



Test Report: 6W58614.4, issue 2


Applicant: Exavera Technologies, Inc.
195 New Hampshire Avenue
Suite 155
Portsmouth, NH 03801

Equipment Under Test: Verafi Access Reading Point VF-2200

FCC ID: T2RVF2200

In Accordance With: **FCC Part 15, Subpart C, 15.249**

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

Authorized By: 
Jason Nixon, Telecom Specialist

Date: September 10, 2007

Total Number of Pages: 20

EQUIPMENT: Verafi Access Reading Point VF-2200
FCC ID: T2RVF2200

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EQUIPMENT: Verafi Access Reading Point VF-2200

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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 15.249. All tests were conducted using measurement procedure ANSI C63.4-2003. Radiated Emissions were 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: 
Xu Jin, Wireless Specialist

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This report applies only to the items tested.

EQUIPMENT: Verafi Access Reading Point VF-2200

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Section 2. Summary Of Test Data

Summary Of Test Data

Name Of Test	Para. No.	Result
Power line Conducted Emissions	15.207(a)	Complies
Radiated Emissions	15.249	Complies

Test Conditions:

Indoor

Temperature: 22°C

Humidity: 52%

Outdoor

Temperature: 25°C

Humidity: 50%

EQUIPMENT: Verafi Access Reading Point VF-2200

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Section 3. General Equipment Specification

