Nextivity, Inc.

TEST REPORT FOR

Provider Specific Consumer Signal Booster
Model: Cel-Fi P34-2/4/5/12

Tested To The Following Standards:

FCC Part 27L

Report No.: 95128-17

Date of issue: April 29, 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.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Michiel Lotter
Customer Reference Number: 001831

REPORT PREPARED BY:

Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 95128

DATE OF EQUIPMENT RECEIPT: December 13, 2013
DATE(S) OF TESTING: December 13, 2013- April 22, 2014

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(s) 2 / 27L

Test Procedure/Method	Description	Results
2.1046	RF Power Output	NA[1]
2.1049 (I)	Occupied Bandwidth	Pass
2.1051 / 27.53(c) / 27.53(f) / 27.53(g)	Spurious Emissions at Antenna Terminals	Pass
2.1053 / 27.53(c) / 27.53(f) / 27.53(g)	Field Strength of Spurious Radiation	Pass
2.1055(a)(d)	Frequency Stability	Pass

NA[1] = A different standard applies; see applicable test report.

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 P34-2/4/5/12CU
Serial: 171341000018

Provider Specific Consumer Signal Booster
Manuf: Nextivity, Inc.
Model: Cel-Fi P34-2/4/5/12NU
Serial: 170931000035

Note: The base model number for the system is Cel-Fi P34-2/4/5/12. The individual systems tested were: Cel-Fi P34-2/4/5/12NU and Cel-Fi P34-2/4/5/12CU.

PERIPHERAL DEVICES

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

Power Supply (2)
Manuf: ITE Power Supply
Model: PW173
Serial: NA

Power Supply (2)
Manuf: Autec Power Systems
Model: SA07-24US12R
Serial: NA

Signal Generator
Manuf: Agilent
Model: E4433B
Serial: US40052164

Signal Generator
Manuf: Agilent
Model: E4438C
Serial: MY42082260

Splitter
Manuf: Anaren
Model: 44000
Serial: 0583

FCC PART(S) 2 / 27L

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) requirements for licensed devices.

47 CFR Part 27: Miscellaneous Wireless Communication Services

2.1049(I) Occupied Bandwidth

Test Conditions / Setup

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

Customer: **Nextivity, Inc.**
Specification: **Occupied Bandwidth**
Work Order #: **95395** Date: 12/13/2013
Test Type: **Conducted Emissions**
Equipment: **Provider Specific Consumer Signal Booster**
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi P34-2/4/5/12 110V 60Hz
S/N: 171341000018 and 170931000035

***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*:**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi P34-2/4/5/12CU	171341000018
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi P34-2/4/5/12NU	170931000035

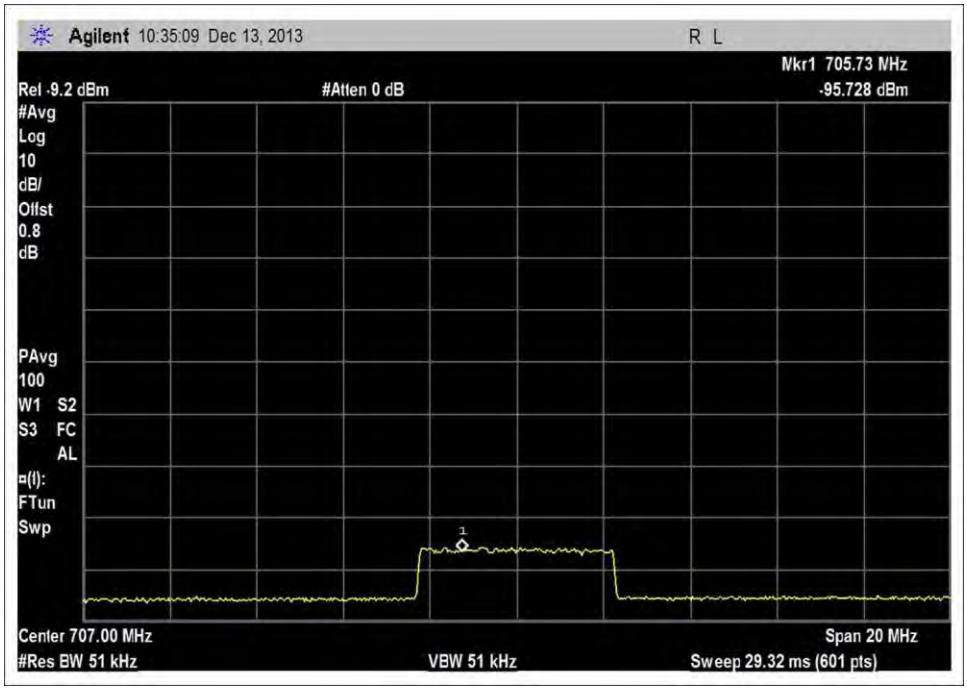
Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4438C	MY49071314
Signal Generator	Agilent	E4438B	MY40052164
Power Supply	Autec Power Systems	SA07-24US12R	NA
Power Supply	Autec Power Systems	SA07-24US12R	NA

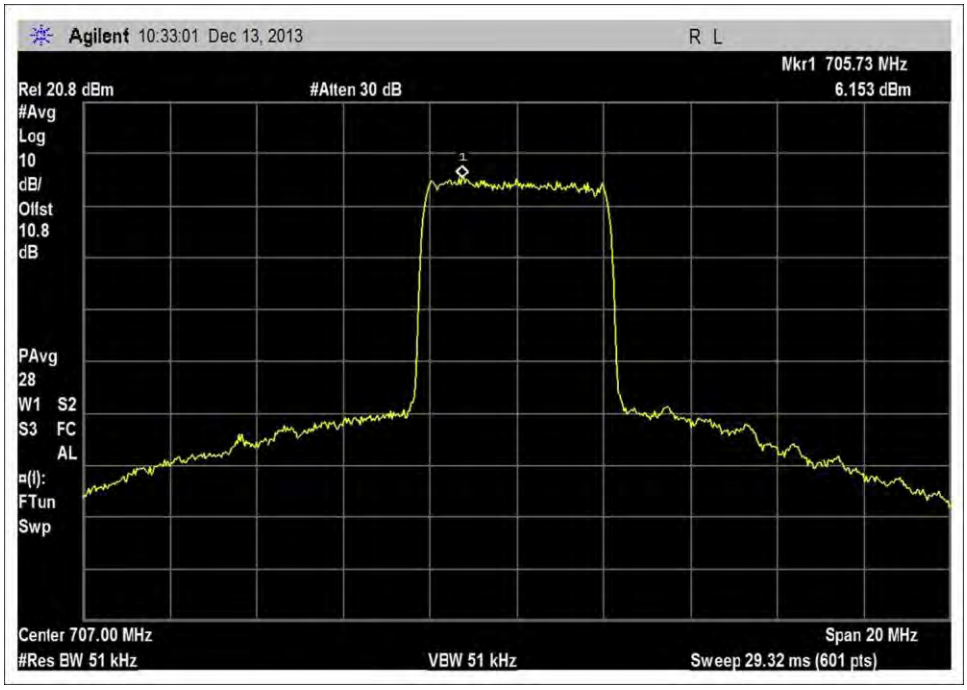
Test Conditions / Notes:

The EUT is provider specific signal booster pair consisted of a Network unit (NU) and a Coverage unit (CU) using proprietary 5.8 GHz Wireless interface. The EUT is manufacturer configurable to operate in relay bandwidth of 5 MHz, 10MHz, 15 MHz and 20 MHz 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 port bands 4 and 12 and server port bands 4 and 12
Signal: 4.1 MHz AWGN.
UL= 1710-1755MHz, 698-716MHz
DL= 2110-2155MHz, 716-746MHz
Test environment conditions: 24°C, 21% Relative Humidity, 100kPa

