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 22 Subpart H

Report No.: 95128-16

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:

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

Project Number: 95128

DATE OF EQUIPMENT RECEIPT: December 12, 2013
DATE(S) OF TESTING: December 12, 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 / 22H

Test Procedure/Method	Description	Results
2.1046 / 22.913(a)	RF Power Output	NA[1]
2.1047	Modulation Characteristics	NA[2]
2.1049(I)	Occupied Bandwidth	Pass
2.1051 / 22.917(a)	Spurious Emissions at Antenna Terminals	Pass
2.1053 / 22.917(a)	Field Strength of Spurious Radiation	Pass
2.1055(a)(d) / 22.355	Frequency Stability	Pass

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 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 / 22H

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) requirements for 47 CFR Part 2: Frequency Allocations and Radio Treaty Matters, General Rules and Regulations and Licensed Device falling under Part 22: Public Mobile Services.

2.1047 Modulation Characteristics

Not applicable because the EUT does not employ modulation characteristics.

2.1049(I) Occupied Bandwidth

Test Conditions / Setup

Test Location: CKC Laboratories • 110 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

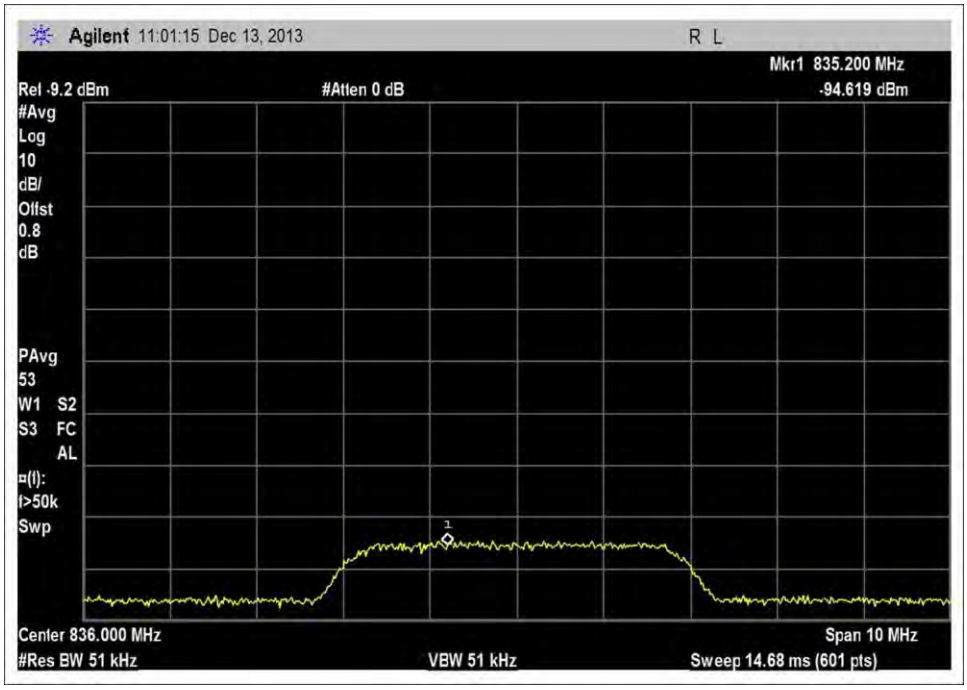
Support Devices:

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

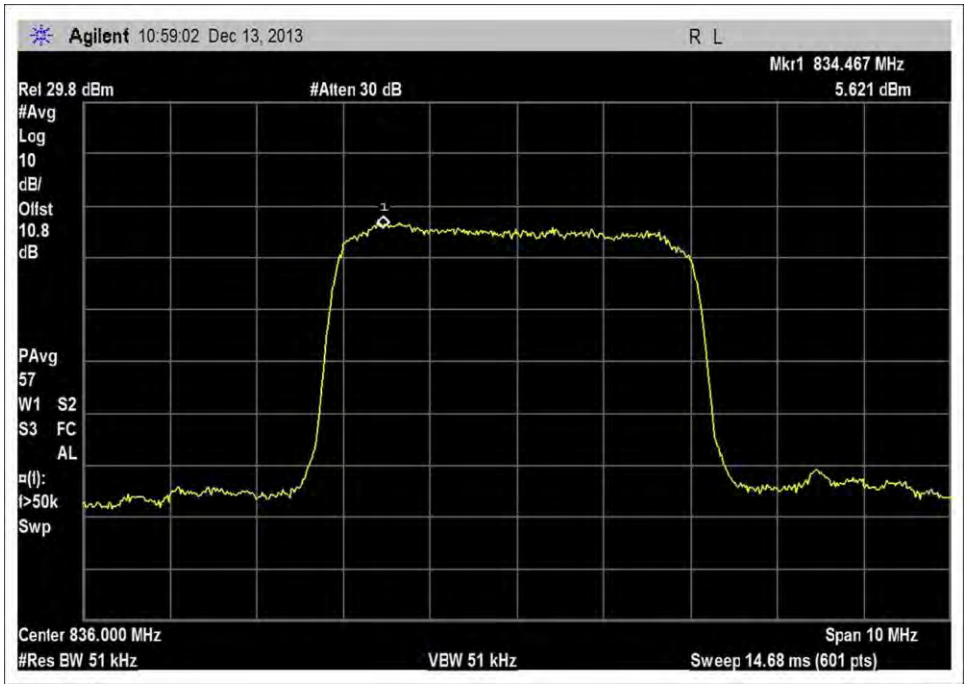
Test Conditions / Notes:

