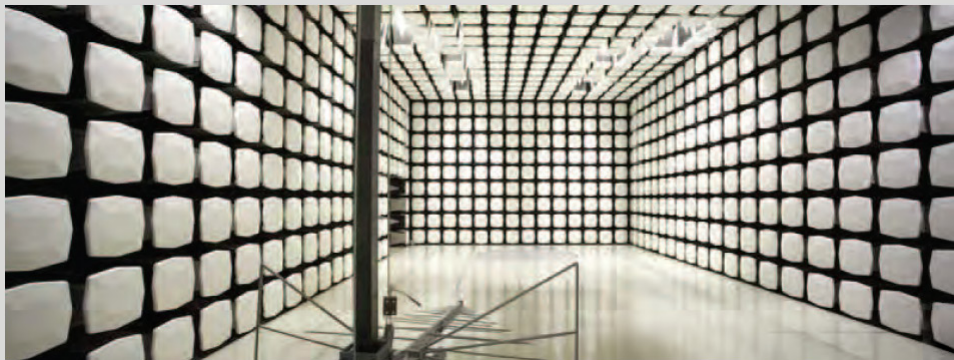




Lantronix
PremierWave XC HSPA+
FCC 22H:2013
FCC 24E:2013

Report #: LANT0018



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: April 15, 2013
Lantronix
Model: PremierWave XC HSPA+

Emissions

Test Description	Specification	Test Method	Pass/Fail
Out of Band Emissions	FCC 22H:2013	ANSI/TIA/EIA-603-C-2004	Pass
Out of Band Emissions	FCC 24E:2013	ANSI/TIA/EIA-603-C-2004	Pass
Effective Radiated Power (ERP)	FCC 22H:2013	ANSI/TIA/EIA-603-C-2004	Pass
Effective Radiated Power (EIRP)	FCC 24E:2013	ANSI/TIA/EIA-603-C-2004	Pass
Conducted Output Power	FCC 22H:2013	ANSI/TIA/EIA-603-C-2004	Pass
Conducted Output Power	FCC 24E:2013	ANSI/TIA/EIA-603-C-2004	Pass

Deviations From Test Standards

None

Approved By:



Don Fecteau, IS Manager



NVLAP Lab Code: 200676-0

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
41 Tesla Ave.
Irvine, CA 92618

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834B-1).

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025. The scope includes radio, ITE, and medical standards from around the world. See: <http://www.nwemc.com/accreditations/>

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

KCC / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Hong Kong

OFTA – Recognized by OFTA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

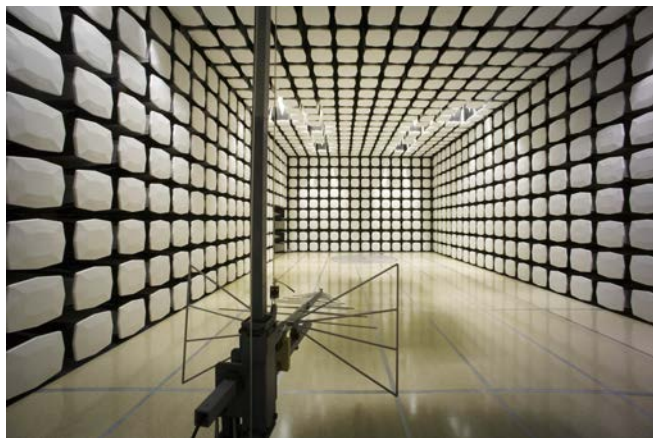
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is listed below. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94	-2.94



Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Minnesota Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Washington Labs NC01-05, SU02, SU07 19201 120 th Ave. NE Bothell, WA 98011 (425) 984-6600
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1
NVLAP				
NVLAP Lab Code: 200630-0	NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200629-0



Client and Equipment Under Test (EUT) Information

Company Name:	Lantronix
Address:	167 Technology
City, State, Zip:	Irvine, CA 92618
Test Requested By:	Michael Simonsen
Model:	PremierWave XC HSPA+
First Date of Test:	March 19, 2013
Last Date of Test:	April 15, 2013
Receipt Date of Samples:	March 14, 2013
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

The PremierWave XC HSPA+ is a Cellular device server intended for serial to Cellular tunnel applications. The unit also supports serial to Ethernet tunneling as well as Ethernet to Cellular routing.

Testing Objective:

Demonstrate the cellular module, FCC ID: QIPPHS8-P, continues to comply with the requirements when installed into this new application provided by the present applicant.

Configuration LANT0018- 1

EUT					
Description	Manufacturer	Model/Part Number	Serial Number		
Multi-port Server	Lantronix	PremierWave XC HSPA+	00204A9D0313		
AC/DC Power Supply	Elementech International Co., Ltd.	AU13312070	None		
Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
(2) 50 ohm Terminator	None	None	None		
USB Thumb Drive	Kingston	DataTraveler G3	5310480		
Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Cable	No	1.4m	No	EUT	AC/DC Power Supply
USB Cable	Yes	2.8m	No	EUT	USB Thumb Drive
Serial Cable	Yes	2.5m	No	EUT	Terminated
Serial Cable	Yes	1.5m	No	EUT	Terminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration LANT0018- 2

EUT					
Description	Manufacturer	Model/Part Number	Serial Number		
Multi-port Server	Lantronix	PremierWave XC HSPA+	00204A9D0313		
AC/DC Power Supply	Elementech International Co., Ltd.	AU13312070	None		
(2) SMA Antenna	Taoglas	TG.09.0113	None		
Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
USB Thumb Drive	Kingston	DataTraveler G3	5310480		
Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Cable	No	1.4m	No	EUT	AC/DC Power Supply
USB Cable	Yes	2.8m	No	EUT	USB Thumb Drive
Serial Cable	Yes	2.5m	No	EUT	Terminated
Serial Cable	Yes	1.5m	No	EUT	Terminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration LANT0018- 3

EUT								
Description		Manufacturer		Model/Part Number		Serial Number		
Multi-port Server		Lantronix		PremierWave XC HSPA+		00204A9D0313		
AC/DC Power Supply		Elementech International Co., Ltd.		AU13312070		None		
Cables								
Cable Type		Shield	Length (m)	Ferrite	Connection 1		Connection 2	
DC Cable		No	1.4m	No	EUT		AC/DC Power Supply	
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.								

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	3/19/2013	Out of Band Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	4/12/2013	Effective Radiated Power (EIRP) (Substitution Method)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	4/12/2013	Effective Radiated Power (ERP) (Substitution Method)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	4/15/2013	Conducted Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Out of Band Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Operating W-CDMA, HSDPA Cellular: Low Ch 4132 (826.4MHz), Mid Ch 4182 (836.4MHz), and High Ch 4233 (846.6MHz)
Operating GSM, E-GPRS: Low Ch 128 (824.2MHz), Mid Ch 192 (837MHz), and High Ch 251 (848.8MHz)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

LANT0018 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 18000 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	BSW	NCR	0 mo
Antenna, Dipole	EMCO	3121C - DB4	ADC	8/16/2012	36 mo
Antenna, Horn	ETS	3117	AHQ	9/12/2012	36 mo
Signal Generator	Agilent	E8257D	TGU	2/1/2012	36 mo
High Pass Filter 1.2-18 GHz	Micro-Tronics	HPM50108	HFW	4/2/2012	24 mo
.5-1GHz Notch Filter	K&L Microwave	3TNF-500/1000-N/N	HFR	11/27/2012	24 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOE	11/21/2012	12 mo
Antenna, Horn	ETS	3160-08	AHT	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	11/21/2012	12 mo
Antenna, Horn	ETS	3160-07	AHR	NCR	0 mo
OC 10 Cables	N/A	8-18GHz RE Cables	OCO	10/10/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	6/7/2012	12 mo
Antenna, Horn	EMCO	3115	AHB	3/8/2011	36 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/10/2012	12 mo
Antenna, Biconilog	EMCO	3142	AXB	6/14/2012	12 mo
OC10 Cables	N/A	10kHz-1GHz RE Cables	OCH	6/7/2012	12 mo
Pre-Amplifier	Miteq	AM-1064-9079	AOO	6/7/2012	12 mo
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method.

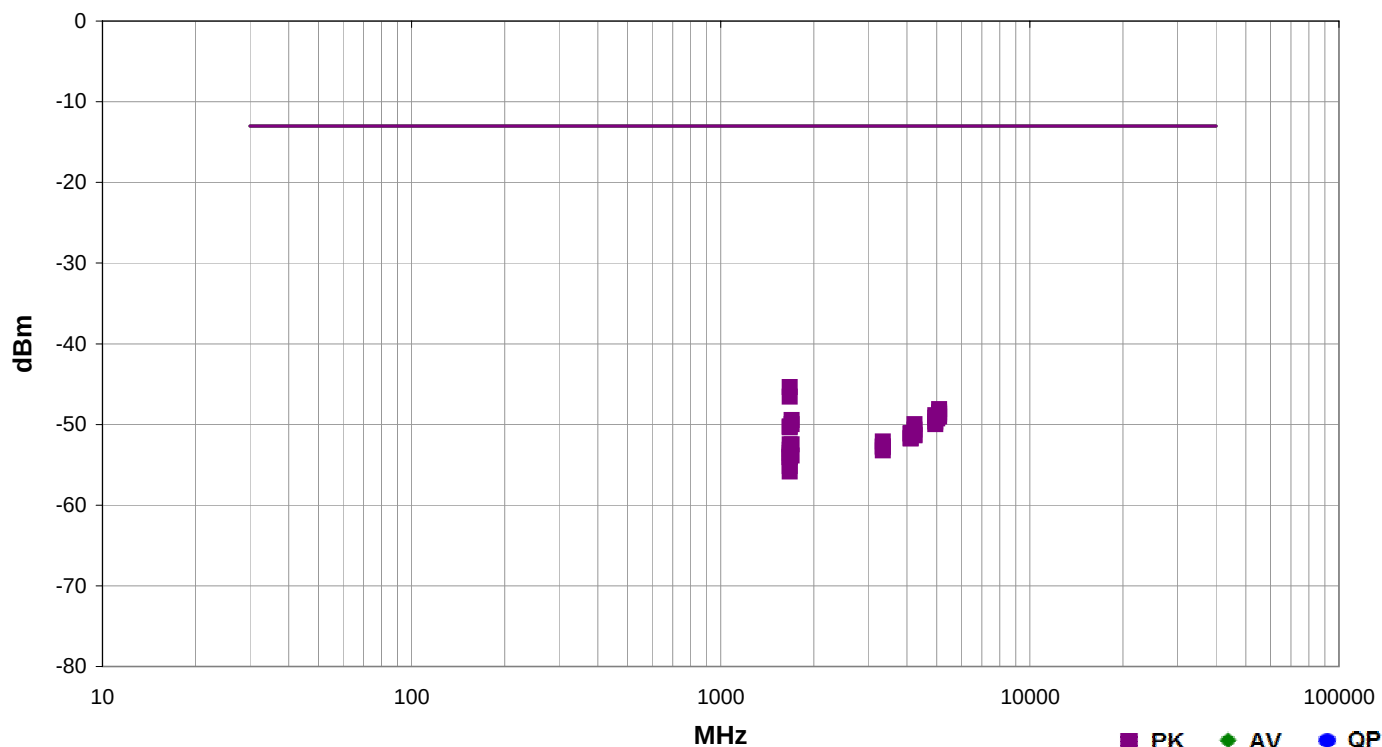
At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

For the purposes of preliminary measurements, the field strength of the spurious emissions can be measured and compared with a 3 meter limit. The 3 meter limit was calculated to be 82.5 dBuV/m at 3 meters. The final measurements must be made utilizing the substitution method described above.

