



FCC Test Report
for
47CFR15, Subpart B for Unintentional Radiators, per Section 101
Equipment authorization of unintentional radiators, and
47CFR15, Subpart C for Intentional Radiators, per Section 247
Operation within the bands 902 to 928 MHz

on
CDMA Gateway
[FCC ID: OWS - 918]

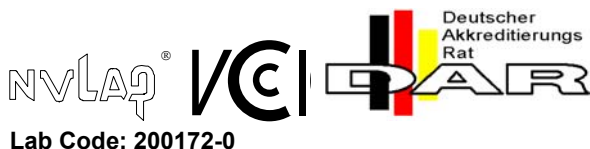
models
CDMA Gateway without Bandpass Filter
CDMA Gateway with Bandpass Filter

report number
20050512-02-F15

manufacturer
Silver Spring Networks, Inc.
13000 West Silver Spring Drive
Butler, WI 53007

judgement
Complies

tests and report by
ITC Engineering Services, Inc. (ITC)
9959 Calaveras Road, P.O. Box 543
Sunol, California 94586
Tel.: (925) 862-2944
Fax: (925) 862-9013
E-Mail: docs@itcemc.com
Web Site: www.itcemc.com



Lab Code: 200172-0

EN45001 Accredited Compliance Laboratory (RES-GmbH)
Registration number: TTI-P-G 159/98-00 (RES-GmbH)

Table of Contents

PART 1	General	7
Section 1.1	Test Information.....	7
	General Information.....	7
Section 1.2	Tests Performed:.....	7
Section 1.3	Declaration/Disclaimer.....	8
Section 1.4	Test Methodology.....	9
Section 1.5	Test Facility.....	9
Section 1.6	Accuracy of Test Data.....	9
PART 2	RECEIVER MEASUREMENTS	10
OPEN FIELD RADIATED EMISSIONS		10
Section 2.1	Test Specification: 47 CFR PART 15, Sub-Part B.....	10
Section 2.2	Test Range Radiated Emissions Tests.....	11
Section 2.3	Spectrum Analyzer Configuration (swept frequency scans)-.....	11
Section 2.4	OPEN FIELD RADIATED EMISSIONS Results.....	12
Section 2.5	Administrative and Environmental Conditions Details – Radiated Emissions.....	12
Section 2.6	OPEN FIELD RADIATED EMISSIONS Test Results.....	12
Section 2.7	Test Data Summary.....	14
Section 2.8	Conclusion.....	14
Section 2.9	Radiated Emissions Test Setup Photographs.....	15
PART 3	RF MEASUREMENTS	17
Section 3.1	List of equipment used during RF Tests.....	17
Section 3.2	Setup Photographs.....	18
PART 4	MAXIMUM IN-BAND PEAK / NUMBER OF CHANNELS	19
Section 4.1	Maximum Peak Measurement.....	19
Section 4.2	Site Used – Maximum In-Band Peak Measurement.....	19
Section 4.3	Administrative AND ENVIRONMENTAL details –Maximum In-Band Peak dATA.....	19
Section 4.4	Test Data – Maximum In-Band Peak Measurement.....	19
PART 5	CHANNEL SEPARATION MEASUREMENT	20
Section 5.1	Channel Separation Measurement.....	20
Section 5.2	Site Used – Channel Separation Measurement.....	20
Section 5.3	Administrative AND ENVIRONMENTAL Details – Channel Separation Measurement.....	20
Section 5.4	Test Data – Channel Separation Measurement.....	20
PART 6	MAXIMUM POWER OUTPUT PER 47 CFR 15.247(B) (1)	21
Section 6.1	Maximum Power Measurement.....	21
Section 6.2	Site Used – Maximum Power Measurement.....	21
Section 6.3	Administrative Details – Maximum Power Measurement.....	21
Section 6.4	Test Data – Maximum Power Measurement (CH 0 – 903.680 MHz).....	21
Section 6.5	Test Data – Maximum Power Measurement (CH 6 – 915.97 MHz).....	22
Section 6.6	Test Data – Maximum Power Measurement (CH 11 – 926.208 MHz).....	22
PART 7	SPECTRAL DENSITY per 47 CFR 15.247(c)	23
Section 7.1	Spectral Density Measurement.....	23
Section 7.2	Site Used – Spectral Density Measurement.....	23
Section 7.3	Administrative and Environmental Details-.....	23
Section 7.4	Test Data – Spectral Density Measurement (channel 0 903.680mhz).....	24

Section 7.5	Test Data – Spectral Density Measurement (Channel 6 – 915.968MHz)	25
Section 7.6	Test Data – Spectral Density Measurement (Channel 11 – 926.208mhz)	26
Test Setup Photograph		27
PART 8 6dB BANDWIDTH per 47 CFR 15.247(a) (2)		28
Section 8.1	6dB Bandwidth Measurement	28
Section 8.2	Site Used – 6dB Bandwidth Measurement	28
Section 8.3	Administrative & Environmental - 6dB Bandwidth Details	28
Section 8.4	Test Data – 6dB Bandwidth Measurement (CHannel 0 – 903.68 MHz)	28
Section 8.5	Test Data – 6dB Bandwidth Measurement (CH 6 – 915.968 MHz)	29
Section 8.6	Test Data – 6dB Bandwidth Measurement (CH 11 – 926.208 MHz)	29
PART 9 6DB BANDEDGE MEASUREMENT		30
6dB BAND-EDGE per 47 CFR 15.247(c)		30
Section 9.1	6dB Band-Edge Measurement	30
Section 9.2	Site Used –Band-Edge Measurement	30
Section 9.3	Administrative and Environmental Details–Band-Edge Measurement	30
Section 9.4	Test Data –Band-Edge Measurement (Upper Band Edge - 928MHz)	30
Section 9.5	Test Data –Band-Edge Measurement (Lower BandEdge - 902MHz)	31
PART 10 100kHz Bandwidth Out-of-Band Emissions per 47 CFR 15.247(a) (2)		32
Section 10.1	100kHz Bandwidth Out-of-Band Emissions Measurement	32
Section 10.2	Site Used – 100 kHz Bandwidth Out-of-Band Measurement	32
Section 10.3	Administrative & Environmental - (Out of Band details)	32
Section 10.4	Test Data – 100kHz Out-of-Band Measurement (In-Band Peak)	32
Section 10.5	Test Data – 100 kHz Bandwidth Out-of-BAND (Ch 0 – 903.680 MHz)27MHz to 930MHz	33
Section 10.6	Test Data – 100 kHz Bandwidth Out-of-BAND (Ch 0 – 903.680 MHz) 817MHz to 5 GHz	34
Section 10.7	Test Data – 100 kHz Bandwidth Out-of-BAND (CH 0- 903.680MHz) 5 GHz to 10 GHz	35
Section 10.8	Test Data – 100 kHz Bandwidth Out-of-Band (Ch 6- 915.968) 27MHz to 940 mhz	36
Section 10.9	Test Data – 100 kHz Bandwidth Out-of-Band (Ch 6- 915.968) 834MHz to 5Ghz	37
Section 10.10	Test Data – 100 kHz Bandwidth Out-of-Band (Ch 6- 915.968) 5GHz to 10Ghz	38
Section 10.11	Test Data – 100 kHz Bandwidth Out-of-Band (Ch 11- 926.208MHz)27MHz to 940MHz	39
Section 10.12	Test Data – 100 kHz Bandwidth Out-of-Band (Ch 11- 926.208MHz) 834MHz to 5GHz.	40
Section 10.13	Test Data – 100 kHz Bandwidth Out-of-Band (Ch 11- 926.208MHz) 5GHz to 10Ghz	41
PART 11 SPURIOUS/HARMONIC EMISSIONS IN THE RESTRICTED BANDS		42
Section 11.1	Test Specification:	42
Section 11.2	Test Range – Spurious/Harmonics Emissions:	42
Section 11.3	Site Used – Spurious/Harmonics Emissions Measurements	42
Section 11.4	Administrative and Environmental Details	42
Section 11.5	Spurious and Harmonic Emission In the Restricted Bands Data	43
Section 11.6	Spurious Photographs	46
PART 12 APPENDICES		48
A.	EUT Technical Specification	48
B.	EUT Photographs	48
C.	Modification Letter	54

List of Figures

Figure 1: Radiated Emissions Test Setup (Below 1 GHz) Front View 15

Figure 2 Radiated Emissions Test Setup (Below 1 GHz) Rear View..... 15

Figure 3: Radiated Emissions Test Setup at 10 meters (Above 1 GHz) Front View..... 16

Figure 4: Radiated Emissions Test Setup at 10 meters (Above 1 GHz) Rear View..... 16

Figure 5 Test Set Up Photos – Front Close Up View 18

Figure 6 Test Set Up Photos (Rear Close Up View) 18

Figure 7: Plot of In-Band Peak Measurement..... 19

Figure 8: Plot of Channel Separation Measurement at 916.98 MHz..... 20

Figure 9: Plot of Maximum Power Measurement at Channel 0 21

Figure 10: Plot of Maximum Power Measurement at Channel 6 22

Figure 11: Plot of Maximum Power Measurement at Channel 11 22

Figure 12: Plot of Spectral Density Measurement at Channel 0..... 24

Figure 13: Plot of Spectral Density Measurement at Channel 6..... 25

Figure 14: Plot of Spectral Density Measurement at Channel 11..... 26

Figure 15: Power Spectral Density Test Setup (Front view) 27

Figure 16: Power Spectral density Test Setup (Rear View) 27

Figure 17: Plot of 6dB Bandwidth Measurement at Channel 0 28

Figure 18: Plot of 6dB Bandwidth Measurement at Channel 6 29

Figure 19: Plot of 6dB Bandwidth Measurement at Channel 11 29

Figure 20: Plot of Upper Band-Edge Measurement at 928 MHz 30

Figure 21: Plot of Lower Band-Edge Measurement at 902MHz..... 31

22: Plot of 100 kHz Bandwidth Out-of-Band Measurement (In-Band-Peak) 32

Figure 23: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 0 (27 MHz – 930 MHz) 33

Figure 24: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 0 (817 MHz – 5GHz)..... 34

Figure 25: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 0 (5GHz – 10GHz) 35

Figure 26: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 6 (27MHz – 940MHz) 36

Figure 27: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 6 (834 MHz to 5 GHz)..... 37

Figure 28: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 6 (5GHz to 10GHz) 38

Figure 29: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 11 (27MHz to 940MHz)..... 39

Figure 30: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 11 (834MHz to 5GHz)..... 40

Figure 31: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 11 (5GHz to 10GHz) 41

Figure 32: Spurious Emissions Front View (Below 1 GHz) 46

Figure 33: Spurious Emissions Rear View (Below 1 GHz) 46

Figure 34: Spurious Emissions Front View (Above 1 GHz)..... 47

Figure 35: Spurious Emissions Rear View (Above 1 GHz) 47

Figure 36: EUT Top View (with bandpass filter)..... 48

Figure 37: EUT Top View (without bandpass filter)..... 49

Figure 38: EUT Front View 49

Figure 39: EUT Rear View 50

Figure 40: EUT Side View 50

Figure 41: EUT Internal View1 51

Figure 42: EUT Internal View2 51

Figure 43: EUT Component View 52

Figure 44: EUT Solder View 52

Figure 45: Component View with Shield off (View 1) 53
Figure 46: Component View with Shield off (View 2) 53

PART 1 General

SECTION 1.1 TEST INFORMATION

GENERAL INFORMATION

Product Type Model	CDMA Gateway CDMA Gateway without Bandpass filter CDMA Gateway with Bandpass filter	
Manufacturer's Name Manufacturer's Address Contact	Silver Spring Networks Inc. 13000 West Silver Springs Drive Butler, WI 53007 United States Tel: +1 (262) 364-5317 Juan Luglio, PhD	Fax: +1 (262) 783-0200 email : juan.luglio@silverspringnetworks.com
Test Laboratory	ITC Engineering Services, Inc. 9959 Calaveras Road, PO Box 543 Sunol, CA 94586-0543 Email: docs@itcemc.com Web Site: http://www.itcemc.com	Tel: +1(925) 862-2944 Fax: +1(925) 862-9013
Test Number and Report Numbers	20050512-03	20050512-03-F15
Test Date(s) & Issue Date	June 09 –June 22,2005	June 22, 2005
Test Engineer(s)	Femi Ojo and Robert Kershaw	
Chief Engineer	Michael Gbadebo, P.E	
Documentation	George Brown.	
Test Results	<input checked="" type="checkbox"/> Complies as Tested	<input type="checkbox"/> Fail

The electromagnetic interference tests, which this report describes, were performed by an independent electromagnetic compatibility consultant, ITC Engineering Services, Inc. (ITC), in accordance with the emissions requirements specified in the FCC rules, 47CFR Part 15, Subparts B and C. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications specified in this report for compliance must be implemented in all production units for compliance to be maintained.

SECTION 1.2 TESTS PERFORMED:

Emissions Requirements:

- OPEN FIELD RADIATED EMISSIONS in accordance with the FCC 47 CFR 15.109

RF Requirements:

- MAXIMUM PEAK OUTPUT OF FUNDAMENTAL in accordance with the FCC 47 CFR 15.247(b) (1)
- OPERATING BAND in accordance with FCC 47 CFR 15.247(a)
- BAND-EDGE in accordance with the FCC 47 CFR 15.247(c)
- 6dB BANDWIDTH in accordance with FCC 47 CFR 15.247(a)(2)
- SPECTRAL DENSITY in accordance with FCC 47 CFR 15.247(d)
- HARMONIC/SPURIOUS EMISSIONS in accordance with the FCC 47 CFR 15.247(c)
- RESTRICTED BAND EMISSIONS in accordance with the FCC 47 CFR 15.205(c)

PART 1 General (Cont)**SECTION 1.3 DECLARATION/DISCLAIMER**

ITC Engineering Services, Inc. (ITC) reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. ITC Engineering Services, Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from ITC Engineering Services, Inc. issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full with our written approval. The applicant/manufacturer shall not use this report to claim product endorsement by NVLAP or any US Government agency.

