RADIATED FUNDAMENTAL AND SPURIOUS EMISSIONS PORTIONS OF

FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
INDUSTRY CANADA RSS-132 ISSUE 2
INDUSTRY CANADA RSS-133 ISSUE 5

CERTIFICATION TEST REPORT
FOR

3G/UNLICENSED WIRELESS HUB

MODEL NUMBER: QWH-HUB-V1.0A

FCC ID: J9C2NET
IC: 2723A-2NET

REPORT NUMBER: 11U14082-1, Revision A

ISSUE DATE: DECEMBER 02, 2011

Prepared for

QUALCOMM INCORPORATED
5775 MOREHOUSE DRIVE
SAN DIEGO, CA 92121, USA

Prepared by

COMPLIANCE CERTIFICATION SERVICES (UL CCS)
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	11/29/2011	Initial Issue	T. Chan
A	12/02/2011	Corrected typos	M. Heckrotte

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: QUALCOMM CORPORATE
5775 MOREHOUSE DRIVE
SAN DIEGO, CA. 92121, UNITED STATES

EUT DESCRIPTION: 3G/UNLICENSED WIRELESS HUB

MODEL: QWH-HUB-V1.0A

SERIAL NUMBER: QUALC00100000134

DATE TESTED: NOVEMBER 18-23, 2011

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
Radiated portion of FCC PART 22H AND 24E	PASS
Radiated portion of IC RSS132 AND IC RSS133	PASS

Compliance Certification Services, Inc. (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For UL CCS By:

MICHAEL HECKROTTE
DIRECTOR OF ENGINEERING
UL CCS

Tested By:

CHIN PANG
EMC ENGINEER
UL CCS

2. SCOPE

This report documents the results of radiated tests of the 3G radio portion of the device, performed in accordance with the applicable portions of the standards listed below.

Conducted test results of the 3G radio and all test results of the unlicensed radio are outside the scope of this report, and are documented separately.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with RSS-132, RSS-133, TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, and FCC CFR Part 24.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a 3G/ Unlicensed Wireless Hub with WLAN and Bluetooth.

6.2. MAXIMUM OUTPUT POWER

The transmitter maximum ERP/EIRP output powers are as follows:

824 to 849 MHz Authorized Band

Frequency Range (MHz)	Modulation	ERP (PEAK)	
		Output Power (dBm)	Output Power (mW)
Low CH - 824.20	GPRS	32.60	1819.7
Mid CH - 836.6		32.60	1819.7
High CH - 848.81		32.85	1927.5

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP (PEAK)	
		Output Power (dBm)	Output Power (mW)
Low CH - 1852.4	GPRS	31.98	1577.6
Mid CH - 1880.00		32.53	1790.6
High CH - 1909.8		29.99	997.7

824 to 849 MHz Authorized Band

Frequency Range (MHz)	Modulation	ERP (PEAK)	
		Output Power (dBm)	Output Power (mW)
Low CH - 824.20	EGPRS	30.26	1061.7
Mid CH - 836.6		30.70	1174.9
High CH - 848.81		30.87	1221.8

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP (PEAK)	
		Output Power (dBm)	Output Power (mW)
Low CH - 1852.4	EGPRS	30.95	1244.5
Mid CH - 1880.00		30.55	1135.0
High CH - 1909.8		29.72	937.6

826 to 846 MHz Authorized Band

Frequency Range (MHz)	Modulation	ERP (PEAK)		ERP (AVERAGE)	
		Output Power (dBm)	Output Power (mW)	Output Power (dBm)	Output Power (mW)
Low CH - 826.4	WCDMA850, Rel99	25.80	380.2	22.80	190.5
Mid CH - 836.0		25.10	323.6	22.20	166.0
High CH - 846.0		24.82	303.4	22.00	158.5

1852 to 1908 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP (PEAK)		EIRP (AVERAGE)	
		Output Power (dBm)	Output Power (mW)	Output Power (dBm)	Output Power (mW)
Low CH - 1850.2	WCDMA1900, Rel99	29.45	881.0	26.25	421.7
Mid CH - 1880.00		29.84	963.8	26.74	472.1
High CH - 1907.6		28.89	774.5	25.59	362.2

826 to 846 MHz Authorized Band

Frequency Range (MHz)	Modulation	ERP (PEAK)		ERP (AVERAGE)	
		Output Power (dBm)	Output Power (mW)	Output Power (dBm)	Output Power (mW)
Low CH - 826.4	WCDMA850, HSDPA	24.70	295.1	22.00	158.5
Mid CH - 836.0		23.60	229.1	20.50	112.2
High CH - 846.0		23.70	234.4	20.70	117.5

1852 to 1908 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP (PEAK)		EIRP (AVERAGE)	
		Output Power (dBm)	Output Power (mW)	Output Power (dBm)	Output Power (mW)
Low CH - 1850.2	WCDMA1900, HSDPA	28.85	767.4	25.35	342.8
Mid CH - 1880.00		28.74	748.2	25.31	339.6
High CH - 1907.6		28.29	674.5	24.59	287.7

6.3. SOFTWARE AND FIRMWARE

The EUT is linked with Agilent Communication Test Set.

6.4. WORST-CASE CONFIGURATION AND MODE

The worst-position was the EUT with highest emissions. To determine the worst-case, the EUT was investigated on X, Y, and Z positions and the worst position were determined to be at Z position for both cell and PCS bands. And one slot was active for GPRS and EGPRS during testing.