The Universal Radio Communicator (CMU200) was configured to ensure the EUT was transmitting at the maximum output power for both W-CDMA and GSM in the Cellular band. The field strength measurements in EIRP were set against the spec limit of -13.0 dBm.

Work Order:	LANT0018	Date:	03/19/13	
Project:	None	Temperature:	23.1 °C	
Job Site:	OC10	Humidity:	45.8% RH	
Serial Number:	00204A9D0313	Barometric Pres.:	1011 mbar	
EUT:		PremierWave XC HSPA+		
Configuration:	2			
Customer:	Lantronix			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating GSM, E-GPRS: Low Ch 128 (824.2MHz), Mid Ch 192 (837MHz), and High Ch 251 (848.8MHz)			
Deviations:	None			
Comments:	None			

Test Specifications	FCC 22H:2013		Test Method	ANSI/TIA/EIA-603-C-2004	
Run #	6	Test Distance (m)	3	Antenna Height(s)	1-4m
			Results	Pass	

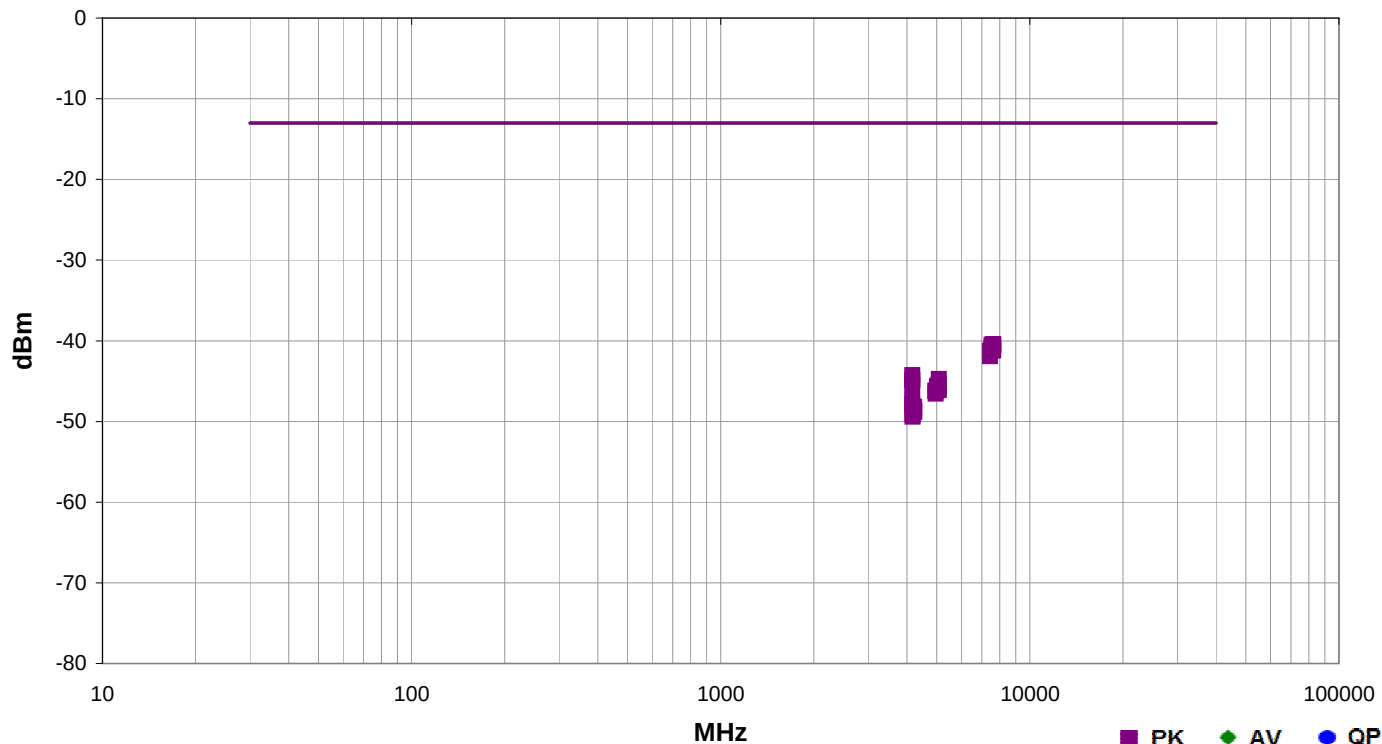


Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1673.980	1.3	214.0	Horz	PK	2.91E-08	-45.4	-13.0	-32.4	Mid Ch 192, GSM, X-Axis
1673.980	1.3	271.0	Vert	PK	2.21E-08	-46.6	-13.0	-33.6	Mid Ch 192, GSM, X-Axis
5092.770	1.2	360.0	Vert	PK	1.55E-08	-48.1	-13.0	-35.1	High Ch 251, GSM, X-Axis
5092.743	1.2	308.0	Horz	PK	1.41E-08	-48.5	-13.0	-35.5	High Ch 251, E-GPRS, X-Axis
5092.981	1.2	360.0	Vert	PK	1.35E-08	-48.7	-13.0	-35.7	High Ch 251, E-GPRS, X-Axis
4945.037	1.2	360.0	Vert	PK	1.30E-08	-48.9	-13.0	-35.9	Low Ch 128, E-GPRS, X-Axis
5092.600	1.2	249.0	Horz	PK	1.26E-08	-49.0	-13.0	-36.0	High Ch 251, GSM, X-Axis

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	5022.092	1.2	360.0	Horz	PK	1.25E-08	-49.0	-13.0	-36.0	Mid Ch 192, GSM, X-Axis
	4945.167	1.3	214.0	Horz	PK	1.21E-08	-49.2	-13.0	-36.2	Low Ch 128, GSM, X-Axis
	5022.178	1.2	0.0	Vert	PK	1.19E-08	-49.2	-13.0	-36.2	Mid Ch 192, GSM, X-Axis
	1697.715	1.2	301.0	Horz	PK	1.13E-08	-49.5	-13.0	-36.5	High Ch 251, E-GPRS, X-Axis
	4945.223	1.2	360.0	Horz	PK	1.08E-08	-49.7	-13.0	-36.7	Low Ch 128, E-GPRS, X-Axis
	4945.136	1.3	259.0	Vert	PK	1.01E-08	-50.0	-13.0	-37.0	Low Ch 128, GSM, X-Axis
	4243.834	1.2	301.0	Horz	PK	1.01E-08	-50.0	-13.0	-37.0	High Ch 251, E-GPRS, X-Axis
	1697.780	1.2	360.0	Vert	PK	1.01E-08	-50.0	-13.0	-37.0	High Ch 251, E-GPRS, X-Axis
	1673.982	1.2	281.0	Horz	PK	9.42E-09	-50.3	-13.0	-37.3	Mid Ch 192, E-GPRS, X-Axis
	1674.113	1.2	106.0	Vert	PK	9.21E-09	-50.4	-13.0	-37.4	Mid Ch 192, GSM, Z-Axis
	4244.095	1.2	219.0	Horz	PK	8.58E-09	-50.7	-13.0	-37.7	High Ch 251, GSM, X-Axis
	4120.733	1.3	333.0	Horz	PK	7.81E-09	-51.1	-13.0	-38.1	Low Ch 128, GSM, X-Axis
	4185.069	1.2	360.0	Vert	PK	7.76E-09	-51.1	-13.0	-38.1	Mid Ch 192, GSM, X-Axis
	4185.125	1.2	327.0	Horz	PK	7.76E-09	-51.1	-13.0	-38.1	Mid Ch 192, E-GPRS, X-Axis
	4120.471	1.2	360.0	Horz	PK	7.64E-09	-51.2	-13.0	-38.2	Low Ch 128, E-GPRS, X-Axis
	4184.961	1.2	264.0	Horz	PK	7.58E-09	-51.2	-13.0	-38.2	Mid Ch 192, GSM, X-Axis
	4244.233	1.2	360.0	Vert	PK	7.47E-09	-51.3	-13.0	-38.3	High Ch 251, GSM, X-Axis
	4185.219	1.2	265.0	Vert	PK	7.41E-09	-51.3	-13.0	-38.3	Mid Ch 192, E-GPRS, X-Axis
	4244.067	1.2	360.0	Vert	PK	7.30E-09	-51.4	-13.0	-38.4	High Ch 251, E-GPRS, X-Axis
	4120.447	1.2	264.0	Vert	PK	6.81E-09	-51.7	-13.0	-38.7	Low Ch 128, E-GPRS, X-Axis
	4120.603	1.3	32.0	Vert	PK	6.65E-09	-51.8	-13.0	-38.8	Low Ch 128, GSM, X-Axis
	3346.400	1.2	111.0	Vert	PK	6.13E-09	-52.1	-13.0	-39.1	Mid Ch 192, GSM, X-Axis
	1673.963	1.2	295.0	Vert	PK	5.68E-09	-52.5	-13.0	-39.5	Mid Ch 192, E-GPRS, Z-Axis
	1697.487	1.2	219.0	Horz	PK	5.66E-09	-52.5	-13.0	-39.5	High Ch 251, GSM, X-Axis
	3348.127	1.2	45.0	Horz	PK	5.34E-09	-52.7	-13.0	-39.7	Mid Ch 192, GSM, X-Axis
	3348.062	1.2	327.0	Horz	PK	5.22E-09	-52.8	-13.0	-39.8	Mid Ch 192, E-GPRS, X-Axis
	1673.905	1.2	360.0	Vert	PK	4.83E-09	-53.2	-13.0	-40.2	Mid Ch 192, E-GPRS, X-Axis
	3347.885	1.2	295.0	Vert	PK	4.76E-09	-53.2	-13.0	-40.2	Mid Ch 192, E-GPRS, X-Axis
	1674.213	1.2	278.0	Vert	PK	4.41E-09	-53.6	-13.0	-40.6	Mid Ch 192, GSM, Y-Axis
	1673.780	1.2	232.0	Horz	PK	4.11E-09	-53.9	-13.0	-40.9	Mid Ch 192, GSM, Y-Axis
	1697.827	1.2	0.0	Vert	PK	4.10E-09	-53.9	-13.0	-40.9	High Ch 251, GSM, X-Axis
	1674.160	1.2	175.0	Vert	PK	3.93E-09	-54.1	-13.0	-41.1	Mid Ch 192, E-GPRS, Y-Axis
	1673.847	1.3	52.0	Horz	PK	3.93E-09	-54.1	-13.0	-41.1	Mid Ch 192, GSM, Z-Axis
	1673.848	1.2	0.0	Horz	PK	3.05E-09	-55.2	-13.0	-42.2	Mid Ch 192, E-GPRS, Z-Axis
	1673.787	1.2	47.0	Horz	PK	2.59E-09	-55.9	-13.0	-42.9	Mid Ch 192, E-GPRS, Y-Axis

Work Order:	LANT0018	Date:	03/21/13	
Project:	None	Temperature:	23.1 °C	
Job Site:	OC10	Humidity:	45.8% RH	
Serial Number:	00204A9D0313	Barometric Pres.:	1011 mbar	
EUT:	PremierWave XC HSPA+			
Configuration:	2			
Customer:	Lantronix			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating W-CDMA, HSDPA Cellular: Low Ch 4132 (826.4MHz), Mid Ch 4182 (836.4MHz), and High Ch 4233 (846.6MHz)			
Deviations:	None			
Comments:	None			

Test Specifications					Test Method		
FCC 22H:2013					ANSI/TIA/EIA-603-C-2004		
Run #	10	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass



Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
7619.617	1.2	66.0	Horz	PK	9.08E-08	-40.4	-13.0	-27.4	High Ch 4233, HSDPA, Y-Axis
7527.469	1.0	79.0	Horz	PK	8.89E-08	-40.5	-13.0	-27.5	Mid Ch 4182, HSDPA, Y-Axis
7619.172	1.0	140.0	Vert	PK	8.87E-08	-40.5	-13.0	-27.5	High Ch 4233, W-CDMA, Y-Axis
7619.492	1.8	225.0	Vert	PK	8.47E-08	-40.7	-13.0	-27.7	High Ch 4233, HSDPA, Y-Axis
7527.604	1.0	53.0	Horz	PK	8.30E-08	-40.8	-13.0	-27.8	Mid Ch 4182, W-CDMA, Y-Axis
7527.848	1.0	4.0	Vert	PK	7.93E-08	-41.0	-13.0	-28.0	Mid Ch 4182, HSDPA, Y-Axis
7527.842	3.9	236.0	Vert	PK	7.57E-08	-41.2	-13.0	-28.2	Mid Ch 4182, W-CDMA, Y-Axis

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	7619.162	2.5	359.0	Horz	PK	7.55E-08	-41.2	-13.0	-28.2	High Ch 4233, W-CDMA, Y-Axis
	7437.624	1.0	107.0	Vert	PK	7.53E-08	-41.2	-13.0	-28.2	Low Ch 4132, W-CDMA, Y-Axis
	7437.754	1.0	13.0	Horz	PK	7.36E-08	-41.3	-13.0	-28.3	Low Ch 4132, W-CDMA, Y-Axis
	7437.453	3.6	174.0	Horz	PK	7.03E-08	-41.5	-13.0	-28.5	Low Ch 4132, HSDPA, Y-Axis
	7437.835	2.4	3.0	Vert	PK	6.41E-08	-41.9	-13.0	-28.9	Low Ch 4132, HSDPA, Y-Axis
	4165.320	1.2	147.0	Vert	PK	3.76E-08	-44.2	-13.0	-31.2	Low Ch 4132, W-CDMA, X-Axis
	5079.593	1.0	246.0	Horz	PK	3.37E-08	-44.7	-13.0	-31.7	High Ch 4233, W-CDMA, Y-Axis
	4165.514	1.2	348.0	Horz	PK	3.27E-08	-44.8	-13.0	-31.8	Low Ch 4132, W-CDMA, Z-Axis
	4165.334	1.2	184.0	Horz	PK	3.27E-08	-44.8	-13.0	-31.8	Low Ch 4132, W-CDMA, Y-Axis
	5079.813	1.0	90.0	Vert	PK	2.87E-08	-45.4	-13.0	-32.4	High Ch 4233, HSDPA, Y-Axis
	4165.374	1.2	180.0	Vert	PK	2.79E-08	-45.5	-13.0	-32.5	Low Ch 4132, W-CDMA, Y-Axis
	5018.300	1.0	56.0	Horz	PK	2.78E-08	-45.6	-13.0	-32.6	Mid Ch 4182, W-CDMA, Y-Axis
	5018.625	2.6	298.0	Vert	PK	2.71E-08	-45.7	-13.0	-32.7	Mid Ch 4182, HSDPA, Y-Axis
	5018.152	2.1	359.0	Horz	PK	2.65E-08	-45.8	-13.0	-32.8	Mid Ch 4182, HSDPA, Y-Axis
	5079.660	1.0	190.0	Vert	PK	2.62E-08	-45.8	-13.0	-32.8	High Ch 4233, W-CDMA, Y-Axis
	5018.188	1.0	348.0	Vert	PK	2.59E-08	-45.9	-13.0	-32.9	Mid Ch 4182, W-CDMA, Y-Axis
	5079.750	2.1	2.0	Horz	PK	2.44E-08	-46.1	-13.0	-33.1	High Ch 4233, HSDPA, Y-Axis
	4958.301	1.0	161.0	Horz	PK	2.42E-08	-46.2	-13.0	-33.2	Low Ch 4132, HSDPA, Y-Axis
	4958.473	1.0	246.0	Vert	PK	2.36E-08	-46.3	-13.0	-33.3	Low Ch 4132, W-CDMA, Y-Axis
	4958.261	1.0	257.0	Horz	PK	2.36E-08	-46.3	-13.0	-33.3	Low Ch 4132, W-CDMA, Y-Axis
	4958.208	1.0	181.0	Vert	PK	2.21E-08	-46.6	-13.0	-33.6	Low Ch 4132, HSDPA, Y-Axis
	4165.380	1.2	132.0	Horz	PK	1.80E-08	-47.4	-13.0	-34.4	Low Ch 4132, W-CDMA, X-Axis
	4165.374	1.2	112.0	Vert	PK	1.64E-08	-47.8	-13.0	-34.8	Low Ch 4132, W-CDMA, Z-Axis
	4231.020	1.0	343.0	Vert	PK	1.52E-08	-48.2	-13.0	-35.2	High Ch 4233, W-CDMA, Y-Axis
	4181.761	1.0	1.0	Horz	PK	1.48E-08	-48.3	-13.0	-35.3	Mid Ch 4182, HSDPA, Y-Axis
	4233.627	1.0	193.0	Horz	PK	1.39E-08	-48.6	-13.0	-35.6	High Ch 4233, HSDPA, Y-Axis
	4233.653	1.0	54.0	Horz	PK	1.33E-08	-48.8	-13.0	-35.8	High Ch 4233, W-CDMA, Y-Axis
	4232.567	3.3	1.0	Vert	PK	1.29E-08	-48.9	-13.0	-35.9	High Ch 4233, HSDPA, Y-Axis
	4182.178	1.0	95.0	Vert	PK	1.26E-08	-49.0	-13.0	-36.0	Mid Ch 4182, HSDPA, Y-Axis
	4181.053	1.0	283.0	Vert	PK	1.20E-08	-49.2	-13.0	-36.2	Mid Ch 4182, W-CDMA, Y-Axis
	4180.200	1.0	179.0	Horz	PK	1.15E-08	-49.4	-13.0	-36.4	Mid Ch 4182, W-CDMA, Y-Axis

Out of Band Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Operating GSM, E-GPRS: Low Ch 512 (1850.2 MHz), Mid Ch 661 (1880MHz), and High Ch 810 (1907.6MHz)
Operating W-CDMA, HSDPA PCS: Low Ch 9262 (1852.4MHz), Mid Ch 9400 (1880MHz), and High Ch 9538 (1907.6MHz).

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

LANT0018 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 26000 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	BSW	NCR	0 mo
Antenna, Dipole	EMCO	3121C - DB4	ADC	8/16/2012	36 mo
Antenna, Horn	ETS	3117	AHQ	9/12/2012	36 mo
Signal Generator	Agilent	E8257D	TGU	2/1/2012	36 mo
High Pass Filter	Micro-Tronics	HPM50111	HFM	4/2/2012	24 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	4/27/2012	12 mo
Antenna, Horn	EMCO	3160-09	AHN	NCR	0 mo
OC floating Cable	N/A	18-26GHz RE Cables	OCK	4/27/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOE	11/21/2012	12 mo
Antenna, Horn	ETS	3160-08	AHT	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	11/21/2012	12 mo
Antenna, Horn	ETS	3160-07	AHR	NCR	0 mo
OC 10 Cables	N/A	8-18GHz RE Cables	OCO	10/10/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	6/7/2012	12 mo
Antenna, Horn	EMCO	3115	AHB	3/8/2011	36 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/10/2012	12 mo
Antenna, Biconilog	EMCO	3142	AXB	6/14/2012	12 mo
OC10 Cables	N/A	10kHz-1GHz RE Cables	OCH	6/7/2012	12 mo
Pre-Amplifier	Miteq	AM-1064-9079	AOO	6/7/2012	12 mo
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method.

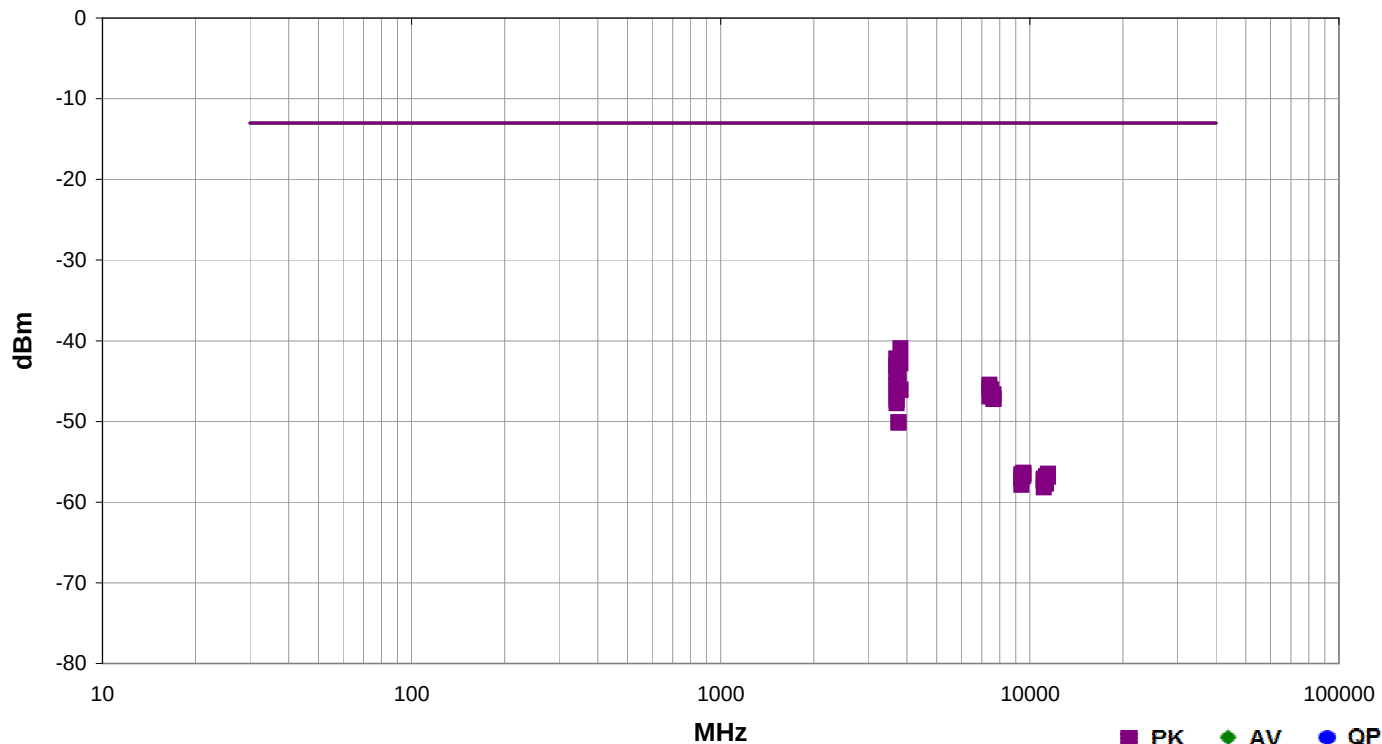
At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a 1/2 wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal 1/2 wave dipole antenna is determined for each radiated spurious emission.

For the purposes of preliminary measurements, the field strength of the spurious emissions can be measured and compared with a 3 meter limit. The 3 meter limit was calculated to be 82.5 dBuV/m at 3 meters. The final measurements must be made utilizing the substitution method described above.

The Universal Radio Communicator (CMU200) was configured to ensure the EUT was transmitting at the maximum output power for both W-CDMA and GSM in the PCS band. The field strength measurements in EIRP were set against the specification limit of -13.0 dBm.