ITC Engineering Services, Inc. (ITC) is:

Accepted by the Federal Communications Commission (FCC) for FCC Methods, CISPR Methods and AUSTEL Technical Standards (Ref: NVLAP Lab Code 200172-0)

Approved by the Industry Canada for Telecom Testing

Certified by Rockford Engineering Services GmbH for EMC Testing according to the European EMC Directive 89/336/EEC per EN45001

Certified by Reg. TP for EMC Testing according to the European EMC Directive 89/336/EEC per EN45001 for RES GmbH (DAR-Registration number: TTI-P-G 159/98-00)

Certified by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI) for EMC testing, in accordance with the Regulations for Voluntary Control Measures, Article 8, Registration Numbers - Site 1: C-1582 and R-1497.

PART 1 General (Cont)

SECTION 1.4 TEST METHODOLOGY

The electromagnetic interference tests, which this report describes, were performed by an independent electromagnetic compatibility consultant, ITC Engineering Services, Inc., in accordance with the FCC test procedure ANSI C63.4-2003.

SECTION 1.5 TEST FACILITY

The open area test site, the conducted measurement facility, and the test equipment used to collect the emissions data is located in Sunol, California, and is fully described in a site attenuation report. The approved site attenuation description is on file at the Federal Communications Commission.

Table 1 Radio Device Measurement Information

Product Type	CDMA Gateway CDMA Gateway without Bandpass Filter	
Models	CDMA Gateway with Bandpass Filter	
Applicant / Manufacturer Address	Silver Spring Networks, Inc. 13000 West Silver Spring Drive Butler, WI 53007	
Contact	Juan Luglio, PhD Tel: (262) 364-5317	juan.luglio@silverspringnetworks.com Fax: (262) 783-0200
Test Results	<input checked="" type="checkbox"/> Complies	<input type="checkbox"/> Not Compliant
Total Number of Pages including Appendices	54 Pages	
Test Report File No.	20050512-03-F15	

Table 2 Measurement Uncertainty

RF frequency	$\pm 1 \times 10^{-7}$ HP8565E
RF power, conducted	± 1.5 dB
Adjacent channel power	± 3 dB
Conducted emission of transmitter, valid up to 1 GHz	± 1.5 dB
Conducted emission of transmitter, valid up to 18 GHz	± 1.5 dB
Conducted emission of receivers	± 1.5 dB
Radiated emission of transmitter, valid up to 1 GHz	± 1.5 dB
Radiated emission of transmitter, valid up to 18 GHz	± 1.5 dB
Radiated emission of transmitter, valid up to 26 GHz	± 3 dB
Radiated emission of transmitter, valid up to 40 GHz	± 3 dB
Radiated emission of transmitter, valid up to 75 GHz	± 3 dB

SECTION 1.6 ACCURACY OF TEST DATA

The test results contained in this report accurately represent the emissions generated by the sample equipment under test. ITC Engineering Services, Inc. (ITC) as an independent testing laboratory declares that the equipment as tested complies with the requirements of:

1. FCC standard 47CFR15.247.

for Intentional Radiators Operation within the bands 902MHz to 928MHz

PART 2 RECEIVER MEASUREMENTS

OPEN FIELD RADIATED EMISSIONS

SECTION 2.1 TEST SPECIFICATION: 47 CFR PART 15, SUB-PART B

The CDMA Gateway without Bandpass Filter and CDMA with Bandpass Filter (or the EUTs) are similar units in shape and configuration. The EUTs were set up at 3 or 10 meters in accordance with the suggested configuration given in FCC Measurement Procedure ANSI C63.4-2003. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-2003. The EUT was set up on a wooden non-conductive tabletop, 80 cm above the ground reference plane, in an open field. The transmit function was de-activated for the tests. For measurements below 1GHz, the EUTs were set up at a 10 meters distance from the search antenna with the EUTs running in a continuous mode. The EUTs were rotated 360 degrees azimuth and the search antenna height varied 1 to 4m in order to maximize the emissions. Significant peaks from the EUTs were then recorded to determine margin to the limits. For measurements above 1GHz, the EUTs running in continuous mode were set up at a 3 meter distance from the search antenna and was rotated 360 degrees azimuth and also rotated in its x-y-z axis positions to determine the precise amplitude of the emissions

Table 3 Test Equipment and Software Used– Radiated Emissions Tests

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8568B	2841A04315	11-29-05
Spectrum Analyzer Display	Hewlett-Packard	85662A	2848A17028	11-29-05
Quasi Peak Adapter	Hewlett-Packard	85650	2521A00871	11-29-05
Preselector	Hewlett-Packard	85685A	2620A00265	11-29-05
Spectrum Analyzer	Hewlett-Packard	8565E	2618A02909	03-29-06
Signal Generator	Hewlett-Packard	83650A	3420A00599	09-09-06
Power Supply	BK Precision	1688	2250558	No Cal.Needed
Biconical Antenna	EMCO	3104	3667	02-03-06
L. P. Ant. (200-1000 MHz)	EMCO	3146	9510-4202	02-03-06
Horn Antenna (Below 18GHz)	EMCO	3115	8812-3050	12-19-05

Software Used	Manufacturer	Model Name	Version Number	Calibration/Validation Date
Test Software	ITC	1.04b1	Rev. 4	02-05-06
Antenna Software	ITC	L.P-V/H 10m	Rev. 4	02-05-06
Antenna Software	ITC	B-V/H 10m	Rev. 4	02-05-06
Cable Software	ITC	OATS 30MHz-1GHz	Rev. 4	02-01-06

Table 4 Support Equipment – Radiated Emissions Tests

No	Description	Manufacturer	Model Name	Serial Number
1	NOTEBOOK	SONY	PCG – 974L	283293303418746

Test Voltage: 120V/480V, 60Hz

OPEN FIELD RADIATED EMISSIONS (cont)

SECTION 2.2 TEST RANGE RADIATED EMISSIONS TESTS

The frequency search range investigated was from 30 MHz to 10GHz

SECTION 2.3 SPECTRUM ANALYZER CONFIGURATION (SWEPT FREQUENCY SCANS)-

- IF Bandwidth..... 120 kHz
- Measurements below 1000 MHz (unless stated otherwise)
 - Analyzer Mode (for Peak Measurements) Peak/Log
 - Resolution Bandwidth..... 100 kHz
 - Video Bandwidth..... 100 kHz
 - Analyzer Mode (for Quasi-Peak Measurements)
 - Quasi-Peak/Linear Resolution Bandwidth..... 1000 kHz
 - Video Bandwidth..... 1000 kHz
- Measurements above 1000 MHz (unless stated otherwise)
 - Quasi-Peak Adapter Mode Disabled
 - Analyzer Mode (for Peak Measurements) Peak
 - Resolution Bandwidth..... 1000 kHz
 - Video Bandwidth..... 1000 kHz
 - Analyzer Mode (for Average Measurements)..... Video Filter
 - Resolution Bandwidth..... 1000 kHz
 - Video Bandwidth..... 10 Hz

Table 5 Data Table Legend and Field Strength Calculation – Radiated Emissions Tests

Detector mode: Peak (P) or Quasi-Peak (QP) or Average (A)

	Polarization	Antenna	Freq Range (MHz)
VB	Vertical	EMCO 3104/sn 3549 Biconical	30 – 200
HB	Horizontal	EMCO 3104/sn 3549 Biconical	30 – 200
VL	Vertical	EMCO 3146/sn. 2075 Log Periodic	200 – 1000
HL	Horizontal	EMCO 3146/sn. 2075 Log Periodic	200 – 1000
VH1	Vertical	EMC 3115/sn. 2362 Horn	Below 18000
HH1	Horizontal	EMC 3115/sn. 2362 Horn	Below 18000
VH2	Vertical	EMC 3116/sn. 2655 Horn	Below 26500
HH2	Horizontal	EMC 3116/sn. 2655 Horn	Below 26500
VH4	Vertical	S&D DBD-520 Horn	Below 75000
HH4	Horizontal	S&D DBD-520 Horn	Below 75000

The margin in the Table 6 is calculated as follows:

Margin = Corrected Amplitude – Limit, where Corrected Amplitude = Spectrum Analyzer Amplitude + Cable Loss + Antenna Factor – Pre-Amp Gain.

SECTION 2.4 OPEN FIELD RADIATED EMISSIONS RESULTS

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room
- Other: _____

SECTION 2.5 ADMINISTRATIVE AND ENVIRONMENTAL CONDITIONS DETAILS – RADIATED EMISSIONS

Test Date:	June 21 st , 2005
Test Engineer:	Bob Kershaw and Femi Ojo
Temperature	78°F
Humidity	52%

SECTION 2.6 OPEN FIELD RADIATED EMISSIONS TEST RESULTS

Table 6 Test Data for Radiated Emissions Measurement (below 1 GHz)

The table below shows a summary of the highest amplitudes of the radiated emissions from the equipment under test at various antenna heights, antenna polarization, and EUT orientations.

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B			
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	FILTER	
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db	MODE	NOTES
200.07	10.5	12.1	3.9	26.5	0	1.0	VL	-	-	33.0	-6.5	QP	
229.09	12.6	10.9	4.0	27.5	90	1.0	VL	-	-	36.0	-8.5	QP	
233.46	11.3	11.0	4.2	26.5	0	1.0	VL	-	-	36.0	-9.5	QP	
250.06	6.9	12.0	5.0	23.9	90	1.0	VL	-	-	36.0	-12.1	QP	
300.07	10.8	14.4	6.3	31.5	90	1.0	VL	-	-	36.0	-4.5	QP	
300.07	14.8	14.4	6.3	35.5	0	1.0	VL	-	-	36.0	-0.5	QP	
300.10	11.8	14.4	6.3	32.5	90	1.0	HL	-	-	36.0	-3.5	QP	
333.40	5.0	14.5	6.3	25.8	0	1.0	VL	-	-	36.0	-10.2	QP	
333.40	9.8	14.5	6.3	30.6	90	1.0	VL	-	-	36.0	-5.4	QP	
366.71	8.1	14.7	6.4	29.2	0	1.0	VL	-	-	36.0	-6.8	QP	
400.07	6.1	15.6	6.3	28.0	90	1.0	VL	-	-	36.0	-8.0	QP	
433.38	10.2	15.6	6.3	32.2	90	1.0	VL	-	-	36.0	-3.8	QP	
533.39	9.5	18.3	8.1	35.9	0	1.0	VL	-	-	36.0	-0.1	QP	

Note: No emissions of significant levels were observed between 30MHz-200MHz and 533.39MHz-1000MHz.

Table 7 Test Data for Radiated Emissions Measurement (Above 1 GHz)

The table below shows a summary of the highest amplitudes of the radiated emissions from the equipment under test at various antenna heights, antenna polarization, and EUT orientations.

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		FILTER	
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	MODE	NOTES
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db		
1000.00	20.3	24.2	2.0	46.5	180	1.0	VH	-	-	54.0	-7.5	P	
1034.00	17.3	24.3	2.1	43.7	45	1.0	VH	-	-	54.0	-10.3	P	
1099.00	17.3	24.4	2.2	43.9	90	1.0	HH	-	-	54.0	-10.1	P	
1100.00	18.0	24.4	2.2	44.6	180	1.0	VH	-	-	54.0	-9.4	P	
1133.00	18.7	24.4	2.3	45.4	90	1.0	HH	-	-	54.0	-8.6	P	
1133.00	18.5	24.4	2.3	45.2	90	1.0	VH	-	-	54.0	-8.8	P	
1178.00	19.2	24.5	2.4	46.0	180	1.0	HH	-	-	54.0	-8.0	P	
1178.00	18.0	24.5	2.4	44.9	0	1.0	VH	-	-	54.0	-9.1	P	
1184.00	16.0	24.5	2.4	42.9	0	1.0	HH	-	-	54.0	-11.1	P	
1199.00	16.7	24.6	2.4	43.6	180	1.0	HH	-	-	54.0	-10.4	P	
1199.00	17.5	24.6	2.4	44.5	180	1.0	VH	-	-	54.0	-9.5	P	
1309.00	15.3	24.8	2.5	42.6	90	1.0	HH	-	-	54.0	-11.4	P	
1342.00	15.5	24.8	2.6	42.9	180	1.0	VH	-	-	54.0	-11.1	P	
1400.00	15.8	24.9	2.6	43.4	0	1.0	HH	-	-	54.0	-10.6	P	
1449.00	15.0	25.0	2.7	42.7	0	1.0	VH	-	-	54.0	-11.3	P	
1466.00	15.0	25.0	2.7	42.7	180	1.0	HH	-	-	54.0	-11.3	P	
1613.00	14.8	25.7	3.1	43.6	180	1.0	HH	-	-	54.0	-10.4	P	
1628.00	15.0	25.8	3.1	43.9	180	1.0	HH	-	-	54.0	-10.1	P	
1806.00	16.2	26.8	3.4	46.4	90	1.0	HH	-	-	54.0	-7.6	P	
1808.00	16.2	26.7	3.4	46.3	90	1.0	VH	-	-	54.0	-7.7	P	
1950.00	15.0	27.4	3.1	45.5	90	1.0	VH	-	-	54.0	-8.5	P	
1978.00	14.3	27.8	3.0	45.2	90	1.0	HH	-	-	54.0	-8.8	P	
2060.00	15.0	27.8	2.9	45.7	180	1.0	VH	-	-	54.0	-8.3	P	
2163.00	16.2	28.1	2.7	47.0	90	1.0	HH	-	-	54.0	-7.0	P	
2196.00	13.7	28.1	2.6	44.3	180	1.0	VH	-	-	54.0	-9.7	P	
2311.00	14.8	28.3	2.6	45.8	180	1.0	HH	-	-	54.0	-8.2	P	
2374.00	13.2	28.4	2.7	44.3	90	1.0	VH	-	-	54.0	-9.7	P	
2451.00	13.8	28.5	2.9	45.3	90	1.0	HH	-	-	54.0	-8.7	P	
2551.00	14.7	28.8	2.9	46.4	90	1.0	HH	-	-	54.0	-7.6	P	
2626.00	13.5	29.0	2.9	45.4	90	1.0	HH	-	-	54.0	-8.6	P	
2700.00	15.7	29.2	2.8	47.7	90	1.0	VH	-	-	54.0	-6.3	P	
2702.00	14.7	29.2	2.8	46.7	90	1.0	HH	-	-	54.0	-7.3	P	
2705.00	13.8	29.2	2.8	45.8	90	1.0	HH	-	-	54.0	-8.2	P	
2709.00	13.7	29.2	2.8	45.7	45	1.0	HH	-	-	54.0	-8.3	P	
2713.00	16.2	29.2	2.8	48.2	180	1.0	VH	-	-	54.0	-5.8	P	
2772.00	13.5	29.4	2.8	45.7	0	1.0	HH	-	-	54.0	-8.3	P	
2816.00	13.7	29.5	2.8	46.0	0	1.0	HH	-	-	54.0	-8.0	P	
2913.00	15.2	29.8	2.9	47.9	45	1.0	VH	-	-	54.0	-6.1	P	
3194.00	13.5	30.5	4.6	48.6	180	1.0	VH	-	-	54.0	-5.4	P	
3299.00	13.8	30.8	4.9	49.5	180	1.0	VH	-	-	54.0	-4.5	P	
3605.00	12.3	31.6	4.6	48.5	45	1.0	HH	-	-	54.0	-5.5	P	
3704.00	12.2	31.9	4.7	48.8	45	1.0	HH	-	-	54.0	-5.2	P	
3811.00	12.3	32.2	4.8	49.3	45	1.0	HH	-	-	54.0	-4.7	P	
4507.00	12.0	32.4	5.0	49.4	90	1.0	HH	-	-	54.0	-4.6	P	
4587.00	11.0	32.6	5.0	48.6	45	1.0	HH	-	-	54.0	-5.4	P	
4691.00	11.5	32.7	5.0	49.2	90	1.0	HH	-	-	54.0	-4.8	P	