Manufacturer: Exavera Technologies

Model No.: Verafi Access Reading Point VF-2200

Date Received In Laboratory: July 9, 2007

Frequency Range: Tx: 905.3---925.3MHz
Rx: 907.8---927.8MHz

Modulation: FSK

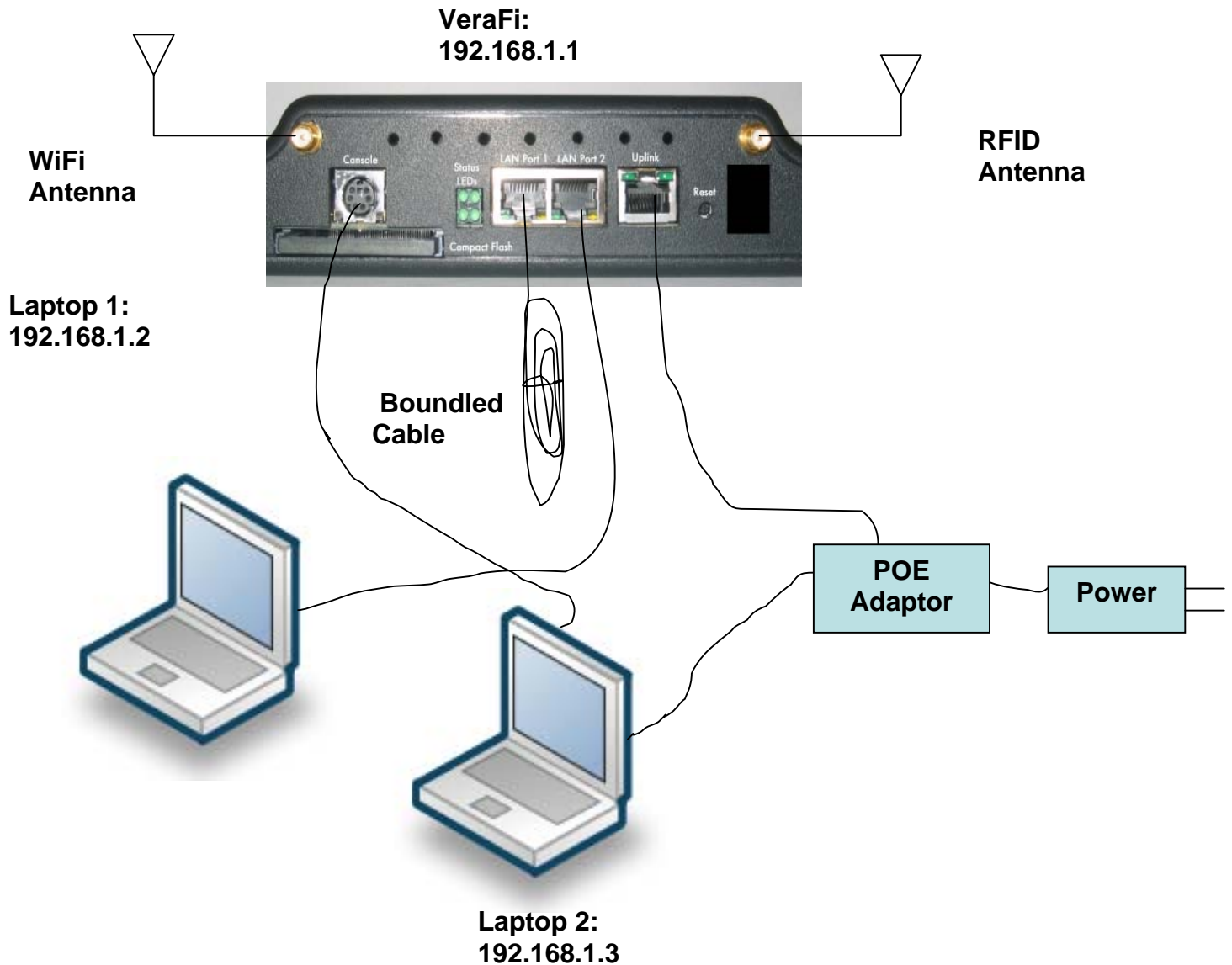
Power Source: 120VAC

Antenna Information ANT-916-CW-HW Dipole Antenna : -2.96 dBi

EQUIPMENT: Verafi Access Reading Point VF-2200

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Test Setup Information:



*EQUIPMENT: Verafi Access Reading Point VF-2200**FCC ID: T2RVF2200*

Section 4. Powerline Conducted Emissions

Para. No.: 15.207 (a)

Test Performed By: Xu Jin	Date of Test: Aug 17, 2007
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§15.207 Conducted limits.

a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

- Decreases with the logarithm of the frequency.

Test Results: Complies.

Measurement Data: See attached graph(s).

Note: Spectral plots have been corrected with cable, LISN, and attenuator losses to show compliance with limits