Work Order:	LANT0018	Date:	03/25/13		
Project:	None	Temperature:	24.1 °C		
Job Site:	OC10	Humidity:	55% RH		
Serial Number:	00204A9D0313	Barometric Pres.:	1011 mbar	Tested by:	Mark Baytan
EUT:	Metal Box				
Configuration:	2				
Customer:	Lantronix				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Operating W-CDMA, HSDPA PCS: Low Ch 9262 (1852.4MHz), Mid Ch 9400 (1880MHz), and High Ch 9538 (1907.6MHz).				
Deviations:	None				
Comments:	None				

Test Specifications					Test Method		
FCC 24E:2013					ANSI/TIA/EIA-603-C-2004		
Run #	15	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass

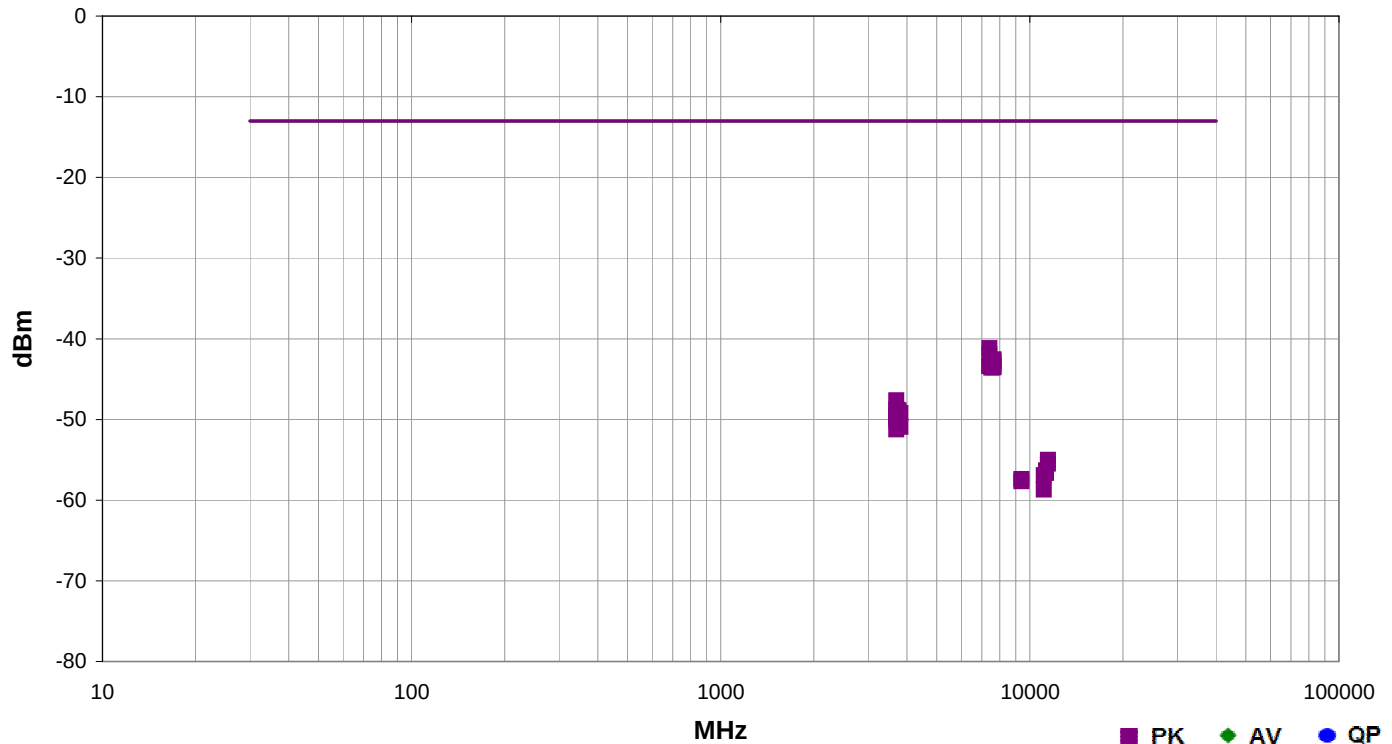


Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
3817.113	1.3	165.0	Vert	PK	8.05E-08	-40.9	-13.0	-27.9	High Ch 9538, HSDPA, Z-Axis
3702.999	1.3	190.0	Vert	PK	6.03E-08	-42.2	-13.0	-29.2	Low Ch 9262, W-CDMA, Z-Axis
3817.350	1.3	189.0	Vert	PK	5.20E-08	-42.8	-13.0	-29.8	High Ch 9538, W-CDMA, Z-Axis
3702.853	1.3	99.0	Vert	PK	4.90E-08	-43.1	-13.0	-30.1	Low Ch 9262, HSDPA, Z-Axis
3702.793	1.3	162.0	Vert	PK	4.07E-08	-43.9	-13.0	-30.9	Low Ch 9262, W-CDMA, Y-Axis
3761.927	1.3	81.0	Vert	PK	3.41E-08	-44.7	-13.0	-31.7	Mid Ch 9400, W-CDMA, Z-Axis
3762.000	1.3	184.0	Vert	PK	3.18E-08	-45.0	-13.0	-32.0	Mid Ch 9400, HSDPA, Z-Axis

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	7409.605	1.3	146.0	Vert	PK	2.86E-08	-45.4	-13.0	-32.4	Low Ch 9262, W-CDMA, Z-Axis
	3702.973	1.3	194.0	Vert	PK	2.82E-08	-45.5	-13.0	-32.5	Low Ch 9262, W-CDMA, X-Axis
	3706.820	1.3	109.0	Horz	PK	2.60E-08	-45.9	-13.0	-32.9	Low Ch 9262, W-CDMA, X-Axis
	7410.847	1.3	172.0	Horz	PK	2.55E-08	-45.9	-13.0	-32.9	Low Ch 9262, HSDPA, Z-Axis
	3816.083	1.3	0.0	Horz	PK	2.49E-08	-46.0	-13.0	-33.0	High Ch 9538, W-CDMA, Z-Axis
	7518.940	1.3	173.0	Horz	PK	2.49E-08	-46.0	-13.0	-33.0	Mid Ch 9400, W-CDMA, Z-Axis
	3817.127	1.3	61.0	Horz	PK	2.43E-08	-46.1	-13.0	-33.1	High Ch 9538, HSDPA, Z-Axis
	7520.987	1.3	184.0	Vert	PK	2.17E-08	-46.6	-13.0	-33.6	Mid Ch 9400, HSDPA, Z-Axis
	7630.133	1.3	147.0	Vert	PK	2.16E-08	-46.6	-13.0	-33.6	High Ch 9538, HSDPA, Z-Axis
	7520.500	1.3	326.0	Vert	PK	2.07E-08	-46.8	-13.0	-33.8	Mid Ch 9400, W-CDMA, Z-Axis
	7409.748	1.3	265.0	Horz	PK	2.02E-08	-46.9	-13.0	-33.9	Low Ch 9262, W-CDMA, Z-Axis
	7631.433	1.3	65.0	Horz	PK	1.93E-08	-47.1	-13.0	-34.1	High Ch 9538, W-CDMA, Z-Axis
	3706.840	1.3	324.0	Horz	PK	1.93E-08	-47.2	-13.0	-34.2	Low Ch 9262, W-CDMA, Z-Axis
	7630.973	1.3	61.0	Horz	PK	1.88E-08	-47.2	-13.0	-34.2	High Ch 9538, HSDPA, Z-Axis
	3706.860	1.3	172.0	Horz	PK	1.84E-08	-47.4	-13.0	-34.4	Low Ch 9262, HSDPA, Z-Axis
	3706.760	1.3	285.0	Horz	PK	1.68E-08	-47.8	-13.0	-34.8	Low Ch 9262, W-CDMA, Y-Axis
	3761.250	1.3	336.0	Horz	PK	9.81E-09	-50.1	-13.0	-37.1	Mid Ch 9400, HSDPA, Z-Axis
	3761.853	1.3	173.0	Horz	PK	9.60E-09	-50.2	-13.0	-37.2	Mid Ch 9400, W-CDMA, Z-Axis
	9537.877	1.0	21.0	Horz	PK	2.31E-09	-56.4	-13.0	-43.4	High Ch 9538, W-CDMA, Z-Axis
	9537.970	1.7	0.0	Vert	PK	2.26E-09	-56.5	-13.0	-43.5	High Ch 9538, W-CDMA, Z-Axis
	11445.580	2.4	124.0	Vert	PK	2.24E-09	-56.5	-13.0	-43.5	High Ch 9538, W-CDMA, Z-Axis
	9400.114	1.0	53.0	Vert	PK	2.21E-09	-56.6	-13.0	-43.6	Mid Ch 9400, HSDPA, Z-Axis
	9538.091	1.0	310.0	Horz	PK	2.20E-09	-56.6	-13.0	-43.6	Mid Ch 9400, HSDPA, Z-Axis
	11445.780	1.0	264.0	Horz	PK	2.19E-09	-56.6	-13.0	-43.6	High Ch 9538, W-CDMA, Z-Axis
	11445.780	1.0	206.0	Vert	PK	2.14E-09	-56.7	-13.0	-43.7	Mid Ch 9400, HSDPA, Z-Axis
	9537.838	1.0	188.0	Vert	PK	2.11E-09	-56.8	-13.0	-43.8	Mid Ch 9400, HSDPA, Z-Axis
	11280.020	1.0	54.0	Horz	PK	2.09E-09	-56.8	-13.0	-43.8	Mid Ch 9400, HSDPA, Z-Axis
	11445.650	1.0	260.0	Horz	PK	2.05E-09	-56.9	-13.0	-43.9	Mid Ch 9400, HSDPA, Z-Axis
	9399.967	1.0	333.0	Vert	PK	2.01E-09	-57.0	-13.0	-44.0	Mid Ch 9400, W-CDMA, Z-Axis
	9399.961	1.0	359.0	Horz	PK	1.97E-09	-57.1	-13.0	-44.1	Mid Ch 9400, W-CDMA, Z-Axis
	11114.380	1.0	237.0	Vert	PK	1.96E-09	-57.1	-13.0	-44.1	Low Ch 9262, W-CDMA, Z-Axis
	11114.270	1.0	352.0	Vert	PK	1.87E-09	-57.3	-13.0	-44.3	Low Ch 9262, HSDPA, Z-Axis
	11114.490	1.0	277.0	Horz	PK	1.83E-09	-57.4	-13.0	-44.4	Low Ch 9262, W-CDMA, Z-Axis
	11280.250	1.0	28.0	Horz	PK	1.82E-09	-57.4	-13.0	-44.4	Mid Ch 9400, W-CDMA, Z-Axis
	11280.250	1.0	108.0	Vert	PK	1.70E-09	-57.7	-13.0	-44.7	Mid Ch 9400, HSDPA, Z-Axis
	11279.840	3.1	250.0	Vert	PK	1.70E-09	-57.7	-13.0	-44.7	Mid Ch 9400, W-CDMA, Z-Axis
	9399.971	1.0	219.0	Horz	PK	1.64E-09	-57.9	-13.0	-44.9	Mid Ch 9400, HSDPA, Z-Axis
	11114.360	3.7	360.0	Horz	PK	1.52E-09	-58.2	-13.0	-45.2	Low Ch 9262, HSDPA, Z-Axis

Work Order:	LANT0018	Date:	03/20/13	
Project:	None	Temperature:	22.5 °C	
Job Site:	OC10	Humidity:	53.4% RH	
Serial Number:	00204A9D0313	Barometric Pres.:	1011 mbar	Tested by: Mark Baytan
EUT:	Metal Box			
Configuration:	2			
Customer:	Lantronix			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating GSM, E-GPRS: Low Ch 512 (1850.2 MHz), Mid Ch 661 (1880MHz), and High Ch 810 (1907.6MHz)			
Deviations:	None			
Comments:	None			