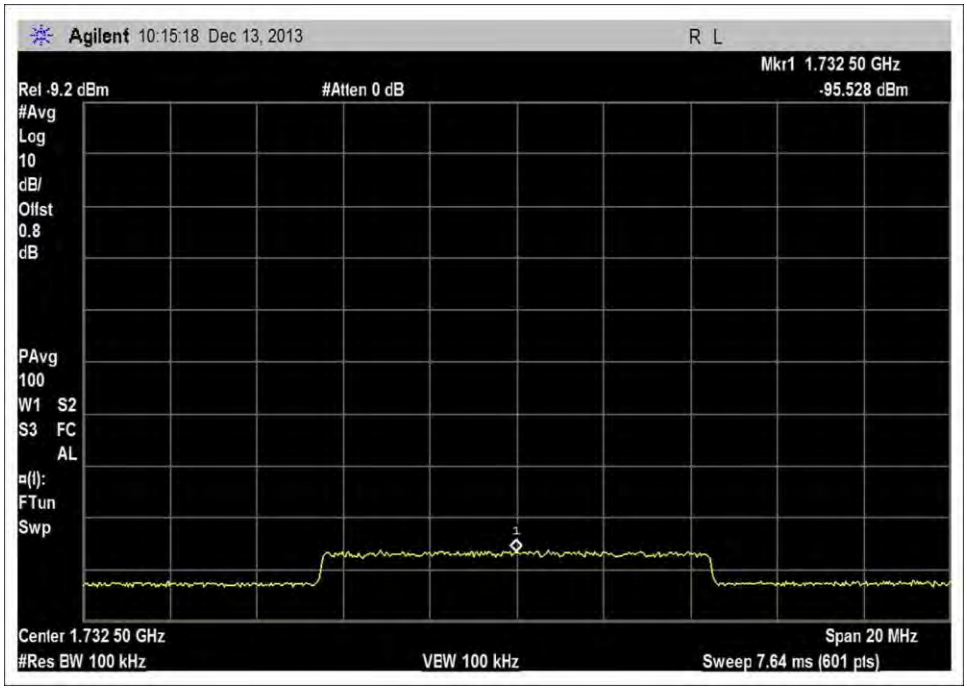
Test Data



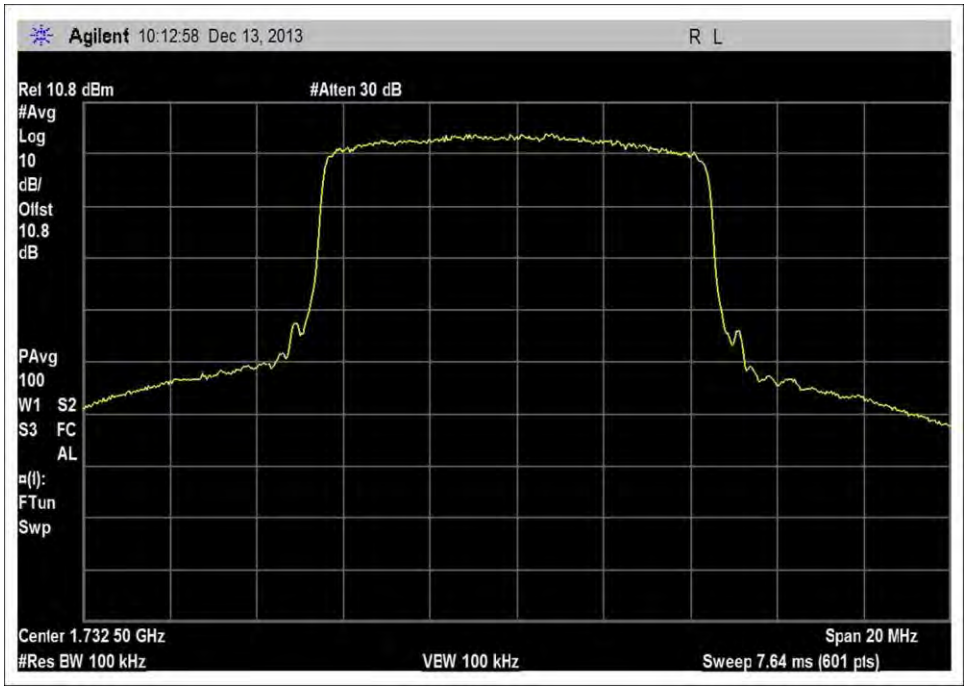
UL_698-716MHz_Input



UL_698-716MHz_Output



UL_1710-1755MHz_Input



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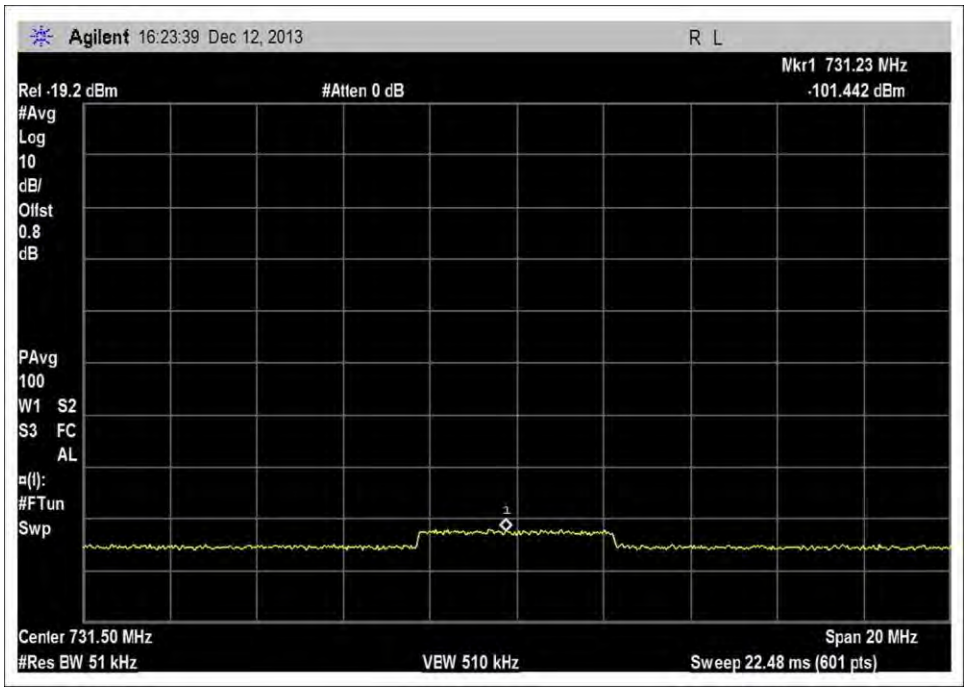
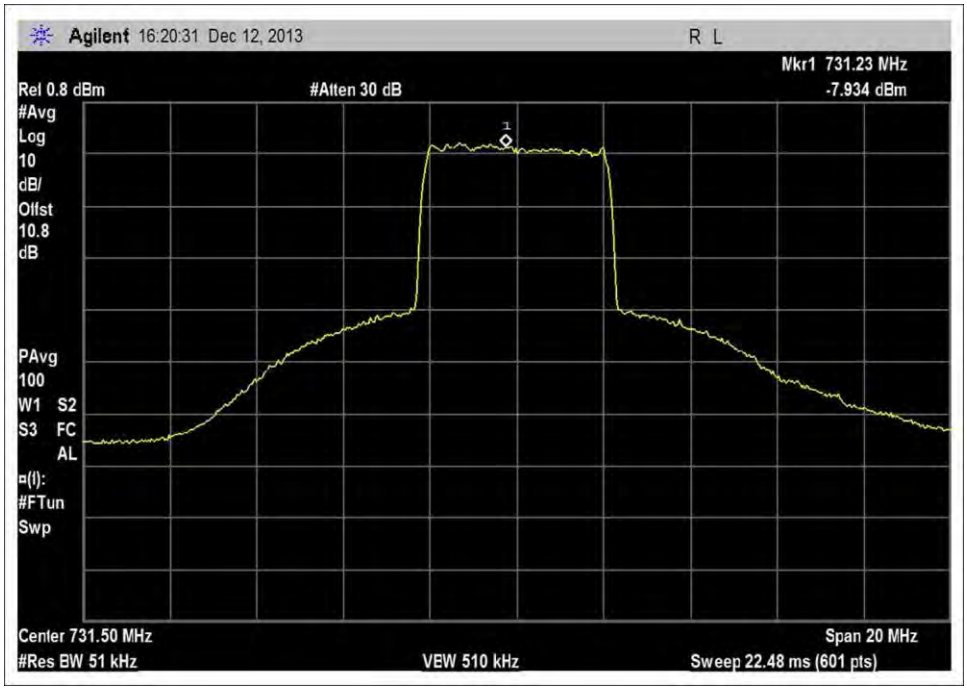
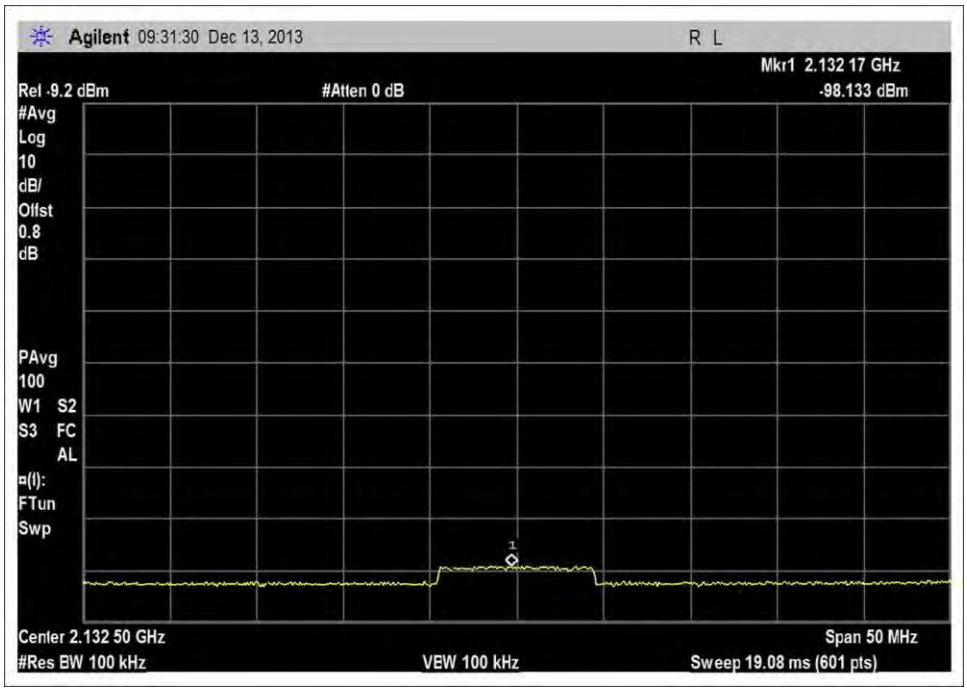