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 power Port band 5 and Server port band 5
Signal: 4.1 MHz AWGN.
UL= 824-849MHz
DL= 869-894MHz
Test environment conditions: 24°C, 21% Relative Humidity, 100kPa

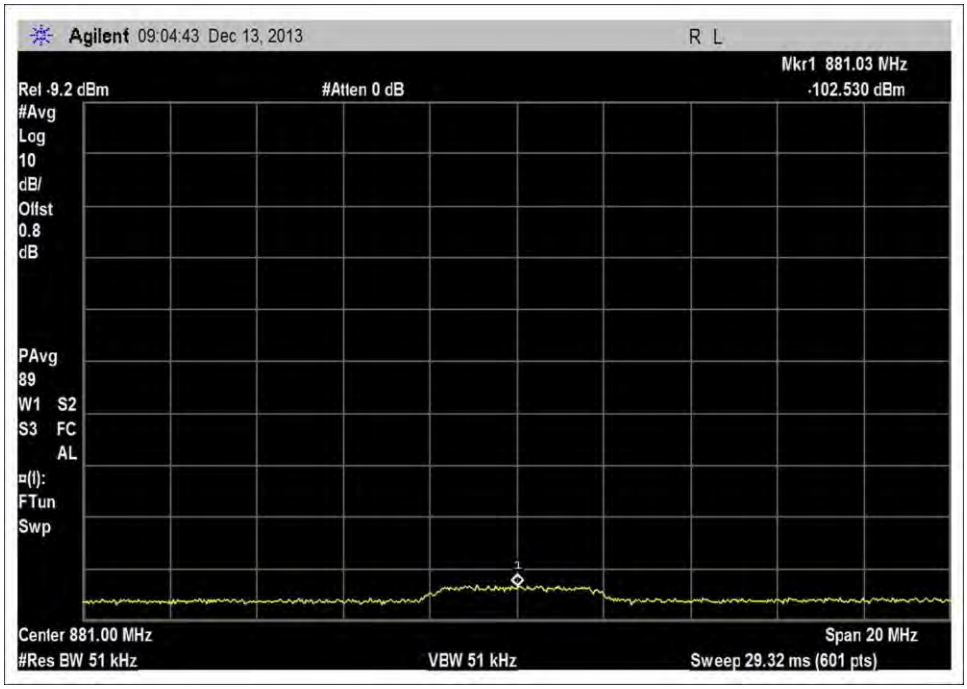
Test Data



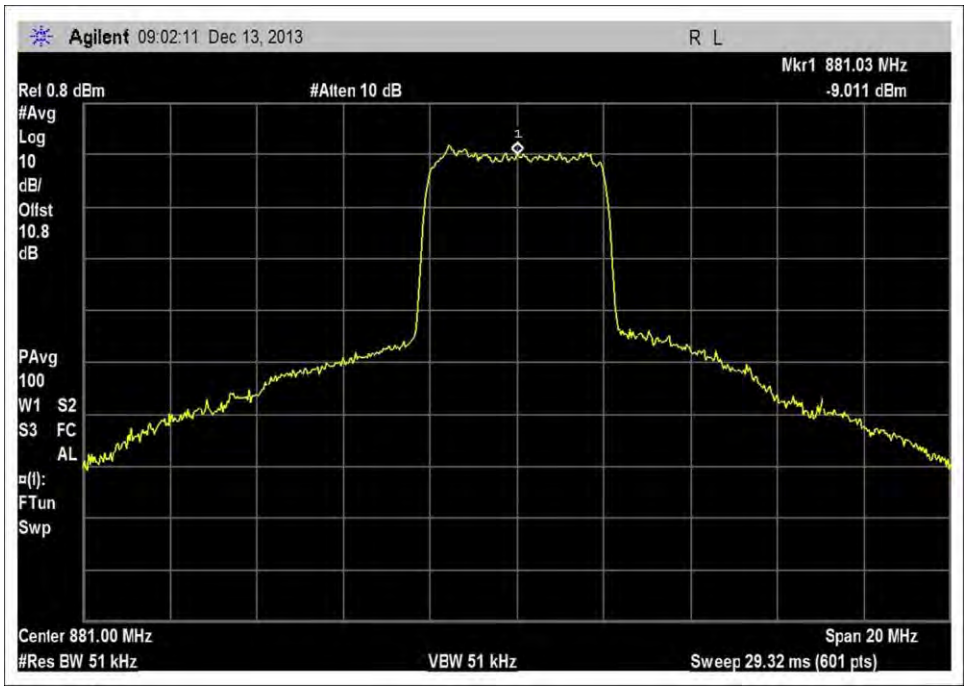
UL_824-849MHz_Input



UL_824-849MHz_Output

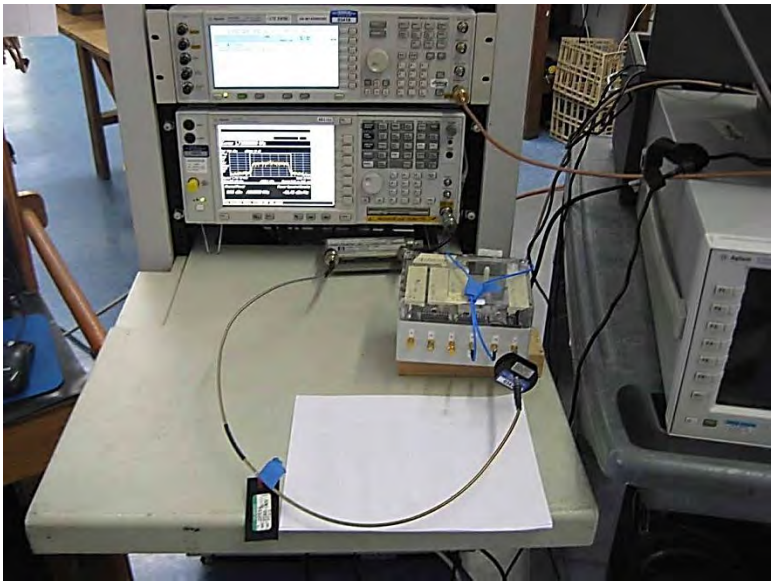


DL_869-894MHz_Input



DL_869-894MHz_Output

Test Setup Photo



Test Setup

2.1051 / 22.917(a) Spurious Emissions at Antenna Terminals

Test Conditions / Setup

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

Customer: **Nextivity, Inc.**
Specification: **47 CFR §22.917 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 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 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 band 5 and Server port band 5

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

UL= 824-849MHz
DL= 869-894MHz

Frequency range of measurement = 9 kHz- 22 GHz.
9 kHz -150 kHz;RBW=200 Hz,VBW=200 Hz;150 kHz-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 emission detected for DL.
Extra 9kHz-30MHz plot for UL as the spectrum analyzer used for UL was a different analyzer used to DL measurement.