Test Specifications		Test Method	
FCC 24E:2013		ANSI/TIA/EIA-603-C-2004	
Run #	25	Test Distance (m)	3
Antenna Height(s)	1-4m	Results	Pass



Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
7400.651	2.4	115.0	Horz	PK	7.62E-08	-41.2	-13.0	-28.2	Low Ch 512, E-GPRS, Z-Axis
7400.672	1.6	1.0	Vert	PK	6.34E-08	-42.0	-13.0	-29.0	Low Ch 512, E-GPRS, Z-Axis
7639.624	1.1	0.0	Horz	PK	5.56E-08	-42.6	-13.0	-29.6	High Ch 810, GSM, Z-Axis
7639.435	1.0	83.0	Vert	PK	5.18E-08	-42.9	-13.0	-29.9	High Ch 810, E-GPRS, Z-Axis
7519.816	1.0	83.0	Horz	PK	5.16E-08	-42.9	-13.0	-29.9	Mid Ch 661, E-GPRS, Z-Axis
7519.535	1.1	249.0	Vert	PK	5.16E-08	-42.9	-13.0	-29.9	Mid Ch 661, GSM, Z-Axis
7520.120	1.1	304.0	Horz	PK	4.93E-08	-43.1	-13.0	-30.1	Mid Ch 661, GSM, Z-Axis

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	7639.340	1.0	1.0	Horz	PK	4.62E-08	-43.4	-13.0	-30.4	High Ch 810, E-GPRS, Z-Axis
	7400.818	1.1	289.0	Vert	PK	4.59E-08	-43.4	-13.0	-30.4	Low Ch 512, GSM, Z-Axis
	7400.227	1.1	33.0	Horz	PK	4.59E-08	-43.4	-13.0	-30.4	Low Ch 512, GSM, Z-Axis
	7639.232	1.1	124.0	Vert	PK	4.41E-08	-43.6	-13.0	-30.6	High Ch 810, GSM, Z-Axis
	7520.074	1.0	83.0	Vert	PK	4.39E-08	-43.6	-13.0	-30.6	Mid Ch 661, E-GPRS, Z-Axis
	3700.427	1.1	286.0	Vert	PK	1.72E-08	-47.6	-13.0	-34.6	Low Ch 512, GSM, Z-Axis
	3700.453	1.1	4.0	Vert	PK	1.34E-08	-48.7	-13.0	-35.7	Low Ch 512, GSM, Y-Axis
	3760.175	1.1	304.0	Horz	PK	1.30E-08	-48.9	-13.0	-35.9	Mid Ch 661, GSM, Z-Axis
	3819.778	1.1	215.0	Vert	PK	1.19E-08	-49.2	-13.0	-36.2	High Ch 810, GSM, Z-Axis
	3700.433	1.1	33.0	Horz	PK	1.11E-08	-49.5	-13.0	-36.5	Low Ch 512, GSM, Z-Axis
	3700.213	1.1	242.0	Horz	PK	1.09E-08	-49.6	-13.0	-36.6	Low Ch 512, GSM, X-Axis
	3760.072	1.1	102.0	Vert	PK	1.06E-08	-49.8	-13.0	-36.8	Mid Ch 661, GSM, Z-Axis
	3700.527	1.1	82.0	Horz	PK	9.70E-09	-50.1	-13.0	-37.1	Low Ch 512, GSM, Y-Axis
	3819.820	1.1	0.0	Horz	PK	8.07E-09	-50.9	-13.0	-37.9	High Ch 810, GSM, Z-Axis
	3700.220	1.1	0.0	Vert	PK	7.52E-09	-51.2	-13.0	-38.2	Low Ch 512, GSM, X-Axis
	11458.790	1.0	250.0	Horz	PK	3.17E-09	-55.0	-13.0	-42.0	High Ch 810, E-GPRS, Z-Axis
	11458.670	1.0	310.0	Vert	PK	2.82E-09	-55.5	-13.0	-42.5	High Ch 810, E-GPRS, Z-Axis
	11280.130	1.0	338.0	Horz	PK	2.33E-09	-56.3	-13.0	-43.3	Mid Ch 661, E-GPRS, Z-Axis
	11280.240	2.0	117.0	Vert	PK	2.18E-09	-56.6	-13.0	-43.6	Mid Ch 661, E-GPRS, Z-Axis
	11101.680	1.0	357.0	Horz	PK	2.04E-09	-56.9	-13.0	-43.9	Low Ch 512, E-GPRS, Z-Axis
	9400.452	1.0	144.0	Vert	PK	1.83E-09	-57.4	-13.0	-44.4	Mid Ch 661, E-GPRS, Z-Axis
	9400.071	1.0	87.0	Horz	PK	1.71E-09	-57.7	-13.0	-44.7	Mid Ch 661, E-GPRS, Z-Axis
	11102.930	1.0	292.0	Vert	PK	1.35E-09	-58.7	-13.0	-45.7	Low Ch 512, E-GPRS, Z-Axis

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Operating GSM, E-GPRS: Low Ch 128 (824.2MHz), Mid Ch 192 (837MHz), and High Ch 251 (848.8MHz)

Operating W-CDMA, HSDPA Cellular: Low Ch 4132 (826.4MHz), Mid Ch 4182 (836.4MHz), and High Ch 4233 (846.6MHz)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

LANT0018 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	824 MHz	Stop Frequency	849 MHz
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SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Universal Radio Communication	Rohde & Schwarz	CMU200	BSW	NCR	0 mo
Antenna, Dipole	EMCO	3121C -DB4	ADC	8/16/2012	36 mo
Signal Generator	Agilent	E8257D	TGU	2/1/2012	36 mo
Antenna, Biconilog	EMCO	3142	AXB	6/14/2012	12 mo
OC10 Cables	N/A	10kHz-1GHz RE Cables	OCH	6/7/2012	12 mo
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

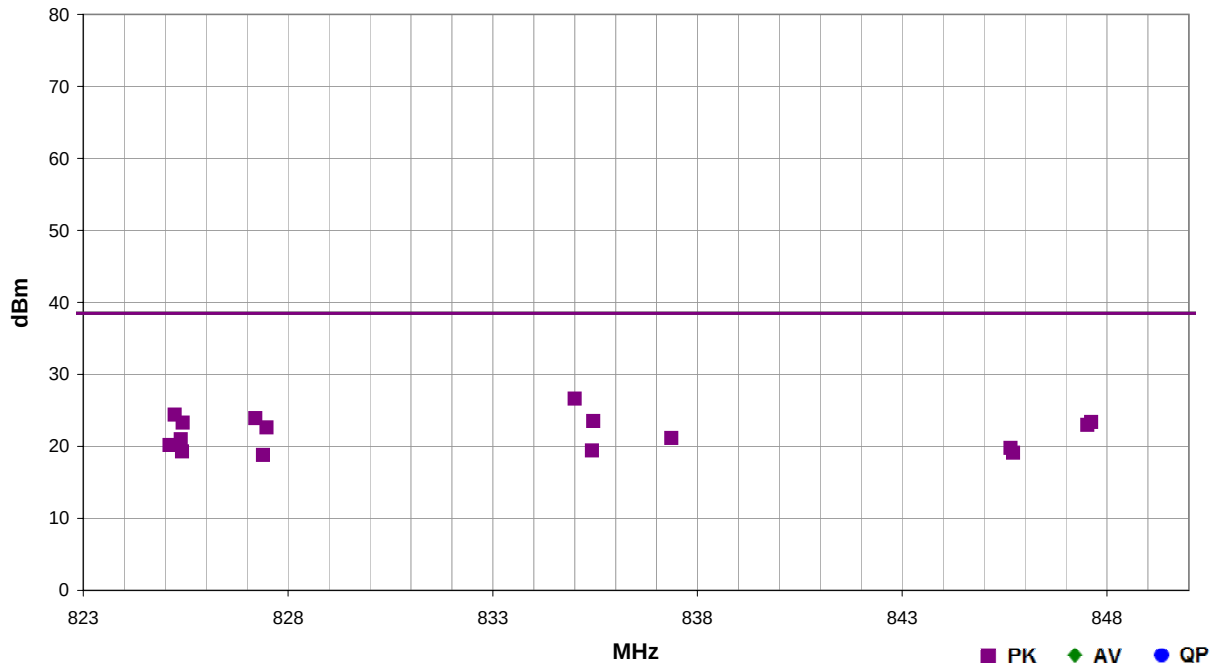
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization. The amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined.

The Universal Radio Communicator (CMU200) was configured to ensure the EUT was transmitting at the maximum output power for both W-CDMA and GSM in the cellular band. The apparent power measurements were taken against the spec limit of 38.5 dBm.

Work Order:	LANT0019	Date:	04/12/13	
Project:	P-LANT001	Temperature:	24.2 °C	
Job Site:	OC11	Humidity:	43.7% RH	
Serial Number:	00204A9D0313	Barometric Pres.:	1011 mbar	
EUT:	PremierWave XC HSPA+			
Configuration:	2			
Customer:	Lantronix			
Attendees:	None			
EUT Power:	230VAC/50Hz			
Operating Mode:	Operating W-CDMA, HSDPA Cellular: Low Ch 4132 (826.4MHz), Mid Ch 4182 (836.4MHz), and High Ch 4233 (846.6MHz)			
Deviations:	None			
Comments:	Pinging.			

Test Specifications	Test Method
FCC 22H:2013	ANSI/TIA/EIA-603-C-2004

Run #	2	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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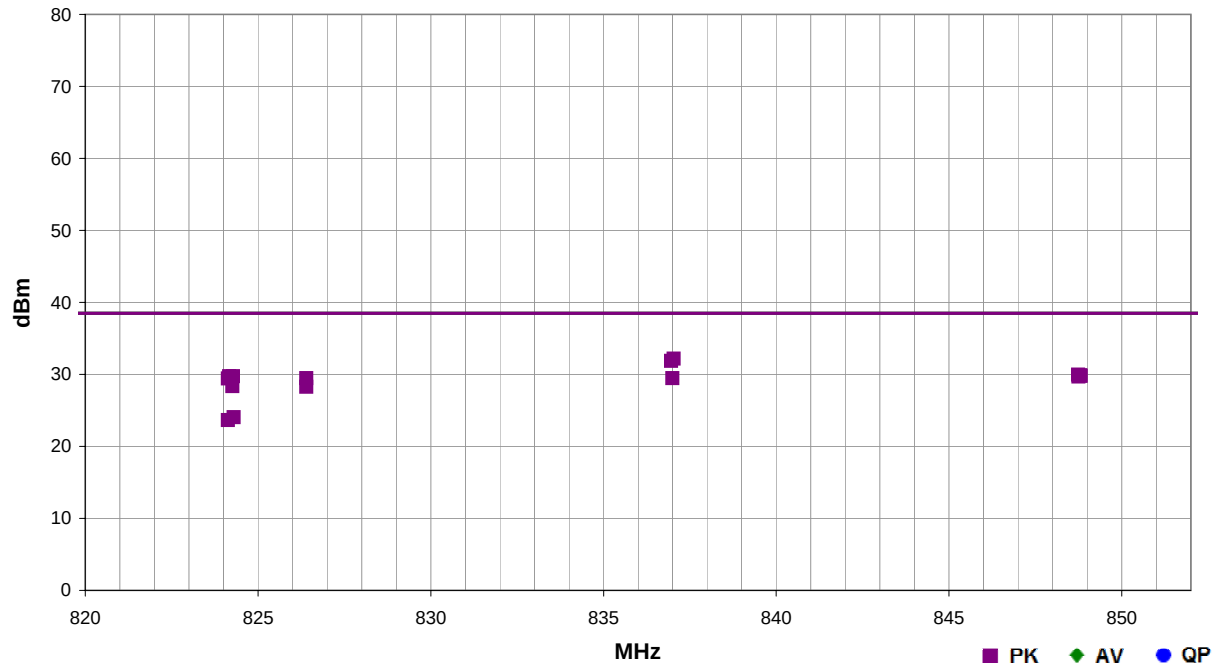


Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
835.000	1.0	354.0	Horz	PK	4.61E-01	26.6	38.5	-11.9	Mid Ch 4182, WCDMA, X-Axis
825.233	1.0	0.0	Horz	PK	2.75E-01	24.4	38.5	-14.1	Low Ch 4132, WCDMA, X-Axis
827.208	1.0	296.0	Horz	PK	2.45E-01	23.9	38.5	-14.6	Low Ch 4132, HSDPA, X-Axis
835.458	1.0	302.0	Horz	PK	2.25E-01	23.5	38.5	-15.0	Mid Ch 4182, HSDPA, X-Axis
847.617	1.0	0.0	Horz	PK	2.18E-01	23.4	38.5	-15.1	High Ch 4233, WCDMA, X-Axis
825.433	1.2	219.0	Vert	PK	2.14E-01	23.3	38.5	-15.2	Low Ch 4132, WCDMA, Z-Axis
847.525	1.0	306.0	Horz	PK	1.99E-01	23.0	38.5	-15.5	High Ch 4233, HSDPA, X-Axis
827.475	1.0	342.0	Horz	PK	1.83E-01	22.6	38.5	-15.9	Low Ch 4132, WCDMA, Y-Axis
837.367	1.0	165.0	Vert	PK	1.31E-01	21.2	38.5	-17.3	Mid Ch 4182, HSDPA, Z-Axis
825.383	1.0	179.0	Vert	PK	1.26E-01	21.0	38.5	-17.5	Low Ch 4132, HSDPA, Z-Axis
825.108	1.0	308.0	Horz	PK	1.04E-01	20.2	38.5	-18.3	Low Ch 4132, WCDMA, Z-Axis
845.650	1.0	165.0	Vert	PK	9.53E-02	19.8	38.5	-18.7	High Ch 4233, HSDPA, Z-Axis
835.425	1.9	164.0	Vert	PK	8.76E-02	19.4	38.5	-19.1	Mid Ch 4182, WCDMA, Z-Axis
825.417	1.2	262.0	Vert	PK	8.51E-02	19.3	38.5	-19.2	Low Ch 4132, WCDMA, Y-Axis
845.708	1.0	168.0	Vert	PK	8.11E-02	19.1	38.5	-19.4	High Ch 4233, WCDMA, Z-Axis
827.392	2.1	46.0	Vert	PK	7.60E-02	18.8	38.5	-19.7	Low Ch 4132, WCDMA, X-Axis

Work Order:	LANT0019	Date:	04/12/13	
Project:	P-LANT001	Temperature:	24.2 °C	
Job Site:	OC11	Humidity:	43.7% RH	
Serial Number:	00204A9D0313	Barometric Pres.:	1011 mbar	
EUT: PremierWave XC HSPA+				Tested by: Mark Baytan
Configuration:	2			
Customer:	Lantronix			
Attendees:	None			
EUT Power:	230VAC/50Hz			
Operating Mode:	Operating GSM, E-GPRS Cellular: Low Ch 128 (824.2MHz), Mid Ch 192 (837MHz), and High Ch 251 (848.8MHz)			
Deviations:	None			
Comments:	Pinging.			

Test Specifications	Test Method
FCC 22H:2013	ANSI/TIA/EIA-603-C-2004

Run #	4	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
837.030	1.0	357.0	Horz	PK	1.65E+00	32.2	38.5	-6.3	Mid Ch 192, GSM, Y-Axis
836.957	1.0	358.0	Horz	PK	1.54E+00	31.9	38.5	-6.6	Mid Ch 192, EGPRS, Y-Axis
848.740	3.4	360.0	Horz	PK	9.95E-01	30.0	38.5	-8.5	High Ch 251, GSM, Y-Axis
848.807	3.4	135.0	Vert	PK	9.72E-01	29.9	38.5	-8.6	High Ch 251, GSM, Y-Axis
848.813	2.8	118.0	Vert	PK	9.50E-01	29.8	38.5	-8.7	High Ch 251, EGPRS, Y-Axis
824.275	1.0	175.0	Horz	PK	9.41E-01	29.7	38.5	-8.8	Low Ch 128, GSM, Y-Axis
824.165	2.9	19.0	Horz	PK	9.39E-01	29.7	38.5	-8.8	Low Ch 128, GSM, Z-Axis
848.747	3.4	360.0	Horz	PK	9.28E-01	29.7	38.5	-8.8	High Ch 251, EGPRS, Y-Axis
837.000	2.8	0.0	Horz	PK	8.88E-01	29.5	38.5	-9.0	Mid Ch 192, EGPRS, Y-Axis
826.400	2.8	0.0	Vert	PK	8.82E-01	29.5	38.5	-9.0	Low Ch 128, EGPRS, Y-Axis
824.130	1.2	359.0	Vert	PK	8.76E-01	29.4	38.5	-9.1	Low Ch 128, GSM, Y-Axis
824.262	1.0	166.0	Vert	PK	6.81E-01	28.3	38.5	-10.2	Low Ch 128, GSM, Z-Axis
826.400	2.8	0.0	Horz	PK	6.69E-01	28.3	38.5	-10.2	Low Ch 128, EGPRS, Y-Axis
824.295	1.0	232.0	Vert	PK	2.53E-01	24.0	38.5	-14.5	Low Ch 128, GSM, X-Axis
824.135	1.0	230.0	Horz	PK	2.30E-01	23.6	38.5	-14.9	Low Ch 128, GSM, X-Axis

EFFECTIVE RADIATED POWER (EIRP)(Substitution Method)

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Operating GSM, E-GPRS: Low Ch 512 (1850.2 MHz), Mid Ch 661 (1880MHz), and High Ch 810 (1907.6MHz)

Operating W-CDMA, HSDPA PCS: Low Ch 9262 (1852.4MHz), Mid Ch 9400 (1880MHz), and High Ch 9538 (1907.6MHz).

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

LANT0018 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	1850 MHz	Stop Frequency	1908 MHz
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SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Universal Radio Communication	Rohde & Schwarz	CMU200	BSW	NCR	0 mo
Antenna, Horn	ETS	3117	AHQ	9/12/2012	36 mo
Signal Generator	Agilent	E8257D	TGU	2/1/2012	36 mo
Antenna, Horn	EMCO	3115	AHB	3/8/2011	36 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/10/2012	12 mo
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes. The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

The Universal Radio Communicator (CMU200) was configured to ensure the EUT was transmitting at the maximum output power for both W-CDMA and GSM in the PCS band. The apparent power measurements were taken against the spec limit of 33.0 dBm.



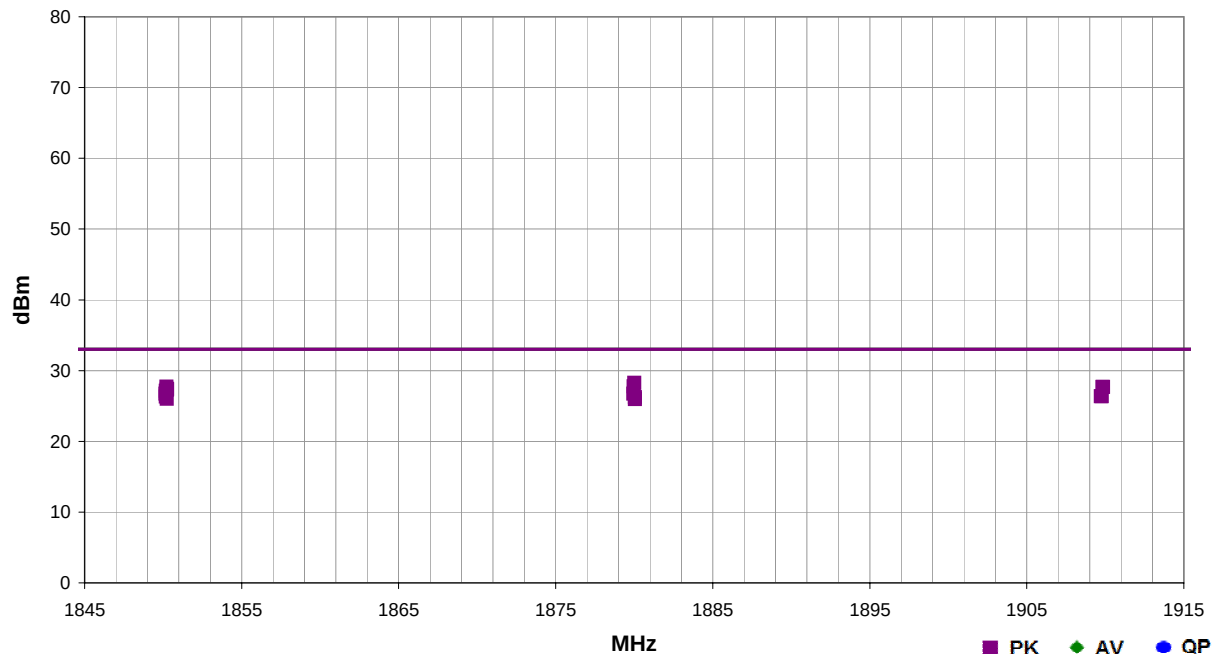
EFFECTIVE RADIATED POWER (EIRP)(Substitution Method)

PSA-ESCI 2012.12.14
PSA-ESCI Version 2013.2.20

Work Order:	LANT0019	Date:	04/12/13	
Project:	P-LANT001	Temperature:	24.2 °C	
Job Site:	OC11	Humidity:	43.7% RH	
Serial Number:	00204A9D0313	Barometric Pres.:	1011 mbar	
EUT: PremierWave XC HSPA+				Tested by: Mark Baytan
Configuration:	2			
Customer:	Lantronix			
Attendees:	None			
EUT Power:	230VAC/50Hz			
Operating Mode:	Operating GSM, E-GPRS PCS: Low Ch 512 (1850.2 MHz), Mid Ch 661 (1880MHz), and High Ch 810 (1907.6MHz)			
Deviations:	None			
Comments:	Pinging.			

