



TEST REPORT FOR CERTIFICATION

Test Report: 2005 020092-FCC
FCC ID:

Equipment Under Test: CDMA 800 Cellular Phone
Model: CV330

Applicant: VITELCOM MOBILE TECHNOLOGY U.S.A.
2480 Irvine Boulevard #172
Tustin, California 92782
714.389.1169

In Accordance With: FCC Part 22, Subpart H

Tested By: Nemko USA Inc.
11696 Sorrento Valley Road
San Diego, CA 92121-1024

Date: February 25, 2005

Total Number of Pages: 39

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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 FCC Part 22, Subpart H.

DOCUMENT HISTORY

REVISION	DATE	COMMENTS
-	February 25, 2005	Prepared By: A. Laudani
-	February 25, 2005	Initial Release: R. L. Hill

NOTE: Nemko USA, Inc. hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4 (1992) "Methods and Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz":

- The unit described in this report was received at Nemko USA, Inc.'s facilities on February 18, 2005. Testing was performed on the unit described in this report on February 18, 2005.
- The Test Results reported herein apply only to the Unit actually tested, and to substantially identical Units.
- This report does not imply the endorsement of the Federal Communications Commission (FCC), NVLAP or any other government agency.

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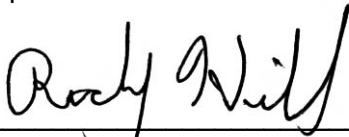
CERTIFICATION

Nemko USA, Inc., an independent Electromagnetic Compatibility (EMC) Test Laboratory, produced this Test Report and performed the Radio Frequency Interference (RFI) testing and data evaluation contained herein.

Nemko USA, Inc.'s measurement facility is currently registered with the United States Federal Communications Commission (FCC) in accordance with the provisions of 47 United States Code (CFR) Part 2, Subpart I, Section 2.948(a). A current description of Nemko USA, Inc.'s measurement facility is on file with the FCC. Nemko USA Inc. has additionally satisfied the FCC that it complies with the requirements set forth in 47 CFR Part 2, Subpart I, Section 2.948(d) regarding the accreditation of EMC laboratories. As a result, the FCC has placed Nemko USA Inc. on its list of EMC laboratories approved to perform Declaration of Conformity (DOC) procedure testing.

The RFI testing, test data collection and test data evaluation were accomplished in accordance with the ANSI C63.4-1992 Standard, and in accordance with the applicable sections of the FCC rules (47 CFR Parts 2 and 18), digital devices. The administrative summary of this test report provides a description of the test sample

I hereby certify that the test data, test data evaluation, and equipment configurations used to compile this test report are a true and accurate representation of the test sample's radio frequency interference characteristics as of the test date(s), and, for the design of the test sample.



Ricky L. Hill, Senior EMC Engineer

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	2.1046	Complies
Audio Frequency Response	2.1047	NA ¹
Audio Low Pass Filter Response	2.1047	NA ¹
Modulation Limiting	2.1047	NA ¹
Occupied Bandwidth	2.1049	Complies
Spurious Emissions at Antenna Terminals	2.1051	Complies
Field Strength of Spurious Emissions	2.1053	Complies
Frequency Stability	2.1055	Complies

Footnotes For N/A's: ¹ Digital Modulation

2.1033(c) (8) 800 MHz Digital CDMA

The input supply to the transmitter was set at 3.6 Volts. The RF power output was measured with the indicated voltage and current applied into the final RF amplifying device(s).

RF Output, DC Current and RF Input Power are all average values.

Measured Maximum RF output: 24dBm (0.25W)

Measured DC voltage: 3.6V

Measured DC current: 610mA

Test Conditions:

Indoor Temperature: 25 °C
 Humidity: 40 %

Outdoor Temperature: 16-18 °C
 Humidity: 63-72 %

Section 2. General Equipment Specification

Manufacturer:	VITELCOM MOBILE TECHNOLOGY U.S.A.
Model No.:	CV330
Serial No.:	N/A
Antenna Model:	SUC Ant S11 Shanghai Universe Communication Electron Co., Ltd
Date Received In Laboratory:	February 18, 2005
Nemko Identification No.:	25-092-VIT
Frequency Ranges:	824.7 – 848.31 MHz
RF Output (Limit):	Part 22: 7 Watts
RF Output (Measured):	Part 22: 0.29 Watts
Emission Designators:	1M24F9W
FCC Identifier:	SELTSM301

Section 3. RF Power Output

Para. No.: 2.1046

Test Performed By: A. Laudani, Sean He	Date of Test: 2-18/23-05
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Minimum Standard: Para. 22.913(a). The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts (38.45 dBm).

Test Results: Complies, see tables below.

Measurement Data:

Radiated Power Level Data – A. L.

Modulation	Frequency (MHz)	Measured (dBm)	Substituted Result (dBm)	Substituted Result Watts
CDMA	824.70	26.2	22.8	0.19
	836.52	26.5	23.5	0.22
	848.31	27.0	23.7	0.23

Conducted Power Level Data –S. H.

Modulation	Frequency (MHz)	Measured (dBm)	Gain (dB)	ERP (dBm)	Result Watts
CDMA	824.70	24.13	0.44	24.57	0.29
	836.52	24.00	0.51	24.51	0.28
	848.30	24.01	0.58	24.59	0.29

ERP = Measured + Antenna Gain

Spectrum Analyzer

Agilent E4405B ESA-E Cal done: 10/19/2004 Cal Due: 10/19/2006 S#US41441400

Conducted measurements are done at 25C and 40% R.H.



NEMKO USA, Inc.

Substitution Method For Radiated

Complete Yes Job # : 25-092-VIT Test # : 1
Preliminary _____ Page 1 of 1

Client Name : VITELCOM MOBILE TECHNOLOGY
EUT Name : CDMA 800 Cellular
EUT Model # : CV330
EUT Part # : _____
EUT Serial # : 001
EUT Config. : _____

Specification : CDMA TX Reference : _____
Rod. Ant. # : NA Temp. (deg. C) : 18 Date : 2/23/2005
Bicon Ant.#: NA Humidity (%) : 72 Time : 13:00
Log Ant.#: NA EUT Voltage : _____ Staff : A. Laudani
DRG Ant. # 529 EUT Frequency : _____ Photo ID: _____
Dipole Ant.#: NA Phase: _____ Peak Bandwidth: RBW-1MHz, VBW-1MHz
Cable#: 60ft Location: SOATS
Preamp#: 842 Distance: 3m
Spec An.#: NA
QP #: NA
PreSelect#: NA

Frequency mHz	target level dBuV/m	Horn Gain dBi	cable loss dB	Signal Generator dBm	Total (ERP) dBm	Spec dBm	Margin dBm
824.70	92.7	0	4.94	27.72	22.8	38.5	-15.7
836.49	92.9	0	5.01	28.47	23.5	38.5	-15.0
849.30	93.3	0	5.11	28.79	23.7	38.5	-14.8
1696.60	68.45	5.41	7.73	-40.37	-42.7	-13	-29.7



Radiated Emissions Data

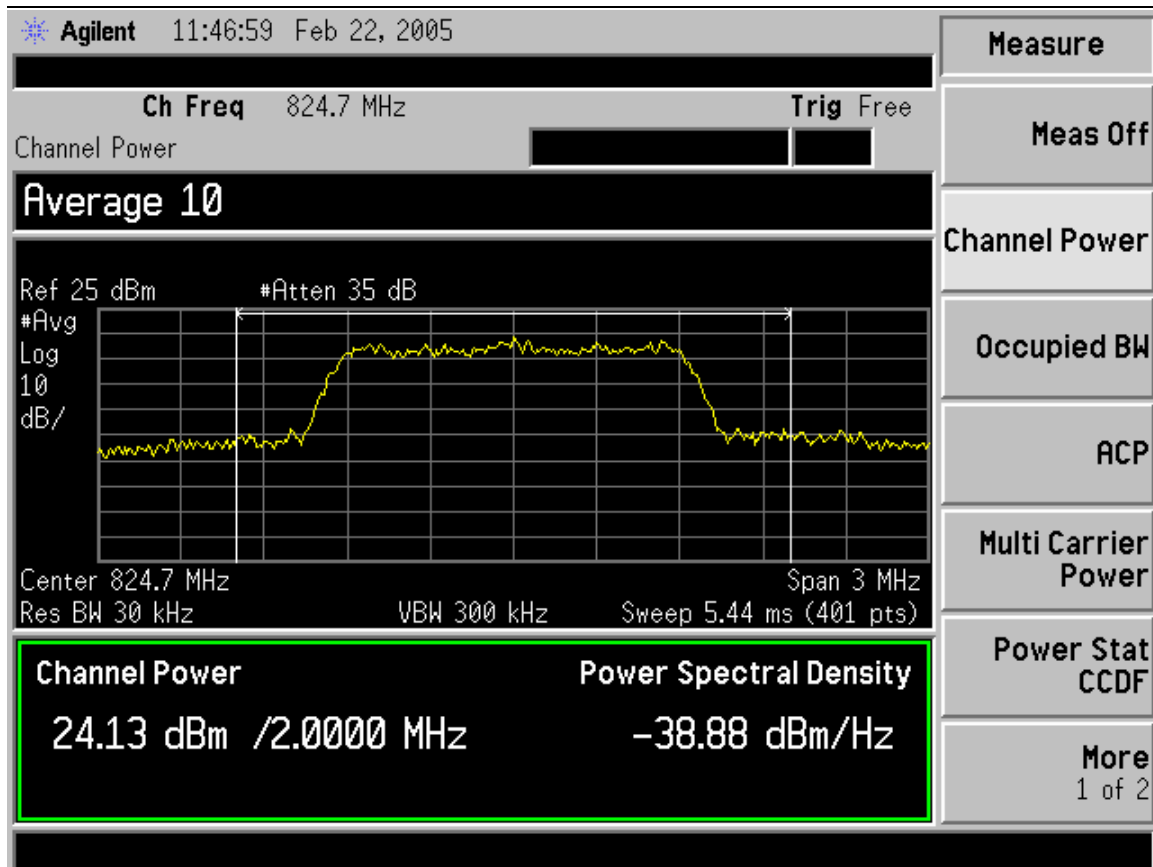
Job #: 24-092-VITR1 Test #: 1
Page 1 of 1