6.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

N/A

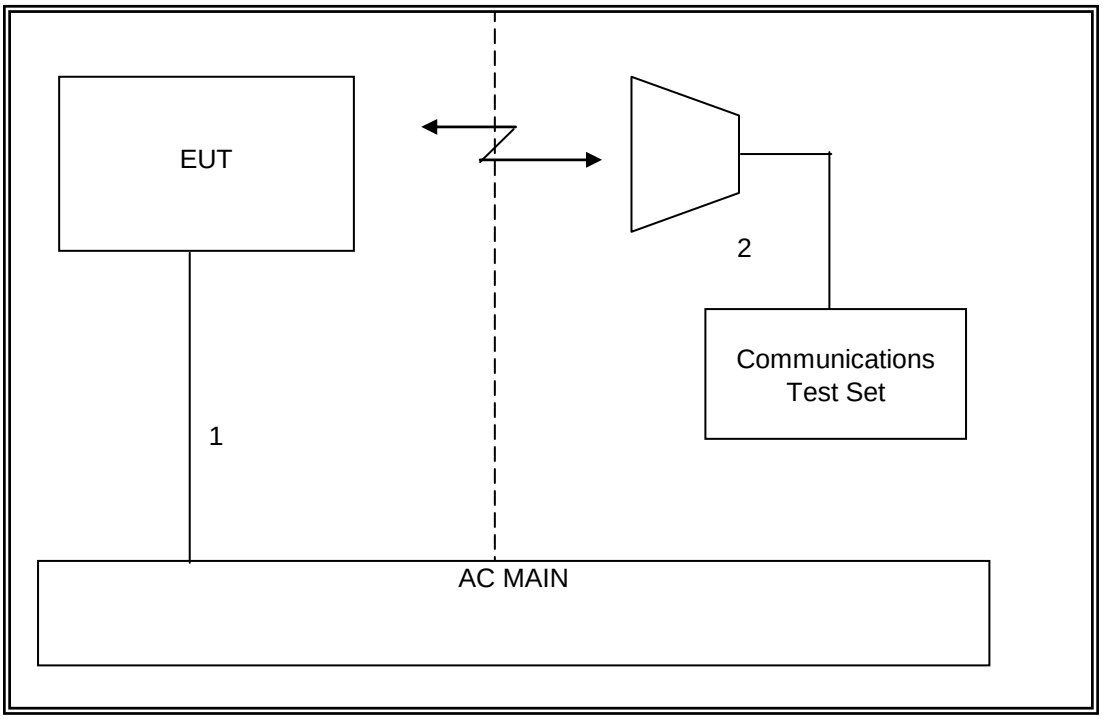
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	RF In/Out	1	Horn	Shielded	2m	NA

TEST SETUP

The EUT is a stand alone device. A Communication Test Set is used to link the device under test.

SETUP DIAGRAM FOR TESTS



7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/15/12
Communications Test Set	Agilent / HP	E5515C	C01086	07/17/12
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/30/12
Antenna, Horn, 18 GHz	EMCO	3115	C00943	CNR
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/16/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/14/12
Dipole	ETS	3121C DB4	C00994	07/16/12
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	N/A	06/09/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/27/12

8. LIMITS AND RESULTS

8.1. RADIATED OUTPUT POWER

LIMITS

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(b) & RSS133 § 6.4 Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17

RESULTS

PEAK POWER

Mode	Channel	f (MHz)	ERP	
			dBm	mW
GPRS	128	824.20	32.60	1819.70
	190	836.60	32.60	1819.70
	251	848.80	32.85	1927.52
EGPRS	128	824.20	30.26	1061.70
	190	836.60	30.70	1174.90
	251	848.80	30.87	1221.80

Mode	Channel	f (MHz)	ERP	
			dBm	mW
UMTS,REL 99	4357	826.40	25.80	380.19
	4405	836.00	25.10	323.59
	4455	846.00	24.82	303.39
UMTS, HSDPA	4357	826.40	24.70	295.12
	4405	836.00	23.60	229.09
	4455	846.00	23.70	234.42

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
GPRS	512	1850.20	31.98	1577.61
	661	1880.00	32.53	1790.61
	810	1909.80	29.99	997.70
EGPRS	512	1850.20	30.95	1244.51
	661	1880.00	30.55	1135.01
	810	1909.80	29.72	937.56

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
UMTS, REL 99	9662	1852.40	29.45	881.05
	9800	1880.00	29.84	963.83
	9938	1907.60	28.89	774.46
UMTS, HSDPA	9662	1852.40	28.85	767.36
	9800	1880.00	28.74	748.17
	9938	1907.60	28.29	674.53

AVERAGE POWER

Mode	Channel	f (MHz)	ERP	
			dBm	mW
UMTS,REL 99	4357	826.40	22.80	190.55
	4405	836.00	22.20	165.96
	4455	846.00	22.00	158.49
UMTS, HSDPA	4357	826.40	22.00	158.49
	4405	836.00	20.50	112.20
	4455	846.00	20.70	117.49

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
UMTS, REL 99	9662	1852.40	26.25	421.70
	9800	1880.00	26.74	472.06
	9938	1907.60	25.59	362.24
UMTS, HSDPA	9662	1852.40	25.35	342.77
	9800	1880.00	25.31	339.63
	9938	1907.60	24.59	287.74