EQUIPMENT: Verafi Access Reading Point VF-2200
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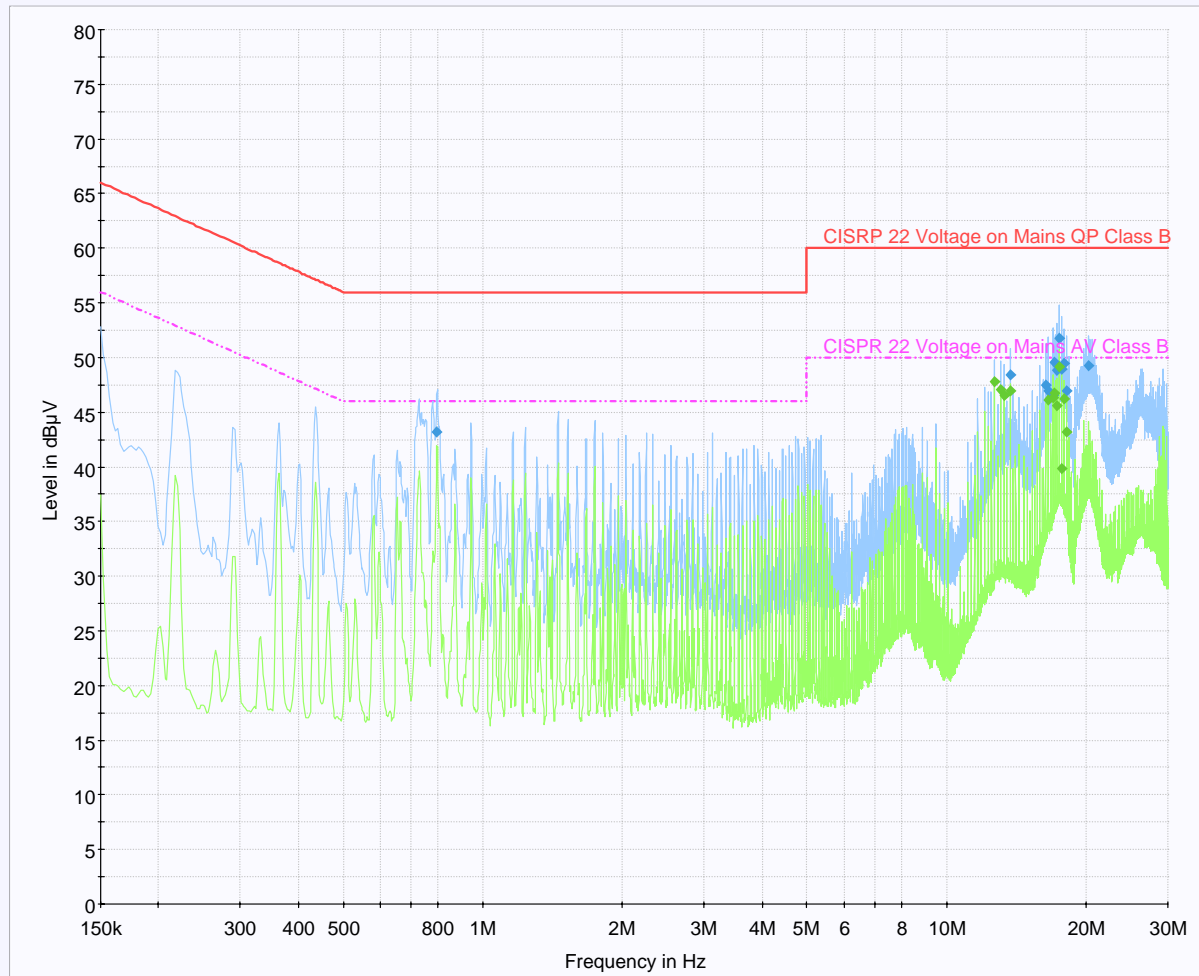
Conducted Disturbance at Mains Detailed Setup Photos



EQUIPMENT: Verafi Access Reading Point VF-2200

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AC Power line conducted emission_ N



AC Power Line _Neutral
 CISRP 22 Voltage on Mains QP Class B CISRP 22 Voltage on Mains AV Class B Peak detector
 Average Detector Final Quasi_Peak Detector Final Average Detector

EQUIPMENT: Verafi Access Reading Point VF-2200

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Final Quasi-Peak Detector _ N

Frequency (MHz)	Quasi_Peak (dBuv)	Measure time (ms)	Bandwidth (KHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuv)
0.796	43.2	100	9	On	N	10.1	12.8	56
13.697	48.5	100	9	On	N	10.5	11.5	60
16.316	47.5	100	9	On	N	10.6	12.5	60
16.5185	47	100	9	On	N	10.6	13	60
16.923	46.5	100	9	On	N	10.6	13.5	60
17.1215	49.6	100	9	On	N	10.6	10.4	60
17.324	48.8	100	9	On	N	10.6	11.2	60
17.52425	51.7	100	9	On	N	10.6	8.3	60
17.72675	48.9	100	9	On	N	10.6	11.1	60
17.927	49.5	100	9	On	N	10.6	10.5	60
18.1295	46.9	100	9	On	N	10.6	13.1	60
20.25975	49.2	100	9	On	N	10.8	10.8	60