Test Specifications	Test Method
FCC 24E:2013	ANSI/TIA/EIA-603-C-2004

Run #	3	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1880.000	1.9	277.0	Vert	PK	6.68E-01	28.2	33.0	-4.8	Mid Ch 661, GSM, Z-Axis
1879.960	1.0	341.0	Vert	PK	5.95E-01	27.7	33.0	-5.3	Mid Ch 661, EGPRS, Z-Axis
1850.227	1.1	342.0	Vert	PK	5.92E-01	27.7	33.0	-5.3	Low Ch 512, GSM, Z-Axis
1909.873	1.0	340.0	Vert	PK	5.84E-01	27.7	33.0	-5.3	High Ch 810, EGPRS, Z-Axis
1909.833	1.0	342.0	Vert	PK	5.84E-01	27.7	33.0	-5.3	High Ch 810, GSM, Z-Axis
1850.253	1.0	344.0	Vert	PK	5.53E-01	27.4	33.0	-5.6	Low Ch 512, EGPRS, Z-Axis
1850.253	1.0	306.0	Horz	PK	5.40E-01	27.3	33.0	-5.7	Low Ch 512, GSM, Z-Axis
1850.240	1.0	307.0	Horz	PK	5.40E-01	27.3	33.0	-5.7	Low Ch 512, EGPRS, Z-Axis
1850.173	1.5	24.0	Vert	PK	5.16E-01	27.1	33.0	-5.9	Low Ch 512, GSM, X-Axis
1879.940	1.0	308.0	Horz	PK	4.73E-01	26.7	33.0	-6.3	Mid Ch 661, EGPRS, Z-Axis
1850.153	1.0	307.0	Horz	PK	4.70E-01	26.7	33.0	-6.3	Low Ch 512, GSM, X-Axis
1909.787	1.0	308.0	Horz	PK	4.33E-01	26.4	33.0	-6.6	High Ch 810, EGPRS, Z-Axis
1909.713	1.0	310.0	Horz	PK	4.33E-01	26.4	33.0	-6.6	High Ch 810, GSM, Z-Axis
1850.167	1.0	295.0	Horz	PK	4.29E-01	26.3	33.0	-6.7	Low Ch 512, GSM, Y-Axis
1880.053	1.0	307.0	Horz	PK	4.22E-01	26.2	33.0	-6.8	Mid Ch 661, EGPRS, Z-Axis
1850.247	1.5	193.0	Vert	PK	4.00E-01	26.0	33.0	-7.0	Low Ch 512, GSM, Y-Axis
1880.047	1.1	134.0	Horz	PK	3.93E-01	25.9	33.0	-7.1	Mid Ch 661, GSM, Z-Axis



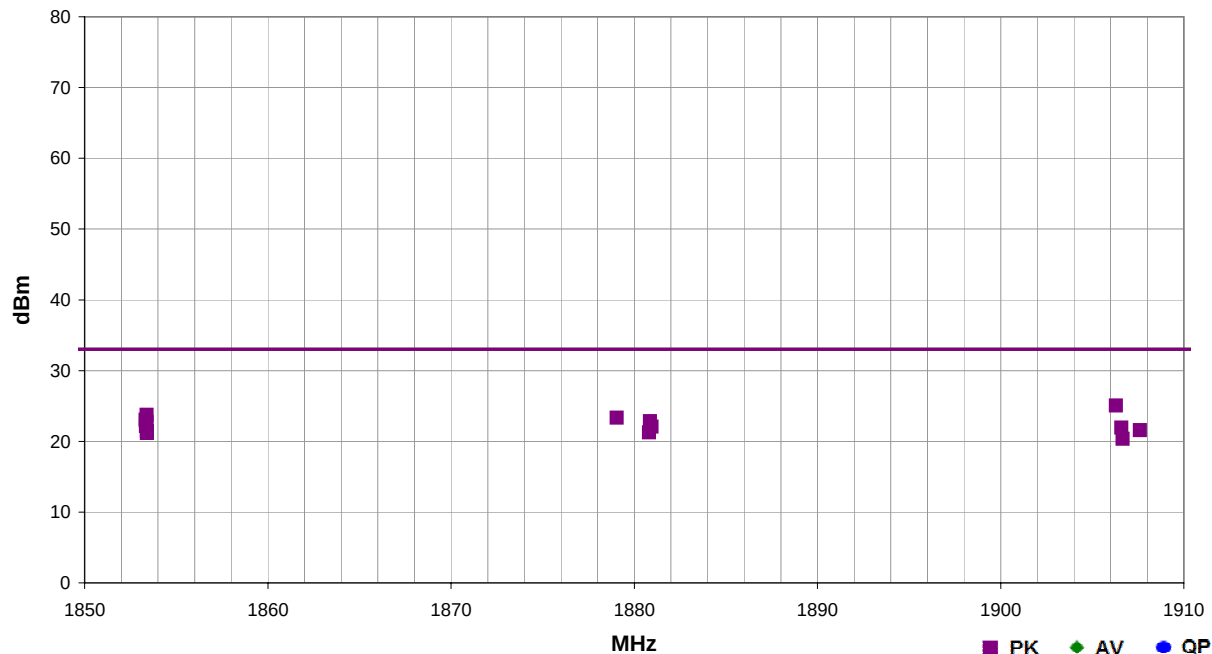
EFFECTIVE RADIATED POWER (EIRP)(Substitution Method)

PSA-ESCI 2012.12.14
PSA-ESCI Version 2013.2.20

Work Order:	LANT0019	Date:	04/12/13	
Project:	P-LANT001	Temperature:	24.2 °C	
Job Site:	OC11	Humidity:	43.7% RH	
Serial Number:	00204A9D0313	Barometric Pres.:	1011 mbar	
EUT: PremierWave XC HSPA+				Tested by: Mark Baytan
Configuration: 2				
Customer: Lantronix				
Attendees: None				
EUT Power: 230VAC/50Hz				
Operating Mode: Operating W-CDMA, HSDPA PCS: Low Ch 9262 (1852.4MHz), Mid Ch 9400 (1880MHz), and High Ch 9538 (1907.6MHz).				
Deviations: None				
Comments: Pinging.				

Test Specifications	Test Method
FCC 24E:2013	ANSI/TIA/EIA-603-C-2004

Run #	1	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1906.300	2.2	0.0	Vert	PK	3.19E-01	25.0	33.0	-8.0	High Ch 9538, WCDMA, Z-Axis
	1853.383	1.7	259.0	Vert	PK	2.37E-01	23.7	33.0	-9.3	Low Ch 9262, WCDMA, Z-Axis
	1879.047	1.7	265.0	Vert	PK	2.16E-01	23.3	33.0	-9.7	Mid Ch 9400, WCDMA, Z-Axis
	1853.335	1.1	225.0	Horz	PK	2.02E-01	23.0	33.0	-10.0	Low Ch 9262, WCDMA, Z-Axis
	1880.860	1.2	275.0	Vert	PK	1.93E-01	22.9	33.0	-10.1	Mid Ch 9400, HSDPA, Z-Axis
	1853.355	1.0	305.0	Horz	PK	1.93E-01	22.8	33.0	-10.2	Low Ch 9262, WCDMA, X-Axis
	1853.376	1.3	273.0	Vert	PK	1.88E-01	22.7	33.0	-10.3	Low Ch 9262, HSDPA, Z-Axis
	1853.396	1.0	360.0	Vert	PK	1.84E-01	22.6	33.0	-10.4	Low Ch 9262, WCDMA, Y-Axis
	1853.350	2.1	31.0	Vert	PK	1.64E-01	22.1	33.0	-10.9	Low Ch 9262, WCDMA, X-Axis
	1880.947	1.2	116.0	Horz	PK	1.61E-01	22.1	33.0	-10.9	Mid Ch 9400, HSDPA, Z-Axis
	1906.587	1.1	274.0	Vert	PK	1.56E-01	21.9	33.0	-11.1	High Ch 9538, HSDPA, Z-Axis
	1907.600	1.6	236.0	Horz	PK	1.43E-01	21.5	33.0	-11.5	High Ch 9538, WCDMA, Z-Axis
	1853.402	2.2	315.0	Horz	PK	1.40E-01	21.4	33.0	-11.6	Low Ch 9262, WCDMA, Y-Axis
	1880.813	1.6	233.0	Horz	PK	1.34E-01	21.3	33.0	-11.7	Mid Ch 9400, WCDMA, Z-Axis
	1853.402	1.4	130.0	Horz	PK	1.30E-01	21.1	33.0	-11.9	Low Ch 9262, HSDPA, Z-Axis
	1906.660	1.0	217.0	Horz	PK	1.08E-01	20.3	33.0	-12.7	High Ch 9538, HSDPA, Z-Axis

Conducted Output Power

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Directional Coupler	Fairview Microwave	SMC4030	RGN	6/17/2011	24
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	BSW	NCR	0
Antenna, Horn	ETS Lindgren	3160-05	AXQ	NCR	0
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24

TEST DESCRIPTION

The peak output power was measured with the EUT set to each of the low, mid, and high channels in the selected band. The peak power measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.



Conducted Output Power

XMit 2013.02.28

EUT: PremierWave XC HSPA+		Work Order: LANT0018	
Serial Number: 00204A9D0313		Date: 04/15/13	
Customer: Lantronix		Temperature: 21.5C ^o C	
Attendees: None		Humidity: 41%	
Project: None		Barometric Pres.: 1009	
Tested by: Mark Baytan		Power: 110VAC/60Hz	
		Job Site: OC10	
TEST SPECIFICATIONS		Test Method	
FCC 22H:2013		ANSI/TIA/EIA-603-C-2004	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature 	
		Value (dBm)	Result
GSM			
Low Channel 128		30.73	Pass
Mid Channel 192		31.18	Pass
High Channel 251		31.63	Pass
E-GPRS (EDGE)			
Low Channel 128		27.46	Pass
Mid Channel 192		27.4	Pass
High Channel 251		31.78	Pass

GSM, Low Channel 128

Value (dBm)

Result

30.73

Pass

Agilent 20:12:42 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 824.257 MHz

Ref 47.6 dBm

#Atten 6 dB

30.73 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 824.200 MHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

GSM, Mid Channel 192

Value (dBm)

Result

31.18

Pass

Agilent 20:32:04 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 837.007 MHz

Ref 47.6 dBm

#Atten 6 dB

31.18 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 837.000 MHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

GSM, High Channel 251

Value (dBm)

Result

31.63

Pass

Agilent 20:35:48 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 848.817 MHz

Ref 47.6 dBm

#Atten 6 dB

31.63 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 848.800 MHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

E-GPRS (EDGE), Low Channel 128

Value (dBm)

Result

27.46

Pass

Agilent 20:14:17 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 824.240 MHz

Ref 47.6 dBm

#Atten 6 dB

27.46 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 824.200 MHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

E-GPRS (EDGE), Mid Channel 192

Value (dBm)

Result

27.4

Pass

Agilent 20:33:12 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 837.010 MHz

Ref 47.6 dBm

#Atten 6 dB

27.70 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 837.000 MHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

E-GPRS (EDGE), High Channel 251

Value (dBm)

Result

31.78

Pass

Agilent 20:39:17 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 848.817 MHz

Ref 47.6 dBm

#Atten 6 dB

31.78 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 848.800 MHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Conducted Output Power

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Directional Coupler	Fairview Microwave	SMC4030	RGN	6/17/2011	24
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	BSW	NCR	0
Antenna, Horn	ETS Lindgren	3160-05	AXQ	NCR	0
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate. FCC Part 22H have no conducted output power limit. The measurements were compared to an FCC Grant that was previously given for this radio module to verify the output power matched the previous measured levels. The FCC Grant Identifier #: QIPPHS8-P



Conducted Output Power

XMit 2013.02.28

EUT: PremierWave XC HSPA+		Work Order: LANT0018
Serial Number: 00204A9D0313		Date: 04/15/13
Customer: Lantronix		Temperature: 20.9C°C
Attendees: None		Humidity: 40%
Project: None		Barometric Pres.: 1011
Tested by: Mark Baytan	Power: 110VAC/60Hz	Job Site: OC10
TEST SPECIFICATIONS		
FCC 22H:2013		Test Method
		ANSI/TIA/EIA-603-C-2004
COMMENTS		
None		
DEVIATIONS FROM TEST STANDARD		
None		
Configuration #	3	Signature 
		Value (dBm)
		Result
W-CDMA		
Low Channel 4132		24.42
Mid Channel 4182		23.93
High Channel 4233		24.14
HSDPA		
Low Channel 4132		24.14
Mid Channel 4182		23.89
High Channel 4233		23.98

W-CDMA, Low Channel 4132

Value (dBm)

Result

24.42

Pass

Agilent 11:33:46 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 827.417 MHz

Ref 47.6 dBm

#Atten 6 dB

24.42 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 826.400 MHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