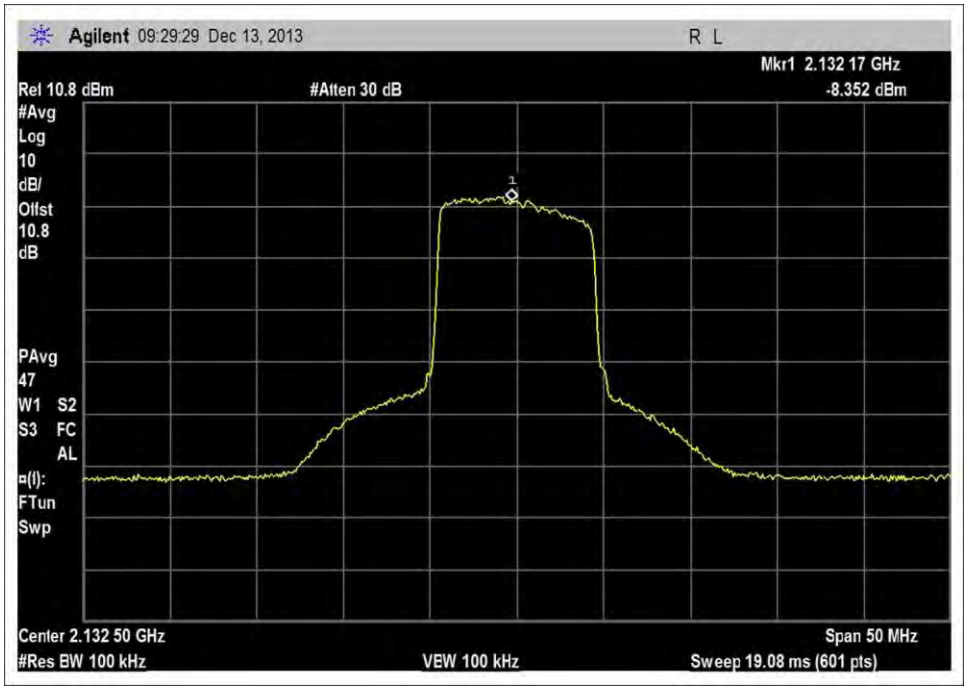
DL_716-746MHz_Input



DL_716-746MHz_Output

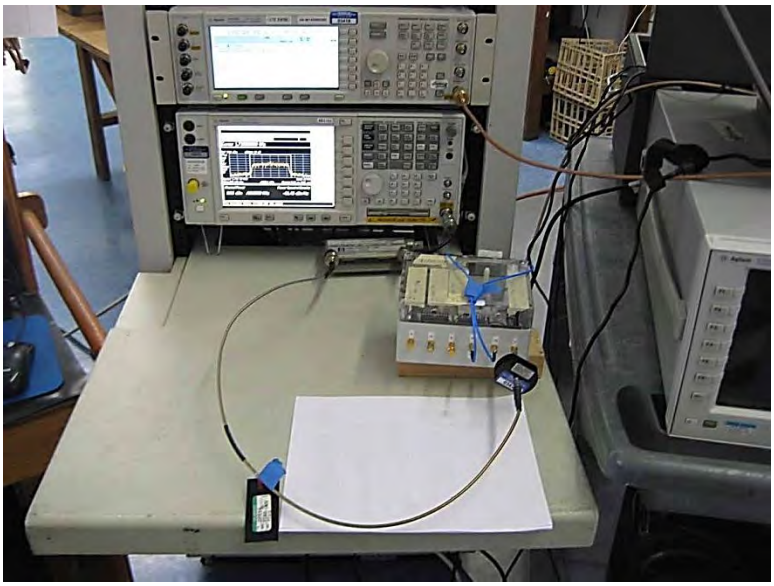


DL_2110-2155MHz_Input



DL_2110-2155MHz_Output

Test Setup Photo(s)



2.1051 /27.53(c) / 27.53(f) / 27.53(g) Spurious Emissions at Antenna Terminals

Test Conditions / Setup

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

Customer: **Nextivity, Inc.**
Specification: **47 CFR § 27.53(m) Spurious Emissions**
Work Order #: **95128** Date: 12/20/2013
Test Type: **Conducted Emissions** Time: 09:57:38
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 5
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi P34-2/4/5/12 110V 60Hz
S/N: 171341000018 /170931000035

***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	AN02946	Cable	32022-2-2909K-36TC	7/31/2013	7/31/2015
T4	ANdBm	Unit Conversion		1/30/2012	1/30/2014

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

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi P34-2/4/5/12CU	171341000018
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi P34-2/4/5/12NU	170931000035

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	ITE Power Supply	PW173	NA
Power Supply	ITE Power Supply	PW173	NA
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260

Test Conditions / Notes:

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

The EUT is manufacturer configurable to operate in relay bandwidth of 5MHz, 10MHz, 15 MHz and 20 MHz within the CMRS band by setting the 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 port bands 4 and 12, Server port bands 4 and 12

Signal: 10 MHz LTE, 4.1 MHz AWGN. 5MHz WCDMA, 5 MHz WCDMATM1

UL= 698-716MHz, 1710-1755MHz
DL= 716-746MHz, 2110-2155MHz

Frequency range of measurement = 9 kHz- 22 GHz.
9kHz -150kHz; RBW=200Hz, VBW=200 Hz; 150kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-22000MHz; RBW=1 MHz, VBW=1 MHz.

Test environment conditions: 17°C, 24% Relative Humidity, 100kPa

No spurious emissions detected for DL.
Extra 9kHz-30MHz plot for UL as the spectrum analyzer used for UL was a different analyzer used to DL measurement.