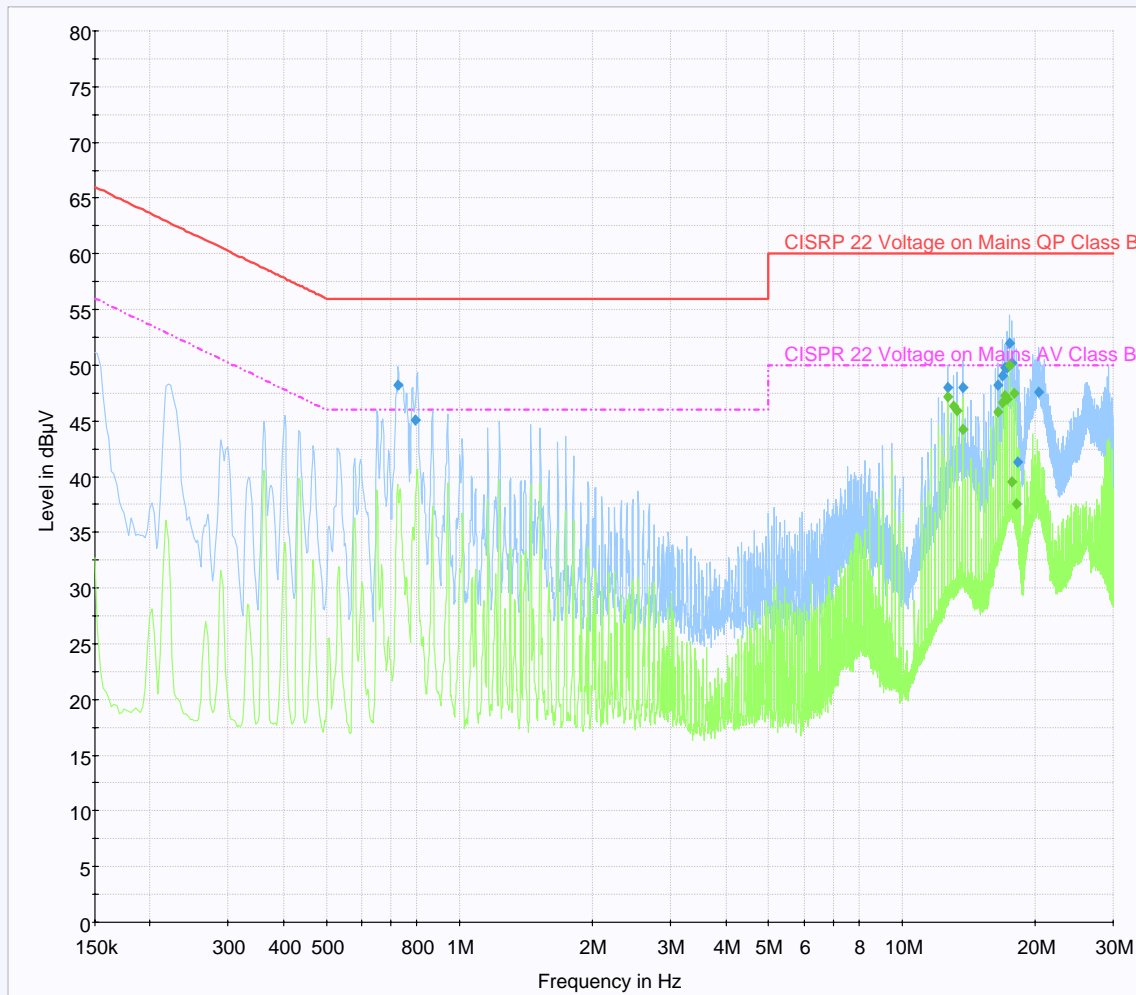
Final Average Detector_ N

Frequency (MHz)	Average (dBuv)	Measure time (ms)	Bandwidth (KHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuv)
12.689	47.7	100	9	On	N	10.4	2.3	50
13.09175	47.1	100	9	On	N	10.4	2.9	50
13.29425	46.5	100	9	On	N	10.4	3.5	50
13.697	47	100	9	On	N	10.5	3	50
16.51625	46.1	100	9	On	N	10.6	3.9	50
16.92125	46.3	100	9	On	N	10.6	3.7	50
17.1215	46.7	100	9	On	N	10.6	3.3	50
17.324	45.6	100	9	On	N	10.6	4.4	50
17.52425	49.2	100	9	On	N	10.6	0.8	50
17.69475	39.8	100	9	On	N	10.6	10.2	50
17.927	46.2	100	9	On	N	10.6	3.8	50
18.1295	43.2	100	9	On	N	10.6	6.8	50

EQUIPMENT: Verafi Access Reading Point VF-2200

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AC Power line conducted emission_L