5391.00	10.8	34.0	5.0	49.8	90	1.0	HH	-	-	54.0	-4.2	P	
5400.00	10.3	34.0	5.0	49.4	180	1.0	HH	-	-	54.0	-4.6	P	
5481.00	11.2	34.2	5.0	50.3	180	1.0	HH	-	-	54.0	-3.7	P	

No emission of significant level was observed between 5.48GHz to 10GHz

SECTION 2.7 TEST DATA SUMMARY

The margin is calculated as follows:

Margin = Corrected Amplitude - Limit; where Corrected Amplitude = Amplitude + Cable Loss + Antenna Factor.

SECTION 2.8 CONCLUSION

The CDMA Gateway with Bandpass Filter meets the requirements of FCC Part 15, Class B.

OPEN FIELD RADIATED EMISSIONS Results (cont)

SECTION 2.9 RADIATED EMISSIONS TEST SETUP PHOTOGRAPHS



Figure 1: Radiated Emissions Test Setup (Below 1 GHz) Front View



Figure 2 Radiated Emissions Test Setup (Below 1 GHz) Rear View

OPEN FIELD RADIATED EMISSIONS (cont)

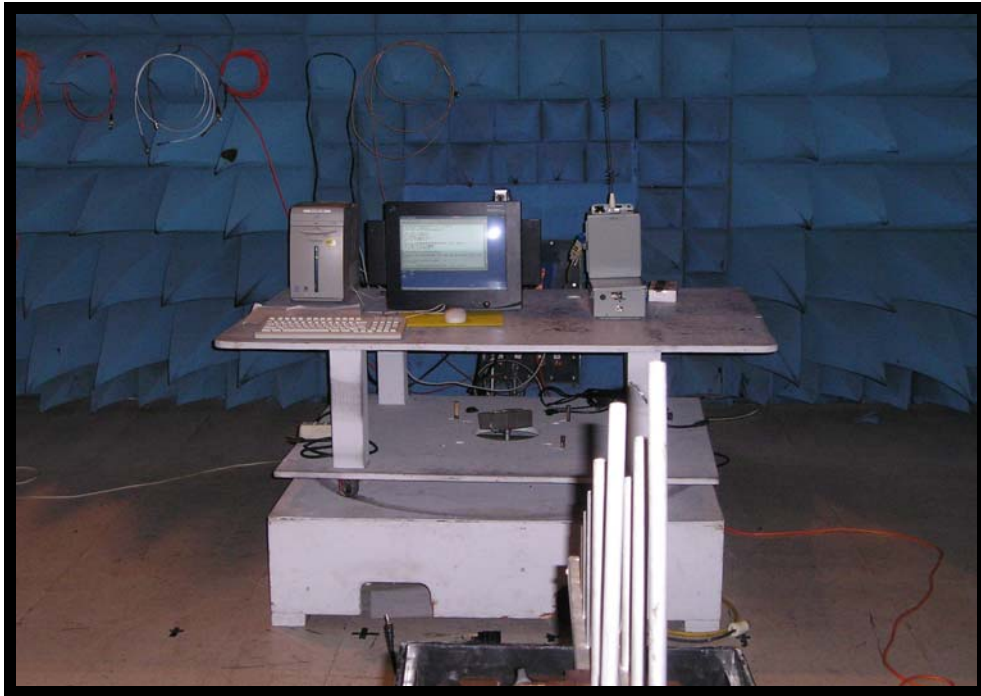


Figure 3: Radiated Emissions Test Setup at 10 meters (Above 1 GHz) Front View



Figure 4: Radiated Emissions Test Setup at 10 meters (Above 1 GHz) Rear View

PART 3 RF MEASUREMENTS

SECTION 3.1 LIST OF EQUIPMENT USED DURING RF TESTS

Table 8: Support Equipment – RF Measurements

No	Description	Manufacturer	Model Name	Serial Number
1	FSU	N/A	N/A	BF00000034
2	PLOTTER	HEWLETT PACKARD	7440A	N/A
3	NOTEBOOK	SONY	PCG – 974L	283293303418746

Table 9: Test Equipment – RF Measurements

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8568B	2841A04315	11-29-05
Spectrum Analyzer Display	Hewlett-Packard	85662A	2848A17028	11-29-05
Quasi Peak Adapter	Hewlett-Packard	85650	2521A00871	11-29-05
Preselector	Hewlett-Packard	85685A	2620A00265	11-29-05
Spectrum Analyzer	Hewlett-Packard	8565E	2618A02909	03-29-06
Signal Generator	Hewlett-Packard	83650A	3420A00599	09-09-06
Power Supply	BK Precision	1688	2250558	No Cal. Needed
Biconical Antenna	EMCO	3104	3667	02-03-06
L. P. Ant. (200-1000 MHz)	EMCO	3146	9510-4202	02-03-06
Horn Antenna (Below 18GHz)	EMCO	3115	8812-3050	12-19-05

Software Used	Manufacturer	Model Name	Version Number	Calibration/Validation Date
Test Software	ITC	1.04b1	Rev. 4	02-05-06
Antenna Software	ITC	L.P-V/H 10m	Rev. 4	02-05-06
Antenna Software	ITC	B-V/H 10m	Rev. 4	02-05-06
Cable Software	ITC	OATS 30MHz-1GHz	Rev. 4	02-01-06

Table 10: Data Table Legend and Field Strength Calculation

Detector mode: Peak (P) or Quasi-Peak (QP) or Average (A)

	Polarization	Antenna	Freq Range (MHz)
VB	Vertical	EMCO 3104/sn 3549 Biconical	30 – 200
HB	Horizontal	EMCO 3104/sn 3549 Biconical	30 – 200
VL	Vertical	EMCO 3146/sn. 2075 Log Periodic	200 – 1000
HL	Horizontal	EMCO 3146/sn. 2075 Log Periodic	200 – 1000
VH1	Vertical	EMC 3115/sn. 2362 Horn	Below 18000
HH1	Horizontal	EMC 3115/sn. 2362 Horn	Below 18000
VH2	Vertical	EMC 3116/sn. 2655 Horn	Below 26500
HH2	Horizontal	EMC 3116/sn. 2655 Horn	Below 26500
VH4	Vertical	S&D DBD-520 Horn	Below 75000
HH4	Horizontal	S&D DBD-520 Horn	Below 75000

RF Conducted Measurements

SECTION 3.2 SETUP PHOTOGRAPHS



Figure 5 Test Set Up Photos – Front Close Up View

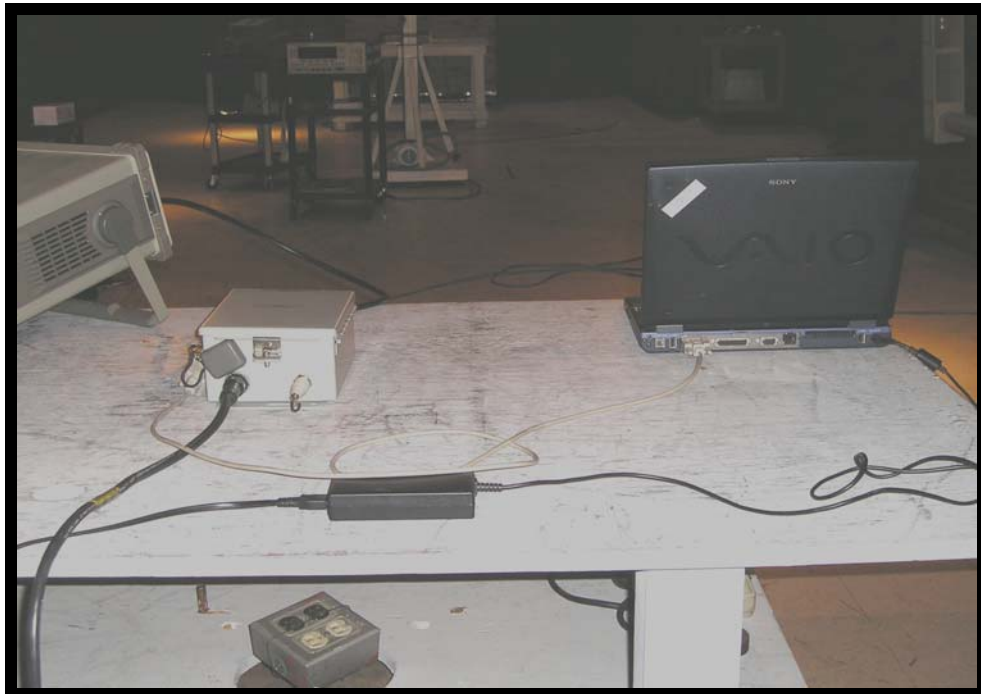


Figure 6 Test Set Up Photos (Rear Close Up View)

PART 4 MAXIMUM IN-BAND PEAK / NUMBER OF CHANNELS

SECTION 4.1 MAXIMUM PEAK MEASUREMENT

The EUT was set up on a wooden non-conductive tabletop, attached at the antenna connector to the measuring device. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-2003. The EUT was configured to run in continuous mode during the tests. The measurement data below represents the maximum worst-case result from the measurement performed in accordance to the requirements of this section.

SECTION 4.2 SITE USED – MAXIMUM IN-BAND PEAK MEASUREMENT

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- Semi-Anechoic Absorber Lined Shielded Room

SECTION 4.3 ADMINISTRATIVE AND ENVIRONMENTAL DETAILS –MAXIMUM IN-BAND PEAK DATA

Test Date(s):	June 22nd, 2005
Test Engineer(s):	Bob Kershaw and Femi Ojo
Temperature	65°F
Humidity	44%

SECTION 4.4 TEST DATA – MAXIMUM IN-BAND PEAK MEASUREMENT

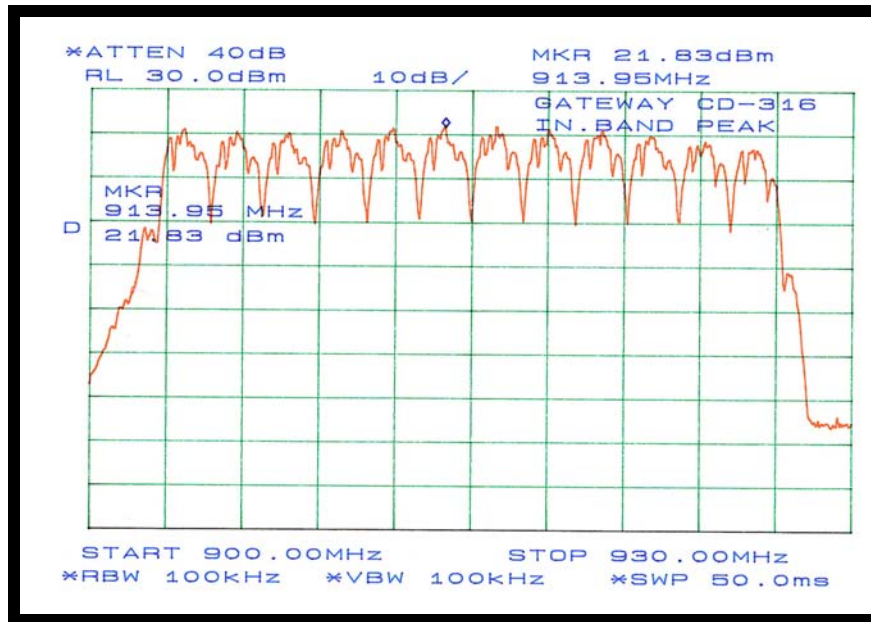


Figure 7: Plot of In-Band Peak Measurement

Test-Data Summary – Peak Measurement:

Peak Frequency = 913.95 MHz
 Peak Level: = 21.83 dBm
 Number of Channels = 11

PART 5 CHANNEL SEPARATION MEASUREMENT

SECTION 5.1 CHANNEL SEPARATION MEASUREMENT

The EUT was set up on a wooden non-conductive tabletop, attached at the antenna connector to the measuring device. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-2003. The EUT was configured to run in continuous mode during the tests. The measurement data below represents the maximum worst-case result from the measurement performed in accordance to the requirements of this section.