Test Data

LIMIT LINE FOR SPURIOUS CONDUCTED EMISSION

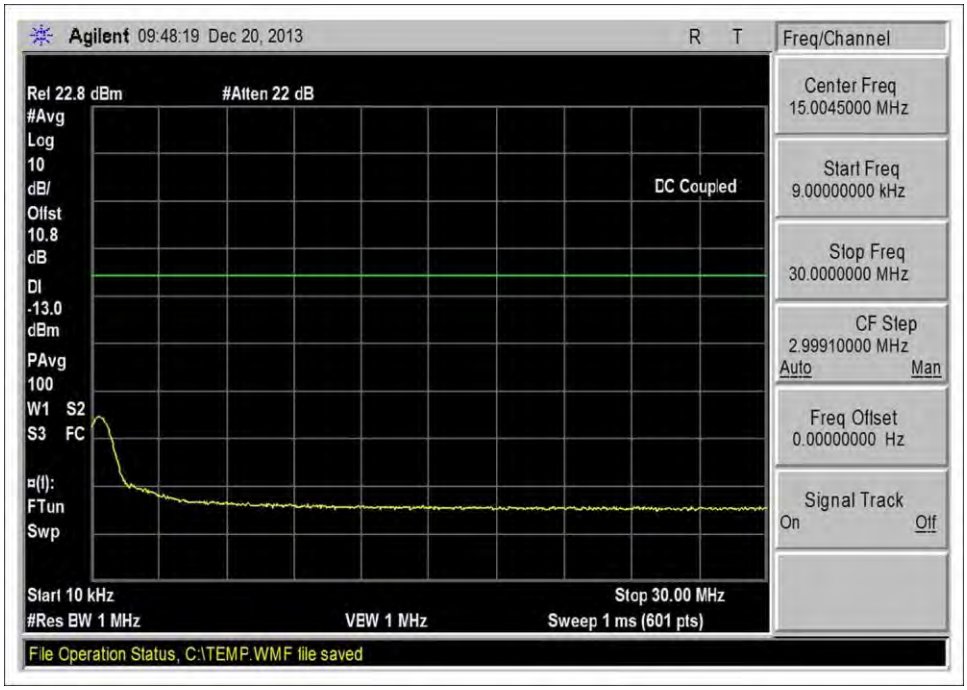
REQUIRED ATTENUATION = 43+10 LOG P DB

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

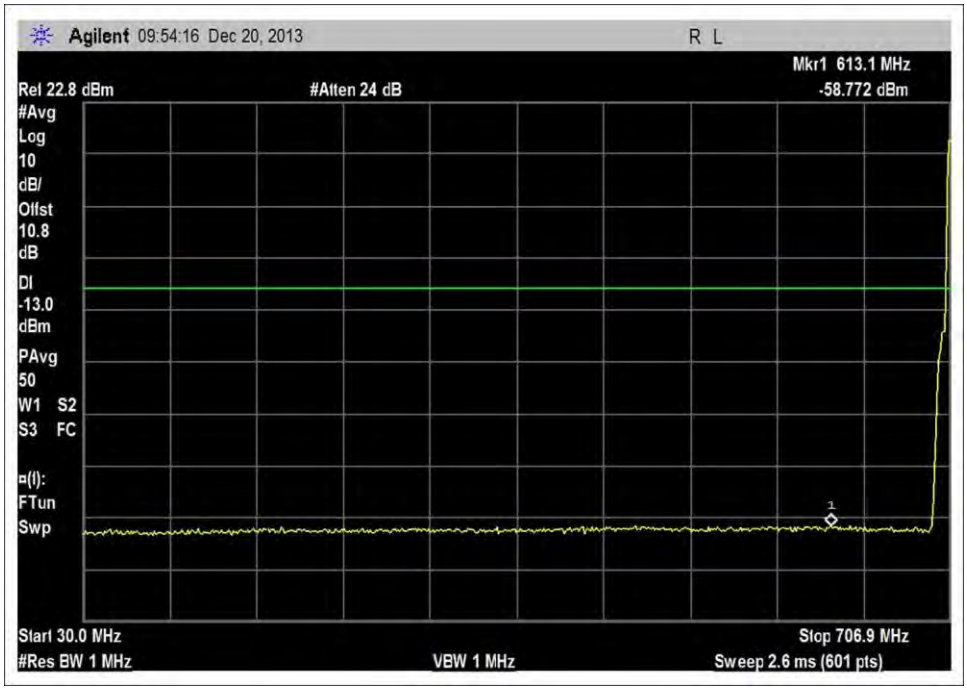
$$V_{dBuV} = 20 \text{ Log } \frac{V}{1 \text{ x } 10^{-6}}$$
$$= 20\left(\text{Log } V - \text{Log } 1 \text{ x } 10^{-6}\right)$$
$$= 20 \text{ Log } V - 20 \text{ Log} 1 \text{ x } 10^{-6}$$
$$= 20 \text{ Log } V - 20(-6)$$
$$= 20 \text{ Log } V + 120$$

$$\text{Attenuation} = 43 + 10 \text{ Log } P$$
$$= 43 + 10 \text{ Log } \frac{V^2}{R}$$
$$= 43 + 10\left(\text{Log } V^2 - \text{Log } R\right)$$
$$= 43 + 10\left(2 \text{ Log } V - \text{Log } R\right)$$
$$= 43 + 20 \text{ Log } V - 10 \text{ Log } R$$

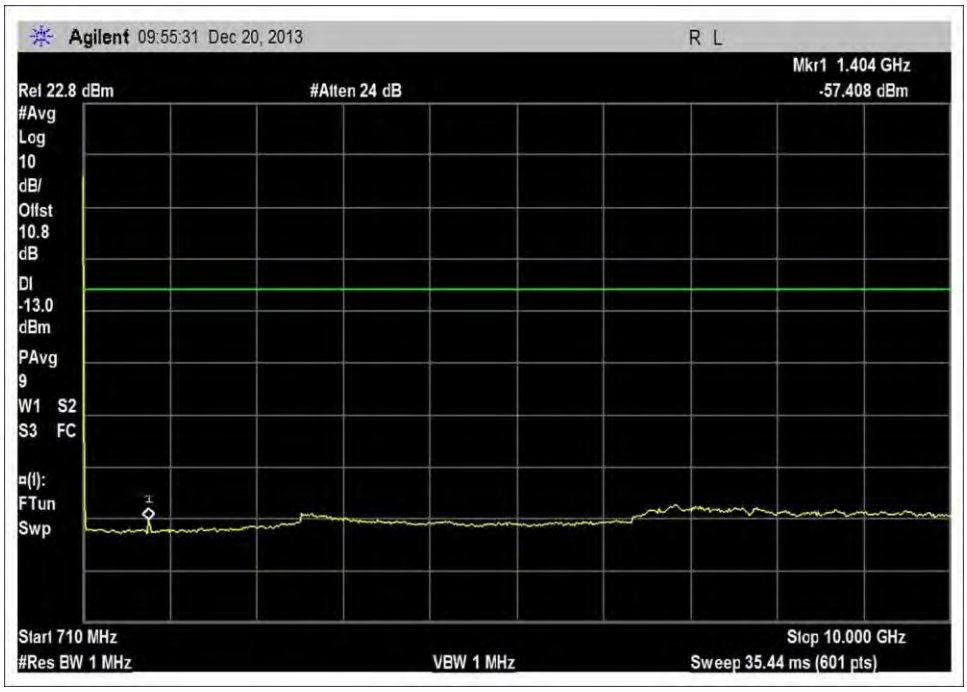
Limit line = V_{dBuv} - Attenuation
= 20 Log V + 120 – (43 + 20 Log V – 10Log R)
= 20 Log V + 120 – 43 – 20 Log V + 10Log R
= 20 Log V + 120 – 43 – 20 Log V + 10Log R
= 120 – 43 + 10 Log 50 Note: R = 50 Ω
= 120 –43 + 16.897
= 94 dBuV at any power level