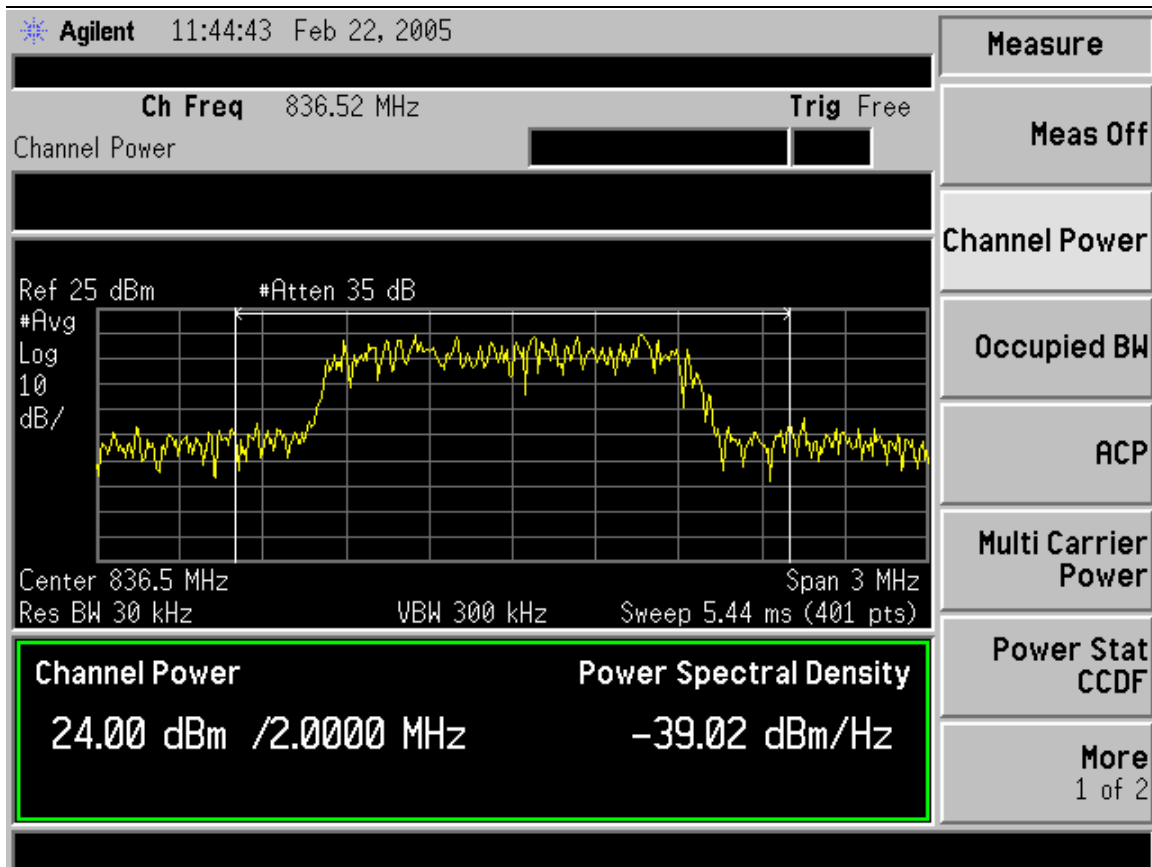
Client Name: VITELCOM MOBILE TECHNOLOGY U.S.A.
EUT Name: CDMA 800 Cellular Phone
EUT Model #: CV330
EUT Part #:
EUT Serial #: 001
EUT Config.: CDMA TX
Specification: FCC Part 22
Reference: Date: 2/18/05
Rod. Ant. #: NA Temp. (deg. C): 16
Bicon Ant. #: NA Humidity (%): 63
Log Ant. #: 112 EUT Voltage: NA
DRG Ant. #: 529 EUT Frequency: NA
Dipole Ant. #: NA Phase: NA
Cable #: 40ft Location: RN#: 90579
Preamp #: 842 Distance: 3m
Spec An. #: 835
QP #: NA
PreSelect #: NA

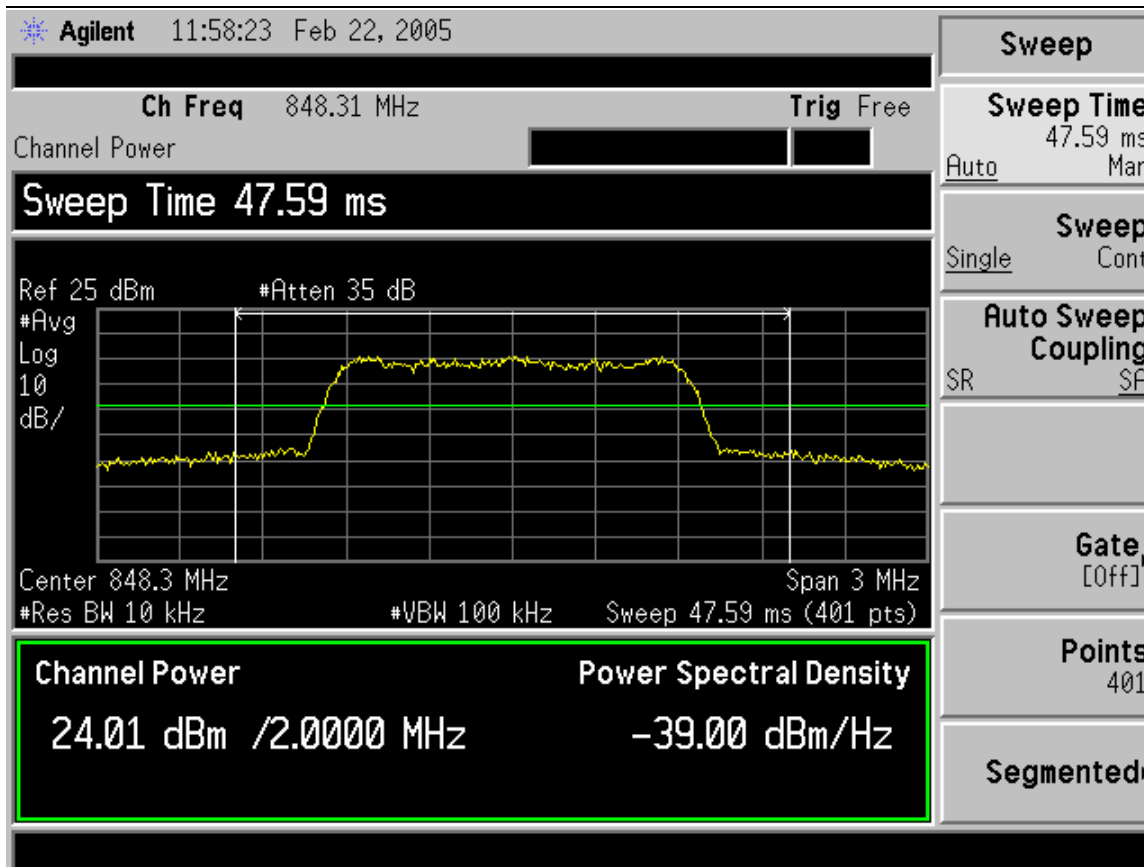
Table with 11 columns: Meas. Freq. (MHz), Vertical (dBuV) pk, Horizontal (dBuV) pk, CF (db), Max Level (dBm) pk, Spec. Limit (ERP) (dBm) pk, Margin dB pk, EUT Rotation, Ant. Height, Pass Fail Unc., Comment. Rows include frequency measurements and pass/fail status.

NS = Not seen, even at a lower RBW

NF = Noise Floor measurement.









Section 4. Audio Frequency Response

Para. No.: 2.1047

Test Performed By:	Date of Test:
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Minimum Standard: Para. No. 15-19-B.

Test Results: Not Applicable, digital modulation

Measurement Data:

Section 5. Audio Low-Pass Filter Response**Para. No.: 2.1047**

Test Performed By:	Date of Test:
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Minimum Standard: Para. No. 22.915 (d).**Test Results:** Not Applicable, digital modulation**Measurement Data:**

- d) Audio filter characteristics. Except as provided in Sec. 22.917, radiotelephony signals applied to the modulator from the modulation limiter must be attenuated as a function of frequency as specified in this paragraph.
- (1) For mobile stations, these signals must be attenuated, relative to the level at 1 kHz, as follows:
 - (i) In the frequency ranges of 3.0 to 5.9 kHz and 6.1 to 15.0 kHz, signals must be attenuated by at least $40 \log(f/3)$ dB, where f is the frequency of the signal in kHz.
 - (ii) In the frequency range of 5.9 to 6.1 kHz, signals must be attenuated at least 35 dB.
 - (iii) In the frequency range above 15 kHz, signals must be attenuated at least 28 dB.



