:	Nextivity, Inc. 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	Sequence#:	1
	Booster		
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
Т3	ANP06543	Cable	32022-29094K-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test (* = EUT):						
Function	Manufacturer	Model #	S/N			
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036			
Signal Booster*						
Provider Specific Consumer	Provider Specific Consumer Nextivity, Inc. Cel-Fi D32-2/4 NU 174406000145					
Signal Booster						
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			

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	Limit	Margin
	dBm	dBm	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_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_-90dBm_ACP



Clause 7.7 Noise limit

Test Conditions / Setup

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

Customer: Specification:	Nextivity, Inc. 7.7 Noise limit		
Work Order #:	95395	Date:	3/12/2014
Test Type:	Conducted Emissions	Time:	09:37:42
Equipment:	Provider Specific Consumer Signal	Sequence#:	1
	Booster		
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-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test (* :	= EUT):		
Function	Manufacturer	Model #	S/N
Provider Specific Consumer	· Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Signal Booster*			
Provider Specific Consumer	· Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145
Signal Booster	-		
Support Devices:			
Function	Manufacturer	Model #	S/N
0. 10		1 (700000)	(0000500(7

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	Limit	Margin
	dBm/MHz	dBm/MHz	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	Limit	Margin
	Sec	Sec	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)(l)	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)(l)	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)(l)	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)(l)	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: Specification:	Nextivity, Inc. 7.8 Uplink Inactivity		
Work Order #:	95395	Date:	3/12/2014
Test Type:	Conducted Emissions	Time:	09:37:42
Equipment:	Provider Specific Consumer Signal	Sequence#:	1
	Booster		
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
Т3	ANP06543	Cable	32022-29094K-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test (* = EUT):					
Function	Manufacturer	Model #	S/N		
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036		
Signal Booster*					
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145		
Signal Booster					
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	Limit	Margin
	Sec	Sec	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

CKC Laboratories • 110 Olinda Place • B	rea, CA 92823 • 71	4-993-6112
Nextivity, Inc.		
7.9 Variable Booster Gain		
95395	Date:	3/12/2014
Conducted Emissions	Time:	09:37:42
Provider Specific Consumer Signal	Sequence#:	1
Booster		
Nextivity, Inc.	Tested By:	E. Wong
Cel-Fi D32-2/4		110V 60Hz
175406000036, 174406000145		
	CKC Laboratories • 110 Olinda Place • B Nextivity, Inc. 7.9 Variable Booster Gain 95395 Conducted Emissions Provider Specific Consumer Signal Booster Nextivity, Inc. Cel-Fi D32-2/4 175406000036, 174406000145	CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 71 Nextivity, Inc. 7.9 Variable Booster Gain 95395 Date: Conducted Emissions Time: Provider Specific Consumer Signal Booster Nextivity, Inc. Tested By: Cel-Fi D32-2/4 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
Т3	ANP06543	Cable	32022-29094K-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test (* = EUT):				
Function	Manufacturer	Model #	S/N	
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036	
Signal Booster*				
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145	
Signal Booster				
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
7.0	Variable Booster Gain	20.21(e)(9)(i)(C)(1)/(2)	Booster Gain
7.9		20.21(e)(9)(i)(l)	Transmit Power Off Mode

Result



DL					
RPCH Power	BSCL	CH power	Gain	Limit	Margin
(dBm)					
-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	BSCL	Ch power	Gain	Limit	Margin
Ant port					
(dBm)					
-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	BSCL	Ch Power	Gain	Limit	Margin
at Ant port					
(dBm)					
-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	Limit	Margin
	Sec	Sec	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

3/12/2014
09:37:42
1
E. Wong
110V 60Hz

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-	11/20/2013	11/20/2015
			29094K-24TC		

Equipment Under Test (* =	= EUT):		
Function	Manufacturer	Model #	S/N
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036
Signal Booster*			
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145
Signal Booster	-		
Support Devices:			
Function	Monufacturer	Model #	S/N

Function	Manufacturer	Model #	S/IN
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	Guidance Description FCC Sec #		FCC Rule Description		
7.11	Oscillation Detection		20.21(e)(9)(ii)(A)	Anti-Oscillation		
Frequency	Mitigation time		Limit	Margin		
	Sec	Sec		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	Limit	Margin
	event	Event	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

CKC Laboratories • 110 Olinda Place •	Brea, CA 92823 • 71	4-993-6112
Nextivity, Inc.		
7.14 Out of Band Gain Limits		
95395	Date:	3/12/2014
Conducted Emissions	Time:	09:37:42
Provider Specific Consumer Signal	Sequence#:	1
Booster		
Nextivity, Inc.	Tested By:	E. Wong
Cel-Fi D32-2/4		110V 60Hz
175406000036, 174406000145		
	CKC Laboratories • 110 Olinda Place • Nextivity, Inc. 7.14 Out of Band Gain Limits 95395 Conducted Emissions Provider Specific Consumer Signal Booster Nextivity, Inc. Cel-Fi D32-2/4 175406000036, 174406000145	CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 71 Nextivity, Inc. 7.14 Out of Band Gain Limits 95395 Date: Conducted Emissions Time: Provider Specific Consumer Signal Booster Nextivity, Inc. Tested By: Cel-Fi D32-2/4 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
Т3	ANP06543	Cable	32022-29094K- 29094K-24TC	11/20/2013	11/20/2015

Equipment Under Test (* = EUT):						
Function	Manufacturer	Model #	S/N			
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 CU	175406000036			
Signal Booster*						
Provider Specific Consumer	Nextivity, Inc.	Cel-Fi D32-2/4 NU	174406000145			
Signal Booster						
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 -46.3 -43.1 -45.0 -45.7 UL: 1710-1755MHz -40.8 UL: 1850-1915MHz -42.0 -38.5 -42.5 -48.5 -47.5 -47.9 DL: 2110-2155MHz -46.6 DL: 1930-1995MHz -54.8 -53.7 -54.6 -52.8 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 34.3 32.8 31.4 33.4 DL: 1930-1995MHz 25.7 23.9 25.9 26.4 Limit 45.0 60.0 60.0 45.0 Margin UL: 1710-1755MHz -20.4 -31.0 -34.2 -19.1 -16.3 -30.8 -28.9 -17.1 UL: 1850-1915MHz -13.6 -26.6 -25.7 -12.2 DL: 2110-2155MHz -34.1 DL: 1930-1995MHz -21.1 -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.