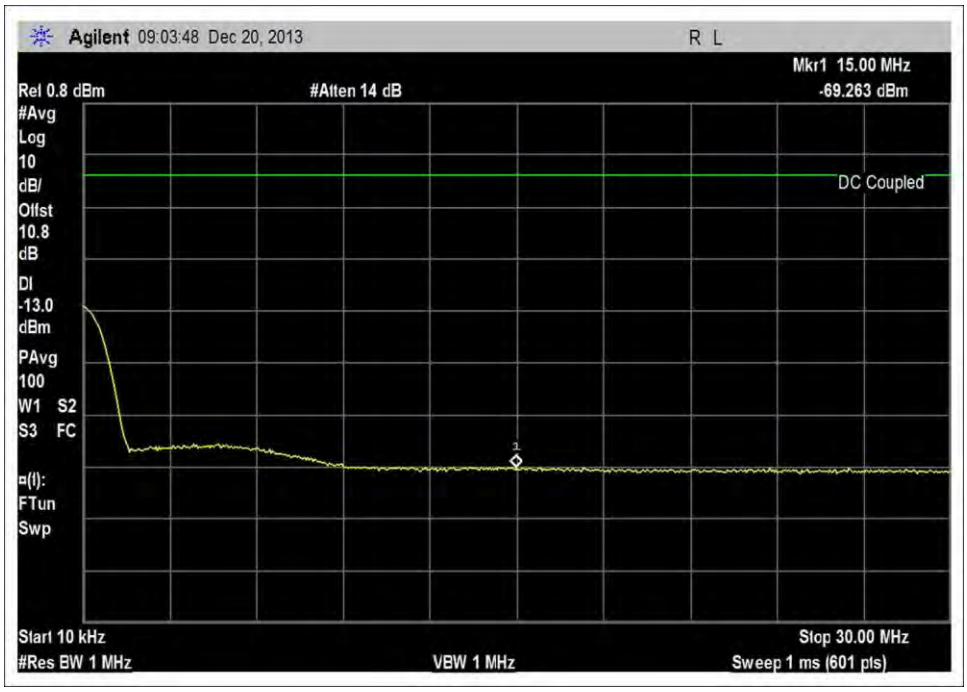
UL_698-716MHz_M_5WCDMATM1_1



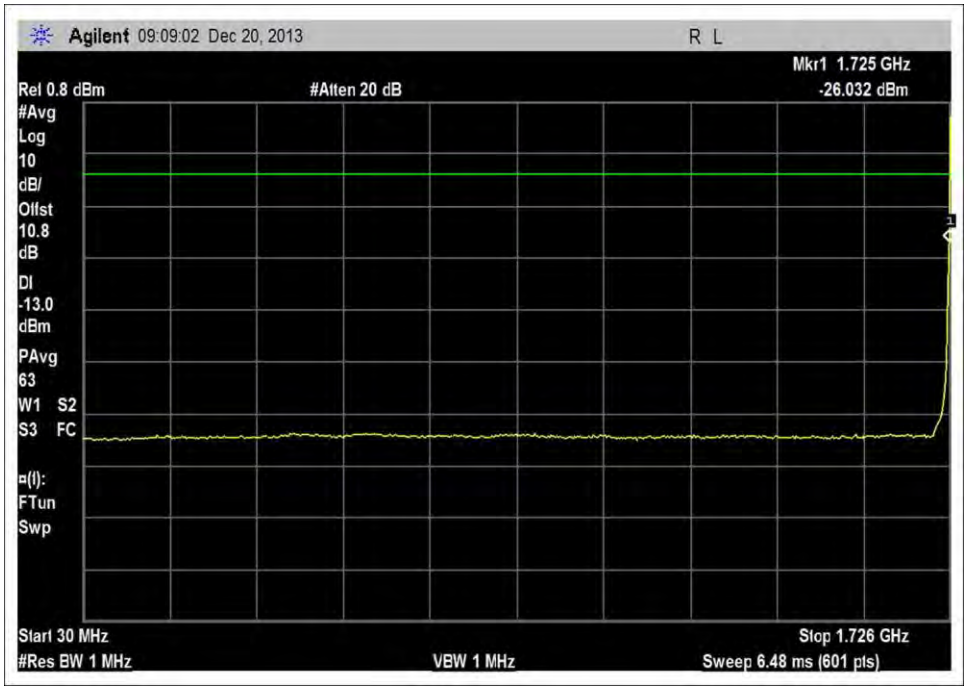
UL_698-716MHz_M_5WCDMATM1_2



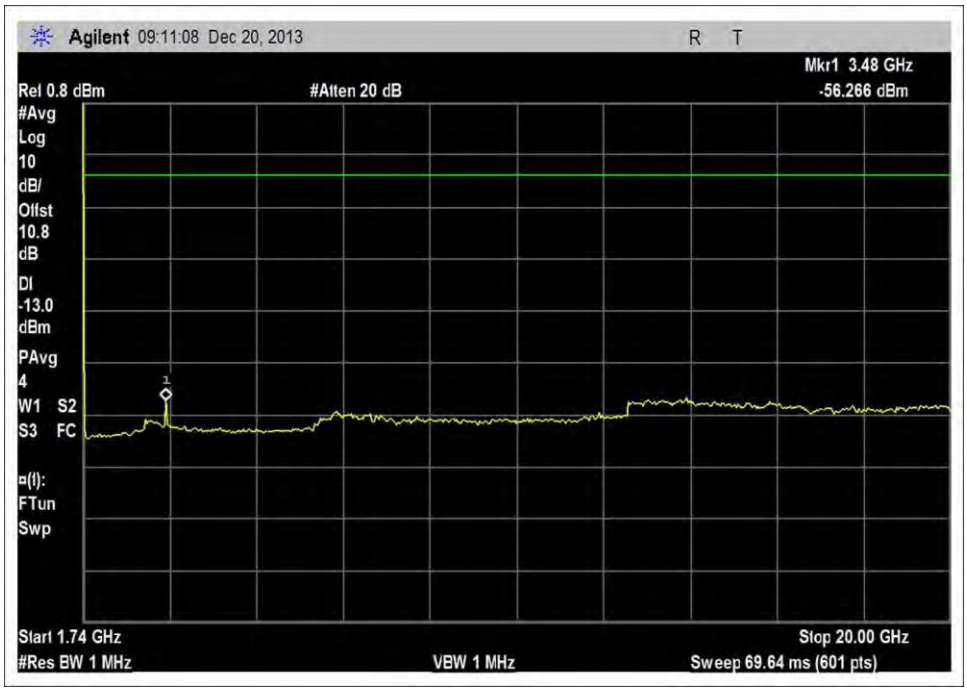
UL_698-716MHz_M_5WCDMATM1_3



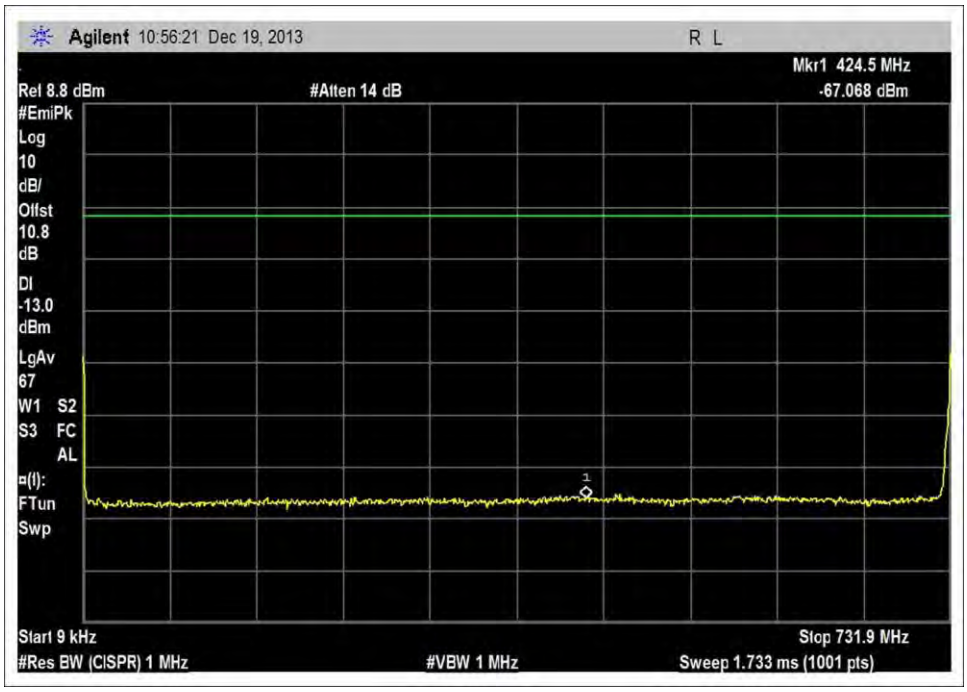
UL_1710-1755MHz_M_10LTW_1



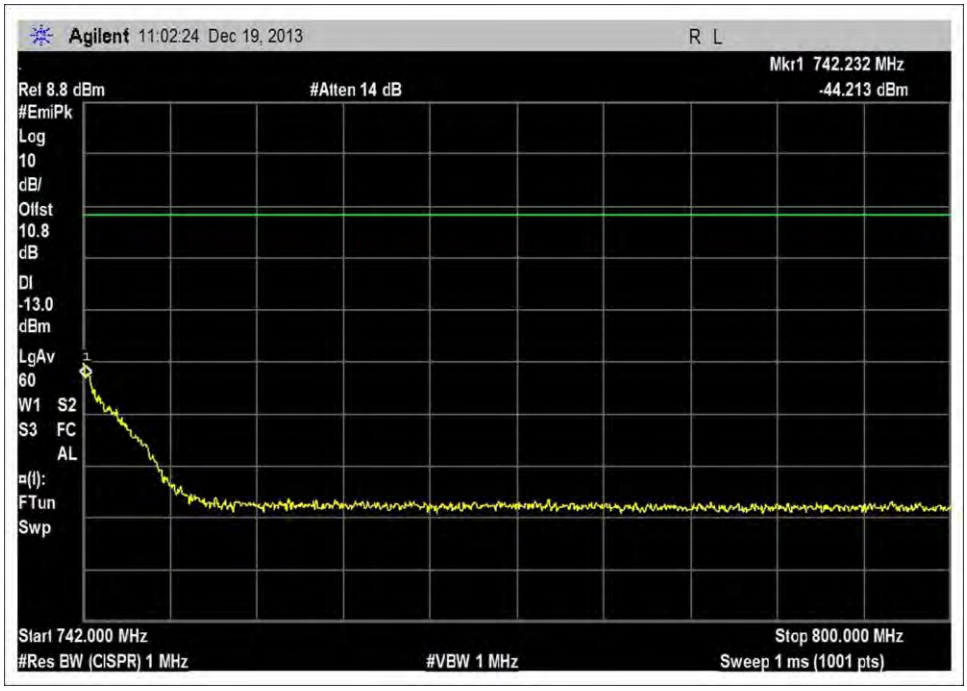
UL_1710-1755MHz_M_10LTE_2



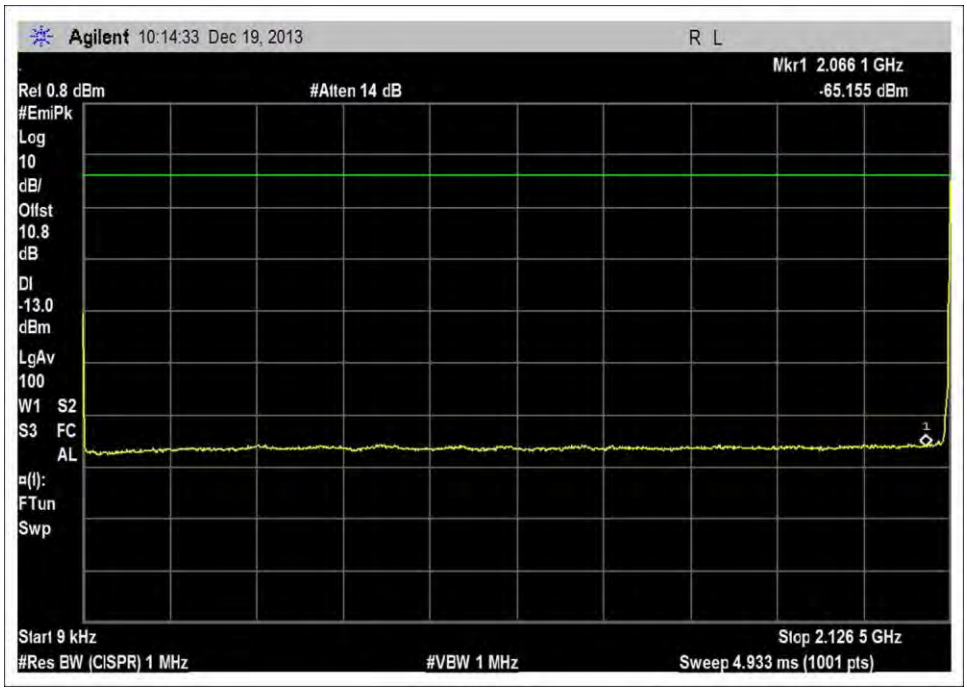
UL_1710-1755MHz_M_10LTW_3



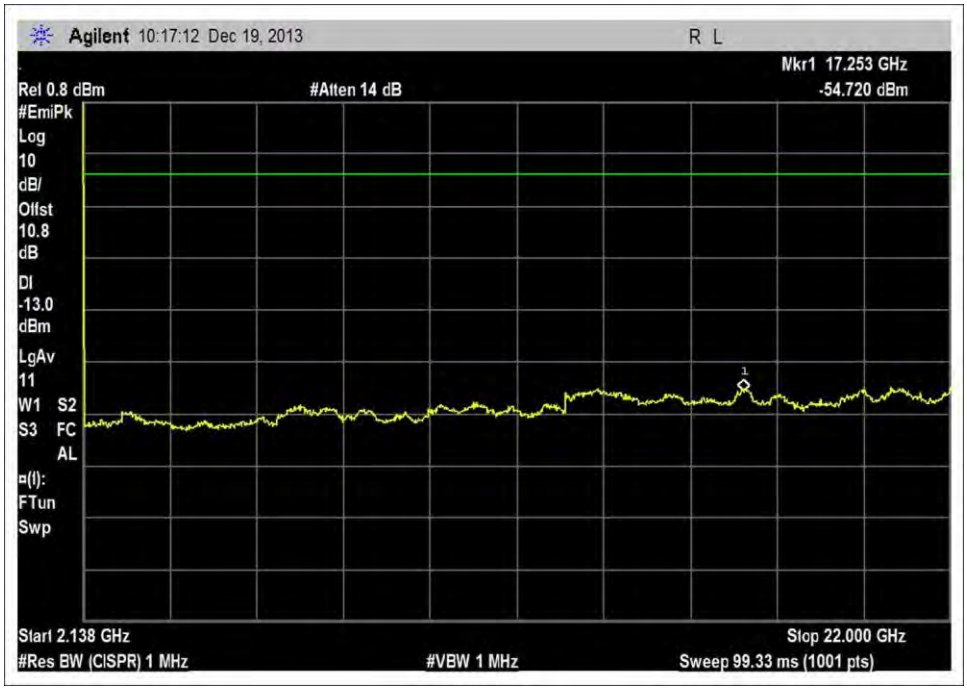
DL_716-746MHz_M_4.1AWGN_1



DL_716-746MHz_M_4.1AWGN_2

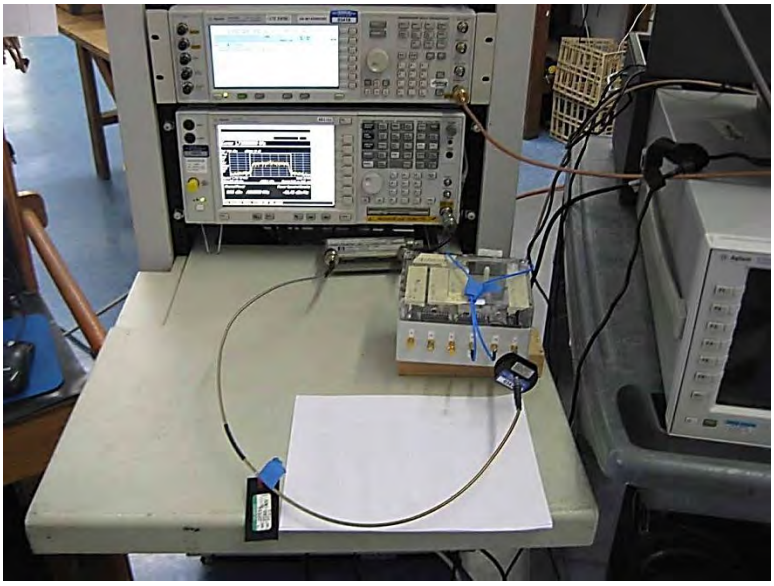


DL_2110-2155MHz_M_10LTE_1



DL_2110-2155MHz_M_10LTE_2

Test Setup Photo(s)



2.1053 /27.53(c) / 27.53(f) / 27.53(g) Field Strength of Spurious Radiation

Test Data

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

Customer: **Nextivity, Inc.**
Specification: **47 CFR § 27.53(m) Spurious Emissions**
Work Order #: **95128** Date: 3/6/2014
Test Type: **Radiated Scan** Time: 15:01:37
Equipment: **Provider Specific Consumer Signal Booster** Sequence#: 6
Manufacturer: Nextivity, Inc. Tested By: E. Wong
Model: Cel-Fi P34-2/4/5/12
S/N: 171341000018 /170931000035

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	2/6/2013	2/6/2015
	AN01995	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
	ANP05198	Cable-Amplitude 15 to 45degC (dB)	8268	12/11/2012	12/11/2014