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

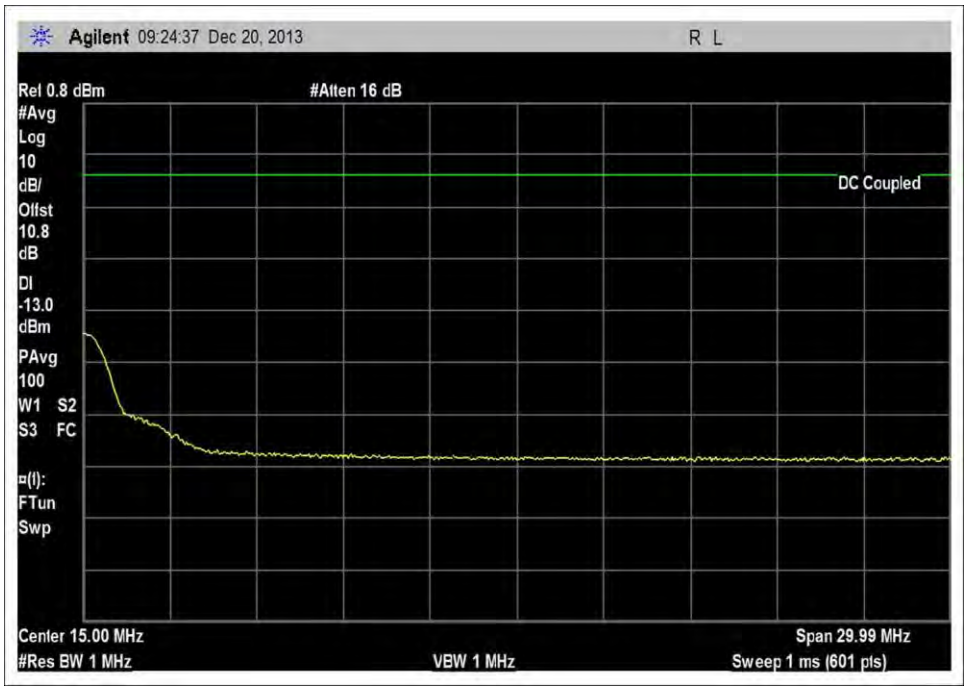
= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 120 – 43 + 10 Log 50 Note: R = 50 Ω