PEAK READING:

GPRS, CELL OUTPUT POWER (ERP)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/15/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND GPRS

Test Equipment:
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	25.27	V	0.5	0.0	24.77	38.5	-13.7	
824.20	33.10	H	0.5	0.0	32.60	38.5	-5.8	
Mid Ch								
836.60	25.14	V	0.5	0.0	24.64	38.5	-13.8	
836.60	33.10	H	0.5	0.0	32.60	38.5	-5.9	
High Ch								
848.80	24.31	V	0.5	0.0	23.81	38.5	-14.6	
848.80	33.35	H	0.5	0.0	32.85	38.5	-5.6	

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EGPRS, CELL OUTPUT POWER (ERP)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/15/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND EGPRS

Test Equipment:
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	24.07	V	0.5	0.0	23.57	38.5	-14.9	
824.20	30.76	H	0.5	0.0	30.26	38.5	-8.2	
Mid Ch								
836.60	23.84	V	0.5	0.0	23.34	38.5	-15.1	
836.60	31.20	H	0.5	0.0	30.70	38.5	-7.8	
High Ch								
848.80	22.31	V	0.5	0.0	21.81	38.5	-16.6	
848.80	31.37	H	0.5	0.0	30.87	38.5	-7.6	

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WCDMA850 REL 99 OUTPUT POWER (ERP)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/21/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND WCDMA Rel 99

Test Equipment:
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	19.52	V	0.5	0.0	19.02	38.5	-19.4	
826.40	26.30	H	0.5	0.0	25.80	38.5	-12.6	
Mid Ch								
836.00	19.00	V	0.5	0.0	18.50	38.5	-19.9	
836.00	25.60	H	0.5	0.0	25.10	38.5	-13.3	
High Ch								
846.00	18.90	V	0.5	0.0	18.40	38.5	-20.0	
846.00	25.32	H	0.5	0.0	24.82	38.5	-13.6	

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WCDMA850 HSDPA OUTPUT POWER (ERP)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/22/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND WCDMA HSDPA

Test Equipment:
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	18.22	V	0.5	0.0	17.72	38.5	-20.7	
826.40	25.20	H	0.5	0.0	24.70	38.5	-13.7	
Mid Ch								
836.00	17.10	V	0.5	0.0	16.60	38.5	-21.8	
836.00	24.10	H	0.5	0.0	23.60	38.5	-14.8	
High Ch								
846.00	19.10	V	0.5	0.0	18.60	38.5	-19.8	
846.00	24.20	H	0.5	0.0	23.70	38.5	-14.7	

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GPRS, PCS OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/15/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND GPRS ERP

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.850	24.8	V	0.85	8.00	31.98	33.0	-1.0	
1.850	15.7	H	0.85	8.00	22.85	33.0	-10.2	
1.880	25.3	V	0.85	8.10	32.53	33.0	-0.5	
1.880	15.6	H	0.85	8.10	22.85	33.0	-10.2	
1.910	22.7	V	0.85	8.14	29.99	33.0	-3.0	
1.910	15.3	H	0.85	8.14	22.59	33.0	-10.4	

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EGPRS PCS OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/15/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND EGPRS ERP

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.850	23.8	V	0.85	8.00	30.95	33.0	-2.1	
1.850	17.3	H	0.85	8.00	24.45	33.0	-8.6	
Mid Ch								
1.880	23.3	V	0.85	8.10	30.55	33.0	-2.5	
1.880	17.6	H	0.85	8.10	24.85	33.0	-8.2	
High Ch								
1.910	22.4	V	0.85	8.14	29.72	33.0	-3.3	
1.910	17.2	H	0.85	8.14	24.49	33.0	-8.5	

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WCDMA1900, REL 99 OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/21/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND WCDMA Rel 99

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	22.0	V	0.85	8.30	29.45	33.0	-3.6	
1.852	16.8	H	0.85	8.27	24.22	33.0	-8.8	
Mid Ch								
1.880	22.5	V	0.85	8.19	29.84	33.0	-3.2	
1.880	17.2	H	0.85	8.20	24.53	33.0	-8.5	
High Ch								
1.908	21.6	V	0.85	8.14	28.89	33.0	-4.1	
1.908	15.6	H	0.85	8.17	22.92	33.0	-10.1	

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WCDMA1900, HSDPA OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/21/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND WCDMA HSDPA

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	21.4	V	0.85	8.30	28.85	33.0	-4.2	
1.852	12.8	H	0.85	8.27	20.22	33.0	-12.8	
Mid Ch								
1.880	21.4	V	0.85	8.19	28.74	33.0	-4.3	
1.880	15.5	H	0.85	8.20	22.85	33.0	-10.2	
High Ch								
1.908	21.0	V	0.85	8.14	28.29	33.0	-4.7	
1.908	16.1	H	0.85	8.17	23.42	33.0	-9.6	

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AVERAGE READING:

WCDMA850 REL 99 OUTPUT POWER (ERP)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/21/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND WCDMA Rel 99

Test Equipment:
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	16.92	V	0.5	0.0	16.42	38.5	-22.0	
826.40	23.30	H	0.5	0.0	22.80	38.5	-15.6	
Mid Ch								
836.00	15.60	V	0.5	0.0	15.10	38.5	-23.3	
836.00	22.70	H	0.5	0.0	22.20	38.5	-16.2	
High Ch								
846.00	15.50	V	0.5	0.0	15.00	38.5	-23.4	
846.00	22.50	H	0.5	0.0	22.00	38.5	-16.4	