	ANP05050	Cable	RG223/U	1/21/2013	1/21/2015
	AN00309	Preamp	8447D	3/29/2012	3/29/2014
	AN00314	Loop Antenna	6502	6/29/2012	6/29/2014
T2	AN00786	Preamp	83017A	6/20/2012	6/20/2014
T3	AN00849	Horn Antenna	3115	4/13/2012	4/13/2014
T4	AN02946	Cable	32022-2-2909K-36TC	7/31/2013	7/31/2015
T5	ANP05988	Cable	LDF1-50	3/12/2012	3/12/2014
T6	AN03385	High Pass Filter	11SH10-3000/T10000-O/O	6/5/2013	6/5/2015
	AN01413	Horn Antenna-ANSI C63.5 (dB/m)	84125-80008	11/9/2012	11/9/2014
T7	AN02749	High Pass Filter	9SH10-1000/T10000-O/O	9/25/2013	9/25/2015

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

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi P34-2/4/5/12CU	171341000018
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi P34-2/4/5/12NU	170931000035

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	ITE Power Supply	PW173	NA
Power Supply	ITE Power Supply	PW173	NA
Signal Generator	Agilent	E4433B	US40052164
Signal Generator	Agilent	E4438C	MY42082260

Test Conditions / Notes:

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

The EUT is manufacturer configurable to operate in relay bandwidth of 5 MHz, 10MHz, 15 MHz and 20 MHz within the CMRS band by setting the 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 and 10MHz will be evaluated.