Section 6. Modulation Limiting

Para. No.: 2.1047

Test Performed By:	Date of Test:
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Minimum Standard: 22.915(b)

Test Results: Not Applicable, digital modulation

Measurement Data:

SAT Deviation:
WB Data Deviation:
ST Deviation:

Section 7. Occupied Bandwidth (WB Data)

Para. No.: 2.1049

Test Performed By: Sean He	Date of Test: 2-23-05
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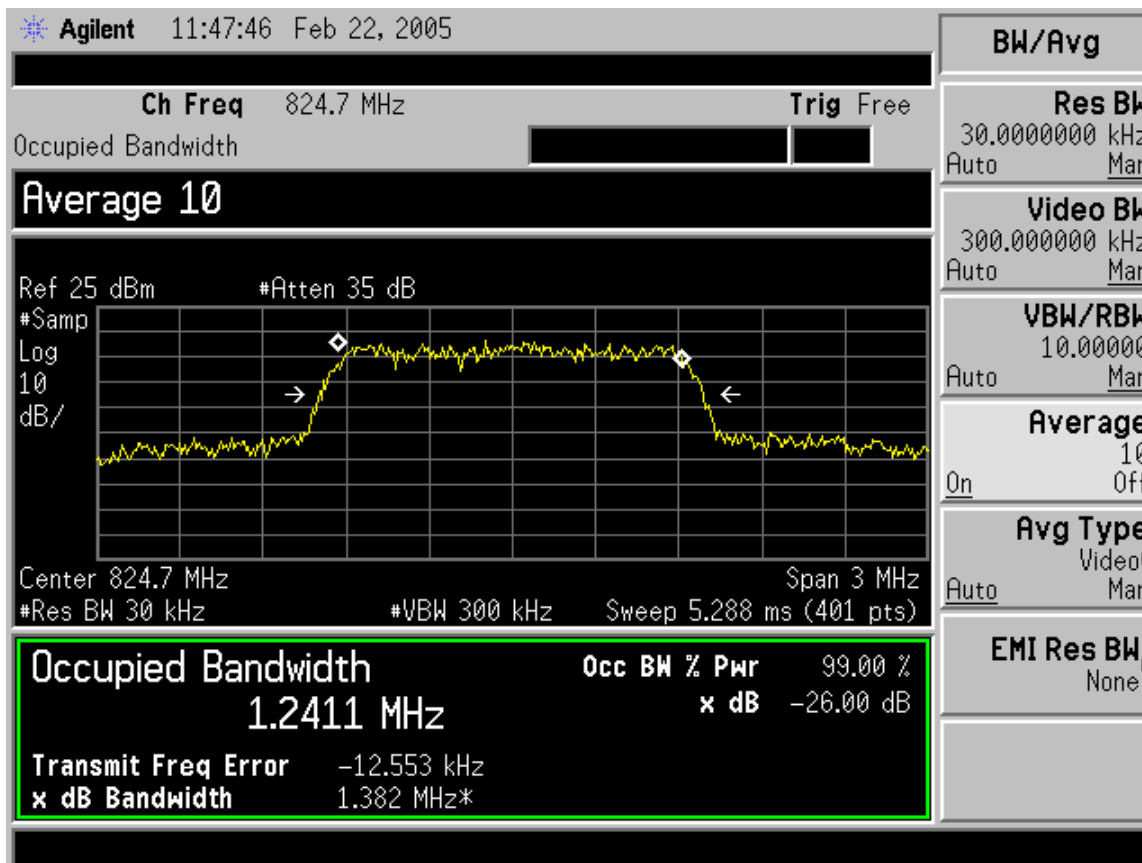
Minimum Standard: 22.917(d)**Test Results:** Complies as Reported below, plots included.

Agilent E4405B ESA-E series Spectrum Analyzer
Cal done: 10/19/2004 Cal Due: 10/19/2006 S#US41441400
Measurements are done at 25C and 40% R.H.

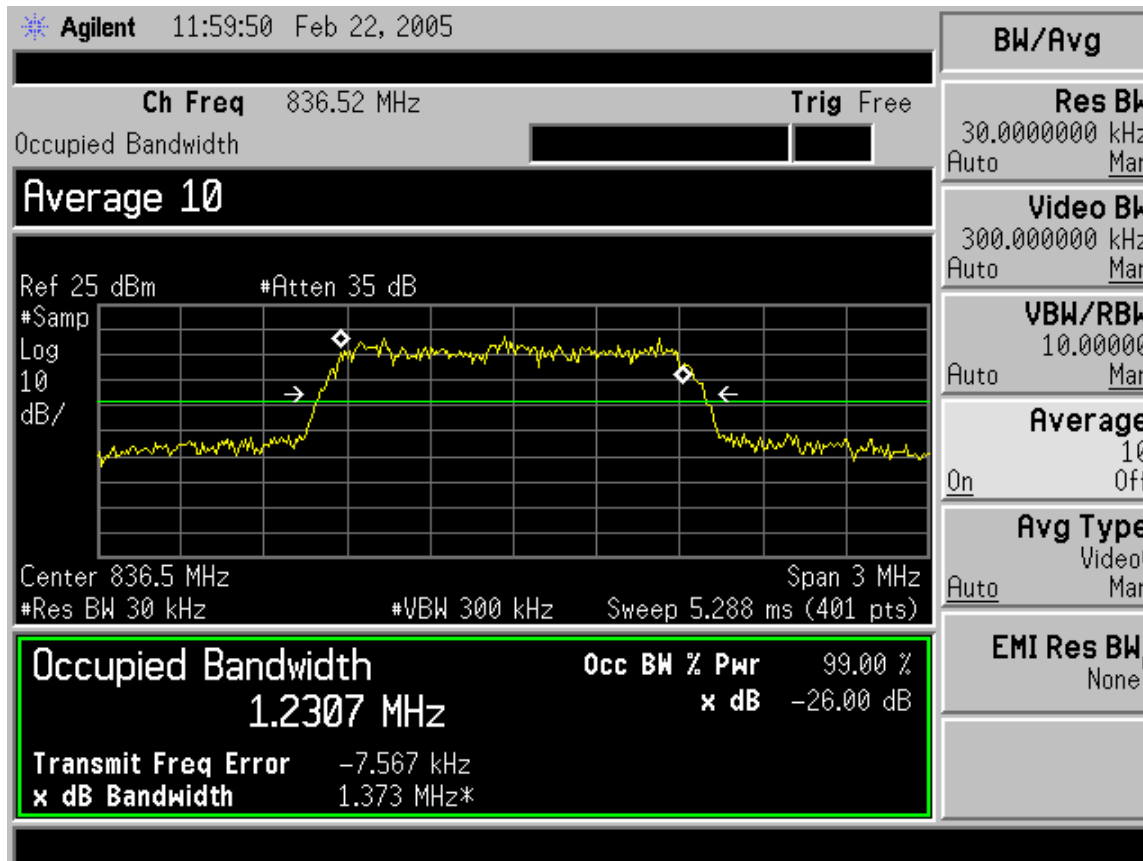
Test Data:

Channel 1013	Low channel	1.24 MHz
Channel 834	Mid Channel	1.23 MHz
Channel 777	High Channel	1.24 MHz