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WCDMA850 HSDPA OUTPUT POWER (ERP)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/22/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND WCDMA HSDPA

Test Equipment:
Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	15.02	V	0.5	0.0	14.52	38.5	-23.9	
826.40	22.50	H	0.5	0.0	22.00	38.5	-16.4	
Mid Ch								
836.00	13.80	V	0.5	0.0	13.30	38.5	-25.1	
836.00	21.00	H	0.5	0.0	20.50	38.5	-17.9	
High Ch								
846.00	16.50	V	0.5	0.0	16.00	38.5	-22.4	
846.00	21.20	H	0.5	0.0	20.70	38.5	-17.7	

Rev. 3.17.11

WCDMA1900, REL 99 OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/21/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND WCDMA Rel 99
Average

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	18.8	V	0.85	8.30	26.25	33.0	-6.8	
1.852	13.7	H	0.85	8.27	21.12	33.0	-11.9	
Mid Ch								
1.880	19.4	V	0.85	8.19	26.74	33.0	-6.3	
1.880	14.6	H	0.85	8.20	21.95	33.0	-11.1	
High Ch								
1.908	18.3	V	0.85	8.14	25.59	33.0	-7.4	
1.908	13.1	H	0.85	8.17	20.42	33.0	-12.6	

Rev. 3.17.11

WCDMA1900, HSDPA OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Qualcomm
Project #: 11U14082
Date: 11/21/11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND WCDMA HSDPA
Average

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	17.9	V	0.85	8.30	25.35	33.0	-7.7	
1.852	9.1	H	0.85	8.27	16.52	33.0	-16.5	
Mid Ch								
1.880	18.0	V	0.85	8.19	25.31	33.0	-7.7	
1.880	12.5	H	0.85	8.20	19.85	33.0	-13.2	
High Ch								
1.908	17.3	V	0.85	8.14	24.59	33.0	-8.4	
1.908	12.3	H	0.85	8.17	19.62	33.0	-13.4	

Rev. 3.17.11

8.2. FIELD STRENGTH OF SPURIOUS RADIATION

LIMIT

§22.917 (e) and §24.238 (a), RSS-132 § 4.5.1, & RSS-133 § 6.5.1 (a) (i) & (b): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 22.917 (b) & FCC 24.238 (b)(g)(1)(2)

RESULTS

GPRS CELL SPURIOUS & HARMONIC (ERP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Qualcomm
Project #: 11U14802
Date: 11-21-11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND GPRS

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.2MHz)									
1.648	4.8	V	3.0	35.5	1.0	-29.8	-13.0	-16.8	
2.473	-7.3	V	3.0	35.4	1.0	-41.7	-13.0	-28.7	
3.297	-12.9	V	3.0	35.5	1.0	-47.4	-13.0	-34.4	
1.648	5.6	H	3.0	35.5	1.0	-28.9	-13.0	-15.9	
2.473	-14.2	H	3.0	35.4	1.0	-48.6	-13.0	-35.6	
3.297	-16.1	H	3.0	35.5	1.0	-50.6	-13.0	-37.6	
Mid Ch, (836.6MHz)									
1.673	5.8	V	3.0	35.5	1.0	-28.7	-13.0	-15.7	
2.510	-1.2	V	3.0	35.4	1.0	-35.6	-13.0	-22.6	
3.346	-14.7	V	3.0	35.5	1.0	-49.3	-13.0	-36.3	
1.673	5.5	H	3.0	35.5	1.0	-29.1	-13.0	-16.1	
2.510	-10.1	H	3.0	35.4	1.0	-44.5	-13.0	-31.5	
3.346	-17.9	H	3.0	35.5	1.0	-52.4	-13.0	-39.4	
High Ch, (848.8MHz)									
1.698	6.0	V	3.0	35.5	1.0	-28.5	-13.0	-15.5	
2.546	2.0	V	3.0	35.4	1.0	-32.5	-13.0	-19.5	
3.395	-13.6	V	3.0	35.5	1.0	-48.1	-13.0	-35.1	
1.698	4.7	H	3.0	35.5	1.0	-29.8	-13.0	-16.8	
2.546	-4.9	H	3.0	35.4	1.0	-39.3	-13.0	-26.3	
3.395	-15.7	H	3.0	35.5	1.0	-50.2	-13.0	-37.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

EGPRS CELL SPURIOUS & HARMONIC (ERP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Qualcomm
Project #: 11U14802
Date: 11-21-11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND EGPRS