SECTION 5.2 SITE USED – CHANNEL SEPARATION MEASUREMENT

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room

SECTION 5.3 ADMINISTRATIVE AND ENVIRONMENTAL DETAILS – CHANNEL SEPARATION MEASUREMENT

Test Date(s):	June 22nd, 2005
Test Engineer(s):	Femi Ojo and Bob Kershaw
Temperature	65°F
Humidity	44%

SECTION 5.4 TEST DATA – CHANNEL SEPARATION MEASUREMENT

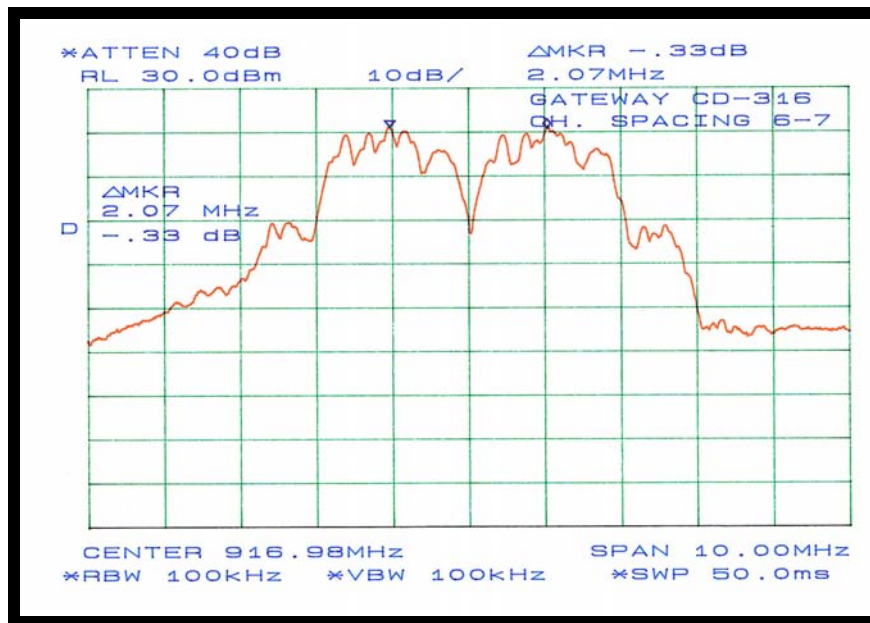


Figure 8: Plot of Channel Separation Measurement at 916.98 MHz

Test-Data Summary – Channel Separation Measurement:

Peak Frequencies = 915.968 MHz (CH 6) & 918.106 MHz (CH 7)
 Channel Separation (measured) = 2.07 MHz

PART 6 MAXIMUM POWER OUTPUT PER 47 CFR 15.247(B) (1)

SECTION 6.1 MAXIMUM POWER MEASUREMENT

The EUT was set up on a wooden non-conductive tabletop, attached at the antenna connector to the measuring device. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-2003. The EUT was configured to run in continuous mode during the tests. The measurement data below represents the maximum worst-case result from the measurement performed in accordance to the requirements of this section.

SECTION 6.2 SITE USED – MAXIMUM POWER MEASUREMENT

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room

SECTION 6.3 ADMINISTRATIVE DETAILS – MAXIMUM POWER MEASUREMENT

Test Date(s):	June 20 th , 2005
Test Engineer(s):	Bob Kershaw and Femi Ojo
Temperature	68°F
Humidity	45%

SECTION 6.4 TEST DATA – MAXIMUM POWER MEASUREMENT (CH 0 – 903.680 MHz)



Figure 9: Plot of Maximum Power Measurement at Channel 0

Test-Data Summary – Peak Measurement (CH 0 – 903.680 MHz):

Center Frequency = 903.97 MHz
 Peak Level: = 251.2 mW
 Limit per 15.247(b)(1) = 1 W

SECTION 6.5 TEST DATA – MAXIMUM POWER MEASUREMENT (CH 6 – 915.97 MHz)

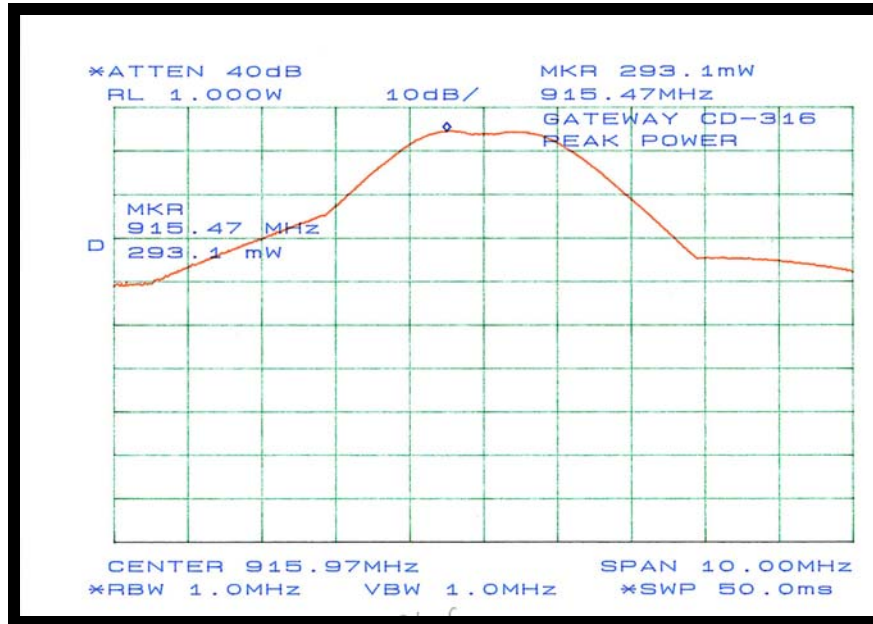


Figure 10: Plot of Maximum Power Measurement at Channel 6

Test-Data Summary – Maximum Power Measurement (CH 6 – 915.968 MHz):

Center Frequency = 915.97 MHz
 Peak Level: = 293.1 mW
 Limit per 15.247(b)(1) = 1 W

SECTION 6.6 TEST DATA – MAXIMUM POWER MEASUREMENT (CH 11 – 926.208 MHz)



Figure 11: Plot of Maximum Power Measurement at Channel 11

Test-Data Summary – Maximum Power Measurement (CH 11 – 926.208 MHz):

Center Frequency = 926.21 MHz
 Peak Level: = 135.8 mW
 Limit per 15.247(b)(1) = 1 W

PART 7 SPECTRAL DENSITY per 47 CFR 15.247(c)

SECTION 7.1 SPECTRAL DENSITY MEASUREMENT

The EUTs were set up at 3m in accordance with the suggested configuration given in FCC Alternative Measurement Procedure. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in FCC Standard. The EUTs were set up on a wooden non-conductive tabletop, 80 cm above the ground reference plane, in a semi-anechoic absorber lined shielded room.

The EUTs were configured to run in continuous mode during the tests. The measurement data below represents the maximum worst-case result from the measurement performed in accordance to the requirements of this section.

SECTION 7.2 SITE USED – SPECTRAL DENSITY MEASUREMENT

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room

SECTION 7.3 ADMINISTRATIVE AND ENVIRONMENTAL DETAILS-

Test Date(s):	June 22 nd , 2005
Test Engineer(s):	Bob Kershaw and Femi Ojo
Temperature	65°F
Humidity	44%

SECTION 7.4 TEST DATA – SPECTRAL DENSITY MEASUREMENT (CHANNEL 0 903.680MHZ)

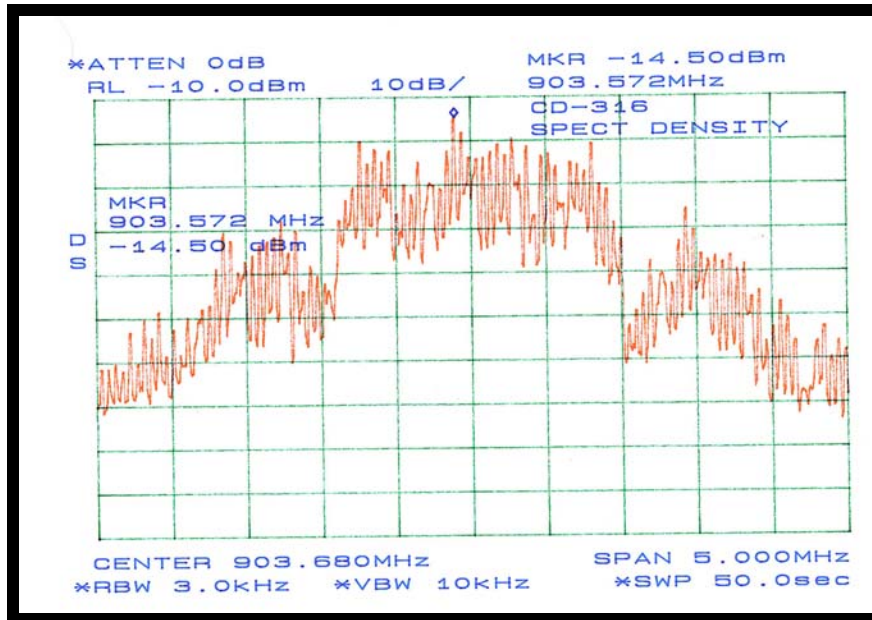


Figure 12: Plot of Spectral Density Measurement at Channel 0

Test-Data Summary – Spectral Density Measurement (903.572MHz):

Center Frequency = 903.680 MHz
 Peak Level: = -14.50dBm = 92.5dBμV
 Field Strength: = 92.5+22.4+1.0=115.90dBμV
 114.07dBμV = 8.9dBm.

Power Spectral Density (alternate method) per FCC Appendix C

$$P = (Ed)^2 / (30G)$$

$$P = (8.9 \times 3)^2 / (30 \times 5.0) = 4.75dBm$$

P = Power Spectral Density
 E = Field strength = 8.9dBm.
 d = Distance (m) = 3m
 G = Gain of the antenna = 5.0
 Limit per 15.247(c) = 8dBm

SECTION 7.5 TEST DATA – SPECTRAL DENSITY MEASUREMENT (CHANNEL 6 – 915.968MHZ)

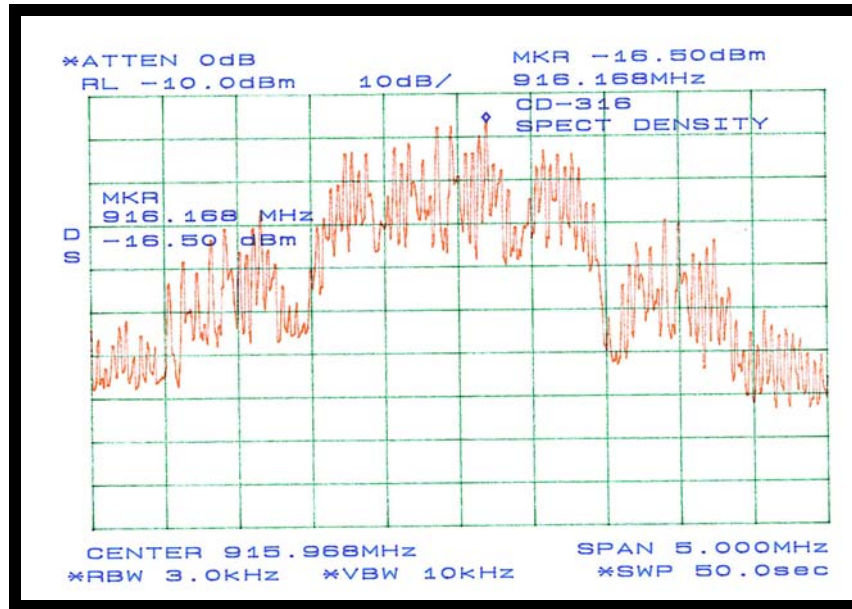


Figure 13: Plot of Spectral Density Measurement at Channel 6

Test-Data Summary – Spectral Density Measurement (916.168 MHz)

Center Frequency = 915.968 MHz
 Peak Level: = -16.50dBm = 90.50dBμV
 Field Strength: = 90.50+22.5+1.0=114dBμV
 114dBμV = 7dBm.