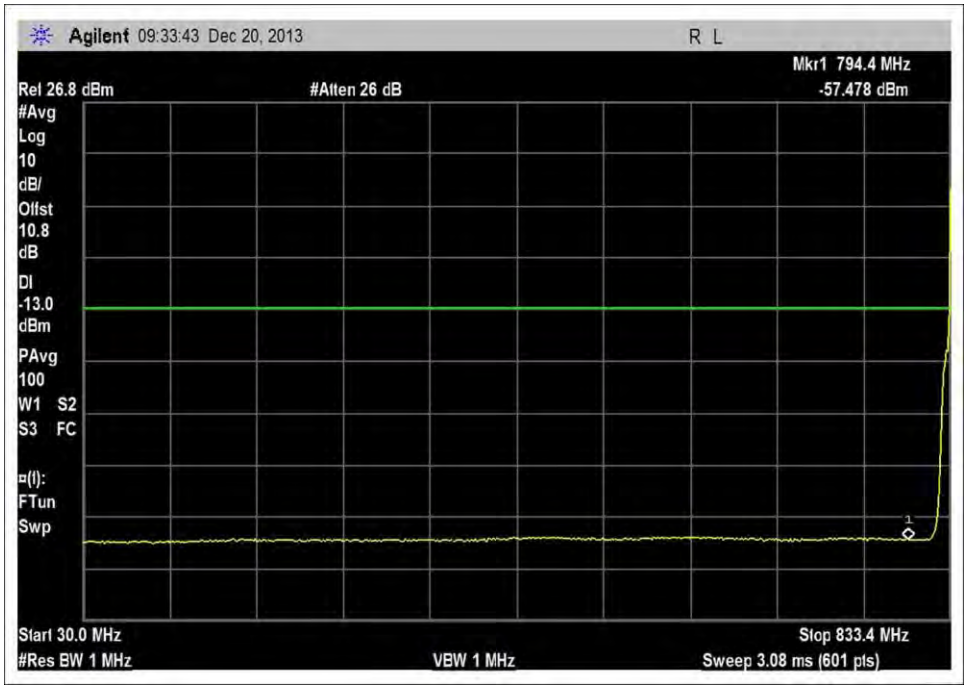
= 120 –43 + 16.897

= 94 dBuV at any power level

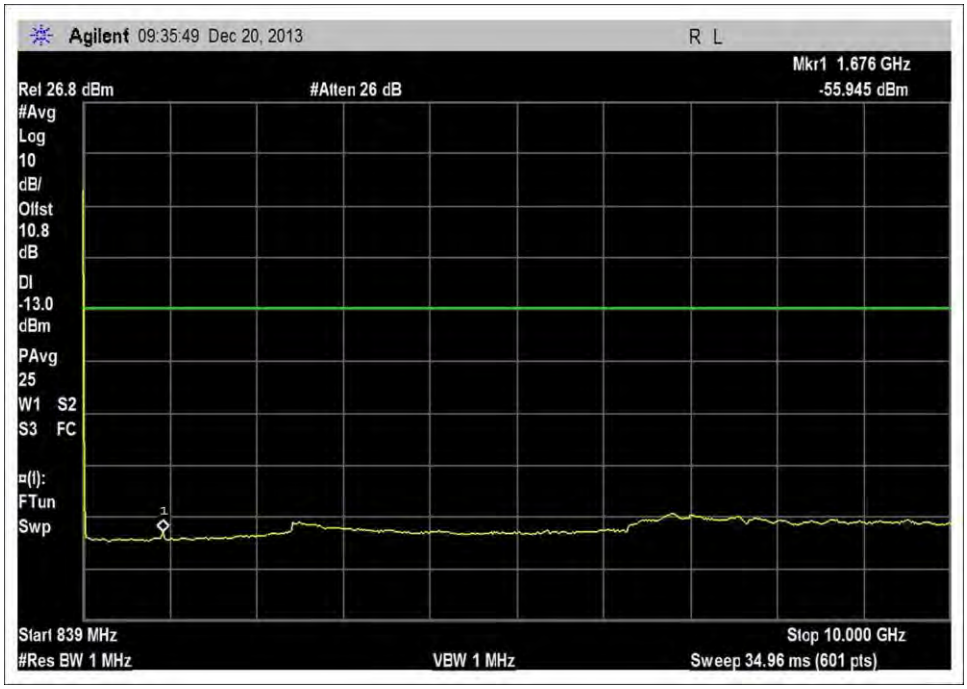
Test Data



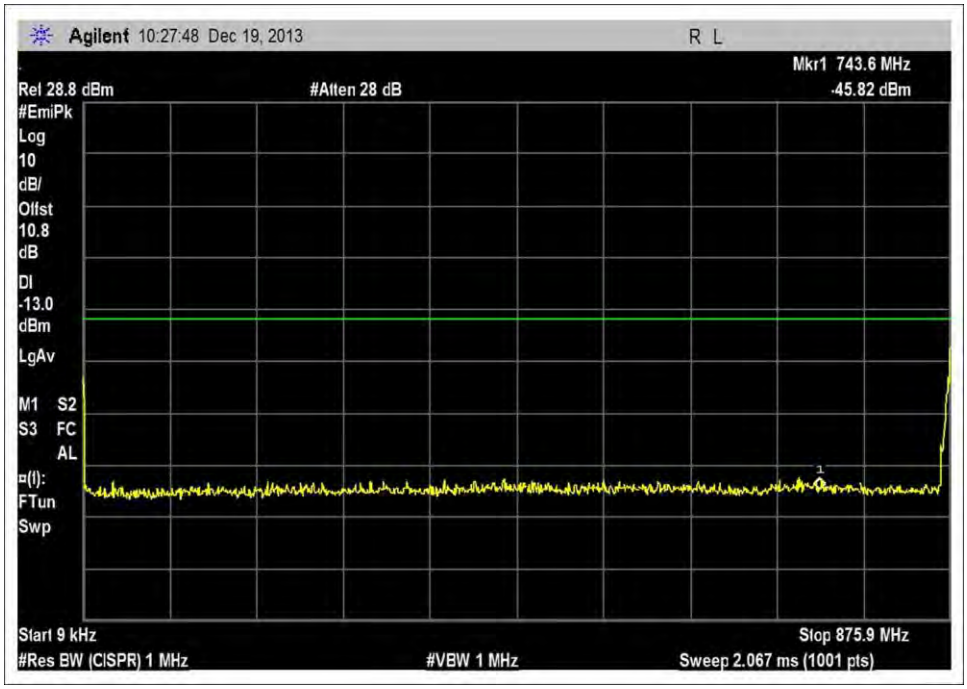
UL_824-849MHz_M_5MWCDMATM1_1



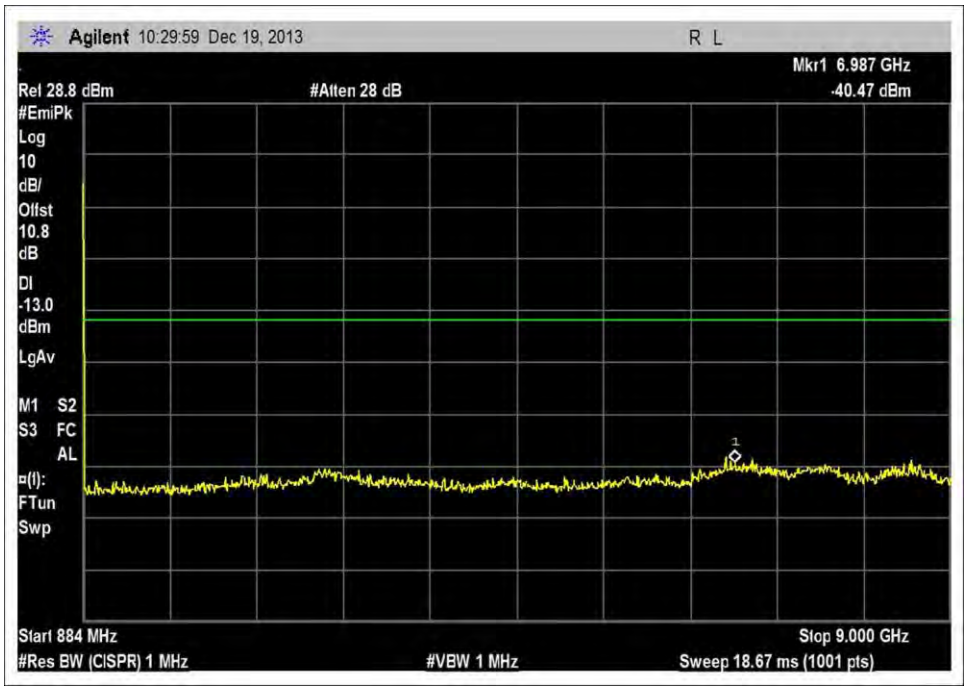
UL_824-849MHz_M_5MWCDMATM1_2



UL_824-849MHz_M_5MWCDMATM1_3

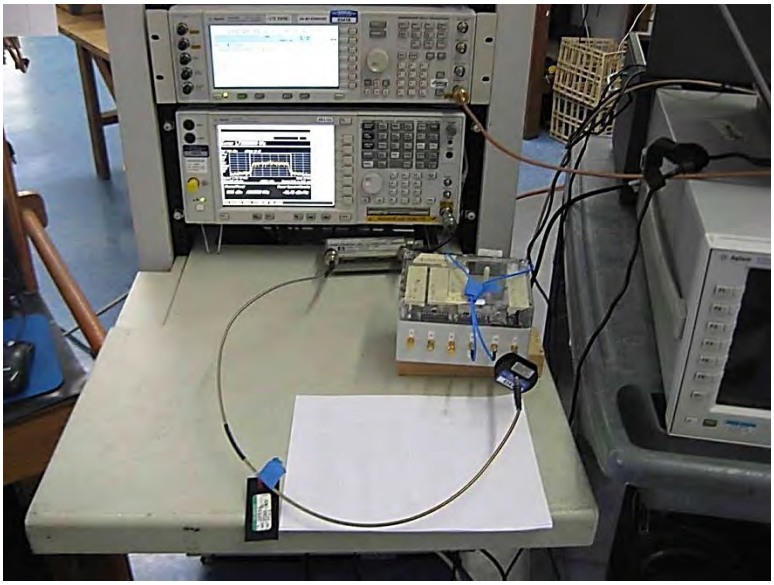


DL_869-894MHz_M_5WCDMA_1



DL_869-894MHz_M_5WCDMA_2

Test Setup Photo



2.1053 / 22.917(a) Field Strength of Spurious Radiation

Test Conditions / Setup

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

Customer: **Nextivity, Inc.**
Specification: **47 CFR §22.917 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
	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
T6	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 5, Server port band 5/4

Signal : 15 MHz WCDMATM1

UL= 824-849MHz
DL= 869-894MHz

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

UL (EUT = NU)

TX Freq= 836MHz, 5 MHz WCDMATM1, gain = 68dB, output power= +21dBm

DL (EUT = CU)

TX freq = 881MHz, 5 MHz WCDMATM1, gain = 56 dB output power = +11dBm

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

Frequency range of measurement = 9 kHz- 10 GHz.
9 kHz -150 kHz;RBW=200 Hz,VBW=200 Hz;150 kHz-30 MHz;RBW=9 kHz,VBW=9 kHz;30 MHz-1000 MHz;RBW=120 kHz,VBW=120 kHz,1000 MHz-10,000 MHz;RBW=1 MHz,VBW=1 MHz.