The EUT under evaluation is placed on the Styrofoam platform. RF signal is fed into the unit not under evaluation which is placed in shielded enclosure to improve RF isolation. A support laptop is connected to the EUT via USB service port for configuration and monitoring purposes.

Evaluation performed : Donor port: band 12 and band 4, Server port band 5/4, band 2/12

Signal : 10 MHz LTE, 5 MHz WCDMATM1
UL= 698-716MHz, 1710-1755MHz,
DL= 716-746MHz, 2110-2155MHz.

Setting in accordance with achievable system gain art the available isolation, with output power at the rated output power.

UL (EUT = NU)
TX Freq=1732.MHz, 10 MHz LTE, gain = 67dB, output power= +22 dBm.
TX Freq= 707 MHz, 5MHz LTE, gain = 67dB, output power = +22dBm

DL (EUT = CU)
TX freq= 2132MHz, 10 MHz LTE, gain = 60, dB output power = +12dBm
TX freq= 737MHz, 5 MHz LTE, gain =60 dB, output power= +10 dBm.

(Output power = monitored Cellrssix power level + monitored Gain)

Frequency range of measurement = 9 kHz- 22 GHz.
9kHz -150kHz; RBW=200Hz, VBW=200Hz;150kHz-30MHz; RBW=9kHz, VBW=9kHz; 30MHz-1000 MHz; RBW=120 kHz, VBW=120kHz, 1000 MHz-22000MHz; RBW=1 MHz, VBW=1 MHz.

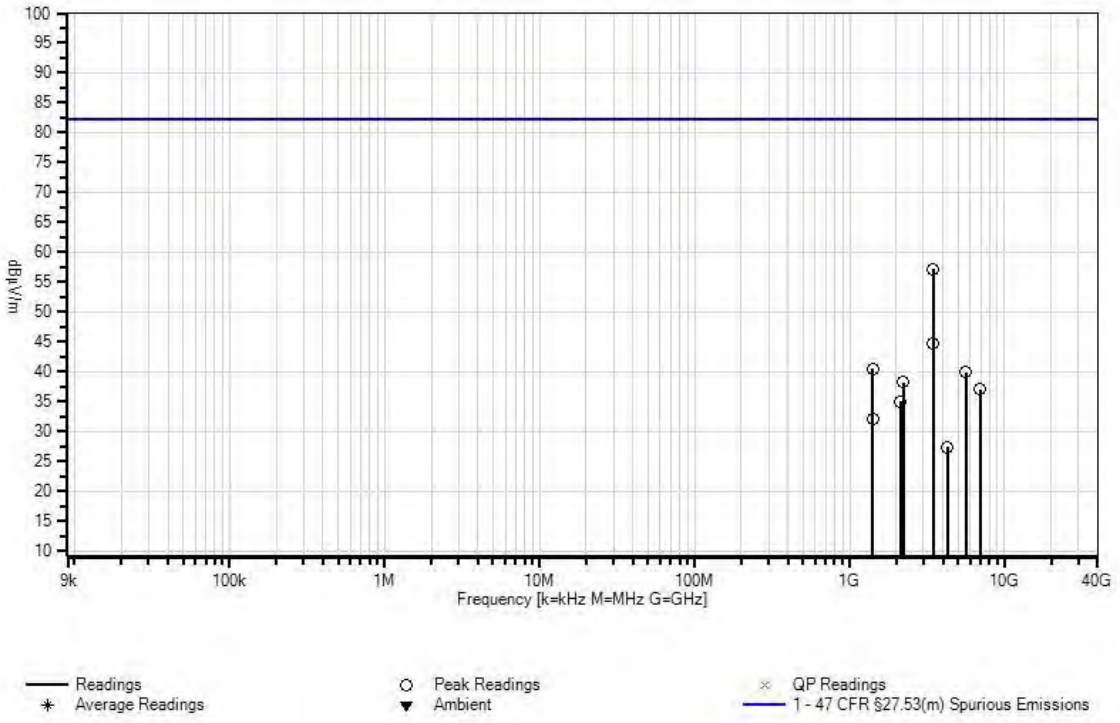
Test environment conditions: 17°C, 24% Relative Humidity, 100kPa
Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 030614
5MHz LTE @700; (lower) 10 MHz max 3/4/14
5MHz WCDMA @850; 15MHz max3/4/14
5MHz WCDMA @ 1900; 20Mhz max 3/4/14
10MHz LTE @ AWS (2100) 20MHz max 5 Min3/4/14

Ext Attn: 0 dB

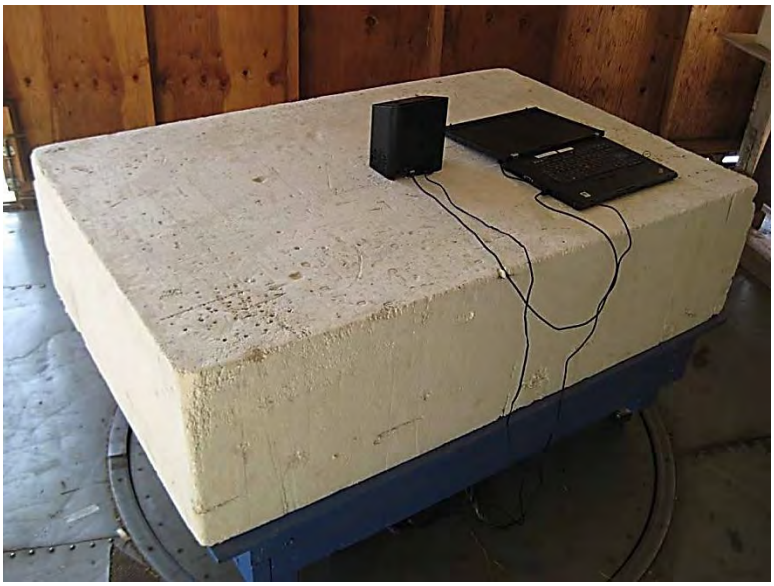
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7						
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	3464.000M	56.8	+0.0	-38.4	+32.5	+0.9	+0.0	57.2	82.2	-25.0	Vert
			+4.9	+0.5	+0.0				UL-1732MHz		
2	3462.330M	44.4	+0.0	-38.4	+32.5	+0.9	+0.0	44.8	82.2	-37.4	Horiz
			+4.9	+0.5	+0.0				UL-1732MHz		
3	1414.000M	50.3	+0.0	-38.9	+25.2	+0.5	+0.0	40.5	82.2	-41.7	Horiz
			+3.0	+0.0	+0.4				UL-707MHz		
4	5656.100M	35.5	+0.0	-37.3	+33.7	+1.2	+0.0	39.9	82.2	-42.3	Horiz
			+6.5	+0.0	+0.3				UL-707MHz		
5	2217.000M	44.2	+0.0	-38.3	+27.7	+0.8	+0.0	38.2	82.2	-44.0	Vert
			+3.8	+0.0	+0.0				DL_737MHz_noise floor		
6	6928.500M	31.2	+0.0	-37.2	+34.5	+1.2	+0.0	37.1	82.2	-45.1	Vert
			+7.4	+0.0	+0.0				UL-1732MHz		
7	2121.100M	40.6	+0.0	-38.4	+28.1	+0.8	+0.0	35.0	82.2	-47.2	Horiz
			+3.7	+0.0	+0.2				UL-707MHz		
8	1415.700M	42.0	+0.0	-38.9	+25.2	+0.5	+0.0	32.2	82.2	-50.0	Vert
			+3.0	+0.0	+0.4				UL-707MHz		
9	4273.600M	27.5	+0.0	-37.9	+31.3	+0.8	+0.0	27.4	82.2	-54.8	Vert
			+5.5	+0.2	+0.0				DL_2132MHz		