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.2MHz)									
1.648	-0.2	V	3.0	35.5	1.0	-34.8	-13.0	-21.8	
2.473	-9.3	V	3.0	35.4	1.0	-43.7	-13.0	-30.7	
1.648	0.2	H	3.0	35.5	1.0	-34.3	-13.0	-21.3	
2.473	-17.2	H	3.0	35.4	1.0	-51.6	-13.0	-38.6	
Mid Ch, (836.6MHz)									
1.673	1.9	V	3.0	35.5	1.0	-32.6	-13.0	-19.6	
2.510	-6.2	V	3.0	35.4	1.0	-40.6	-13.0	-27.6	
1.673	-0.5	H	3.0	35.5	1.0	-35.1	-13.0	-22.1	
2.510	-11.1	H	3.0	35.4	1.0	-45.5	-13.0	-32.5	
High Ch, (848.8MHz)									
1.698	5.7	V	3.0	35.5	1.0	-28.8	-13.0	-15.8	
2.546	1.0	V	3.0	35.4	1.0	-33.5	-13.0	-20.5	
3.395	-12.6	V	3.0	35.5	1.0	-47.1	-13.0	-34.1	
1.698	3.7	H	3.0	35.5	1.0	-30.8	-13.0	-17.8	
2.546	-8.4	H	3.0	35.4	1.0	-42.8	-13.0	-29.8	
3.395	-15.7	H	3.0	35.5	1.0	-50.2	-13.0	-37.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

WCDMA 850 REL99 SPURIOUS & HARMONIC (ERP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Qualcomm
Project #: 11U14802
Date: 11-21-11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND WCDMA Rel 99

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (826.4MHz)									
1.653	-13.8	V	3.0	35.5	1.0	-48.3	-13.0	-35.3	
2.479	-17.3	V	3.0	35.4	1.0	-51.7	-13.0	-38.7	
1.653	-15.7	H	3.0	35.5	1.0	-50.3	-13.0	-37.3	
2.479	-21.2	H	3.0	35.4	1.0	-55.6	-13.0	-42.6	
Mid Ch, (836MHz)									
1.672	-12.4	V	3.0	35.5	1.0	-46.9	-13.0	-33.9	
2.508	-21.2	V	3.0	35.4	1.0	-55.6	-13.0	-42.6	
1.672	-13.5	H	3.0	35.5	1.0	-48.1	-13.0	-35.1	
2.508	-22.6	H	3.0	35.4	1.0	-57.0	-13.0	-44.0	
High Ch, (846MHz)									
1.692	-8.6	V	3.0	35.5	1.0	-43.1	-13.0	-30.1	
2.538	-18.1	V	3.0	35.4	1.0	-52.5	-13.0	-39.5	
1.692	-14.4	H	3.0	35.5	1.0	-48.9	-13.0	-35.9	
2.538	-21.9	H	3.0	35.4	1.0	-56.4	-13.0	-43.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

WCDMA 850 HSDPA SPURIOUS & HARMONIC (ERP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Qualcomm
Project #: 11U14802
Date: 11-21-11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CELL BAND WCDMA HSDPA

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (826.4MHz)									
1.653	-13.3	V	3.0	35.5	1.0	-47.8	-13.0	-34.8	
2.479	-19.8	V	3.0	35.4	1.0	-54.2	-13.0	-41.2	
1.653	-12.7	H	3.0	35.5	1.0	-47.3	-13.0	-34.3	
2.479	-22.7	H	3.0	35.4	1.0	-57.1	-13.0	-44.1	
Mid Ch, (836MHz)									
1.672	-8.9	V	3.0	35.5	1.0	-43.4	-13.0	-30.4	
2.508	-20.6	V	3.0	35.4	1.0	-55.0	-13.0	-42.0	
1.672	-12.5	H	3.0	35.5	1.0	-47.1	-13.0	-34.1	
2.508	-23.1	H	3.0	35.4	1.0	-57.5	-13.0	-44.5	
High Ch, (846MHz)									
1.692	-10.1	V	3.0	35.5	1.0	-44.6	-13.0	-31.6	
2.538	-20.9	V	3.0	35.4	1.0	-55.3	-13.0	-42.3	
1.692	-15.4	H	3.0	35.5	1.0	-49.9	-13.0	-36.9	
2.538	-23.4	H	3.0	35.4	1.0	-57.9	-13.0	-44.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

GPRS PCS SPURIOUS & HARMONIC (EIRP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Qualcomm
Project #: 11U14082
Date: 11-21-11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND GPRS

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.2MHz)									
3.700	-10.9	V	3.0	35.4	1.0	-45.2	-13.0	-32.2	
5.551	-12.3	V	3.0	35.4	1.0	-46.7	-13.0	-33.7	
3.700	-13.3	H	3.0	35.4	1.0	-47.6	-13.0	-34.6	
5.551	-12.0	H	3.0	35.4	1.0	-46.4	-13.0	-33.4	
Mid Ch, (1880.0MHz)									
3.760	-4.7	V	3.0	35.3	1.0	-39.1	-13.0	-26.1	
5.640	-11.9	V	3.0	35.4	1.0	-46.3	-13.0	-33.3	
3.760	-12.5	H	3.0	35.3	1.0	-46.8	-13.0	-33.8	
5.640	-11.8	H	3.0	35.4	1.0	-46.3	-13.0	-33.3	
High Ch, (1909.8MHz)									
3.820	-8.9	V	3.0	35.3	1.0	-43.2	-13.0	-30.2	
5.729	-11.6	V	3.0	35.4	1.0	-46.1	-13.0	-33.1	
3.820	-14.3	H	3.0	35.3	1.0	-48.6	-13.0	-35.6	
5.729	-11.1	H	3.0	35.4	1.0	-45.5	-13.0	-32.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

EGPRS PCS SPURIOUS & HARMONIC (EIRP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Qualcomm
Project #: 11U14082
Date: 11-21-11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND EGPRS