W-CDMA, Mid Channel 4182

Value (dBm)

Result

23.93

Pass

Agilent 11:40:15 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 837.367 MHz

Ref 47.6 dBm

#Atten 6 dB

23.93 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 836.400 MHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

W-CDMA, High Channel 4233

Value (dBm)

Result

24.14

Pass

Agilent 11:41:07 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 847.483 MHz

Ref 47.6 dBm

#Atten 6 dB

24.14 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 846.400 MHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

HSDPA, Low Channel 4132

Value (dBm)

Result

24.14

Pass

Agilent 12:33:36 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 827.633 MHz

Ref 47.6 dBm

#Atten 6 dB

24.14 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 826.400 MHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

HSDPA, Mid Channel 4182

Value (dBm)

Result

23.89

Pass

Agilent 12:32:49 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 837.333 MHz

Ref 47.6 dBm

#Atten 6 dB

23.89 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 836.400 MHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

HSDPA, High Channel 4233

Value (dBm)

Result

23.98

Pass

Agilent 12:31:18 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 845.583 MHz

Ref 47.6 dBm

#Atten 6 dB

23.98 dBm

Peak

Log

10

dB/

Offst

51.6

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 846.450 MHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Conducted Output Power

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Directional Coupler	Fairview Microwave	SMC4030	RGN	6/17/2011	24
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	BSW	NCR	0
Antenna, Horn	ETS Lindgren	3160-05	AXQ	NCR	0
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate. FCC Part 24E have no conducted output power limit. The measurements were compared to an FCC Grant that was previously given for this radio module to verify the output power matched the previous measured levels. The FCC Grant Identifier #: QIPPHS8-P



Conducted Output Power

XMit 2013.02.28

EUT: PremierWave XC HSPA+		Work Order: LANT0018	
Serial Number: 00204A9D0313		Date: 04/15/13	
Customer: Lantronix		Temperature: 21.4°C	
Attendees: None		Humidity: 41%	
Project: None		Barometric Pres.: 1011	
Tested by: Mark Baytan		Power: 110VAC/60Hz	
		Job Site: OC10	
TEST SPECIFICATIONS		Test Method	
FCC 24E:2013		ANSI/TIA/EIA-603-C-2004	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature 	
		Value (dBm)	Result
GSM			
Low Channel 512		29.14	Pass
Mid Channel 661		27.88	Pass
High Channel 810		31.44	Pass
E-GPRS			
Low Channel 512		26.06	Pass
Mid Channel 661		24.89	Pass
High Channel 810		27.67	Pass

GSM, Low Channel 512

Value (dBm)

Result

29.14

Pass

Agilent 19:06:52 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 1.850 160 GHz

Ref 47.9 dBm

#Atten 6 dB

29.14 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.850 200 GHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

GSM, Mid Channel 661

Value (dBm)

Result

27.88

Pass

Agilent 19:26:39 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 1.879 983 GHz

Ref 47.9 dBm

#Atten 6 dB

27.88 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.880 000 GHz

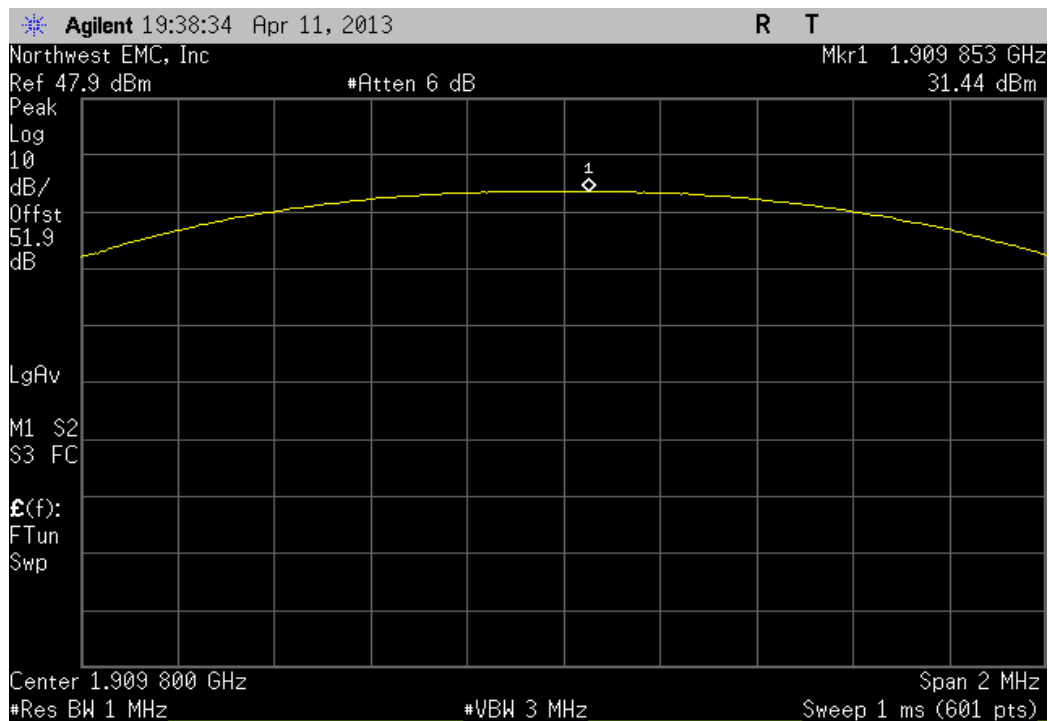
Span 2 MHz

#Res BW 1 MHz

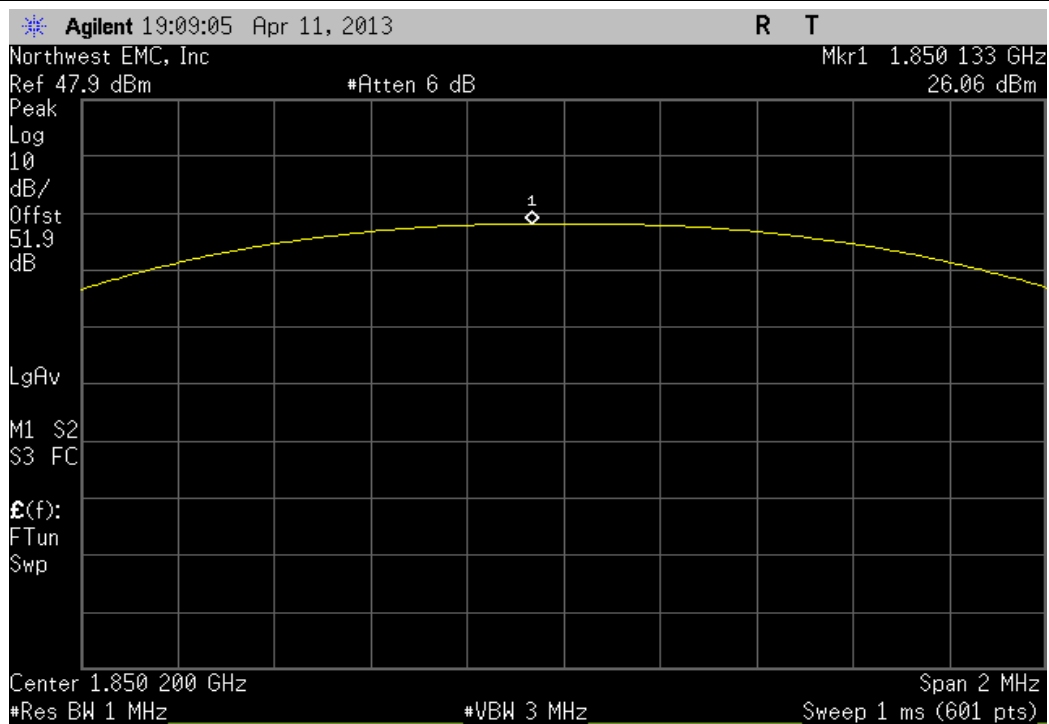
#VBW 3 MHz

Sweep 1 ms (601 pts)

GSM, High Channel 810						
				Value (dBm)	Result	
				31.44	Pass	



E-GPRS, Low Channel 512						
				Value (dBm)	Result	
				26.06	Pass	



E-GPRS, Mid Channel 661

Value (dBm)

Result

24.89

Pass

Agilent 19:33:35 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 1.880 040 GHz

Ref 47.9 dBm

#Atten 6 dB

24.89 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.880 000 GHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

E-GPRS, High Channel 810

Value (dBm)

Result

27.67

Pass

Agilent 19:36:53 Apr 11, 2013

R T

Northwest EMC, Inc

Mkr1 1.909 840 GHz

Ref 47.9 dBm

#Atten 6 dB

27.67 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.909 800 GHz

Span 2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Conducted Output Power

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Directional Coupler	Fairview Microwave	SMC4030	RGN	6/17/2011	24
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	BSW	NCR	0
Antenna, Horn	ETS Lindgren	3160-05	AXQ	NCR	0
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate. FCC Part 24E have no conducted output power limit. The measurements were compared to an FCC Grant that was previously given for this radio module to verify the output power matched the previous measured levels. The FCC Grant Identifier #: QIPPHS8-P



Conducted Output Power

XMit 2013.02.28

EUT: PremierWave XC HSPA+		Work Order: LANT0018
Serial Number: 00204A9D0313		Date: 04/15/13
Customer: Lantronix		Temperature: 21.4°C
Attendees: None		Humidity: 41%
Project: None		Barometric Pres.: 1011
Tested by: Mark Baytan	Power: 110VAC/60Hz	Job Site: OC10
TEST SPECIFICATIONS		
FCC 24E:2013		Test Method
		ANSI/TIA/EIA-603-C-2004
COMMENTS		
None		
DEVIATIONS FROM TEST STANDARD		
None		
Configuration #	1	Signature 
		Value (dBm)
		Result
W-CDMA		
Low Channel 9262		24.42
Mid Channel 9400		23.42
High Channel 9538		24.37
HSDPA		
Low Channel 9262		24.48
Mid Channel 9400		23.8
High Channel 9538		25.31

W-CDMA, Low Channel 9262

Value (dBm)

Result

24.42

Pass

Agilent 12:40:18 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 1.853 100 GHz

Ref 47.9 dBm

#Atten 6 dB

24.42 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.852 400 GHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

W-CDMA, Mid Channel 9400

Value (dBm)

Result

23.42

Pass

Agilent 12:39:44 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 1.879 083 GHz

Ref 47.9 dBm

#Atten 6 dB

23.42 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.880 000 GHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

W-CDMA, High Channel 9538

Value (dBm)

Result

24.37

Pass

Agilent 12:39:06 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 1.908 600 GHz

Ref 47.9 dBm

#Atten 6 dB

24.37 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.907 600 GHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

HSDPA, Low Channel 9262

Value (dBm)

Result

24.48

Pass

Agilent 12:35:42 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 1.853 667 GHz

Ref 47.9 dBm

#Atten 6 dB

24.48 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.852 400 GHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

HSDPA, Mid Channel 9400

Value (dBm)

Result

23.8

Pass

Agilent 12:37:10 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 1.879 183 GHz

Ref 47.9 dBm

#Atten 6 dB

23.80 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.880 000 GHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

HSDPA, High Channel 9538

Value (dBm)

Result

25.31

Pass

Agilent 12:38:10 Apr 12, 2013

R T

Northwest EMC, Inc

Mkr1 1.908 633 GHz

Ref 47.9 dBm

#Atten 6 dB

25.31 dBm

Peak

Log

10

dB/

Offst

51.9

dB

LgAv

M1 S2

S3 FC

E(f):

FTun

Swp

Center 1.907 600 GHz

Span 10 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)