



Test Report: 4W36013, Issue 2

Applicant: Mitel Networks Corporation
350 Legget Drive
Kanata Ontario

**Equipment Under Test:
(EUT)** Verizon One Phone

FCC ID:

In Accordance With: **FCC Part 15.247, Subpart C**
FHSS System and Digitally Modulated Radiators
5725-5850MHz

Tested By: Nemko Canada Inc.
303 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

Authorized By: 
Sim Jagpal, General Manager

Date: 17 January 2005

Total Number of Pages: 31

EQUIPMENT: Verizon One, Base Unit

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EQUIPMENT: Verizon One, Base Unit

Section 1. Summary of Test Results

General

All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C. Radiated tests were conducted in accordance with ANSI C63.4-2001. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE
TEST SPECIFICATIONS HAVE BEEN MADE.

See "Summary of Test Data".



TESTED BY: _____
Glen Westwell, Wireless Specialist

DATE: 17 January 2005

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This report applies only to the items tested.

EQUIPMENT: Verizon One, Base Unit

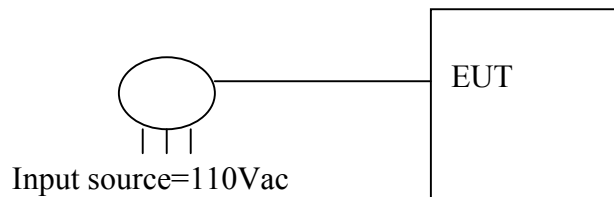
Summary Of Test Data

Name Of Test	Para. No.	Result
Powerline Conducted Emissions	15.207(a)	Complies
20 dB Bandwidth	15.247(a)(1)(ii)	Complies
Number of Hopping Channels	15.247(a)(1)(ii)	Complies
Occupancy Time	15.247(a)(1)(ii)	Complies
Minimum Channel Separation	15.247(a)(1)	Complies
Peak Output Power	15.247(b)(1)	Complies
Spurious Emissions	15.247(d)	Complies

Test Conditions:

Indoor Temperature: 23°C
 Humidity: 42%

Outdoor Temperature: -7°C
 Humidity: 30%

Test Set Up Diagram

EQUIPMENT: Verizon One, Base Unit

Section 2. General Equipment Specification

Manufacturer:	Verizon for Mitel
Model No.:	A90-VZ1015-06, Verizon One
Serial No.:	000471
Date Received In Laboratory:	17 Dec 2004
Band of Operation:	5725-5850MHz
Operating Frequency of EUT:	5725.809323-5848.888935MHz
Peak Output Power (measured):	14.6dBm
Modulation:	EDCT FHSS
Antenna Gain:	3dBi

EQUIPMENT: Verizon One, Base Unit

Section 3. Powerline Conducted Emissions**Para. No.: 15.207(a)**

Test Performed By: Glen Westwell	Date of Test: 11 Jan. 2005
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Test Results: Complies.

General		
These tests were conducted using measurement procedures of ANSI C63.4-2001. The equipment was tested for conducted emissions from 0.15MHz to 30MHz using a 50 microhenry line impedance stabilization network (L.I.S.N.) as described in ANSI C63.4-2001. Peripheral equipment was also operated through a 50 microhenry L.I.S.N.		
Limits For Conducted Disturbance At The Mains Ports: Paragraph No. 15.107 for Class B		
Frequency Range MHz	Limits dB(μV)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50
Notes		
1. The lower limit shall apply at the transition frequency. 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50MHz.		

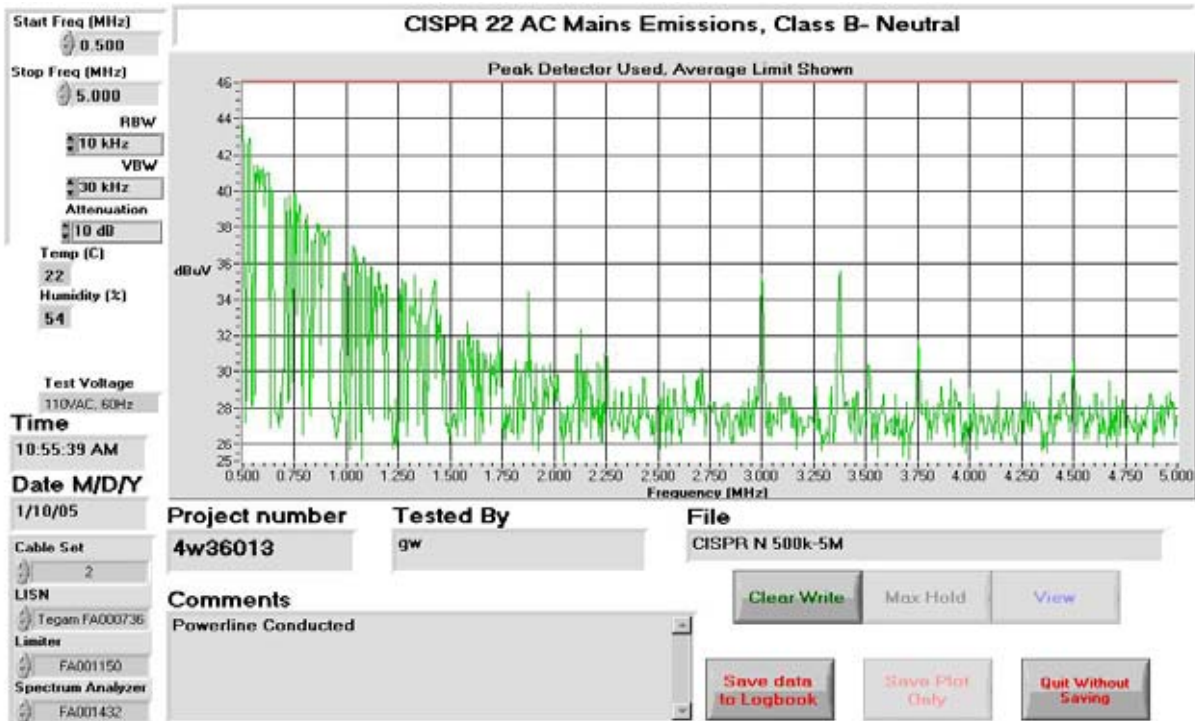
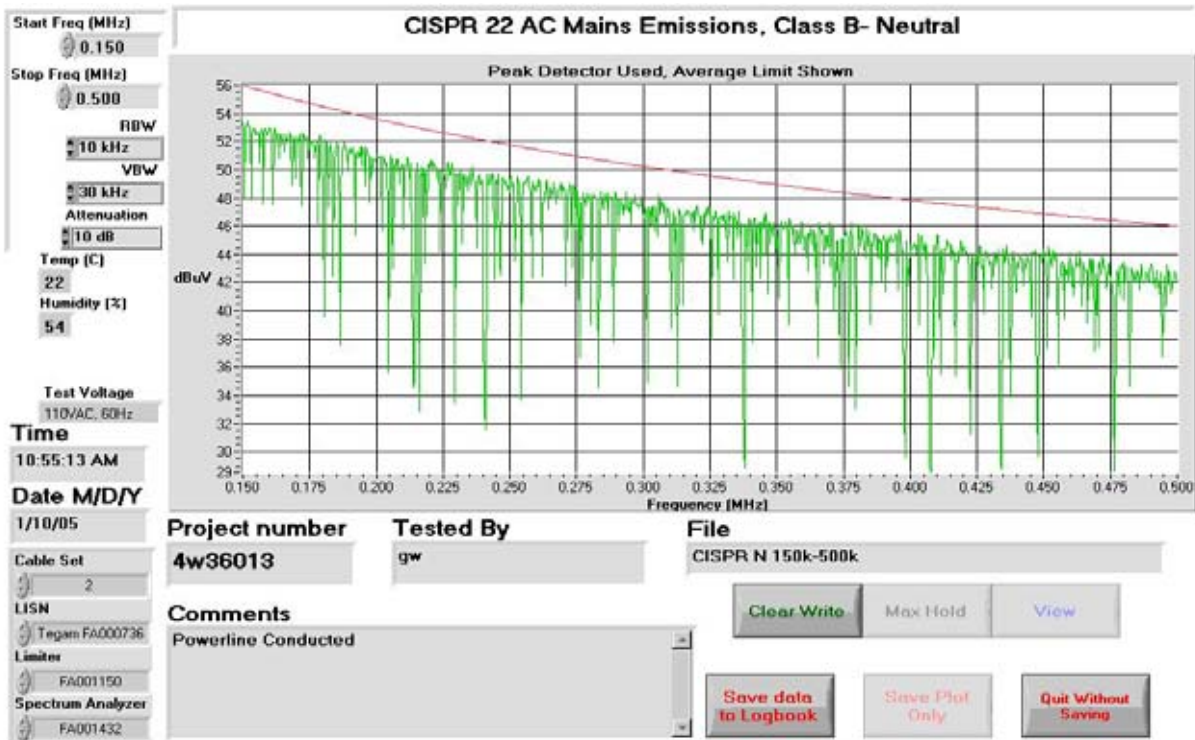
Measurement Data: See attached graph(s).