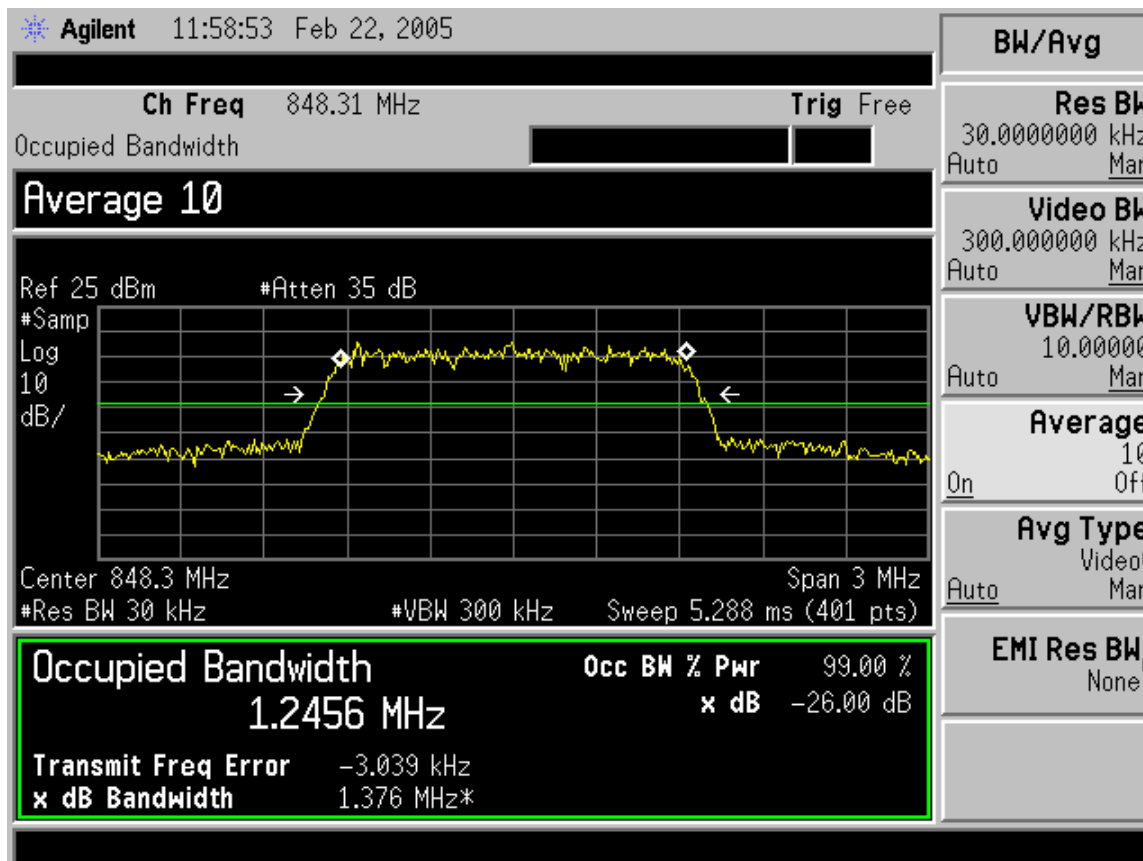
Channel 1013, Low Channel



Channel 384, Mid Channel



Channel 777, High Channel



Section 8. Spurious Emissions At Antenna Terminals

Para. No.: 2.1051

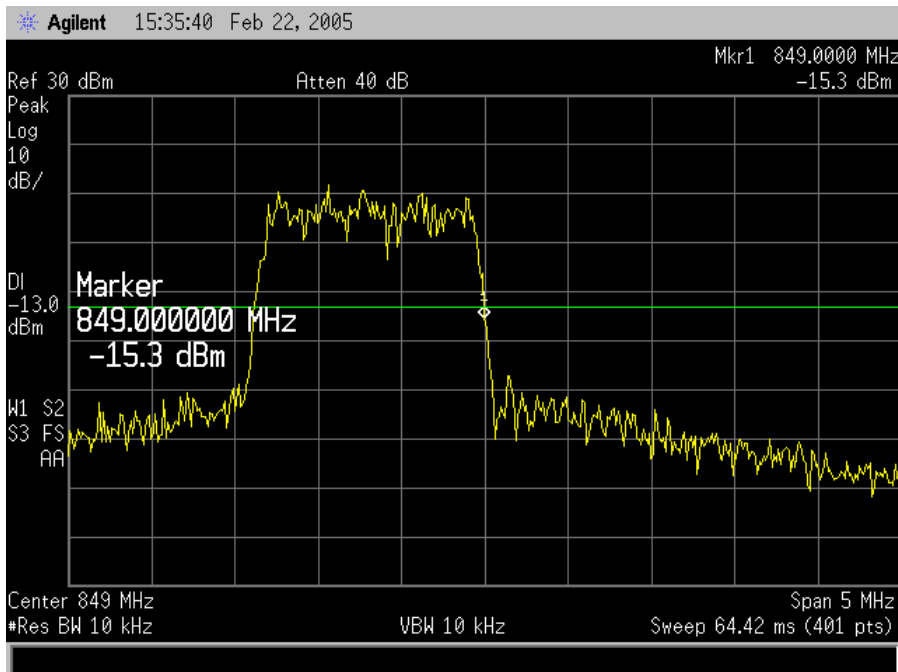
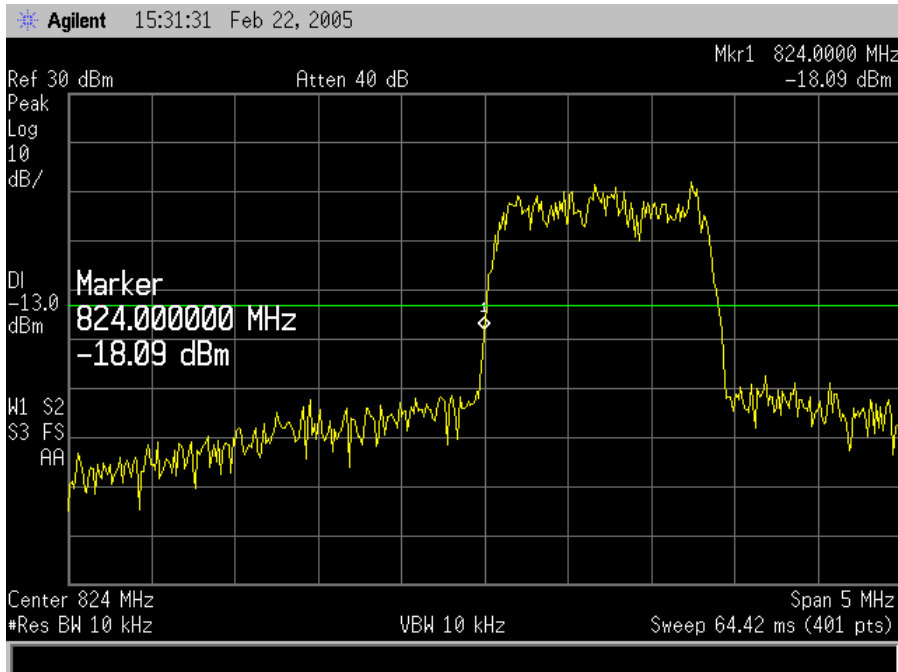
Test Performed By: A. Laudani	Date of Test: 2-18-05
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Minimum Standard: Para. No. 22.917(b)

Test Results: Complies, see plots below. No emissions within 20 dB of the limit were demonstrated from 30 MHz to 9000 MHz (10 harmonics of the fundamental frequency).

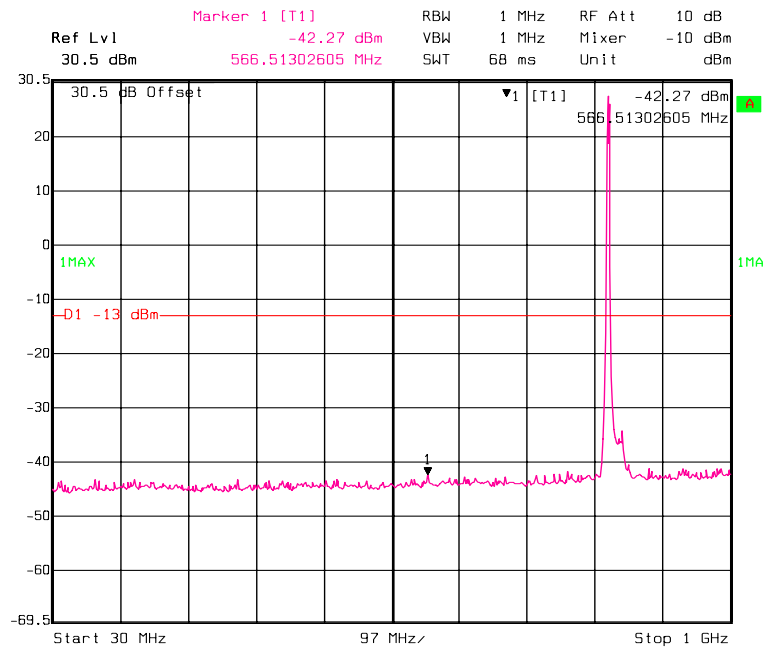
Test Data: See Plots, page 21, for bandedge.
See Plots, pages 22-29, for Out of band Spurious.

BandEdge Plots.