CISRP 22 Voltage on Mains QP Class B
 CISPR 22 Voltage on Mains AV Class B
 Peak Detector
 Average Detector
 Final Quasi_Peak Detector
 Final Average Detector

EQUIPMENT: Verafi Access Reading Point VF-2200

FCC ID: T2RVF2200

Final Quasi-Peak Detector _ L

Frequency (MHz)	Quasi_Peak (dBuV)	Measure time (ms)	Bandwidth (KHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.724	48.2	100	9	On	L1	10.1	7.8	56
0.7965	45.1	100	9	On	L1	10.1	10.9	56
12.68	48	100	9	On	L1	10.4	12	60
13.68575	48	100	9	On	L1	10.4	12	60
16.505	48.2	100	9	On	L1	10.5	11.8	60
16.9095	49	100	9	On	L1	10.5	11	60
17.108	49.8	100	9	On	L1	10.6	10.2	60
17.3105	49.8	100	9	On	L1	10.6	10.2	60
17.51075	52	100	9	On	L1	10.6	8	60
17.71325	50.2	100	9	On	L1	10.6	9.8	60
18.214	41.3	100	9	On	L1	10.6	18.7	60
20.3205	47.5	100	9	On	L1	10.7	12.5	60

Final Average Detector _ L

Frequency (MHz)	Average (dBuV)	Measure time (ms)	Bandwidth (KHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
12.68	47.2	100	9	On	L1	10.4	2.8	50
13.08275	46.3	100	9	On	L1	10.4	3.7	50
13.283	45.9	100	9	On	L1	10.4	4.1	50
13.68975	44.2	100	9	On	L1	10.4	5.8	50
16.505	45.8	100	9	On	L1	10.5	4.2	50
16.9095	46.6	100	9	On	L1	10.5	3.4	50
17.108	47.3	100	9	On	L1	10.6	2.7	50
17.30825	47	100	9	On	L1	10.6	3	50
17.51075	50	100	9	On	L1	10.6	0	50
17.695	39.5	100	9	On	L1	10.6	10.5	50
17.9135	47.5	100	9	On	L1	10.6	2.5	50
18.12175	37.6	100	9	On	L1	10.6	12.4	50

*EQUIPMENT: Verafi Access Reading Point VF-2200**FCC ID: T2RVF2200*

Section 5. Radiated Emissions

Para. No.: 15.249**Test Performed By: Xu Jin****Date of Test: Aug 20, 2007**

Minimum Standard: 15.209&15.249
Band edge check must comply with 50dBc requirement.
Radiated Emission must comply with 15.209 general requirement

Frequency (MHz)	Field Strength (mV/m)	Field Strength (dBµV/m)
Fundamental		
902-928	50	94
Spurious out side the frequency band		
33-88	0.1	40.0
88-216	0.15	43.5
216-960	0.2	46.0
960 above	0.5	54.0

Test Results: See graphic and data of this section.

Radiated emission test was conducted at 3 meter at open area test site. The EUT was searched from 30MHz to the 10th harmonics, and for low, medium and high frequencies at the frequency band.

The spectrum analyzer was set to peak detector with 100KHz RBW/VBW for measurement below 1GHz and 1 MHz RBW / VBW above 1 GHz.

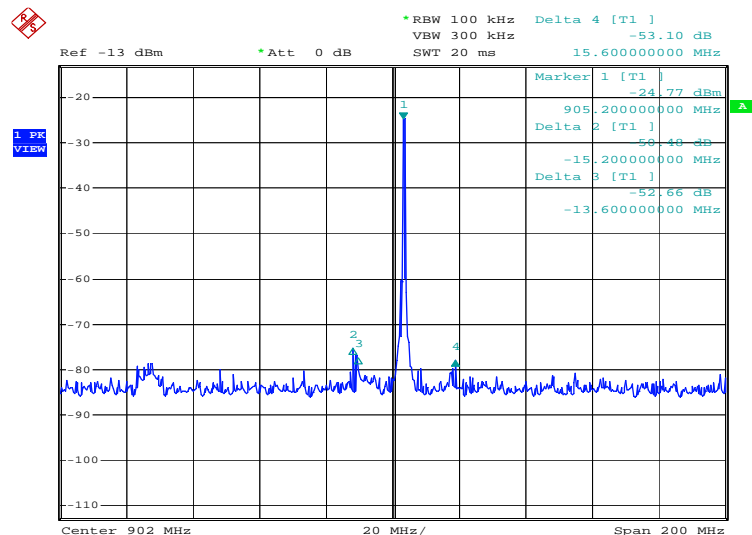
Only worst cases have been reported.