EQUIPMENT: Verizon One, Base Unit

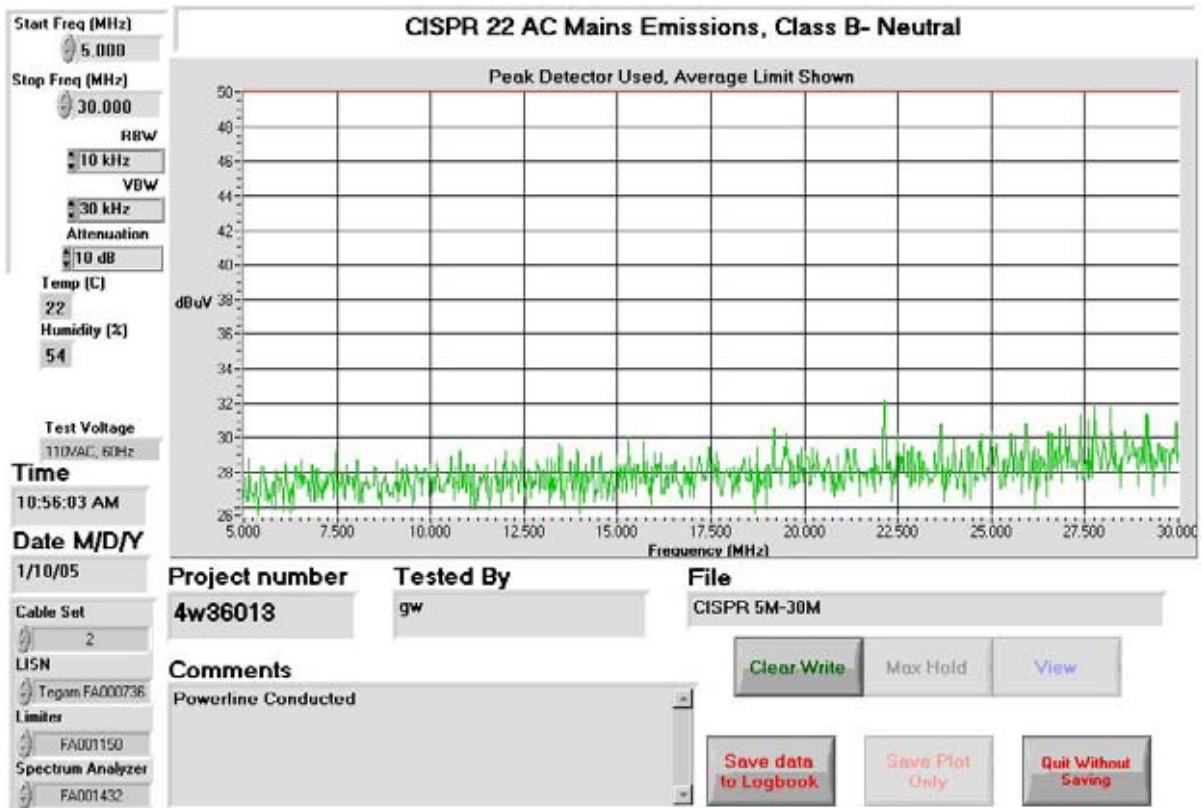
Set-up Photo



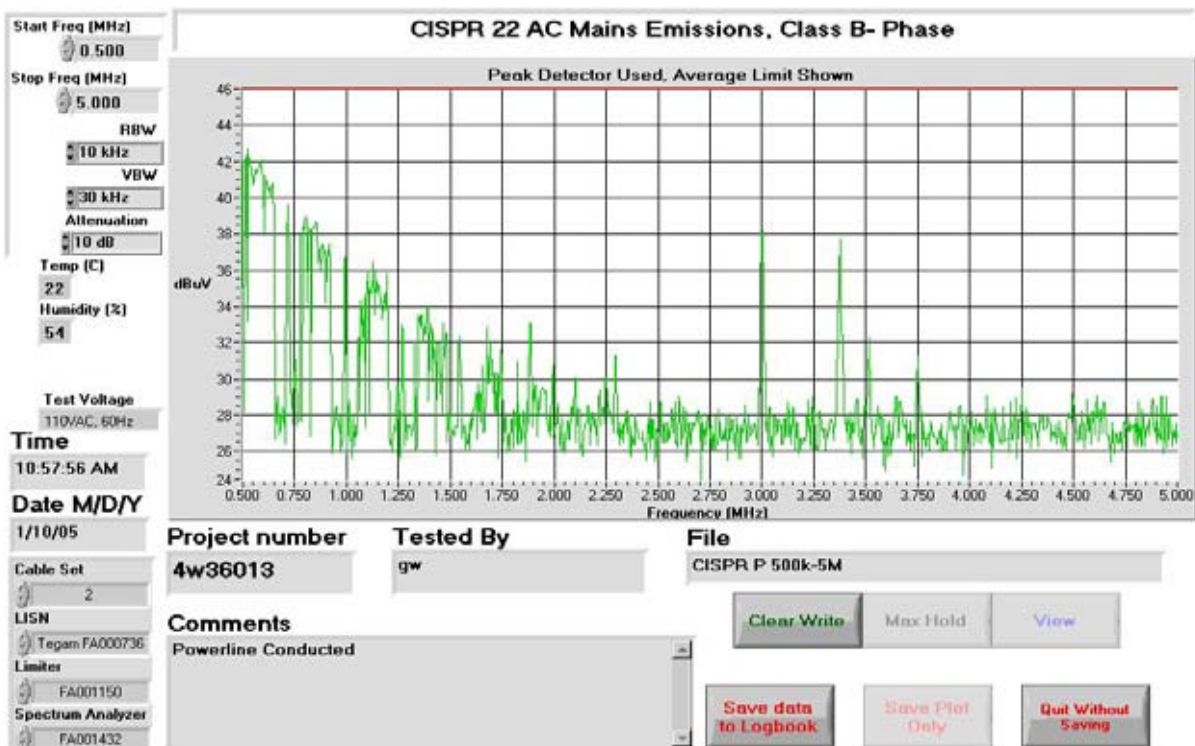
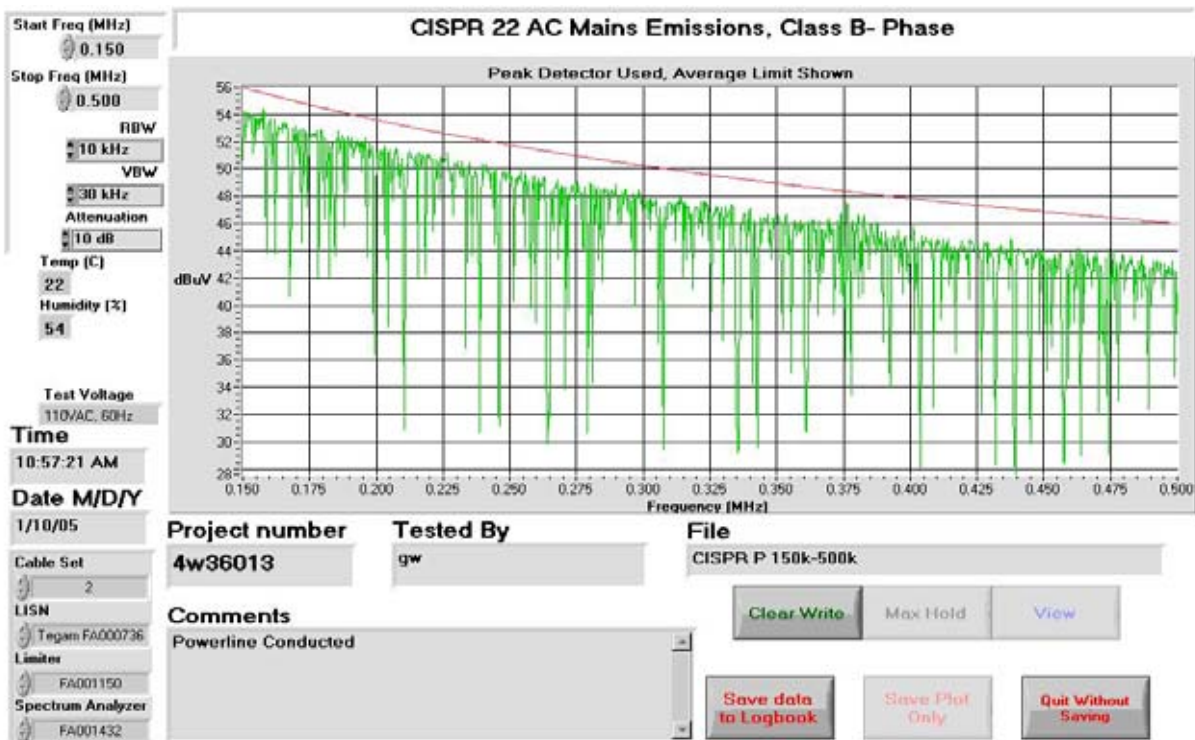
EQUIPMENT: Verizon One, Base Unit