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.2MHz)									
3.700	-13.9	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
5.551	-13.8	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
3.700	-11.7	H	3.0	35.4	1.0	-46.0	-13.0	-33.0	
5.551	-14.0	H	3.0	35.4	1.0	-48.4	-13.0	-35.4	
Mid Ch, (1880.0MHz)									
3.760	-9.7	V	3.0	35.3	1.0	-44.1	-13.0	-31.1	
5.640	-14.1	V	3.0	35.4	1.0	-48.5	-13.0	-35.5	
3.760	-13.7	H	3.0	35.3	1.0	-48.0	-13.0	-35.0	
5.640	-14.8	H	3.0	35.4	1.0	-49.3	-13.0	-36.3	
High Ch, (1909.8MHz)									
3.820	-11.6	V	3.0	35.3	1.0	-45.9	-13.0	-32.9	
5.729	-11.9	V	3.0	35.4	1.0	-46.4	-13.0	-33.4	
3.820	-14.5	H	3.0	35.3	1.0	-48.8	-13.0	-35.8	
5.729	-12.0	H	3.0	35.4	1.0	-46.4	-13.0	-33.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

WCDMA1900 REL99 SPURIOUS & HARMONIC (EIRP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Qualcomm
Project #: 11U14082
Date: 11-22-11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND WCDMA Rel 99

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.4MHz)									
3.705	-16.9	V	3.0	35.4	1.0	-51.2	-13.0	-38.2	
5.557	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
3.705	-17.7	H	3.0	35.4	1.0	-52.0	-13.0	-39.0	
5.557	-15.0	H	3.0	35.4	1.0	-49.4	-13.0	-36.4	
Mid Ch, (1880.0MHz)									
3.760	-17.7	V	3.0	35.3	1.0	-52.1	-13.0	-39.1	
5.640	-15.7	V	3.0	35.4	1.0	-50.1	-13.0	-37.1	
3.760	-18.5	H	3.0	35.3	1.0	-52.8	-13.0	-39.8	
5.640	-15.3	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
High Ch, (1907.6MHz)									
3.815	-16.6	V	3.0	35.3	1.0	-50.9	-13.0	-37.9	
5.723	-14.6	V	3.0	35.4	1.0	-49.1	-13.0	-36.1	
3.815	-16.6	H	3.0	35.3	1.0	-50.9	-13.0	-37.9	
5.723	-14.7	H	3.0	35.4	1.0	-49.1	-13.0	-36.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

WCDMA1900 HSDPA SPURIOUS & HARMONIC (EIRP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Qualcomm
Project #: 11U14082
Date: 11-22-11
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, PCS BAND WCDMA HSDPA

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.4MHz)									
3.705	-17.9	V	3.0	35.4	1.0	-52.2	-13.0	-39.2	
5.557	-15.5	V	3.0	35.4	1.0	-49.9	-13.0	-36.9	
3.705	-18.0	H	3.0	35.4	1.0	-52.3	-13.0	-39.3	
5.557	-15.7	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
Mid Ch, (1880.0MHz)									
3.760	-17.7	V	3.0	35.3	1.0	-52.1	-13.0	-39.1	
5.640	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
3.760	-17.9	H	3.0	35.3	1.0	-52.2	-13.0	-39.2	
5.640	-14.8	H	3.0	35.4	1.0	-49.3	-13.0	-36.3	
High Ch, (1907.6MHz)									
3.815	-15.6	V	3.0	35.3	1.0	-49.9	-13.0	-36.9	
5.723	-15.6	V	3.0	35.4	1.0	-50.1	-13.0	-37.1	
3.815	-17.3	H	3.0	35.3	1.0	-51.6	-13.0	-38.6	
5.723	-13.9	H	3.0	35.4	1.0	-48.3	-13.0	-35.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

8.3. RECEIVER SPURIOUS EMISSIONS

LIMIT

RSS-Gen 7.2.2

Spurious Emission Limits for Receivers:

Spurious Frequency (MHz)	Field Strength (microvolts/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

TEST PROCEDURE

The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (local oscillator frequency, intermediate frequency or carrier frequency),