Power Spectral Density (alternate method) per FCC Appendix C

$$P = (Ed)^2 / (30G)$$

$$P = (7 \times 3)^2 / (30 \times 5.0) = 2.94dBm$$

P = Power Spectral Density
 E = Field strength = 7dBm.
 d = Distance (m) = 3m
 G = Gain of the antenna = 5.0
 Limit per 15.247(c) = 8dBm

SECTION 7.6 TEST DATA – SPECTRAL DENSITY MEASUREMENT (CHANNEL 11 – 926.208MHZ)

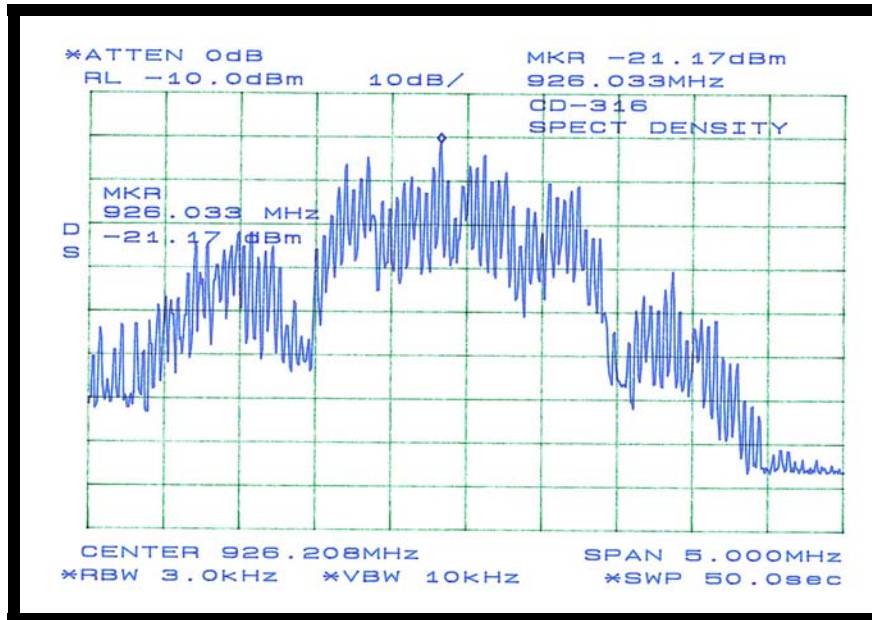


Figure 14: Plot of Spectral Density Measurement at Channel 11

Test-Data Summary – Spectral Density Measurement (926.033 MHz)

Center Frequency = 926.208 MHz
 Peak Level: = -21.17dBm = 85.83dBμV
 Field Strength: = 85.83+22.6+1.0=109.43dBμV
 109.43dBμV = 2.43dBm.

Power Spectral Density (alternate method) per FCC Appendix C

$$P = (Ed)^2 / (30G)$$

$$P = (2.43 \times 3)^2 / (30 \times 5.0) = 0.35dBm$$

P = Power Spectral Density
 E = Field strength = 2.43dBm.
 d = Distance (m) = 3m
 G = Gain of the antenna = 5.0
 Limit per 15.247(c) = 8dBm

Test Setup Photograph



Figure 15: Power Spectral Density Test Setup (Front view)



Figure 16: Power Spectral density Test Setup (Rear View)

PART 8 6dB BANDWIDTH per 47 CFR 15.247(a) (2)

SECTION 8.1 6DB BANDWIDTH MEASUREMENT

The EUT was set up on a wooden non-conductive tabletop, attached at the antenna connector to the measuring device. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-2003. The EUT was configured to run in continuous mode during the tests. The measurement data below represents the maximum worst-case result from the measurement performed in accordance to the requirements of this section.

SECTION 8.2 SITE USED – 6DB BANDWIDTH MEASUREMENT

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room

SECTION 8.3 ADMINISTRATIVE & ENVIRONMENTAL - 6DB BANDWIDTH DETAILS

Test Date(s):	June 22 nd , 2005
Test Engineer(s):	Bob Kershaw and Femi Ojo
Temperature	65°F
Humidity	44%

SECTION 8.4 TEST DATA – 6DB BANDWIDTH MEASUREMENT (CHANNEL 0 – 903.68 MHZ)

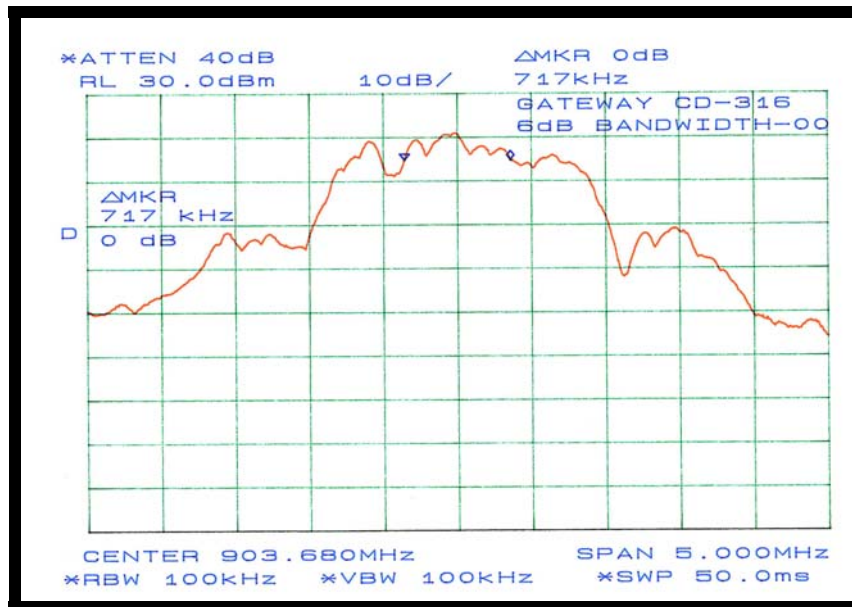


Figure 17: Plot of 6dB Bandwidth Measurement at Channel 0

Test-Data Summary – 6dB Bandwidth Measurement (CH 0 –903.68 MHz):

Center Frequency = 903.68 MHz
 6dB Bandwidth = 717 KHz
 Limit per 15.247(a)(2) = 500 KHz minimum

SECTION 8.5 TEST DATA – 6DB BANDWIDTH MEASUREMENT (CH 6 – 915.968 MHZ)

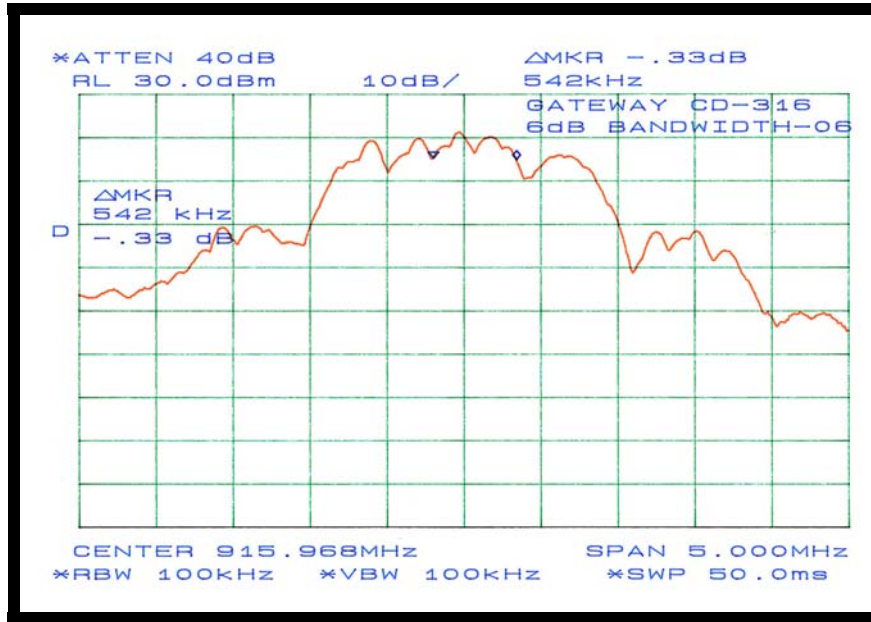


Figure 18: Plot of 6dB Bandwidth Measurement at Channel 6

Test-Data Summary – 6dB Bandwidth Measurement (CH 6 – 915.968 MHz):

Center Frequency = 915.968 MHz
 6dB Bandwidth = 542 KHz
 Limit per 15.247(a)(2) = 500KHz minimum

SECTION 8.6 TEST DATA – 6DB BANDWIDTH MEASUREMENT (CH 11 – 926.208 MHZ)

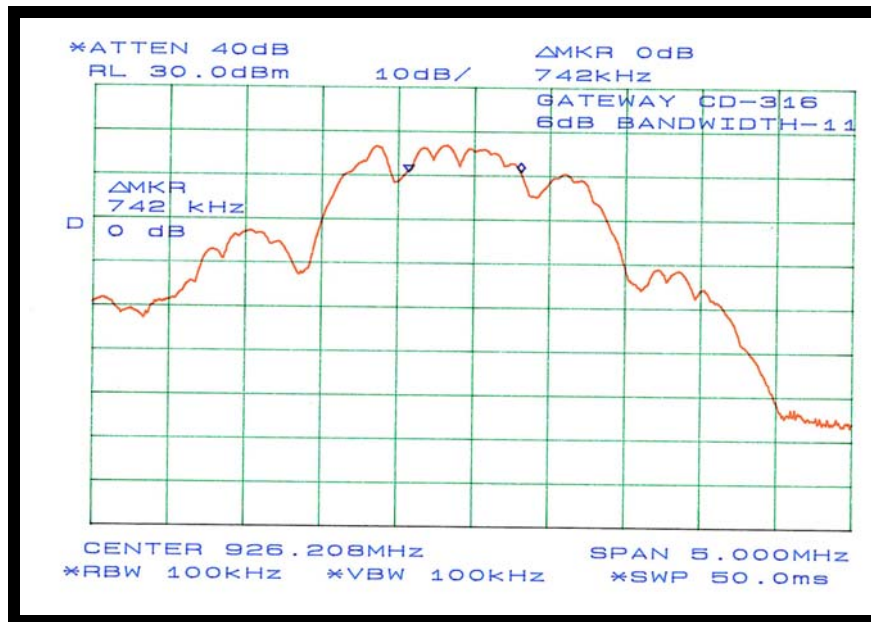


Figure 19: Plot of 6dB Bandwidth Measurement at Channel 11

Test-Data Summary – 6dB Bandwidth Measurement (CH11 - 926.208MHz).

Center Frequency = 926.208 MHz
 6dB Bandwidth = 742 KHz
 Limit per 15.247(a)(2) = 500KHz minimum

PART 9 6DB BANDEDGE MEASUREMENT

6dB BAND-EDGE per 47 CFR 15.247(c)

SECTION 9.1 6DB BAND-EDGE MEASUREMENT

The EUT was set up on a wooden non-conductive tabletop, attached at the antenna connector to the measuring device. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-2003. The EUT was configured to run in continuous mode during the tests. The measurement data below represents the maximum worst-case result from the measurement performed in accordance to the requirements of this section.

SECTION 9.2 SITE USED –BAND-EDGE MEASUREMENT

- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room

SECTION 9.3 ADMINISTRATIVE AND ENVIRONMENTAL DETAILS–BAND-EDGE MEASUREMENT

Test Date(s):	June 22 nd , 2005
Test Engineer(s):	Bob Kershaw and Femi Ojo
Temperature	65°F
Humidity	44%

SECTION 9.4 TEST DATA –BAND-EDGE MEASUREMENT (UPPER BAND EDGE - 928MHZ)

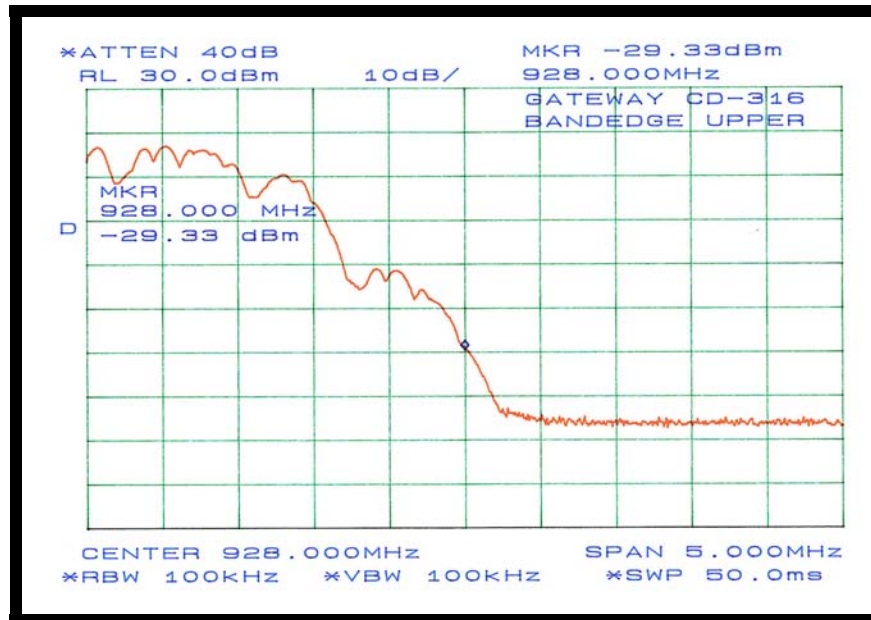


Figure 20: Plot of Upper Band-Edge Measurement at 928 MHz

Test-Data Summary –Band-Edge Measurement (Upper Band Edge – 928MHz):

Center Frequency = 928 MHz
 Band-Edge Level = -29.33 dBm
 Limit per 15.247(c) = 20dB below in-band peak (or -20dB)

BAND-EDGE MEASUREMENT (cont)

SECTION 9.5 TEST DATA –BAND-EDGE MEASUREMENT (LOWER BANDEGE - 902MHZ)

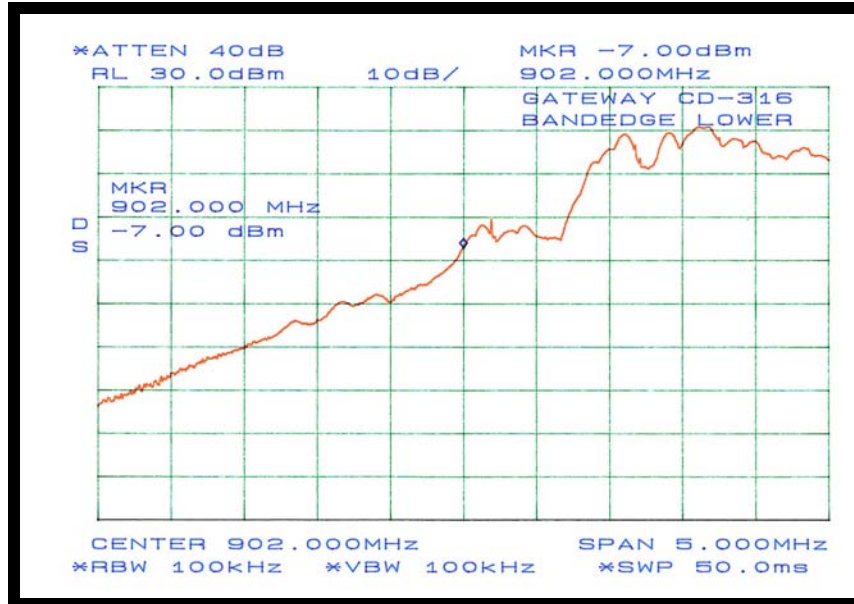


Figure 21: Plot of Lower Band-Edge Measurement at 902MHz

Test-Data Summary –Band-Edge Measurement (Lower Band Edge – 902MHz):

Center Frequency = 902 MHz
 Band-Edge Level = -7 dBm
 Limit per 15.247(c) = 20dB below in-band peak (or -20dB)

PART 10 100kHz Bandwidth Out-of-Band Emissions per 47 CFR 15.247(a) (2)

SECTION 10.1 100KHZ BANDWIDTH OUT-OF-BAND EMISSIONS MEASUREMENT

The EUT was set up on a wooden non-conductive tabletop, attached at the antenna connector to the measuring device. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-2003. The EUT was configured to run in continuous mode during the tests. The measurement data below represents the maximum worst-case result from the measurement performed in accordance to the requirements of this section.