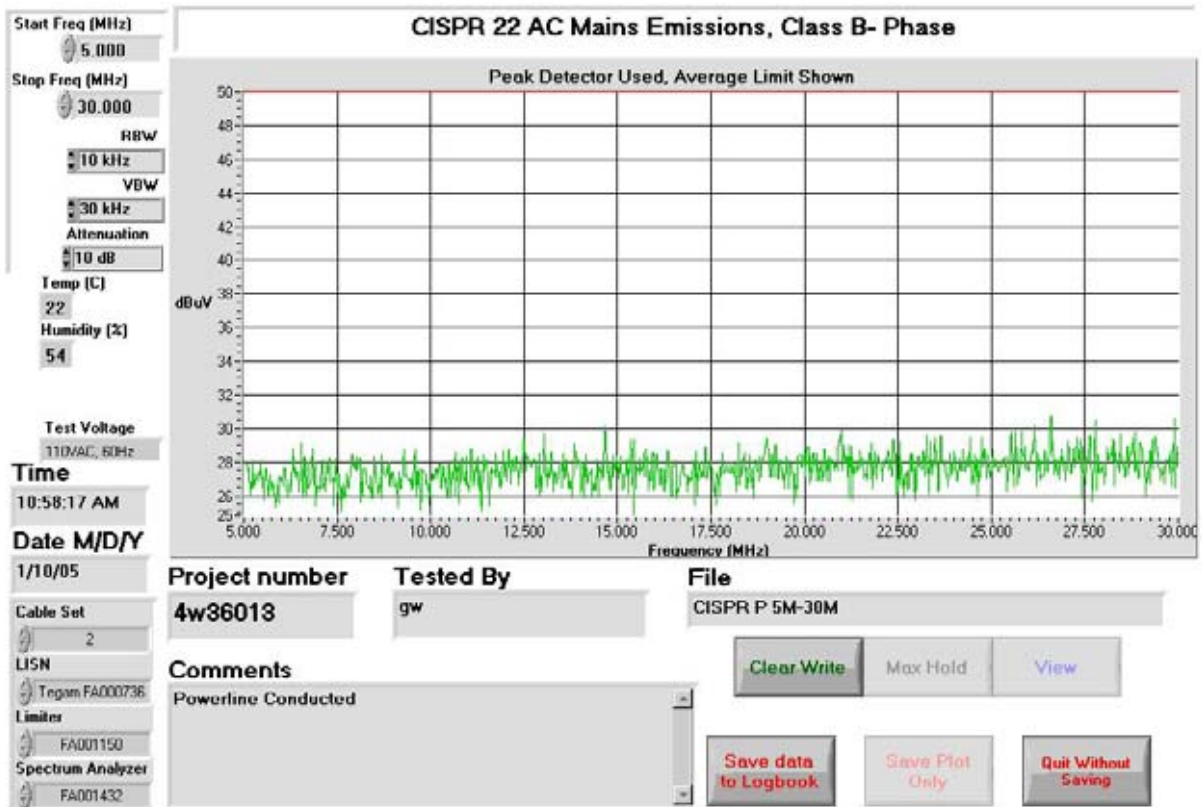
EQUIPMENT: Verizon One, Base Unit



EQUIPMENT: Verizon One, Base Unit



EQUIPMENT: Verizon One, Base Unit



EQUIPMENT: Verizon One, Base Unit

Section 4. 20 dB Bandwidth

Para. No.: 15.247(a) (1)(ii)