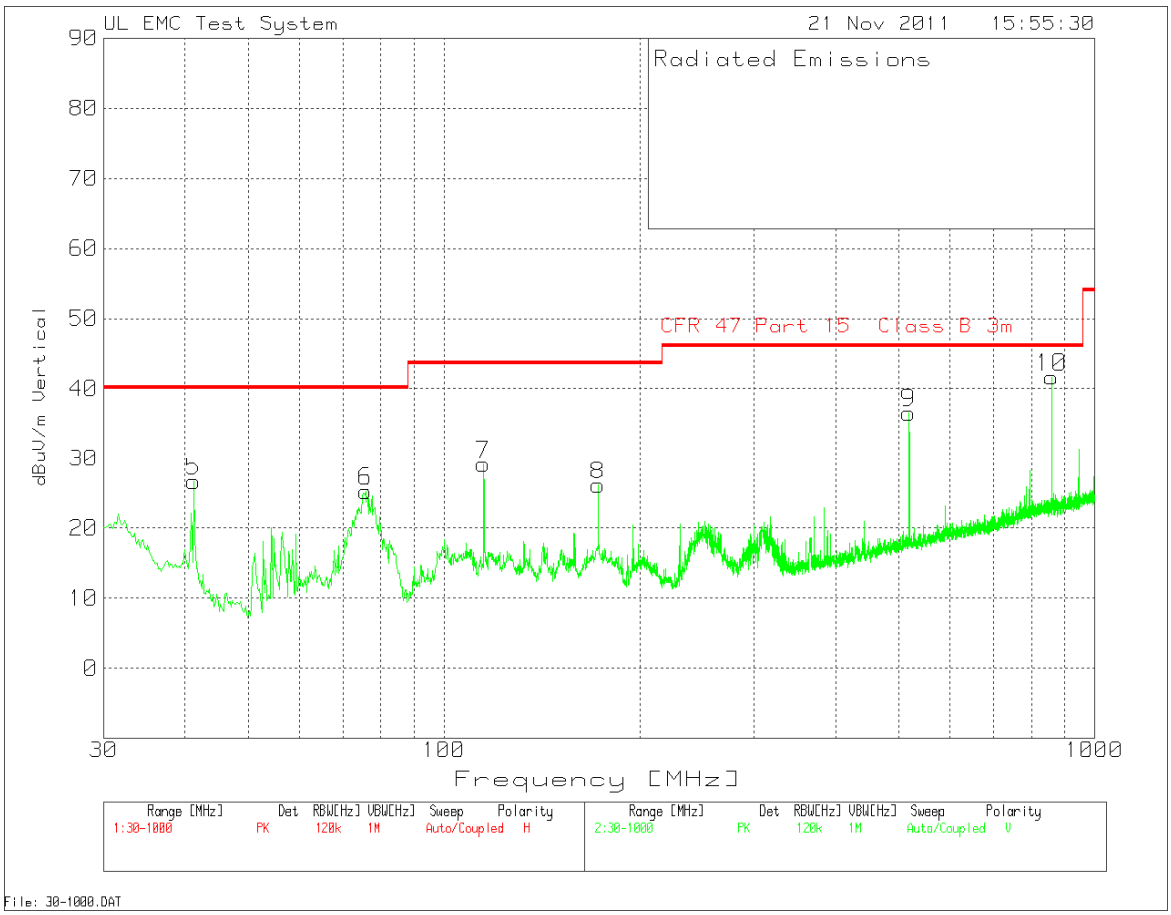
or 30 MHz, whichever is the higher, to at least 3 times the highest tunable and local oscillator frequencies.

RESULTS

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Range 1 30 - 1000MHz								
Frequency	Reading	Detector	Amp [dB]	Ant Factors]	dBuV/m	Part 15B	Margin	Polarity
56.5568	44.79	PK	-29	7.9	23.69	40	-16.31	Horz
248.4632	46.5	PK	-27.2	11.8	31.1	46	-14.9	Horz
315.7274	43.15	PK	-26.8	13.6	29.95	46	-16.05	Horz
794.1367	40.34	PK	-25.5	20.9	35.74	46	-10.26	Horz
401.213	38.06	PK	-27	15.1	26.16	46	-19.84	Horz
519.2646	41.98	PK	-26.8	17.1	32.28	46	-13.72	Horz
Range 2 30 - 1000MHz								
Frequency	Reading	Detector	Amp [dB]	Ant Factors]	dBuV/m	Part 15B	Margin	Polarity
41.243	42.55	PK	-29.2	13.3	26.65	40	-13.35	Vert
75.7474	46.12	PK	-28.8	7.9	25.22	40	-14.78	Vert
115.0979	44.71	PK	-28.4	12.8	29.11	43.5	-14.39	Vert
172.6699	43.9	PK	-27.8	10	26.1	43.5	-17.4	Vert
518.8769	46.32	PK	-26.9	17.1	36.52	46	-9.48	Vert
859.2686	45.38	PK	-25	21.3	41.68	46	-4.32	Vert

SPURIOUS EMISSIONS ABOVE 1000 MHz (WORST-CASE CONFIGURATION)

Note: No emissions were detected above the system noise floor.

8.4. POWER LINE CONDUCTED EMISSION

LIMIT

RSS-Gen 7.2.2

Except when the requirements applicable to a given device state otherwise, for any licence-exempt radio communication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries.