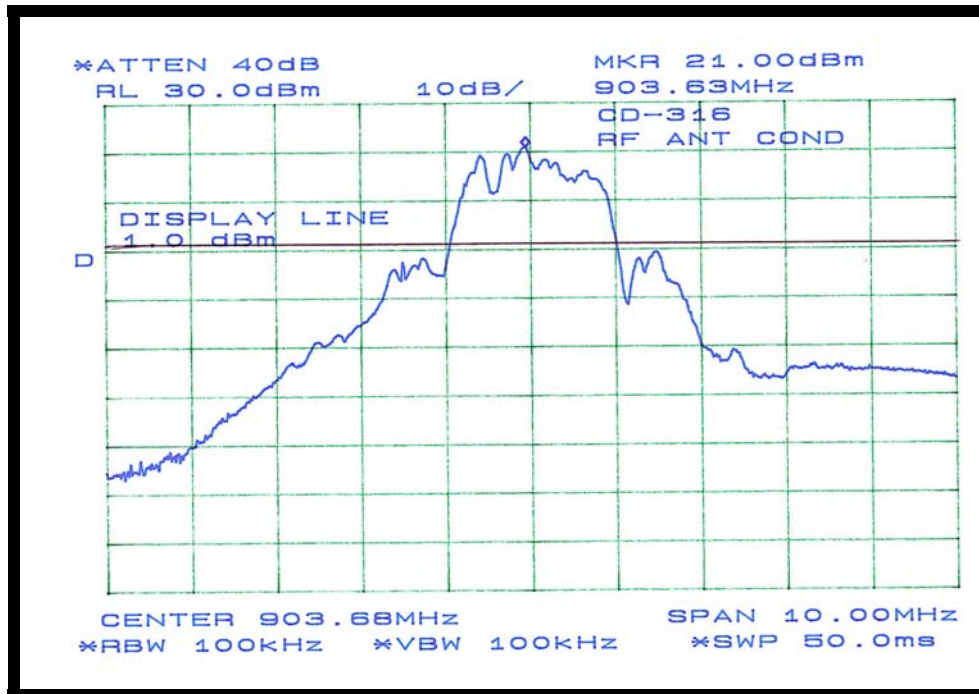
SECTION 10.2 SITE USED – 100 KHZ BANDWIDTH OUT-OF-BAND MEASUREMENT

- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room

SECTION 10.3 ADMINISTRATIVE & ENVIRONMENTAL - (OUT OF BAND DETAILS)

Test Date(s):	June 22 nd , 2005
Test Engineer(s):	Femi Ojo and Bob Kershaw
Temperature	65°F
Humidity	44%

SECTION 10.4 TEST DATA – 100KHZ OUT-OF-BAND MEASUREMENT (IN-BAND PEAK)



22: Plot of 100 kHz Bandwidth Out-of-Band Measurement (In-Band-Peak)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement (In-Band Peak):

Center Frequency = 903.68 MHz
 Center Frequency Peak = 21.00 dBm
 20dB Limit (measured) per 15.247(c) = 1.0dBm

Prepared By: ITC Engineering Services, Inc.
 9959 Calaveras Road, PO Box 543
 Sunol, California 94586-0543
 Tel: [925] 862-2944 Fax: [925] 862-9013
 Email: docs@itcenc.com Web: www.itcenc.com

Product: Telco Gateway
 Model :Telco Gateway With Bandpass Filter

FCC ID: OWS - 919

SECTION 10.5 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 0 – 903.680 MHZ) 27 MHZ TO 930MHZ

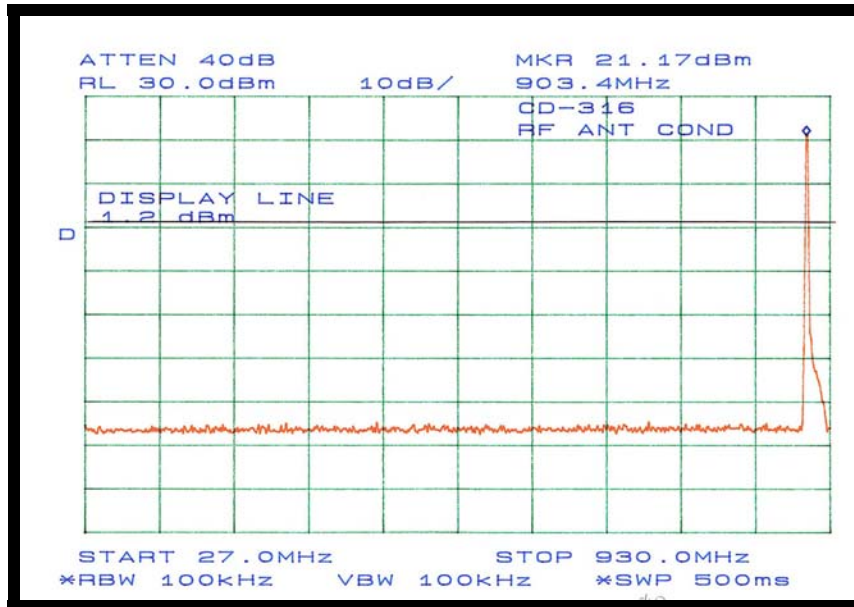


Figure 23: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 0 (27 MHz – 930 MHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 0 – 903.680MHz (27MHz – 940MHz)

Peak Frequency (Fundamental) = 903.4MHz
 Maximum Peak (27MHz to 930MHz) = Noise floor
 20dB Limit (measured) per 15.247(c) = 1.2dBm

SECTION 10.6 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 0 – 903.680 MHZ) 817 MHZ TO 5 GHZ

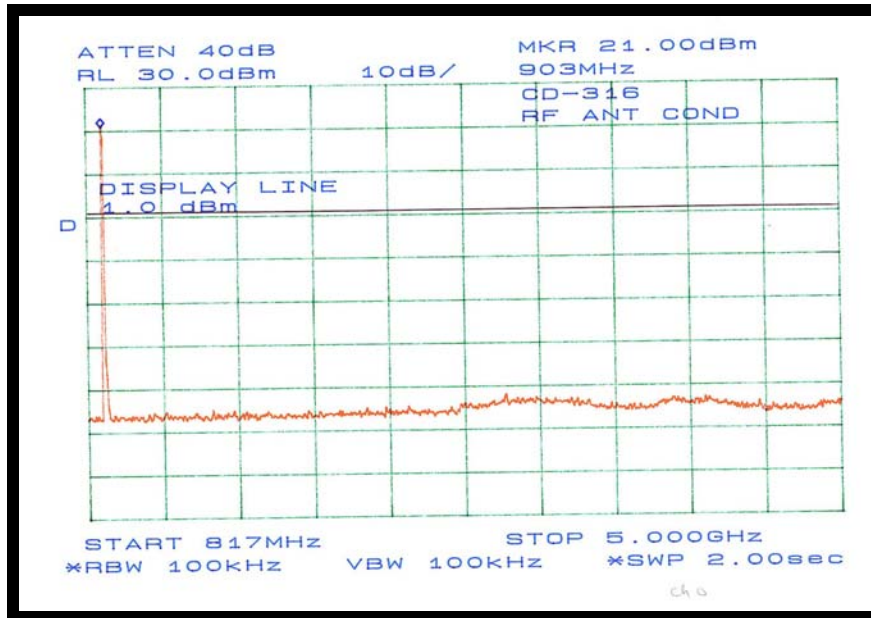


Figure 24: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 0 (817 MHz – 5GHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 0 – 903.680MHz (817MHz – 5GHz)

Peak Frequency (Fundamental) = 903 MHz
 Maximum Peak (817MHz to 5GHz) = Noise Floor
 20dB Limit (measured) per 15.247(c) = 1.0dBm

SECTION 10.7 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 0- 903.680MHZ) 5 GHZ TO 10 GHZ

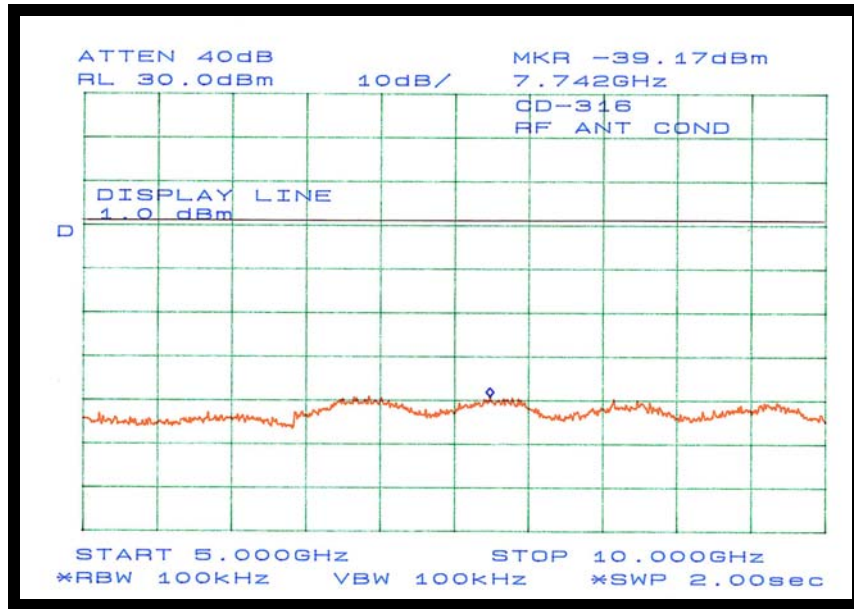


Figure 25: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 0 (5GHz – 10GHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 0 – 903.680MHz (5GHz – 10GHz)

Peak Frequency (Fundamental) = 903.680MHz
 Maximum Peak (5GHz – 10GHz) = Noise Floor
 20dB Limit (measured) per 15.247(c) = 1.0dBm

SECTION 10.8 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 6- 915.968) 27MHZ TO 940 MHZ

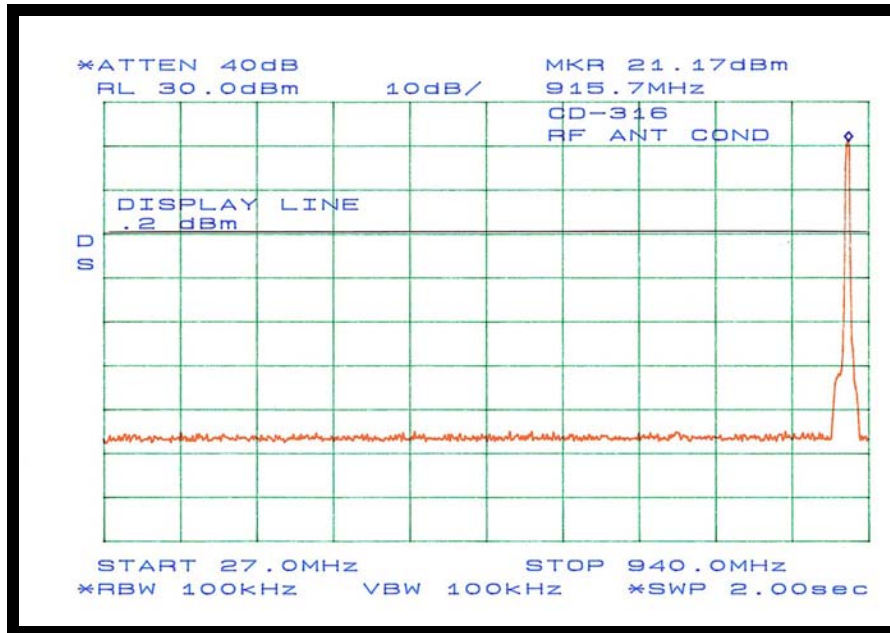


Figure 26: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 6 (27MHz – 940MHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 6 – 915.968MHz (27MHz – 940MHz)

Peak Frequency (Fundamental) = 915.7 MHz
Maximum Peak (27MHz to 940MHz) = Noise Floor
20dB Limit (measured) per 15.247(c) = 0.2dBm

SECTION 10.9 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 6- 915.968) 834MHZ TO 5GHZ