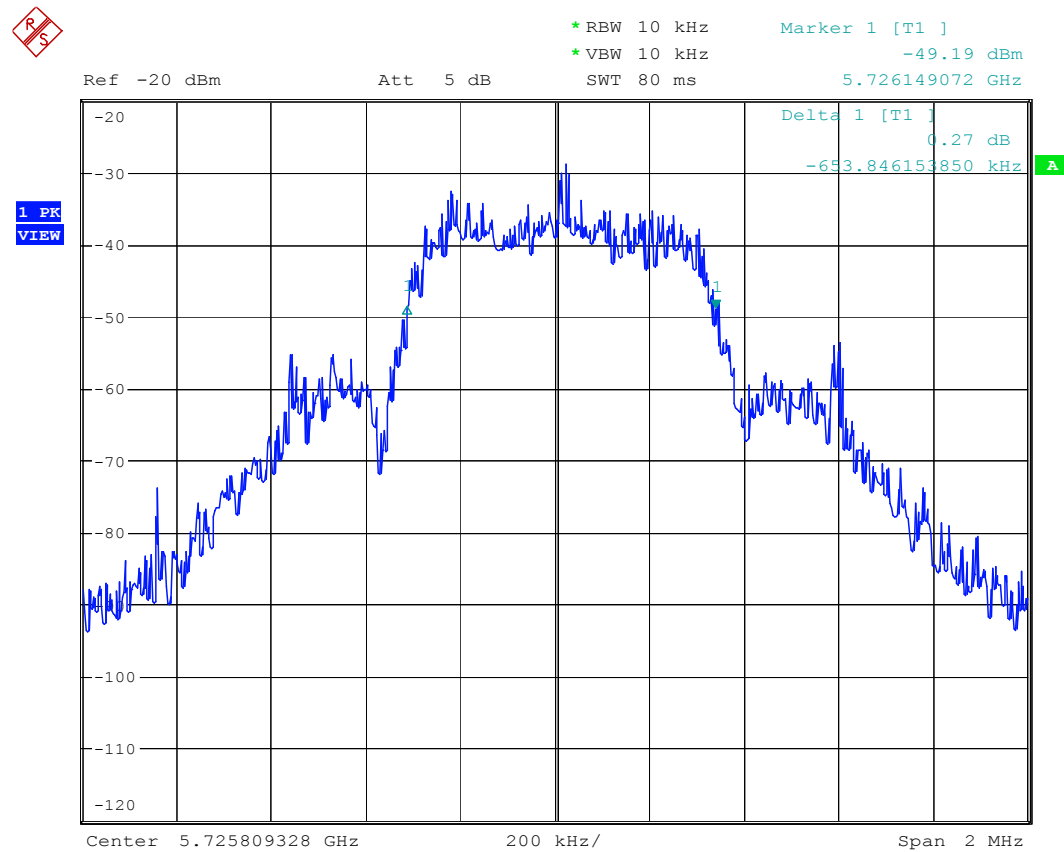
Test Performed By: Glen Westwell	Date of Test: 7 Jan 2005
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Limit: $\leq 1\text{MHz}$

Measurement Data: Complies, see attached plot

OBW = 653.8kHz

EQUIPMENT: Verizon One, Base Unit



OCC BW

Date: 7.JAN.2005 15:03:31

EQUIPMENT: Verizon One, Base Unit

Section 5. Occupancy Time

Para. No.: 15.247(a)(1)(ii)

Test Performed By: Glen Westwell	Date of Test: 7 Jan. 2005
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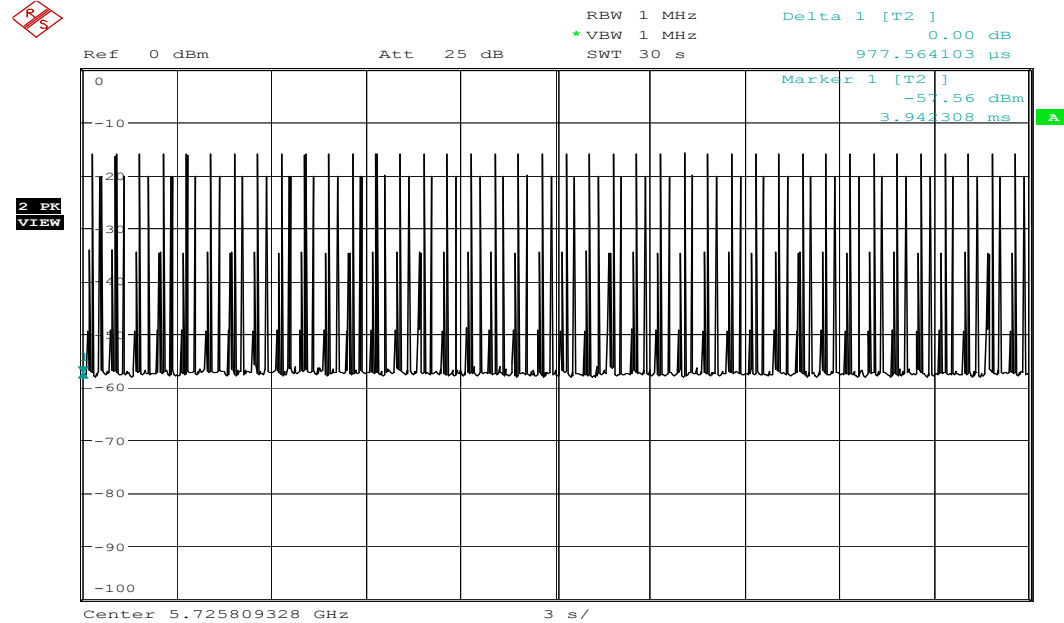
Limit: **0.4s/30s period**

Measurement Data: Complies. See attached plots.

Time of Occupancy = 0.04s/30s

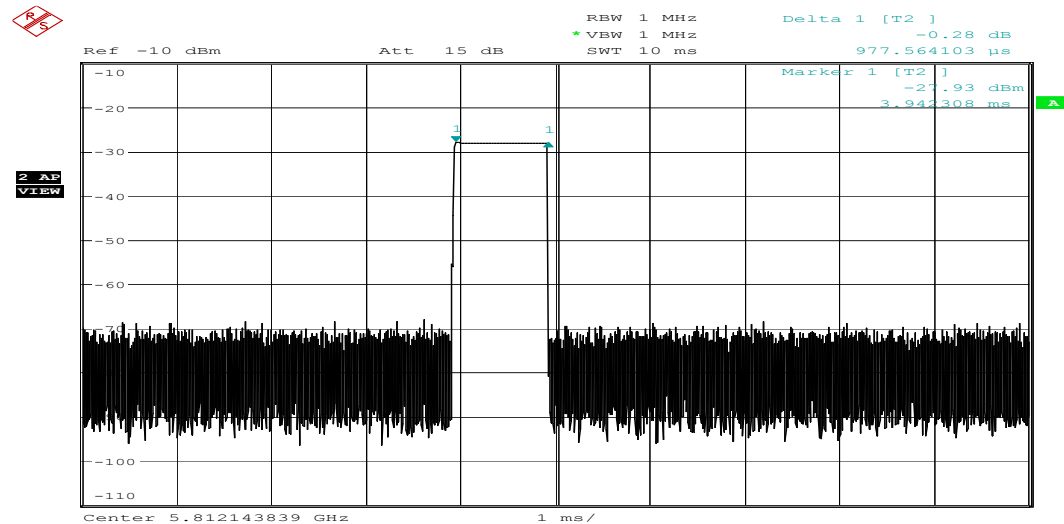
EQUIPMENT: Verizon One, Base Unit

Time of Occupancy



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Date: 7.JAN.2005 11:49:14



OCC BW

Date: 7.JAN.2005 11:39:29

Time of Occupancy = 40 x 977.6uS/30s = 0.04s/30s period.