EQUIPMENT: Verafi Access Reading Point VF-2200

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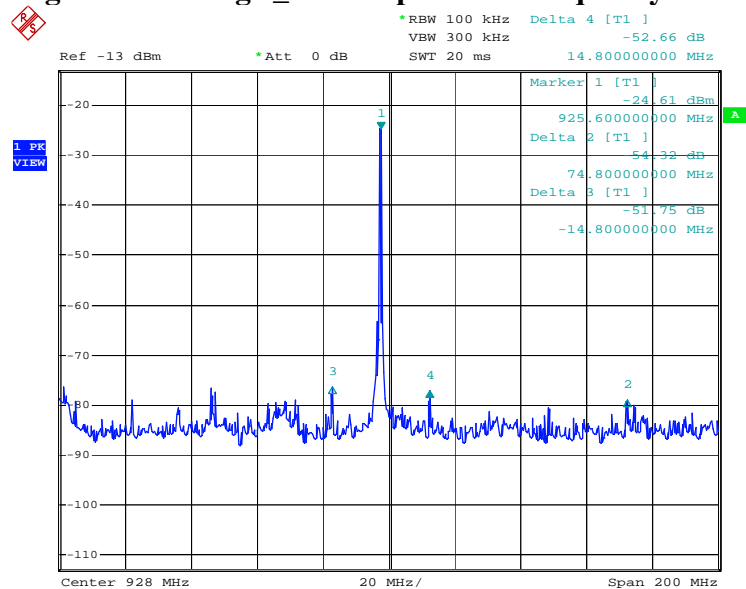
50dBc Band Edge Check

Lower Band Edge_ EUT Operation Frequency 905.3MHz



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Higher Band Edge_ EUT Operation Frequency 925.3MHz

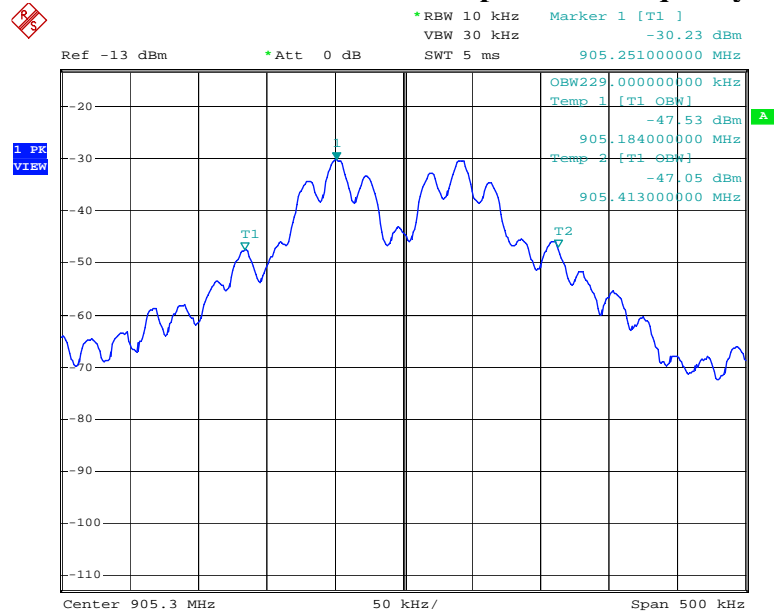


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EQUIPMENT: Verafi Access Reading Point VF-2200

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99%Channel Bandwidth _ EUT Operation Frequency 905.3MHz