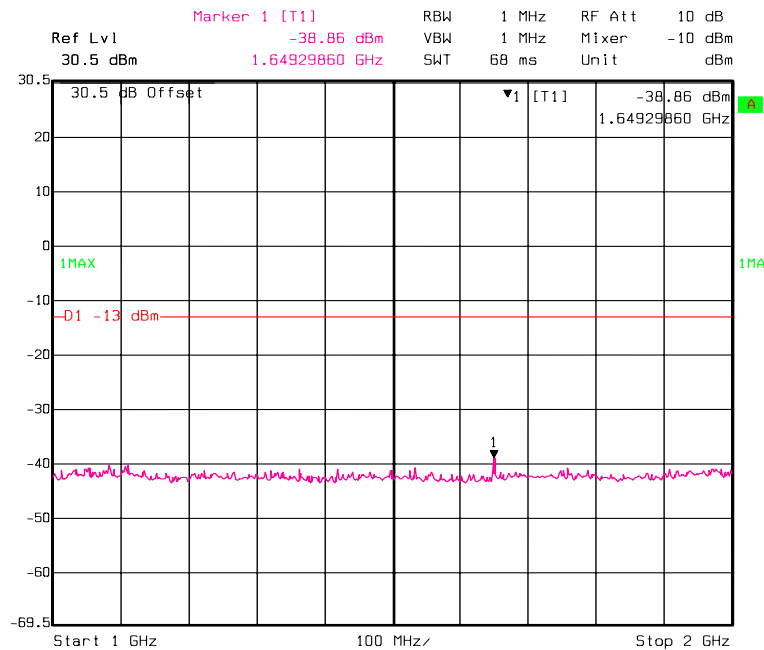




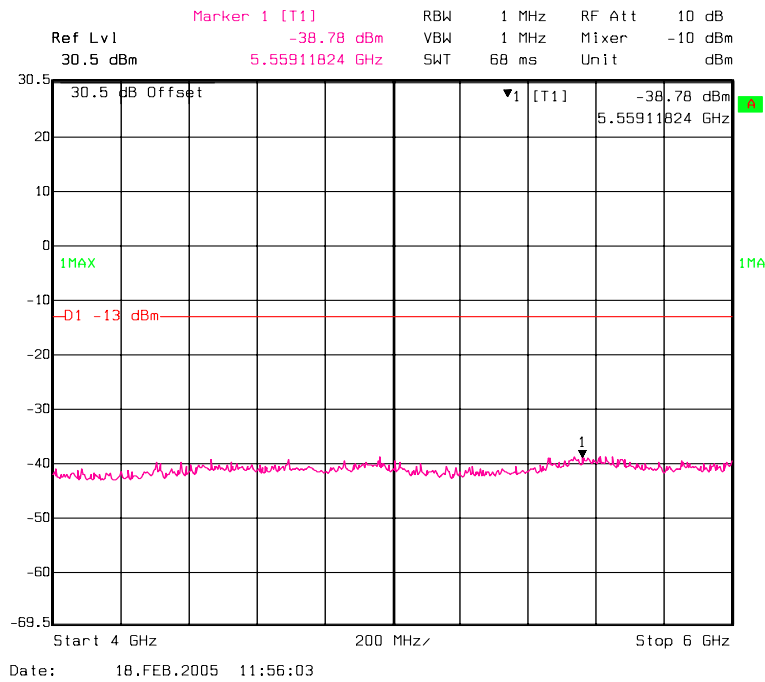
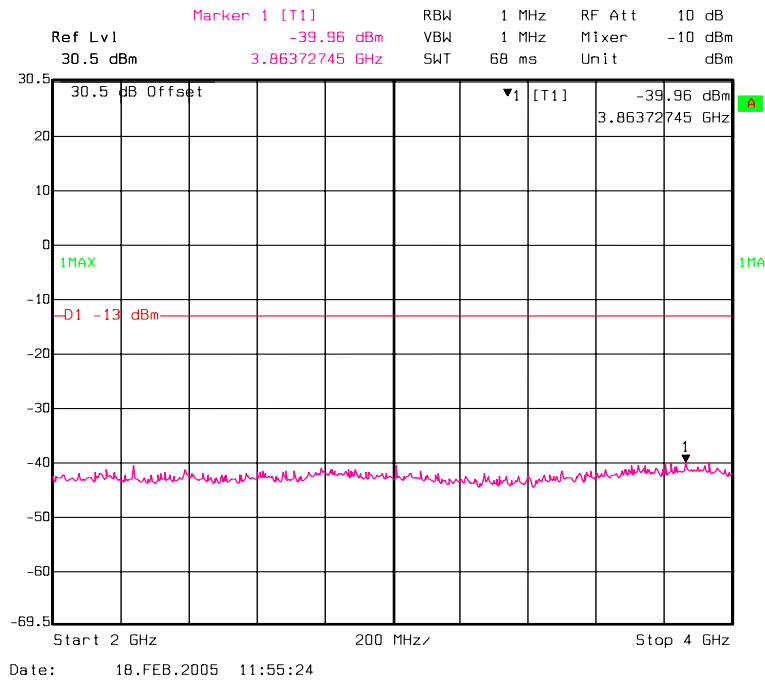
Lowest Channel 824.7 MHz

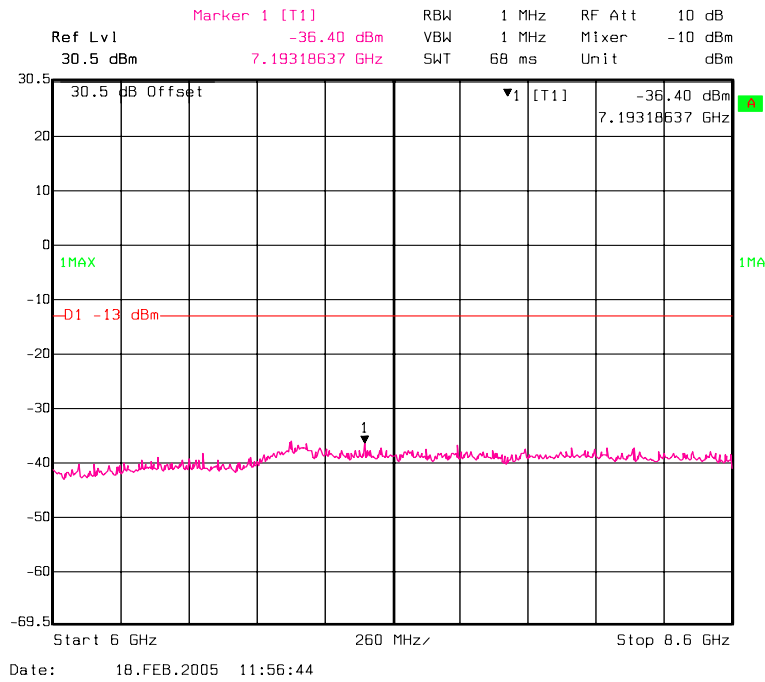


Date: 18.FEB.2005 11:54:23

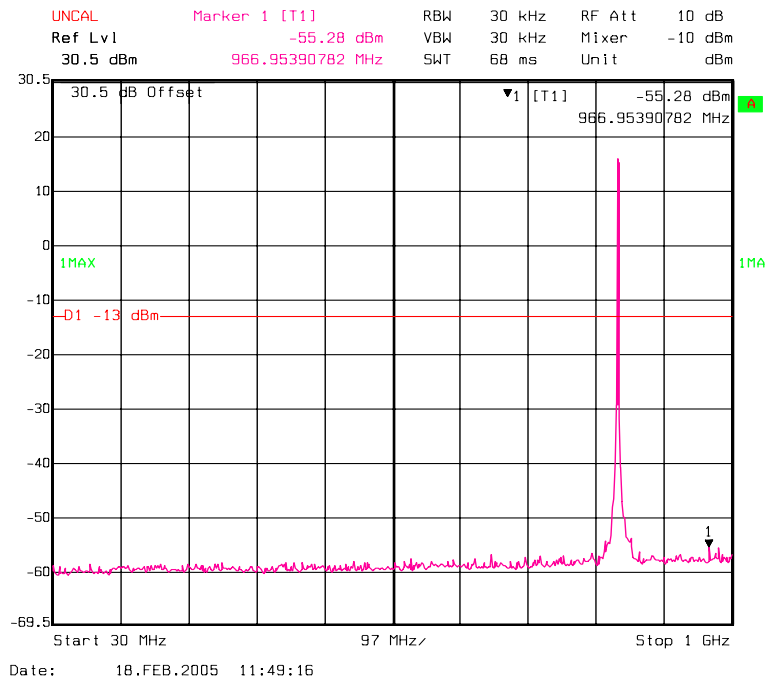


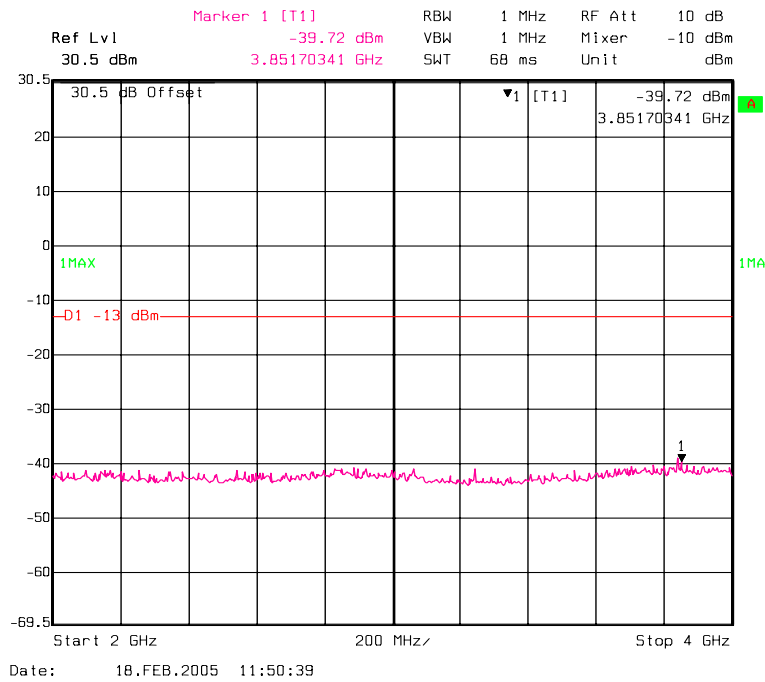
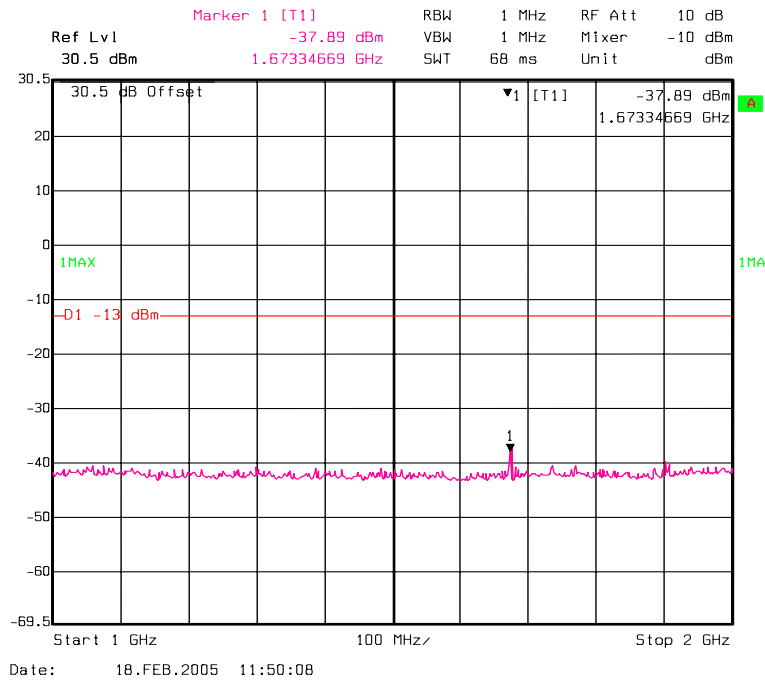
Date: 18.FEB.2005 11:54:55