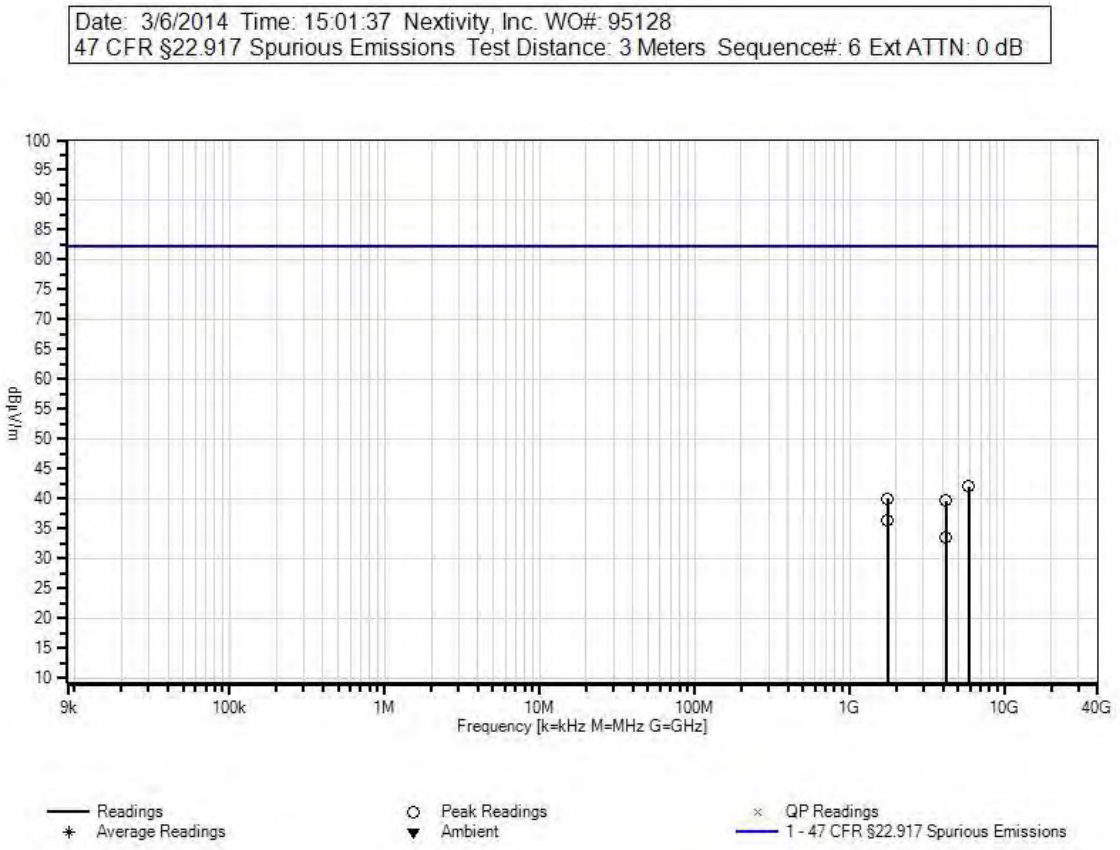
Test environment conditions: 17°C, 24% Relative Humidity, 100kPa

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

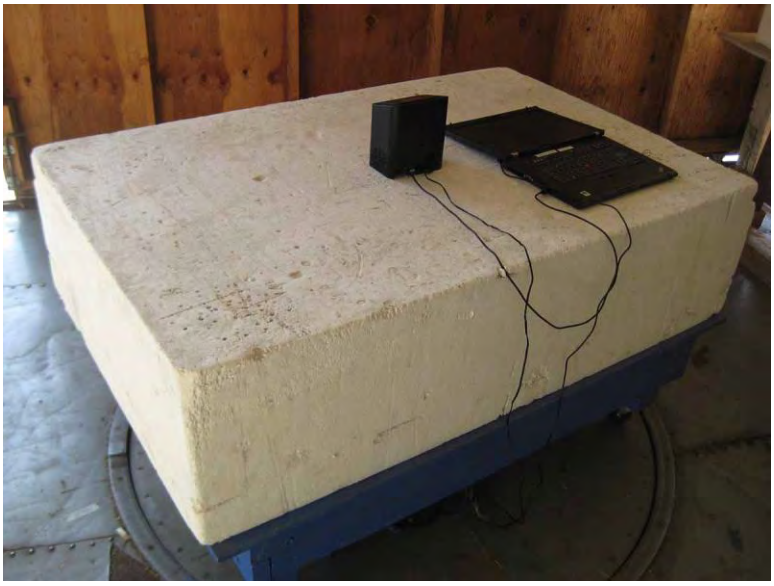
Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5853.500M	37.7	+0.0 +6.6	-37.3 +0.4	+33.4	+1.2	+0.0	42.0	82.2 UL-836MHz	-40.2	Vert
2	1763.300M	46.9	+0.0 +3.5	-38.5 +0.3	+27.3	+0.5	+0.0	40.0	82.2 DL 881MHz	-42.2	Vert
3	4180.800M	39.4	+0.0 +5.5	-37.9 +0.4	+31.3	+0.9	+0.0	39.6	82.2 UL-836MHz	-42.6	Vert
4	1761.800M	43.2	+0.0 +3.5	-38.5 +0.3	+27.3	+0.5	+0.0	36.3	82.2 DL 881MHz	-45.9	Horiz
5	4180.000M	33.2	+0.0 +5.5	-37.9 +0.4	+31.4	+0.9	+0.0	33.5	82.2 UL-836MHz	-48.7	Horiz