Date: 20.AUG.2007 12:43:01

EQUIPMENT: Verafi Access Reading Point VF-2200

FCC ID: T2RVF2200

Radiated Emission Test Data

Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB/m)	Amp. Gain (dB)	Cable Loss (dB)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
925.3000	LP1	H	65.5	24.2	N/A	3.2	92.9	94.0	1.1	Peak
925.3000	LP1	V	63.6	23.0	N/A	3.2	89.8	94.0	4.2	Peak
1850.6000	Horn2	H	68.1	27.4	49.1	4.7	51.2	54.0	2.8	Peak
1850.6000	Horn2	V	65.4	27.5	49.1	4.7	48.6	54.0	5.4	Peak
2775.0000	Horn2	H	76.3	30.0	59.7	6.0	52.6	54.0	1.4	Peak
2775.0000	Horn2	V	73.3	30.1	59.7	6.0	49.6	54.0	4.4	Peak
915.3000	LP1	H	63.3	23.9	N/A	3.2	90.4	94.0	3.6	Peak
915.3000	LP1	V	61.4	22.9	N/A	3.2	87.5	94.0	6.5	Peak
1830.6000	Horn2	H	60.7	27.4	49.1	4.6	43.6	54.0	10.4	Peak
1830.6000	Horn2	V	59.2	27.5	49.1	4.6	42.3	54.0	11.7	Peak
2745.9000	Horn2	H	71.3	30.0	59.7	5.8	47.3	54.0	6.7	Peak
2745.9000	Horn2	V	69.4	30.0	59.7	5.8	45.5	54.0	8.5	Peak
905.3000	LP1	H	65.8	23.7	N/A	3.1	92.6	94.0	1.4	Peak
905.3000	LP1	V	63.2	22.9	N/A	3.1	89.2	94.0	4.8	Peak
1810.6000	Horn2	H	59.4	27.4	49.1	4.5	42.3	54.0	11.7	Peak
1810.6000	Horn2	V	57.5	27.5	49.1	4.5	40.4	54.0	13.6	Peak
2715.9000	Horn2	H	75.5	29.9	59.8	5.9	51.6	54.0	2.4	Peak
2715.9000	Horn2	V	73.2	30.0	59.8	5.9	49.4	54.0	4.6	Peak
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole										
Note 2: Detector Legend: Below 1GHz, Peak detector with 100 kHz RBW, 100KHz VBW										
Above 1GHz, Peak detector with 1.0MHz RBW, 1.0MHz VBW										

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Radiated Emissions Photos



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Output Power Measurement Under Extreme Voltage Conditions

Test Method: Radiated power was verified under voltage extreme conditions at the operation frequency of 905.3MHz.

Extreme Voltage: $\pm 15\%$ of AC Mains.

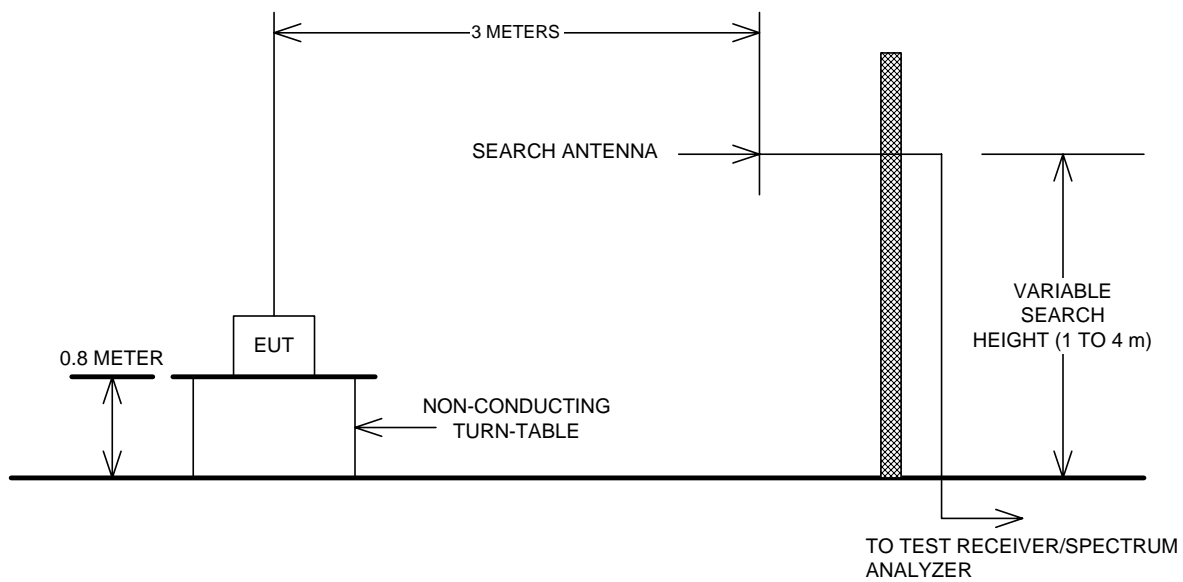
Test Result: No change in fundamental power level was observed during the test.