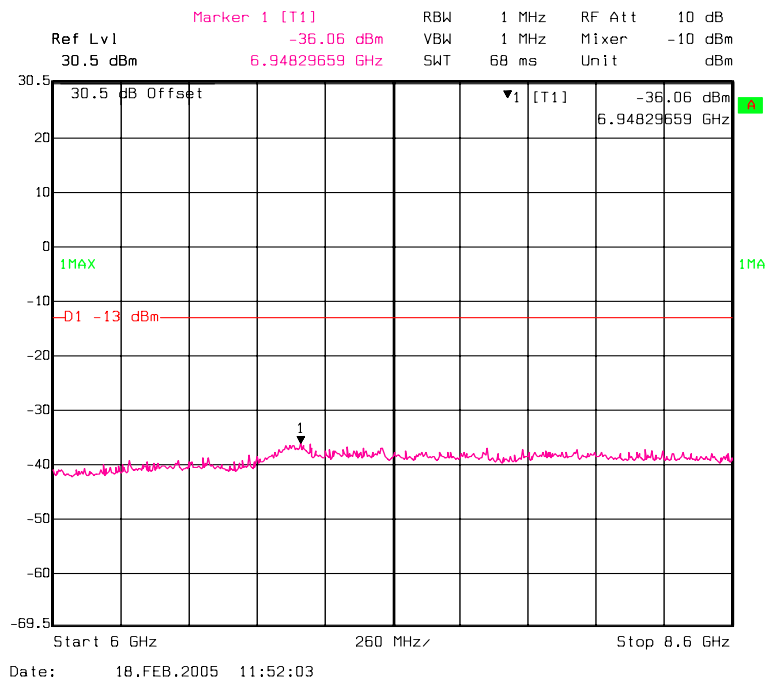
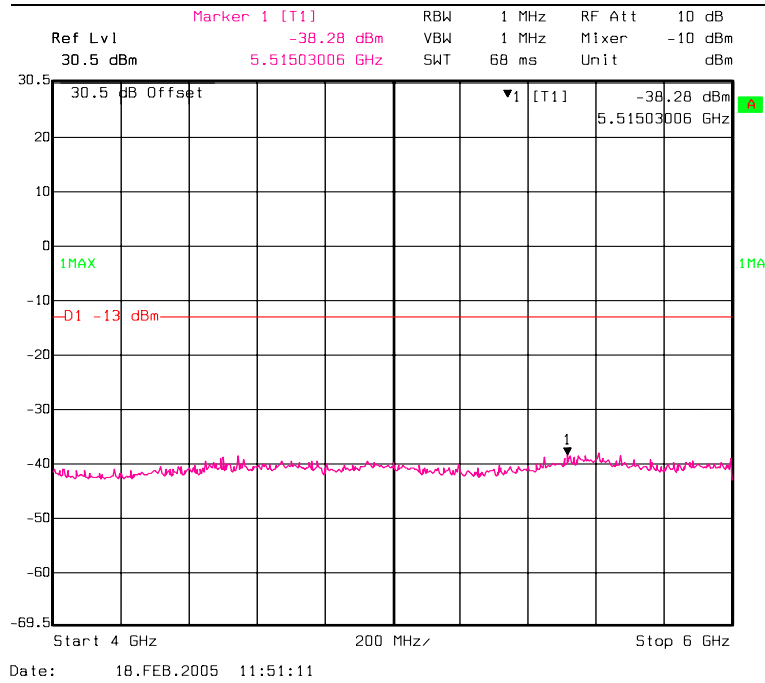




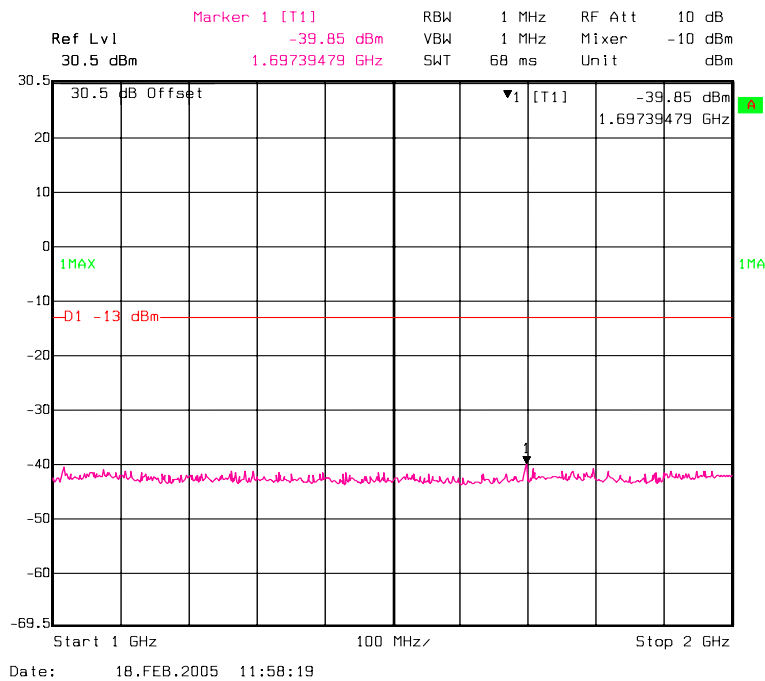
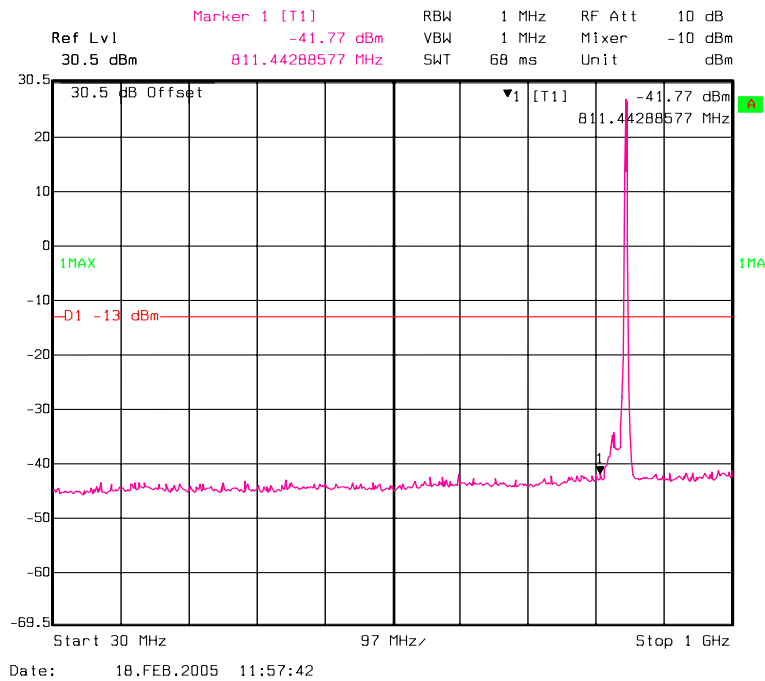
Mid Channel 836.52

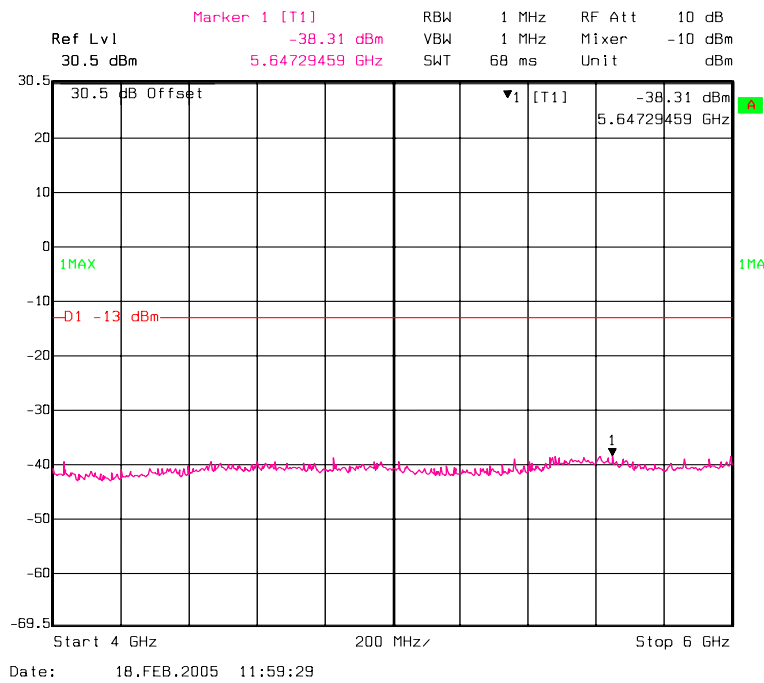
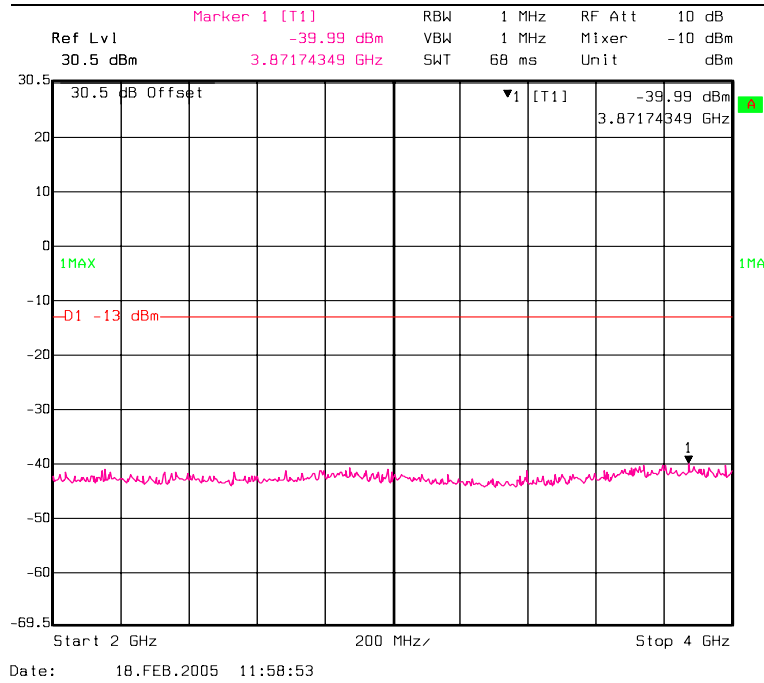