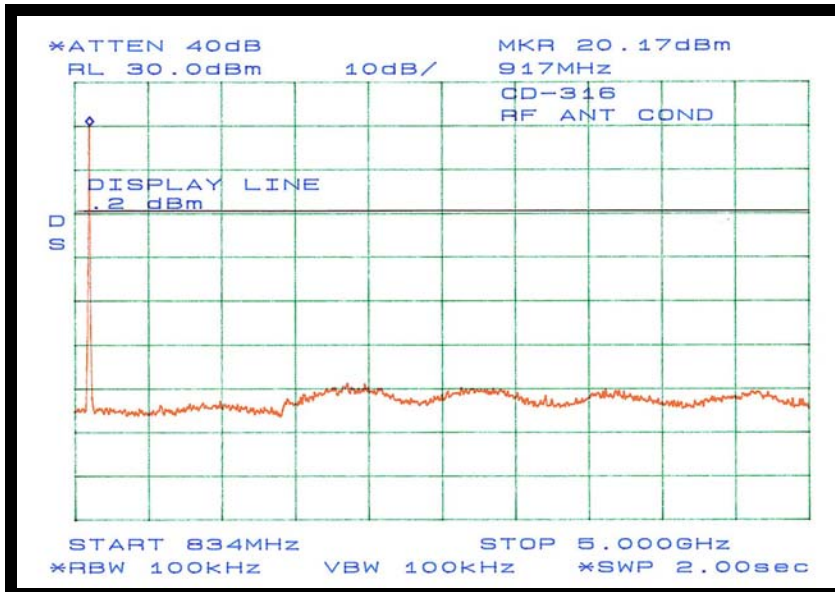


Figure 27: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 6 (834 MHz to 5 GHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 6 915.968MHz (834MHz to 5GHz)

Peak Frequency (Fundamental) = 917 MHz
 Maximum Peak (834MHz to 5GHz) = Noise Floor
 20dB Limit (measured) per 15.247(c) = 0.2dBm

SECTION 10.10 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 6- 915.968) 5GHZ TO 10GHZ

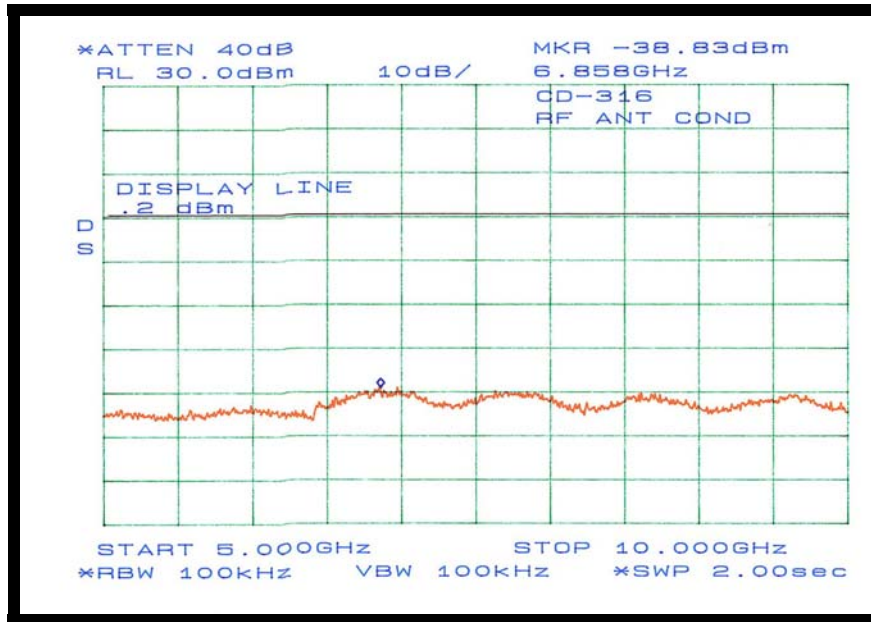


Figure 28: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 6 (5GHz to 10GHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 6 915.968MHz (5GHz to 10GHz)

Peak Frequency (Fundamental) = 915.968MHz
 Maximum Peak (5GHz to 10GHz) = Noise Floor
 20dB Limit (measured) per 15.247(c) = 0.2dBm

SECTION 10.11 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 11- 926.208MHZ) 27MHZ TO 940MHZ

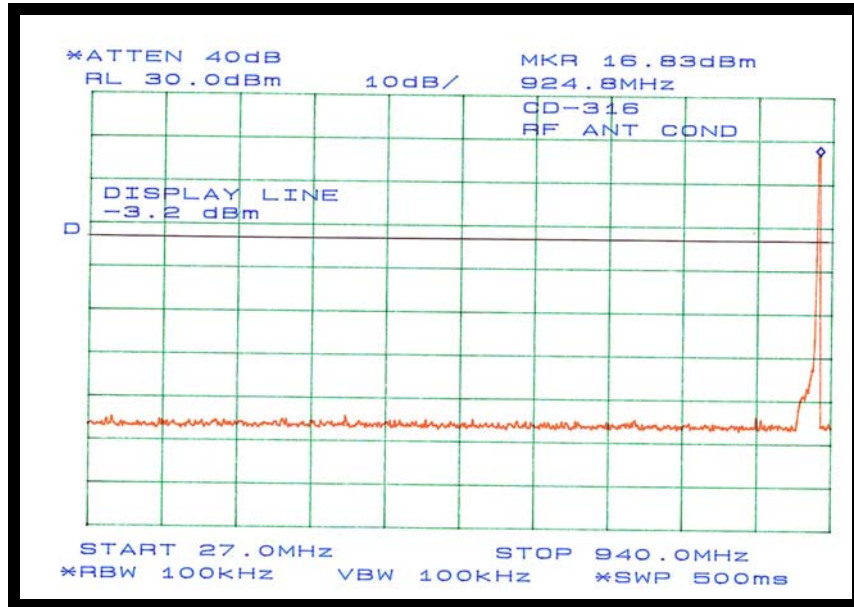


Figure 29: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 11 (27MHz to 940MHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 11 926.208MHz (27MHz to 940MHz)

Peak Frequency (Fundamental) = 924.8 MHz
Maximum Peak (27MHz - 940 MHz) = Noise Floor
20dB Limit (measured) per 15.247(c) = -3.2dBm

SECTION 10.12 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 11- 926.208MHZ) 834MHZ TO 5GHZ

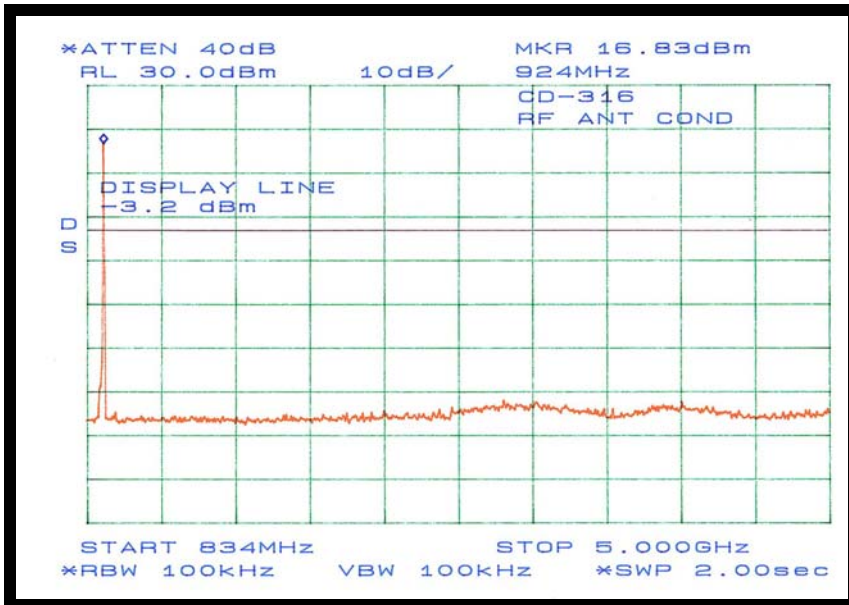


Figure 30: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 11 (834MHz to 5GHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 11 926.208MHz (834MHz to 5GHz)

Peak Frequency (Fundamental) = 924 MHz
 Maximum Peak (834MHz – 5GHz) = Noise Floor
 20dB Limit (measured) per 15.247(c) = -3.2dBm

SECTION 10.13 TEST DATA – 100 KHZ BANDWIDTH OUT-OF-BAND (CH 11- 926.208MHZ) 5GHZ TO 10GHZ

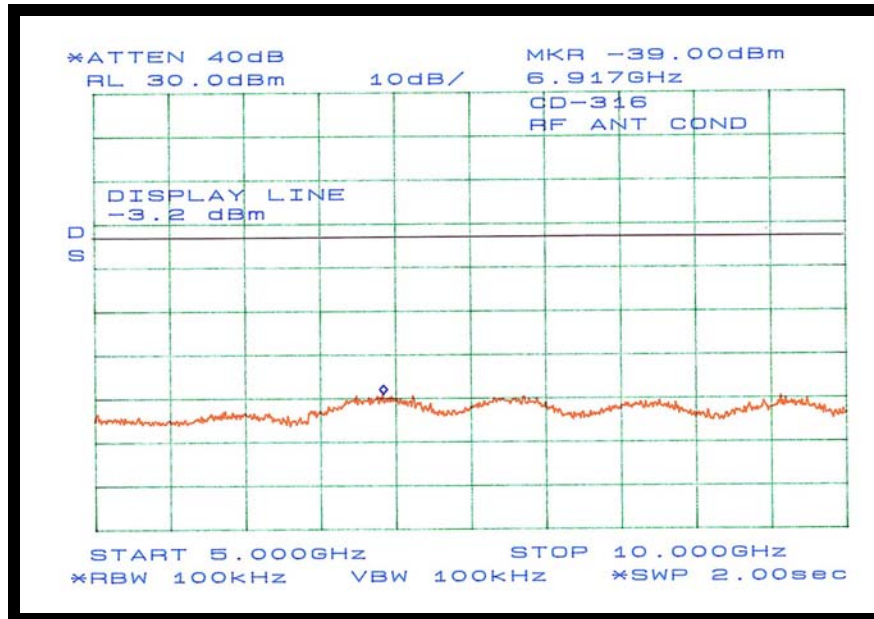


Figure 31: Plot of 100 kHz Bandwidth Out-of-Band Measurement at Ch 11 (5GHz to 10GHz)

Test-Data Summary – 100 kHz Bandwidth Out-of-Band Measurement Ch 11 926.208MHz (5GHz to 10GHz)

Peak Frequency (Fundamental) = 926.208MHz
 Maximum Peak (5GHz – 10GHz) = Noise Floor
 20dB Limit (measured) per 15.247(c) = -3.2dBm

PART 11 SPURIOUS/HARMONIC EMISSIONS IN THE RESTRICTED BANDS

SECTION 11.1 TEST SPECIFICATION:

FCC PART 15 SECTION 47 CFR 15.205
 FCC PART 15 SECTION 47 CFR 15.247(c)

SECTION 11.2 TEST RANGE – SPURIOUS/HARMONICS EMISSIONS:

The measurement range investigated was from 30 MHz to 10GHz.

SECTION 11.3 SITE USED – SPURIOUS/HARMONICS EMISSIONS MEASUREMENTS

- Test Site 1 - Shielded Room: 16' x 12' x 9'
- Test Site 1 - 3m Open Field Radiated Site
- Test Site 1 - 10m Open Field Radiated Site
- Test Site 2 - Environmental Lab
- EMC Lab 1 - Test Laboratory
- Semi-Anechoic Absorber Lined Shielded Room
- Other: _____

SECTION 11.4 ADMINISTRATIVE AND ENVIRONMENTAL DETAILS

Test Date:	June 21 st , 2005
Test Engineer:	Bob Kershaw and Femi Ojo
Temperature	65°F
Humidity	44%

SECTION 11.5 SPURIOUS AND HARMONIC EMISSION IN THE RESTRICTED BANDS DATA

Table 11 Test Data – Spurious Emissions (Below 1 GHz)

The table below shows the summary of the highest amplitudes of the spurious RF radiated emissions from the equipment under test.

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		FILTER	
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	MODE	NOTES
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db		
200.07	10.5	12.1	3.9	26.5	0	1.0	VL	-	-	33.0	-6.5	QP	
229.09	12.6	10.9	4.0	27.5	90	1.0	VL	-	-	36.0	-8.5	QP	
233.46	11.3	11.0	4.2	26.5	0	1.0	VL	-	-	36.0	-9.5	QP	
250.06	6.9	12.0	5.0	23.9	90	1.0	VL	-	-	36.0	-12.1	QP	
300.07	10.8	14.4	6.3	31.5	90	1.0	VL	-	-	36.0	-4.5	QP	
300.07	14.8	14.4	6.3	35.5	0	1.0	VL	-	-	36.0	-0.5	QP	
300.10	11.8	14.4	6.3	32.5	90	1.0	HL	-	-	36.0	-3.5	QP	
333.40	5.0	14.5	6.3	25.8	0	1.0	VL	-	-	36.0	-10.2	QP	
333.40	9.8	14.5	6.3	30.6	90	1.0	VL	-	-	36.0	-5.4	QP	
366.71	8.1	14.7	6.4	29.2	0	1.0	VL	-	-	36.0	-6.8	QP	
400.07	6.1	15.6	6.3	28.0	90	1.0	VL	-	-	36.0	-8.0	QP	
433.38	10.2	15.6	6.3	32.2	90	1.0	VL	-	-	36.0	-3.8	QP	
533.39	9.5	18.3	8.1	35.9	0	1.0	VL	-	-	36.0	-0.1	QP	

Note: No emissions of significant levels were observed between 30MHz-200MHz and 533.39MHz-1000MHz.