Test Setup Photo(s)



Coverage Unit

Coverage Unit

Network Unit

Network Unit

2.1055 / 22.355 Frequency Stability

Test Conditions / Setup

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

Customer: Nextivity, Inc.
Specification: FCC 22.355
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=824-849MHz
DL=869-894MHz
Testing is performed in accordance with Provider Specific Booster test procedure 935210 D04 Provider Specific Booster Measurement DR06-41704, dated 03/06/14.
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 required limit of 1.5ppm.

Summary

Pass.
The device complies with the requirement of 1.5ppm.

Procedure Sec #	Guidance Description	FCC Sec #	FCC Rule Description
	Frequency Stability[1]	2.1055 / 22/24/27[1]	Frequency Stability[1]

§22.355 Frequency tolerance

Frequency range (MHz)	Base, fixed (ppm)	Mobile ≤3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	NA	NA
929 to 960	1.5	NA	NA
2110 to 2220	10.0	NA	NA

Test Data

Frequency Stability

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

Operating Voltage: 110 **VAC**
Frequency Deviation Limit: 1.5 **ppm**

Temperature Variations

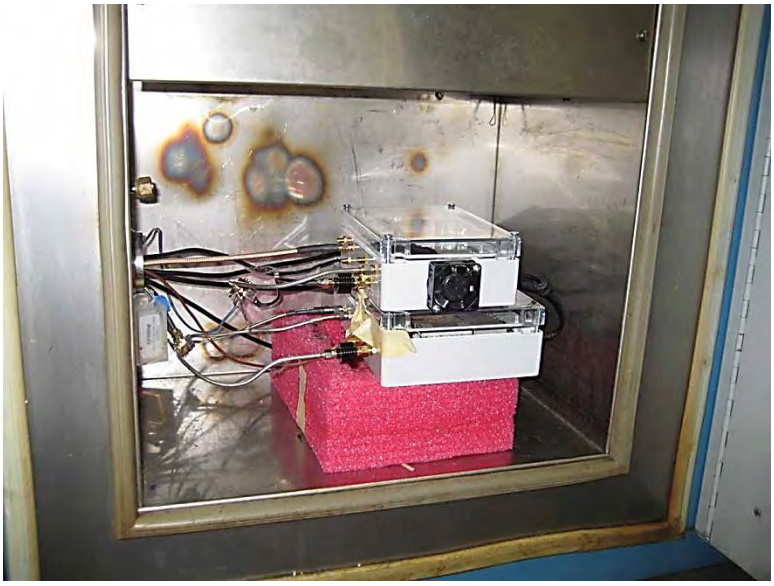
Channel Frequency:		UL 826.4 (MHz) 826.40000	Dev. (MHz)	DL 871.4 871.40000	Dev. (MHz)
Temp (C)	Voltage				
-30	110	826.40008	0.000080	871.40020	0.000204
-20	110	826.40021	0.000214	871.40018	0.000180
-10	110	826.40026	0.000257	871.40028	0.000282
0	110	826.40026	0.000262	871.40029	0.000288
10	110	826.40021	0.000214	871.40027	0.000271
20	110	826.40017	0.000166	871.40026	0.000258
30	110	826.39994	0.000061	871.39999	0.000010
40	110	826.40013	0.000127	871.40015	0.000152
50	110	826.40023	0.000227	871.40011	0.000111

Voltage Variations (±15%)

20	93.5	826.40011	0.000111	871.40021	0.000213
20	110	826.40006	0.000061	871.40021	0.000213
20	126.5	826.40002	0.000022	871.40023	0.000231

Max Deviation (MHz)	**0.000262**		**0.000288**
Max Deviation (ppm)	**0.317038**		**0.330503**
	PASS		**PASS**

Test Setup Photo



Test Setup

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.