Section 6. Number of Hopping Channels

Para. No.: 15.247(a)(1)(ii)

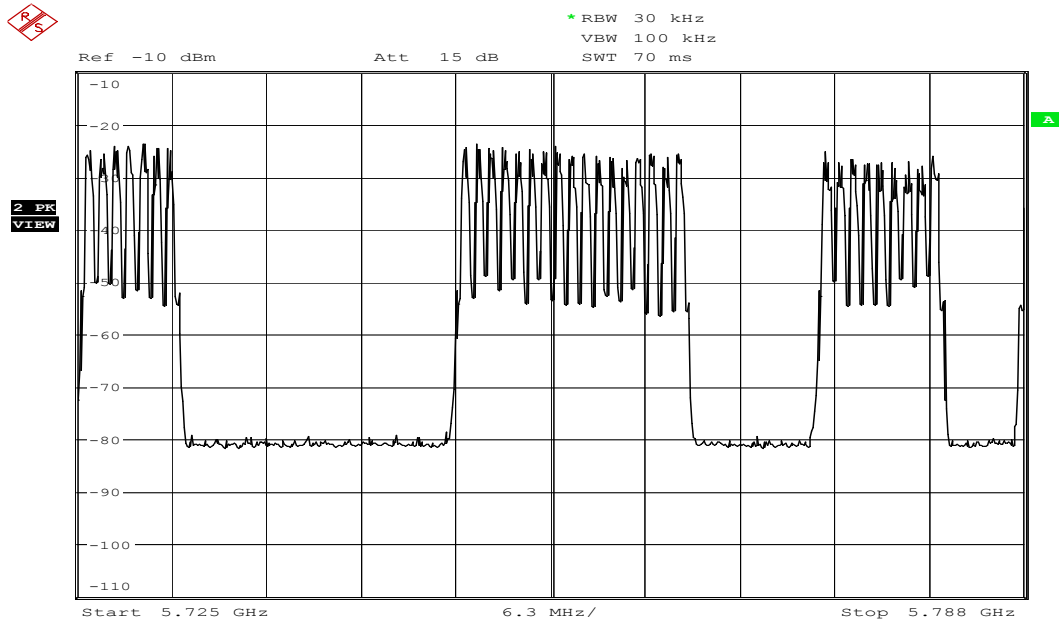
Test Performed By: Glen Westwell	Date of Test: 6 Jan. 2004
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Limit: Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

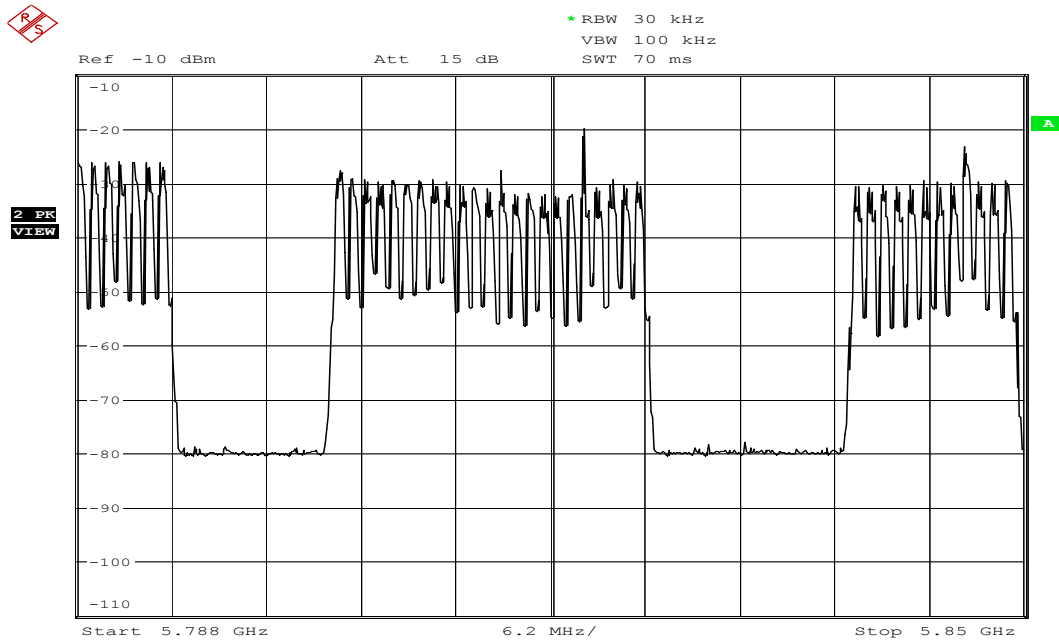
Measurement Data: Complies, See Plot(s)

Number of Hopping Channels: 75

EQUIPMENT: Verizon One, Base Unit



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Date: 6.JAN.2005 16:41:01



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Date: 7.JAN.2005 08:33:36

EQUIPMENT: Verizon One, Base Unit

Section 7. Minimum Channel Separation

Para. No.: 15.247(a)(1)