SPURIOUS and HARMONICS Emissions (cont)

Table 12 Test Data – Spurious and Harmonics Emissions (Above 1GHz)

The table below shows a summary of the highest amplitudes of the radiated emissions from the equipment under test at various antenna heights, antenna polarization, and EUT orientations

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		FILTER	
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	MODE	NOTES
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db		
903.71	34.2	22.4	4.3	60.8	0	1.0	VL	-	-	143.0	-82.2	P	
903.73	43.8	23.1	4.3	71.2	90	1.0	HL	-	-	143.0	-71.8	P	
907.15	8.8	22.4	4.2	35.4	90	1.0	VL	-	-	46.0	-10.6	P	
908.30	5.3	23.2	4.2	32.7	180	1.0	HL	-	-	46.0	-13.3	P	
908.71	8.5	22.4	4.2	35.1	0	1.0	VL	-	-	46.0	-10.9	P	
910.91	4.3	22.4	4.1	30.9	90	1.0	VL	-	-	46.0	-15.1	P	
910.93	5.3	23.2	4.1	32.7	90	1.0	HL	-	-	46.0	-13.3	P	
912.05	7.2	22.4	4.1	33.7	180	1.0	VL	-	-	46.0	-12.3	P	
912.80	4.7	23.2	4.0	31.9	0	1.0	HL	-	-	46.0	-14.1	P	
916.25	8.3	23.2	3.9	35.4	0	1.0	HL	-	-	46.0	-10.6	P	
929.70	12.8	23.3	4.6	40.8	90	1.0	HL	-	-	46.0	-5.2	P	
933.40	15.8	22.6	4.2	42.6	180	1.0	VL	-	-	46.0	-3.4	P	
940.30	15.7	23.1	3.2	42.0	90	1.0	HL	-	-	46.0	-4.0	P	
940.37	8.8	22.5	3.2	34.5	180	1.0	VL	-	-	46.0	-11.5	P	
966.67	9.0	23.4	3.3	35.6	90	1.0	HL	-	-	46.0	-10.4	P	
1000.00	20.3	24.2	2.0	46.5	180	1.0	VH	-	-	54.0	-7.5	P	
1034.00	17.3	24.3	2.1	43.7	45	1.0	VH	-	-	54.0	-10.3	P	
1099.00	17.3	24.4	2.2	43.9	90	1.0	HH	-	-	54.0	-10.1	P	
1100.00	18.0	24.4	2.2	44.6	180	1.0	VH	-	-	54.0	-9.4	P	
1133.00	18.7	24.4	2.3	45.4	90	1.0	HH	-	-	54.0	-8.6	P	
1133.00	18.5	24.4	2.3	45.2	90	1.0	VH	-	-	54.0	-8.8	P	
1178.00	19.2	24.5	2.4	46.0	180	1.0	HH	-	-	54.0	-8.0	P	
1178.00	18.0	24.5	2.4	44.9	0	1.0	VH	-	-	54.0	-9.1	P	
1184.00	16.0	24.5	2.4	42.9	0	1.0	HH	-	-	54.0	-11.1	P	
1199.00	16.7	24.6	2.4	43.6	180	1.0	HH	-	-	54.0	-10.4	P	
1199.00	17.5	24.6	2.4	44.5	180	1.0	VH	-	-	54.0	-9.5	P	
1309.00	15.3	24.8	2.5	42.6	90	1.0	HH	-	-	54.0	-11.4	P	
1342.00	15.5	24.8	2.6	42.9	180	1.0	VH	-	-	54.0	-11.1	P	
1400.00	15.8	24.9	2.6	43.4	0	1.0	HH	-	-	54.0	-10.6	P	
1449.00	15.0	25.0	2.7	42.7	0	1.0	VH	-	-	54.0	-11.3	P	
1466.00	15.0	25.0	2.7	42.7	180	1.0	HH	-	-	54.0	-11.3	P	
1613.00	14.8	25.7	3.1	43.6	180	1.0	HH	-	-	54.0	-10.4	P	
1628.00	15.0	25.8	3.1	43.9	180	1.0	HH	-	-	54.0	-10.1	P	
1806.00	16.2	26.8	3.4	46.4	90	1.0	HH	-	-	54.0	-7.6	P	
1808.00	16.2	26.7	3.4	46.3	90	1.0	VH	-	-	54.0	-7.7	P	
1950.00	15.0	27.4	3.1	45.5	90	1.0	VH	-	-	54.0	-8.5	P	
1978.00	14.3	27.8	3.0	45.2	90	1.0	HH	-	-	54.0	-8.8	P	
2060.00	15.0	27.8	2.9	45.7	180	1.0	VH	-	-	54.0	-8.3	P	
2163.00	16.2	28.1	2.7	47.0	90	1.0	HH	-	-	54.0	-7.0	P	
2196.00	13.7	28.1	2.6	44.3	180	1.0	VH	-	-	54.0	-9.7	P	
2311.00	14.8	28.3	2.6	45.8	180	1.0	HH	-	-	54.0	-8.2	P	
2374.00	13.2	28.4	2.7	44.3	90	1.0	VH	-	-	54.0	-9.7	P	
2451.00	13.8	28.5	2.9	45.3	90	1.0	HH	-	-	54.0	-8.7	P	
2551.00	14.7	28.8	2.9	46.4	90	1.0	HH	-	-	54.0	-7.6	P	
2626.00	13.5	29.0	2.9	45.4	90	1.0	HH	-	-	54.0	-8.6	P	

2700.00	15.7	29.2	2.8	47.7	90	1.0	VH	-	-	54.0	-6.3	P	
2702.00	14.7	29.2	2.8	46.7	90	1.0	HH	-	-	54.0	-7.3	P	
2705.00	13.8	29.2	2.8	45.8	90	1.0	HH	-	-	54.0	-8.2	P	
2709.00	13.7	29.2	2.8	45.7	45	1.0	HH	-	-	54.0	-8.3	P	
2713.00	16.2	29.2	2.8	48.2	180	1.0	VH	-	-	54.0	-5.8	P	
2772.00	13.5	29.4	2.8	45.7	0	1.0	HH	-	-	54.0	-8.3	P	
2816.00	13.7	29.5	2.8	46.0	0	1.0	HH	-	-	54.0	-8.0	P	
2913.00	15.2	29.8	2.9	47.9	45	1.0	VH	-	-	54.0	-6.1	P	
3194.00	13.5	30.5	4.6	48.6	180	1.0	VH	-	-	54.0	-5.4	P	
3299.00	13.8	30.8	4.9	49.5	180	1.0	VH	-	-	54.0	-4.5	P	
3605.00	12.3	31.6	4.6	48.5	45	1.0	HH	-	-	54.0	-5.5	P	
3704.00	12.2	31.9	4.7	48.8	45	1.0	HH	-	-	54.0	-5.2	P	
3811.00	12.3	32.2	4.8	49.3	45	1.0	HH	-	-	54.0	-4.7	P	
4507.00	12.0	32.4	5.0	49.4	90	1.0	HH	-	-	54.0	-4.6	P	
4587.00	11.0	32.6	5.0	48.6	45	1.0	HH	-	-	54.0	-5.4	P	
4691.00	11.5	32.7	5.0	49.2	90	1.0	HH	-	-	54.0	-4.8	P	
5391.00	10.8	34.0	5.0	49.8	90	1.0	HH	-	-	54.0	-4.2	P	
5400.00	10.3	34.0	5.0	49.4	180	1.0	HH	-	-	54.0	-4.6	P	
5481.00	11.2	34.2	5.0	50.3	180	1.0	HH	-	-	54.0	-3.7	P	

Note: No emission of significant level was observed between 5549MHz-10000MHz.

Conclusion

The CDMA Gateway CD-316 meets the requirements of the test reference for Spurious and Harmonics emissions in Restricted Bands specified in 15.209

SECTION 11.6 SPURIOUS PHOTOGRAPHS



Figure 32: Spurious Emissions Front View (Below 1 GHz)



Figure 33: Spurious Emissions Rear View (Below 1 GHz)



Figure 34: Spurious Emissions Front View (Above 1 GHz)



Figure 35: Spurious Emissions Rear View (Above 1 GHz)

PART 12 APPENDICES

A. EUT TECHNICAL SPECIFICATION

Applicant	Silver Spring Networks
General Description	Telco Gateway with Bandpass filter
Model	T-313,
Dimension	H= 4" ,L=9.5" ,W= 7.5", WEIGHT = 7lbs
Power Input	120/480V , 60 Hz.

B.EUT PHOTOGRAPHS



Figure 36: EUT Top View (with bandpass filter)



Figure 37: EUT Top View (without bandpass filter)



Figure 38: EUT Front View



Figure 39: EUT Rear View



Figure 40: EUT Side View



Figure 41: EUT Internal View1

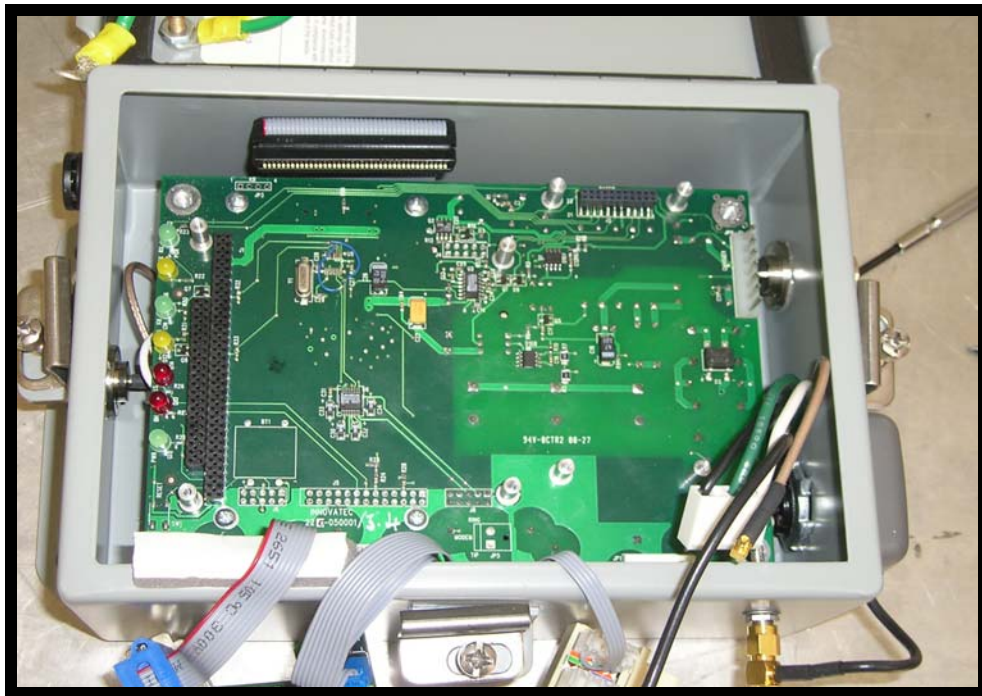


Figure 42: EUT Internal View2



Figure 43: EUT Component View



Figure 44: EUT Solder View



Figure 45: Component View with Shield off (View 1)

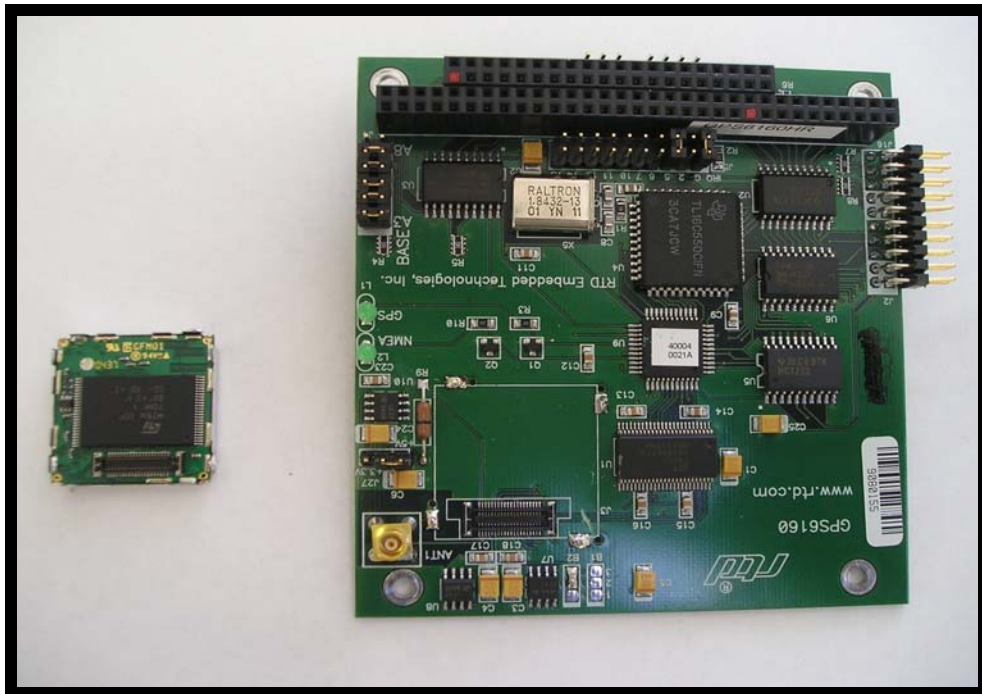


Figure 46: Component View with Shield off (View 2)

C. MODIFICATION LETTER

To Whom It May Concern:

This is to certify that no modifications were required for CDMA Gateway without Bandpass Filter and CDMA Gateway with Bandpass Filter to comply with the requirements of the standard listed below.

FCC Rules and Regulations per 47 CFR 15.247

It is the manufacturer's responsibility to ensure that additional production units of the CDMA Gateways are manufactured with identical electrical and mechanical characteristics.

For further information, please contact the manufacturer at:

Silver Spring Network, Inc.
13000 West Silver Spring Drive
Butler, WI 53007

ATTN: Juan Luglio, PhD
Tel: (262) 364-5317
juan.luglio@silverspringnetworks.com