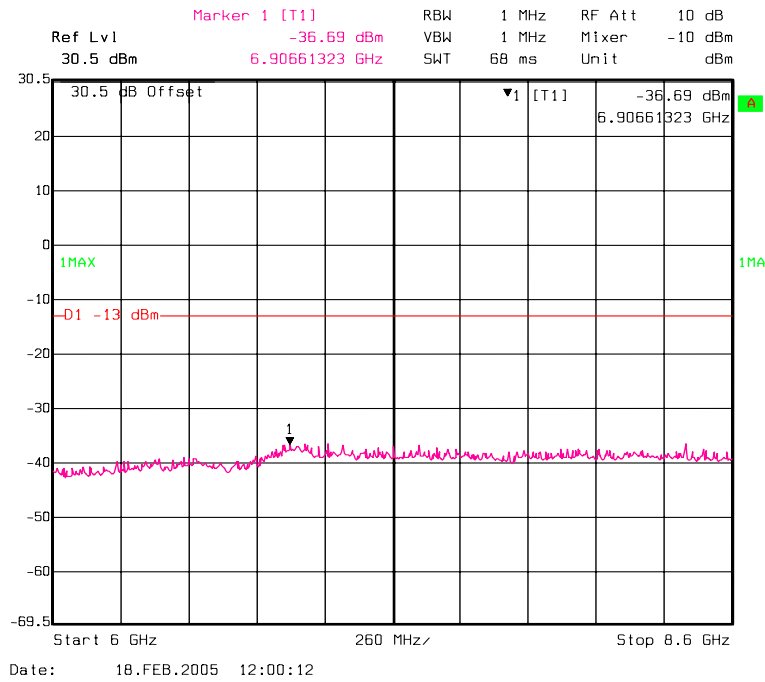




High Channel 848.52









Section 9. Field Strength of Spurious

Para. No.: 2.1053

Test Performed By: A. Laudani

Date of Test: 2/18/2005

Minimum Standard: Para. No. 22.917(b)

Test Results:

The maximum spurious field strength in CDMA mode is -19.3 dB below the limit @ 1696 MHz

As this was within 20 dB of the margin, substitution was performed resulting a margin of -29.7 dB below the limit for this emission.

Test Data: See attached table.

Radiated Emissions

Job # : 24-092-VITR1 Test # : 1
 Page 1 of 1

Client Name :	VITELCOM MOBILE TECHNOLOGY		
EUT Name :	CDMA 800 Cellular Phone		
EUT Model # :	CV330		
EUT Part # :			
EUT Serial # :	001		
EUT Config. :			
Specification :	CDMA TX		
	FCC Part 22		Reference :
Rod. Ant. # :	NA	Temp. (deg. C) :	16
Bicon Ant.# :	NA	Humidity (%) :	63
Log Ant.# :	112	EUT Voltage :	NA
DRG Ant. # :	529	EUT Frequency :	NA
Dipole Ant.# :	NA	Phase :	NA
Cable# :	40ft	Location :	RN#: 90579
Preamp# :	842	Distance :	3m
Spec An.# :	835		
QP # :	NA		
PreSelect# :	NA		
		Date :	2/18/05
		Time :	9:30 AM
		Staff :	A. Laudani
		Photo ID :	
		Peak Bandwidth :	1 MHz
		Video Bandwidth :	1 MHz

Meas. Freq. (MHz)	Vertical (dBuV) pk	Horizontal (dBuV) pk	CF (db)	Max Level (dBm) pk	Spec. Limit (ERP) (dBm) pk	Margin dB pk	EUT Rotation	Ant. Height	Pass Fail Unc.	Comment
824.7	92.7	89.7	30.8	26.2	33.0	-6.8	90.0	1.5	PASS	
1649.4	66.19	60.19	-3.5	-34.6	-13.0	-21.6		1.1	PASS	
2474.1	60.73	57.17	1.1	-35.4	-13.0	-22.4		1.0	PASS	
3298.8	61.78	64.13	-4.0	-37.1	-13.0	-24.1		1.0	PASS	
4123.5	56.78	54.09	-0.8	-41.3	-13.0	-28.3		1.0	PASS	
4948.2	50.76	49.66	-1.2	-47.7	-13.0	-34.7			PASS	NS, NF
5772.9	49.03	48.64	2.5	-45.7	-13.0	-32.7			PASS	NS, NF
6597.6	48.39	48.95	3.4	-44.9	-13.0	-31.9			PASS	NS, NF
7422.3	48.34	47.37	5.8	-43.1	-13.0	-30.1			PASS	NS, NF
8247	47.22	47.69	7.5	-42.1	-13.0	-29.1			PASS	NS, NF
836.49	92.89	89.9	30.9	26.5	33.0	-6.5	90.0	1.2	PASS	
1672.98	65.39	61.51	-3.5	-35.4	-13.0	-22.4		1.1	PASS	
2509.47	57.18	56.31	2.0	-38.1	-13.0	-25.1		1.0	PASS	
3345.96	58.24	55.6	-4.0	-43.0	-13.0	-30.0		1.0	PASS	
4182.45	52.92	51.7	-0.8	-45.1	-13.0	-32.1		1.0	PASS	
5018.94	49.36	49.46	1.7	-46.1	-13.0	-33.1			PASS	NS, NF
5855.43	48.94	47.47	2.5	-45.8	-13.0	-32.8			PASS	NS, NF
6691.92	47.99	47.07	3.4	-45.9	-13.0	-32.9			PASS	NS, NF
7528.41	47.1	47.92	7.0	-42.3	-13.0	-29.3			PASS	NS, NF
8364.90	47.49	47.66	7.5	-42.1	-13.0	-29.1			PASS	NS, NF
848.30	93.31	90.35	30.9	27.0	33.0	-6.1	90.0	1.4	PASS	
1696.60	68.45	65.78	-3.5	-32.3	-13.0	-19.3		1.1	PASS	
2544.90	59.31	59.82	2.0	-35.4	-13.0	-22.4		1.0	PASS	
3393.20	61.74	63.30	-4.0	-38.0	-13.0	-25.0		1.0	PASS	
4241.50	54.58	56.96	-0.8	-41.1	-13.0	-28.1		1.0	PASS	
5089.80	50.48	50.69	1.7	-44.9	-13.0	-31.9			PASS	NS, NF
5938.10	48.30	47.40	2.5	-46.5	-13.0	-33.5			PASS	NS, NF
6786.40	47.81	47.40	3.4	-46.1	-13.0	-33.1			PASS	NS, NF
7634.70	47.05	47.15	7.0	-43.1	-13.0	-30.1			PASS	NS, NF
8483.00	46.74	46.74	7.5	-43.0	-13.0	-30.0			PASS	NS, NF

NS = Not seen, even at a lower RBW

NF = Noise Floor measurement.

Set Up Photos

Radiated Emissions





Section 10. Frequency Stability

Para. No.: 2.1055

Test Performed By: Sean He	Date of Test: 2-23-05
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Minimum Standard: Para. No. 22.355
 TSM CV330-VTL301

Test Results: Complies, see table below

Frequency stability measurements were made over the temperature range of -30°C to +60°C. The frequency error is measured with HP8960. Climatic control was accomplished using a temperature chamber. The temperature was first lowered to -30°C and then raised hourly in 10°C increments. The unit remained in the chamber during temperature transitions and during the measurement process.