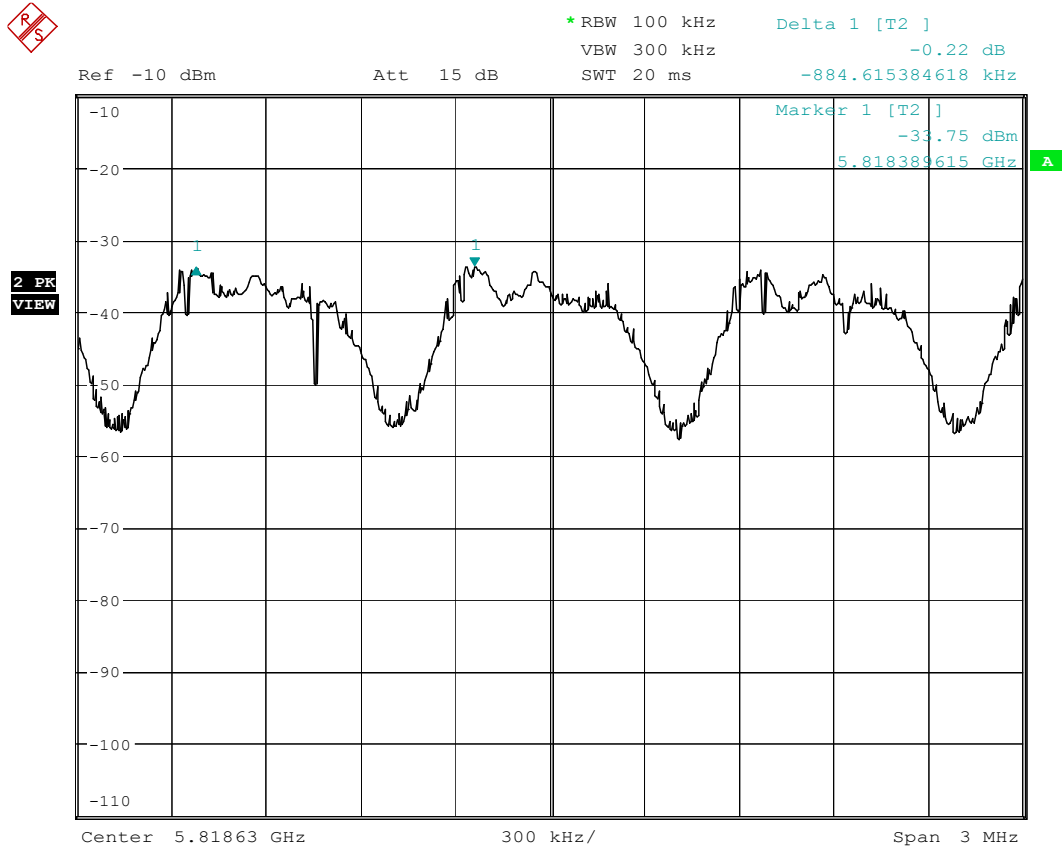
Test Performed By: Glen Westwell	Date of Test: 6 Jan. 2004
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Limit: >20dB bandwidth

Measurement Data: Complies, See Plot.

20dB Bandwidth = 653.8kHz
Channel Separation = 884.6kHz

EQUIPMENT: Verizon One, Base Unit



OCC BW

Date: 7.JAN.2005 10:09:51

*EQUIPMENT: Verizon One, Base Unit***Peak Radiated Power, Base Station**

Test Date: 18 Dec. 2004										
Engineer's Name: Glen Westwell										
Temperature (C°): 21						Humidity %: 35				
Measurement Distance = 3m										
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Amp. Gain (-dB)	Passband filter / Cable Loss (dB)	Duty Cycle Corr. (-dB)	Level (dBuV)	EUT Antenna Gain (dBi)	Peak Output Power (W)
Low Band Ch.1										
5725.6	Hrn 1	V/H	74.7	34.3	N/A	2.6		111.6	3	0.022
Mid Band Ch.41										
5788.9	Hrn 1	V/H	74.6	34.3	N/A	2.6		111.5	3	0.021
Mid Band Ch.81										
5848.6	Hrn 1	V/H	75.9	34.3	N/A	2.6		112.8	3	0.029
Note 1: Antenna Legend: Hrn = Horn Antenna, Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz 3:										
Notes:		Measurement Receiver = R&S FSU, RBW/VBW = 1MHz								
		Both polarizations were maximized, worst case results presented.								

EQUIPMENT: Verizon One, Base Unit

Measurement Set up Photo



EQUIPMENT: Verizon One, Base Unit

Section 9. Spurious Emissions

Para. No.: 15.247(d)

Test Performed By: Glen Westwell	Date of Test: 18 Dec. 2004
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Limit: 15.247(d), 15.209(a), 15.205(c)

Measurement Data: Complies, see attached plots and tables

Duty Cycle Correction: $20\log(9.8\text{mS}/100\text{mS}) = -20.2\text{dB}$

*EQUIPMENT: Verizon One, Base Unit***Spurious Harmonic Emissions Test Data: Base Station, Peak**

Test Date: 18 Dec. 2004										
Engineer's Name: Glen Westwell										
Temperature (C°): 21						Humidity %: 35				
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Amp. Gain (-dB)	Passband filter / Cable Loss (dB)	Duty Cycle Corr. (-dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
Low Band Ch.1										
11451.3	Hrn 1	V/H	65.3	39.0	41.6	6.0		68.7	74	5.3
17177.0	Hrn 1	V/H	78.2	41.0	40.2	7.0		86.0	91.6	5.6
22902.6	Hrn 5	V/H	63.9	45.5	43.7	7.6		73.3	74	0.7
Mid Band Ch.41										
11577.9	Hrn 1	V/H	62.8	39.0	41.6	6.0		66.2	74	7.8
17366.9	Hrn 1	V/H	76.4	41.0	40.2	7.0		84.2	91.5	7.3
23155.8	Hrn 5	V/H	66.3	45.5	43.7	7.6		75.7	91.5	15.8
Mid Band Ch.81										
11697.2	Hrn 1	V/H	61.1	39.0	41.6	6.0		64.5	74	9.5
17546.2	Hrn 1	V/H	75.0	41.0	40.2	7.0		82.8	92.8	10.0
23394.4	Hrn 5	V/H	62.3	45.5	43.7	7.6		71.7	92.8	21.1
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole										
Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz RBW										
Note 3: The EUT was searched up to 10th harmonic of the fundamental										
Notes:		Measurement Receiver = R&S FSU, RBW/VBW =1000kHz								

*EQUIPMENT: Verizon One, Base Unit***Spurious Harmonic Emissions Test Data: Base Station, Average**

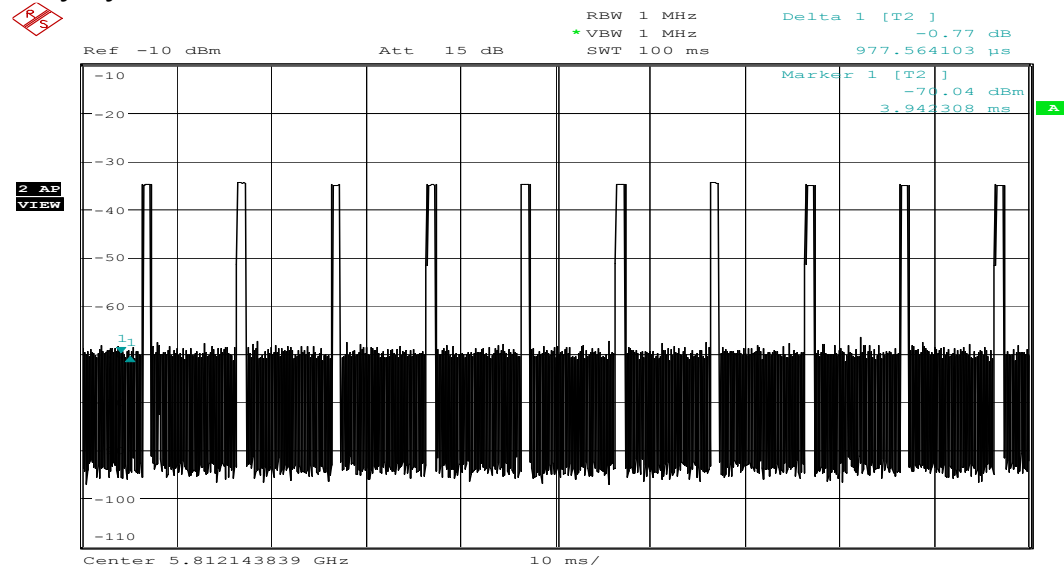
Test Date: 18 Dec. 2004										
Engineer's Name: Glen Westwell										
Temperature (C°): 21							Humidity %: 35			
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Amp. Gain (-dB)	Passband filter / Cable Loss (dB)	Duty Cycle Corr. (-dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
Low Band Ch.1										
11451.3	Hrn 1	V/H	65.3	39.0	41.6	6.0	-20	48.7	54	5.3
22902.6	Hrn 5	V/H	63.9	45.5	43.7	7.6	-20	53.3	54	0.7
Mid Band Ch.41										
11577.9	Hrn 1	V/H	62.8	39.0	41.6	6.0	-20	46.2	54	7.8
Mid Band Ch.81										
11697.2	Hrn 1	V/H	61.1	39.0	41.6	6.0	-20	44.5	54	9.5
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole										
Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz RBW										
Note 3: The EUT was searched up to 10th harmonic of the fundamental										
Notes:		Measurement Receiver = R&S FSU, RBW/VBW = 1MHz								