Table 2 – AC Power Lines Conducted Emission Limits

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

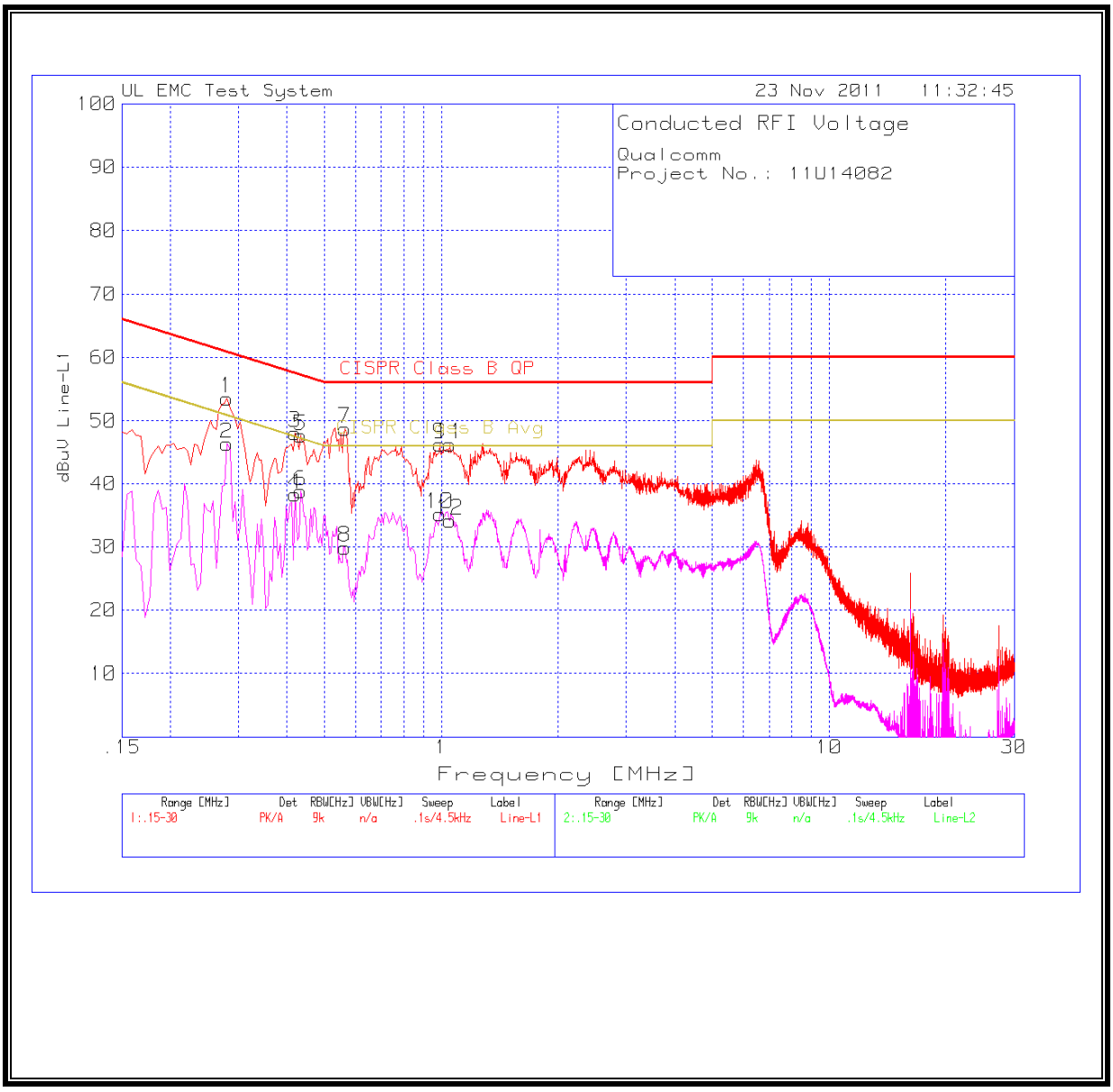
* Decreases with the logarithm of the frequency.

RESULTS

6 WORST EMISSIONS

Qualcomm								
Project No.: 11U14082								
115VAC 60Hz								
Line-L1 .15 - 30MHz								
Frequency	Reading	Detector	Path Loss L1.	dBuV	Class B QP	Margin	Class B Avg	Margin
0.2805	52.7	PK	0.8	53.5	60.8	-7.3	50.8	2.7
0.2805	45.55	Av	0.8	46.35	60.8	-14.45	50.8	-4.45
0.42	47.52	PK	0.6	48.12	57.4	-9.28	47.4	0.72
0.42	37.64	Av	0.6	38.24	57.4	-19.16	47.4	-9.16
0.4335	47.04	PK	0.6	47.64	57.2	-9.56	47.2	0.44
0.4335	38.13	Av	0.6	38.73	57.2	-18.47	47.2	-8.47
0.564	48.23	PK	0.5	48.73	56	-7.27	46	2.73
0.564	29.34	Av	0.5	29.84	56	-26.16	46	-16.16
0.9915	45.89	PK	0.4	46.29	56	-9.71	46	0.29
0.9915	34.76	Av	0.4	35.16	56	-20.84	46	-10.84
1.05	45.87	PK	0.4	46.27	56	-9.73	46	0.27
1.05	33.73	Av	0.4	34.13	56	-21.87	46	-11.87
Line-L2 .15 - 30MHz								
Frequency	Reading	Detector	Path Loss L2.	dBuV	Class B QP	Margin	Class B Avg	Margin
0.2715	51.12	PK	0.7	51.82	61.1	-9.28	51.1	0.72
0.2715	36.35	Av	0.7	37.05	61.1	-24.05	51.1	-14.05
0.438	45.29	PK	0.5	45.79	57.1	-11.31	47.1	-1.31
0.438	32.38	Av	0.5	32.88	57.1	-24.22	47.1	-14.22
0.501	47.96	PK	0.4	48.36	56	-7.64	46	2.36
0.501	28.8	Av	0.4	29.2	56	-26.8	46	-16.8
0.519	47.34	PK	0.4	47.74	56	-8.26	46	1.74
0.519	24.39	Av	0.4	24.79	56	-31.21	46	-21.21
0.5325	47.44	PK	0.4	47.84	56	-8.16	46	1.84
0.5325	29.52	Av	0.4	29.92	56	-26.08	46	-16.08
0.564	46.54	PK	0.4	46.94	56	-9.06	46	0.94
0.564	25.37	Av	0.4	25.77	56	-30.23	46	-20.23

LINE 1 RESULTS



LINE 2 RESULTS