EQUIPMENT: Verafi Access Reading Point VF-2200

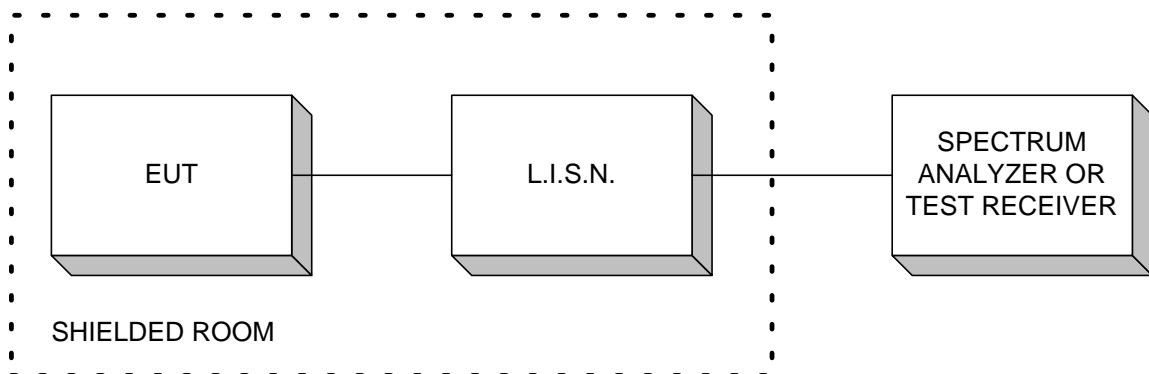
FCC ID: T2RVF2200

Section 6. Block Diagrams

Test Site For Radiated Emissions



Conducted Emissions



*EQUIPMENT: Verafi Access Reading Point VF-2200**FCC ID: T2RVF2200*

Section 7. Test Equipment List

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
Spectrum Analyzer	Rhode & Schwarz	FSP	FA001920	Mar. 19/08
Spectrum Analyzer	Rhode & Schwarz	FSU	FA001877	Jan. 16/08
Spectrum Analyzer/EMI Receiver	Rhode & Schwarz	ESU	FA002043	Oct. 24/07
Signal Generator	Rohde & Schwarz	SMR40	FA001879	Aug. 8/08
RF AMP	JCA	1 – 2 GHz	FA001498	COU
RF AMP	JCA	2 – 4 GHz	FA001496	COU
RF AMP	JCA	4 – 8 GHz	FA001497	COU
RF AMP	Narda	5 – 18 GHz	FA001409	COU
Bi-Conical Antenna #2	EMCO	3109	FA000904	Sep. 12/07
Log Periodic Antenna #1	EMCO	3148	FA001355	Sep. 12/07
Horn Antenna #2	EMCO	3115	FA000825	Jan. 30/08
LISN	Rohde & Schwarz	ENV216	FA002023	Aug. 28/07
Spectrum Analyzer	Rohde & Schwarz	FSU	FA001877	Jan. 16/08
Receiver	Rohde & Schwarz	ESVS-30	FA001437	July 12/08

* COU (Calibrate on Use)