*EQUIPMENT: Verizon One, Base Unit***Spurious Emissions Test Data: Base Station, Peak**

Test Date: 11 Jan 2005										
Engineer's Name: Glen Westwell										
Temperature (C°): -7						Humidity %: 35				
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Amp. Gain (-dB)	Passband filter / Cable Loss (dB)	Duty Cycle Corr. (-dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
250.0000	BC1	V	26.1	16.8		2.0		44.9	46.0	1.1
250.0000	BC1	H	27.9	16.0		2.0		45.9	46.0	0.1
117.4000	BC1	V	29.0	11.8		1.4		42.2	43.5	1.4
117.4000	BC1	H	29.5	11.5		1.4		42.4	43.5	1.2
109.0000	BC1	V	26.0	11.0		1.3		38.3	43.5	5.2
109.0000	BC1	H	27.5	10.3		1.3		39.1	43.5	4.4
1000.0000	Horn 1	V	17.0	26.0		2.9		46.0	54.0	8.0
1000.0000	Horn 1	H	15.0	26.0		2.9		43.9	54.0	10.1
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole										
Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz RBW										
Note 3: The EUT was searched up to 10th harmonic of the fundamental										
Notes:		Measurement Receiver = R&S FSU, RBW/VBW =1000kHz								
		R&S ESVS30, RBW/VBW =120kHz								

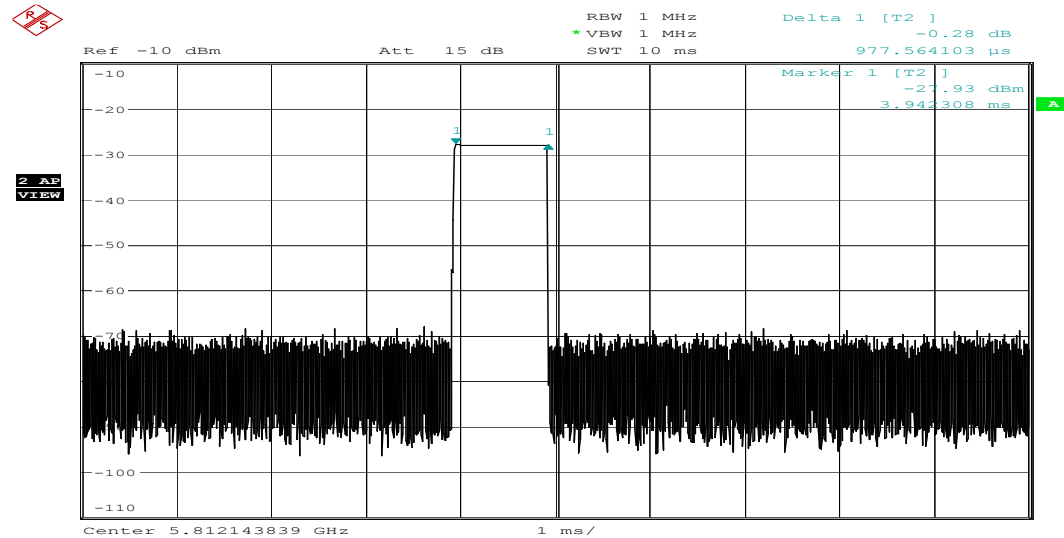
EQUIPMENT: Verizon One, Base Unit

Duty Cycle Plots



OCC BW

Date: 7.JAN.2005 11:40:26



OCC BW

Date: 7.JAN.2005 11:39:29

Duty Cycle Correction Calculation
 $20\log(9.8\text{mS}/100\text{mS}) = -20.2\text{dB}$