Wireless communication Test Set

Agilent 8960 Series 10 E5515C Cal done: 8/8/2004 Cal Due: 8/8/2005 S# GB42140510

Temperature Chamber

TestEquity Halfcube Model 105 Cal done: 5/24/2004 Cal Due: 11/24/2005 S# 0500415

Measurement Data:

Temperature(°C)	Freq Error (Hz)			PPM		
	Ch1013	Ch384	Ch777	Ch1013	Ch384	Ch777
-30	9.0	9.2	8.1	0.0109	0.0110	0.0098
-20	9.4	8.7	8.6	0.0114	0.0104	0.0104
-10	9.2	8.5	7.9	0.0112	0.0102	0.0095
0	9.7	9.5	8.2	0.0118	0.0114	0.0099
10	8.0	7.9	9.7	0.0097	0.0094	0.0117
20	9.5	8.4	8.0	0.0115	0.0100	0.0096
30	9.9	9.3	8.1	0.0120	0.0111	0.0098
40	8.2	8.8	8.9	0.0099	0.0105	0.0107
50	9.1	9.6	9.2	0.0110	0.0115	0.0111

$$\text{PPM} = \text{Frequency Error (Hz)} / \text{Frequency (MHz)} \times 10^6$$

Frequency Stability over Voltage Variation

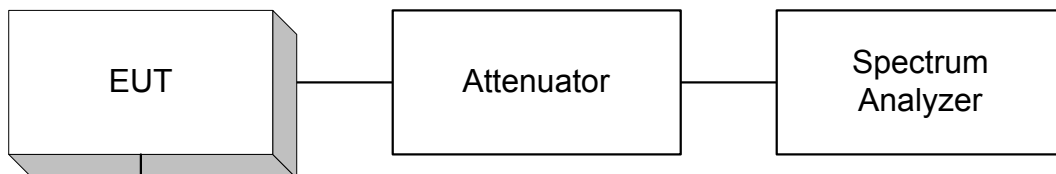
Date:	22-Feb-05	
Mode:	CDMA 800	
Channel:	384	

Voltage	Frequency Error	Frequency Error
Volt	HZ	PPM
4.2 volt	7.40	0.0088
4.1 volt	6.50	0.0078
4.0 volt	-7.20	-0.0086
3.9 volt	8.40	0.0100
3.8 volt	7.20	0.0086
3.7 volt	6.80	0.0081
3.6 volt	7.20	0.0086
3.5 volt	7.90	0.0094
3.4 volt	-8.20	-0.0098

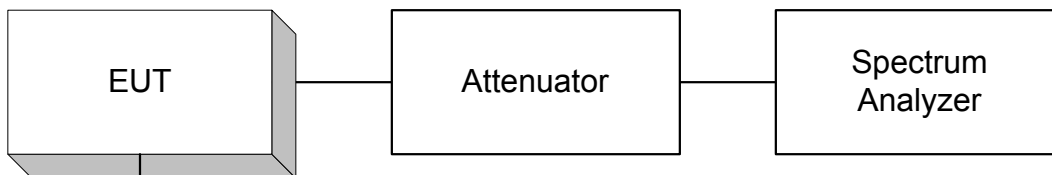
3.4 Volts is mfg's declared minimum voltage.

Section 11. Block Diagrams

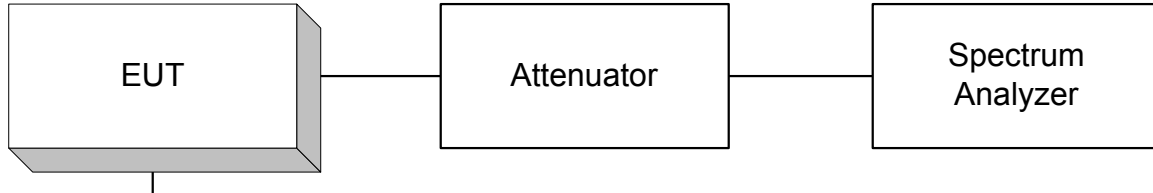
Para. No. 2.1046 - R.F. Power Output



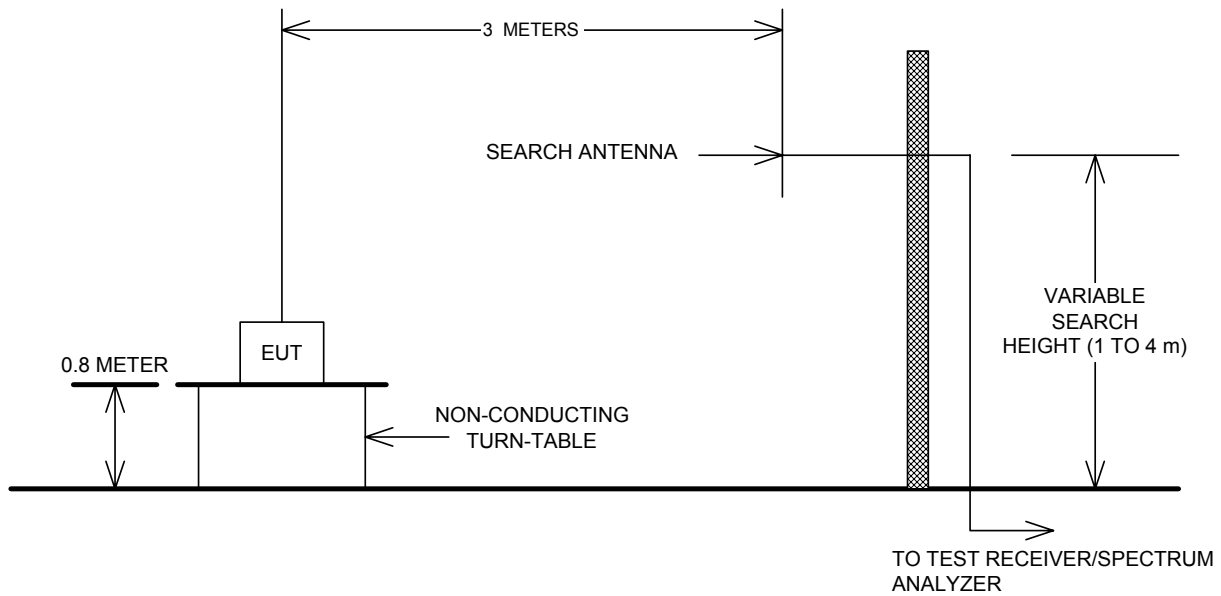
Para. No. 2.1049 - Occupied Bandwidth



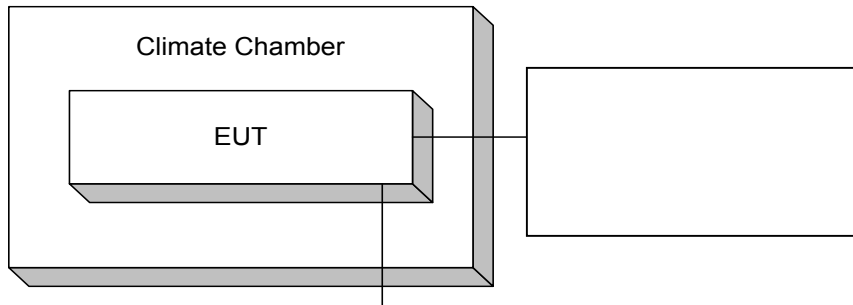
Para. No. 2.1051 Spurious Emissions at Antenna Terminals



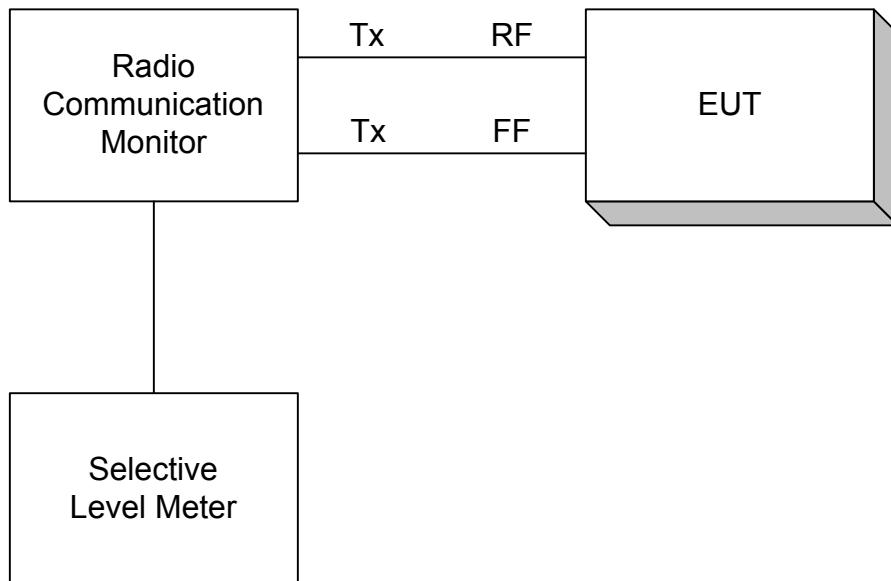
Para. No. 2.1053 - Field Strength of Spurious Radiation



Para. No. 2.1055 - Frequency Stability



**Para. No. 2.1045 – Audio Frequency Response, Audio Low Pass Filter Response
And Modulation Limiting**



Section 13. Test Equipment List

Emissions Test Equipment						
Client	VITELCOM MOBILE TECHNOLOGY U.S.A.		EUT Name	CDMA 800 Cellular Phone		
PAN #	25-092-VIT		EUT Model	TSM CV330-VTL301		
	<i>Device Type</i>	<i>Model #</i>	<i>MFG</i>	<i>Asset #</i>	<i>SN</i>	<i>Cal Due</i>
OATS #2 (South)						
	Spectrum Analyzer	1088.3494.30	R & S	835	830320/002	12-30-05
	Antenna, Ridged Guide	3115	EMCO	529	2505	11-19-05
	Antenna, Ridged Guide	3115	EMCO	752	9609-4943	12-19-05
	Signal Generator	1018	Gigatronics	440	314104	9/22/2005
	Dipole Set	3121C	EMCO	756	1215	8-27-05
	Antenna, LPA	3146	EMCO	112	9101-2988	9-19-05
	Attenuator, 30dB	8491B	HP	332	X0475	4-21-05

NA: Not Applicable
 NCR: No Cal Required
 COU: CAL On Use