Date: 3/6/2014 Time: 15:01:37 Nextivity, Inc. WO#: 95128
47 CFR §27.53(m) Spurious Emissions Test Distance: 3 Meters Sequence#: 6 Ext ATTN: 0 dB



Test Setup Photo(s)



Coverage unit

Coverage unit

Network unit

Network unit

2.1055(a)(d) Frequency Stability

Test Conditions / Setup

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

Customer: **Nextivity, Inc.**
Specification: **FCC 27.54**
Work Order #: **95128** Date: 4/19/2014
Test Type: **Frequency Stability**
Equipment: **Provider Specific Consumer Signal Booster**
Manufacturer: Nextivity, Inc. Tested By: S. Yamamoto
Model: Cel-Fi P34-2/4/5/12 110V 60Hz
S/N: 171341000018 and 170931000035

***Test Equipment*:**

Asset #	Description	Model	Calibration Date	Cal Due Date
02869	Spectrum Analyzer	E4440A	2/6/2013	2/6/2015
03431	Attenuator	89-20-21	9/5/2013	9/5/2015
P06544	Cable	32026-29094K-29094K-36TC	11/20/2013	11/20/2015
01878	Temperature Chamber	S 1.2 Mini-Max	4/2/2013	4/2/2015
02946	Cable	32022-2-2909K-36TC	7/31/2013	7/31/2015
P05947	Thermometer	51	3/18/2014	3/18/2016
P06543	Cable	32022-29094K-29094K-26TC	11/20/2013	11/20/2015

***Equipment Under Test*:**

Function	Manufacturer	Model #	S/N
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi P34-2/4/5/12CU	171341000018
Provider Specific Consumer Signal Booster	Nextivity, Inc.	Cel-Fi P34-2/4/5/12NU	170931000035

Support Devices:

Function	Manufacturer	Model #	S/N
Signal Generator	Agilent	E4438C	MY49071314
Signal Generator	Agilent	E4438B	MY40052164
Splitter	Anaren	44000	0583
Power Supply	Autec Power Systems	SA07-24US12R	NA
Power Supply	Autec Power Systems	SA07-24US12R	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 5.8 GHz Wireless interface.
The EUT is manufacturer configurable to operate in relay bandwidth of 5 MHz, 10MHz, 15 MHz and 20 MHz 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.
UL=1710-1755MHz, 698-716MHz
DL=2110-2155MHz, 728-746MHz
Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 030614. With the following deviation:
Due to the narrowband rejection circuit, a 4.1MHz AWGN or a WCDMA signal was used instead of CW. Frequency deviation in MHz was measured at each temperature and voltage extreme and compared again the maximum allowed deviation to ensure the fundamental emission stays within the authorized frequency block.

Test Data

Frequency Stability

Customer: Nextivity, Inc.
WO#: 95128
Date: 19-Apr-14
Test Engineer: S. Yamamoto

Operating Voltage: 110 VAC

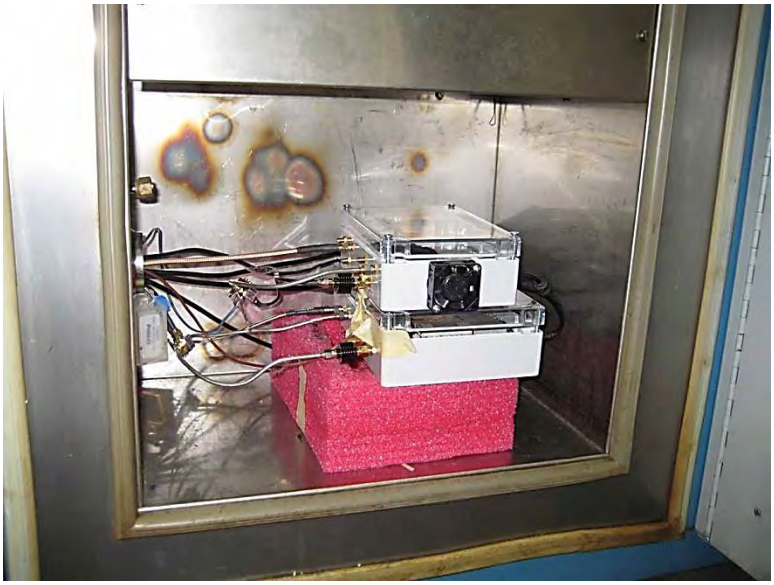
Temp (C)	Voltage	UL, Band 4, Low channel data		UL, Band 4, High channel data	
20	93.5	1710.305	1714.485	1750.509	1754.688
20	110	1710.337	1714.48	1750.508	1754.688
20	126.5	1710.338	1714.476	1750.509	1754.694
-30	110	1680.337	1684.48	1860.508	1864.688
-20	110	1690.337	1694.48	1860.508	1864.688
-10	110	1700.337	1704.48	1860.508	1864.688
0	110	1710.337	1714.48	1860.508	1864.688
10	110	1720.337	1724.48	1860.508	1864.688
20	110	1730.337	1734.48	1860.508	1864.688
30	110	1740.337	1744.48	1860.508	1864.688
40	110	1750.337	1754.48	1860.508	1864.688
50	110	1760.337	1764.48	1860.508	1864.688
		Lower Limit	Upper Limit	Lower Limit	Upper Limit
		1710	1714.9	1750.1	1755
		PASS	**PASS**	**PASS**	**PASS**

Temp (C)	Voltage	DL, Band 4, Low channel data		DL, Band 4, High channel data	
20	93.5	2110.3755	2114.4689	2150.5147	2154.6846
20	110	2110.379	2114.4647	2150.513	2154.6821
20	126.5	2110.3745	2114.4663	2150.5205	2154.673
-30	110	2110.378906	2114.464606	2150.512884	2154.681984
-20	110	2110.37903	2114.46473	2150.512836	2154.681936
-10	110	2110.378897	2114.464597	2150.512879	2154.681979
0	110	2110.378822	2114.464522	2150.512798	2154.681898
10	110	2110.378903	2114.464603	2150.512877	2154.681977
20	110	2110.378922	2114.464622	2150.512889	2154.681989
30	110	2110.379144	2114.464844	2150.513113	2154.682213
40	110	2110.379018	2114.464718	2150.51297	2154.68207
50	110	2110.378881	2114.464581	2150.512841	2154.681941
		Lower Limit	Upper Limit	Lower Limit	Upper Limit
		2110	2114.9	2150.1	2155
		PASS	**PASS**	**PASS**	**PASS**

Temp (C)	Voltage	UL, Band 12, Low channel data		UL, Band 12, High channel data	
20	93.5	699.296	703.496	711.516	715.678
20	110	699.305	703.5	711.5	715.674
20	126.5	699.308	703.49	711.518	715.68
-30	110	699.304906	703.499906	711.499884	715.673884
-20	110	699.30503	703.50003	711.499836	715.673836
-10	110	699.304897	703.499897	711.499879	715.673879
0	110	699.304822	703.499822	711.499798	715.673798
10	110	699.304903	703.499903	711.499877	715.673877
20	110	699.304922	703.499922	711.499889	715.673889
30	110	699.305144	703.500144	711.500113	715.674113
40	110	699.305018	703.500018	711.49997	715.67397
50	110	699.304881	703.499881	711.499841	715.673841
		Lower Limit	Upper Limit	Lower Limit	Upper Limit
		698.9	703.9	711.1	716
		PASS	**PASS**	**PASS**	**PASS**

Temp (C)	Voltage	DL, Band 12, Low channel data		DL, Band 12, High channel data	
20	93.5	729.3257	733.456	741.5605	745.6638
20	110	729.3413	733.456	741.557	745.6647
20	126.5	729.3421	733.4622	741.5563	745.667
-30	110	729.340823	733.455523	741.55658	745.66428
-20	110	729.340881	733.455581	741.556594	745.664294
-10	110	729.340776	733.455476	741.556541	745.664241
0	110	729.34088	733.45558	741.556561	745.664261
10	110	729.340947	733.455647	741.556679	745.664379
20	110	729.340995	733.455695	741.556719	745.664419
30	110	729.341505	733.456205	741.557291	745.664991
40	110	729.341099	733.455799	741.556823	745.664523
50	110	729.340946	733.455646	741.556773	745.664473
		Lower Limit	Upper Limit	Lower Limit	Upper Limit
		728.9	733.9	741.1	746
		PASS	**PASS**	**PASS**	**PASS**

Test Setup Photo(s)



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or carrot ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.