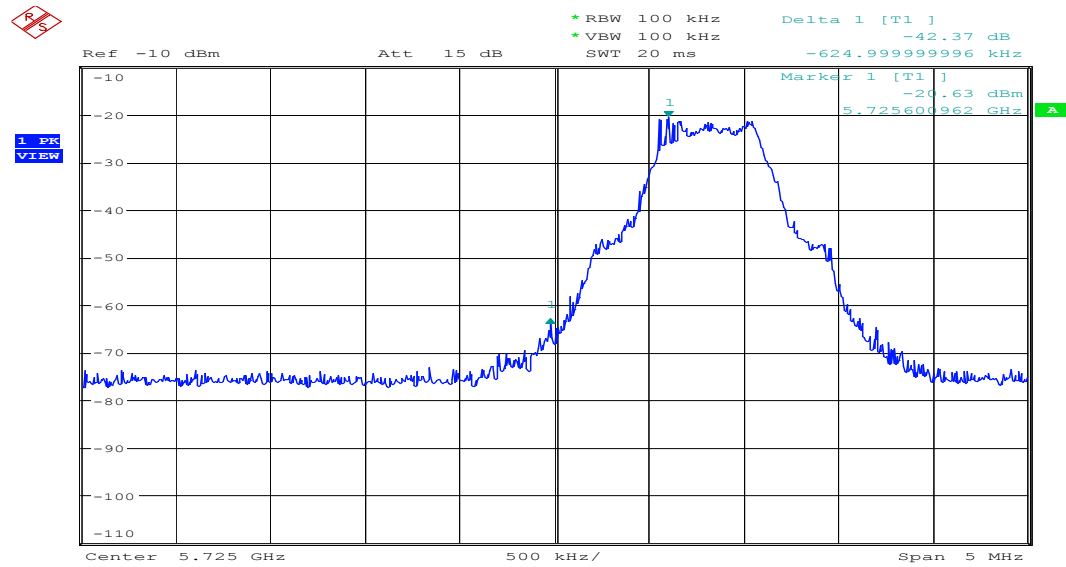
EQUIPMENT: Verizon One, Base Unit

Set-up Photo

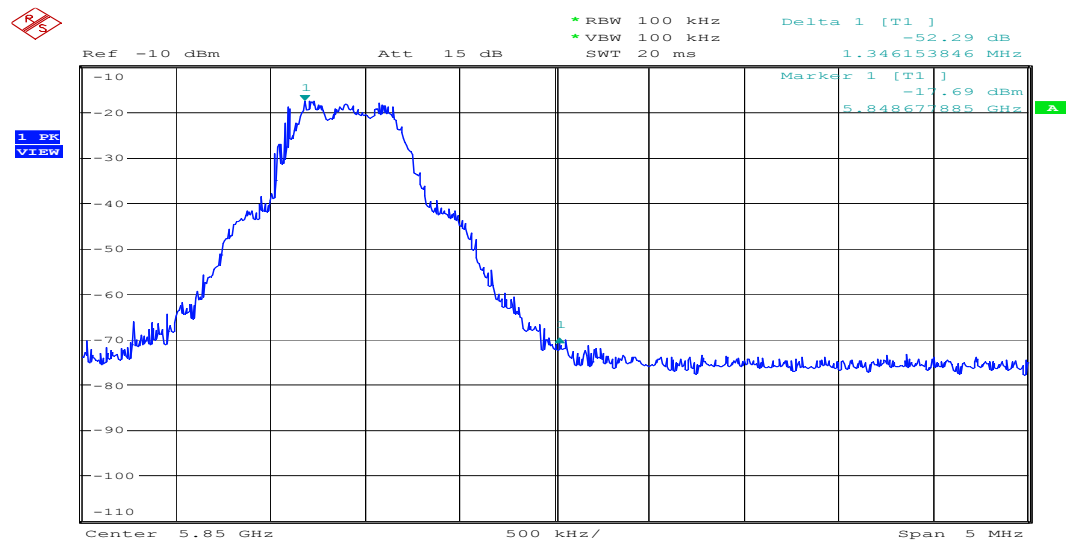


EQUIPMENT: Verizon One, Base Unit

20dBc Bandedge



OCC BW
Date: 7.JAN.2005 15:42:32

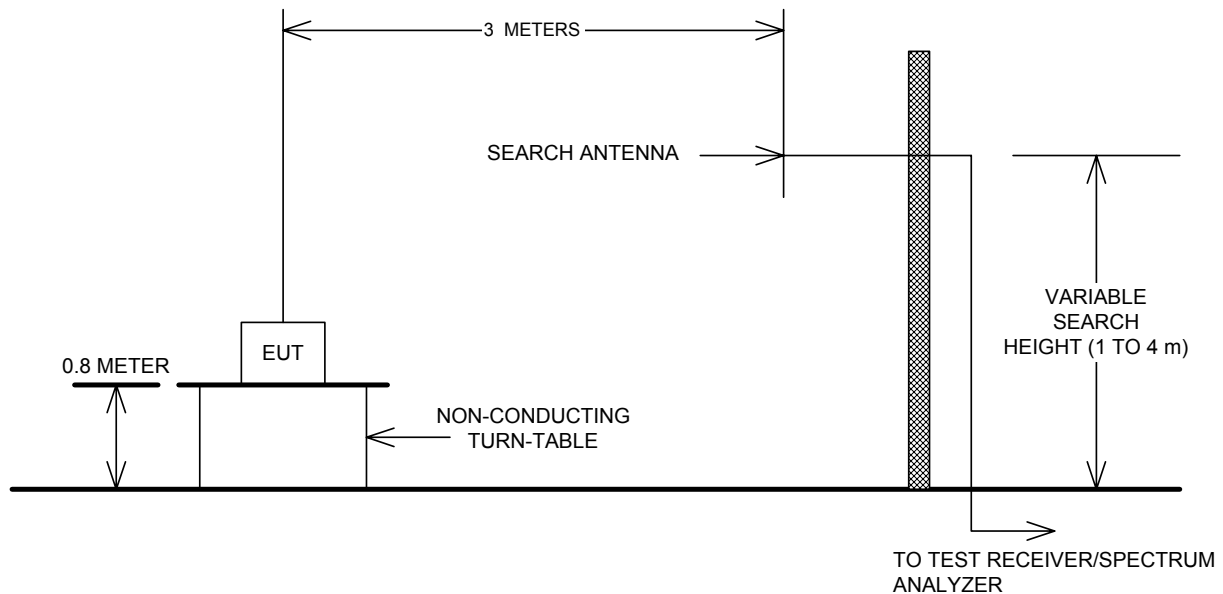


OCC BW
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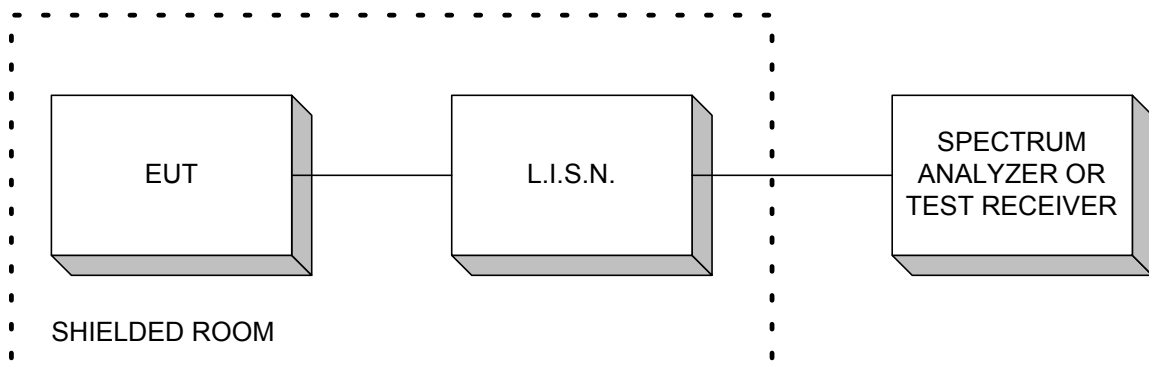
EQUIPMENT: Verizon One, Base Unit

Section 10. Block Diagrams

Test Site For Radiated Emissions



Conducted Emissions



*EQUIPMENT: Verizon One, Base Unit***Section 11. Test Equipment List**

Equipment List - Radiated Emissions

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	Spectrum Analyzer	Rhode & Schwarz	FSU46	FA001877	26 May 04	26 May 05
1 Year	Signal Generator	Rohde & Schwarz	SMR40	FA001879	28 May 04	28 May 05
1 Year	Receiver	Rohde & Schwarz	ESVS-30	FA001437	July 26/04	July 26/05
1 Year	Horn Antenna	EMCO #5	3116	FA001847	19 Jan 04	19 Jan 05
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 18/03	Dec. 18/04
1 Year	Biconical (1) Antenna	EMCO	3109	FA000805	April 23/04	April 23/05
COU	9.6 – 18 GHz Passband Filter	Dorado	62-SMA	-----	COU	COU
COU	5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU	COU
COU	18.0 – 26.0 GHz Amplifier	NARDA	BBS-1826N612	FA001550	COU	COU
1 Year	LISN	FCC	FCC-LISN-50-100-1-02	FA001775	April 29/04	April 29/05
1 Year	LISN	FCC	FCC-LISN-50-100-1-02	FA001777	April 29/04	April 29/05
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001432	May 25/04	May 25/05
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001432	May 25/04	May 25/05
NCR	Biconlog	EMCO	3146	FA000815	NCR	NCR
Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use, OUT = Out For CAL/Repair						