FCC PART 15, SUBPART B AND C TEST METHOD: ANSI C63.4-1992 TEST REPORT

for

V-LINK II

Model: DT-5100

Prepared for

VITALCOM, INC. 15222 DEL AMO AVE. TUSTIN, CALIFORNIA 92780

Prepared	l b	y :									

KYLE FUJIMOTO

Approved by:_____

SCOTT McCUTCHAN

COMPATIBLE ELECTRONICS INC. 114 OLINDA DRIVE BREA, CALIFORNIA 92823 (714) 579-0500

DATE: APRIL 5, 1999

	REPORT		APPEN	TOTAL		
	BODY	A	В	C	D	
PAGES	16	2	2	15	16	51

This report shall not be reproduced except in full, without the written approval of Compatible Electronics.



TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
SUMMARY OF TEST RESULTS	4
1. PURPOSE	5
 2. ADMINISTRATIVE DATA 2.1 Location of Testing 2.2 Traceability Statement 2.3 Cognizant Personnel 2.4 Date Test Sample was Received 2.5 Disposition of the Test Sample 2.6 Abbreviations and Acronyms 	6 6 6 6 6 6
3. APPLICABLE DOCUMENTS	7
 4. Description of Test Configuration 4.1 Description of Test Configuration - EMI 4.1.1 Cable Construction and Termination 	8 8 9
 5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT 5.1 EUT and Accessory List 5.2 EMI Test Equipment 	10 10 11
 6. TEST SITE DESCRIPTION 6.1 Test Facility Description 6.2 EUT Mounting, Bonding and Grounding 	12 12 12
 7. Test Procedures 7.1 Conducted Emissions Test 7.2 Radiated Emissions (Spurious and Harmonics) Test 	13 13 14
8 CONCLUSIONS	16



LIST OF APPENDICES

APPENDIX	TITLE				
	Madifference of the DIVE				
A	Modifications to the EUT				
В	Additional Models Covered Under This Report				
C	Diagrams, Charts, and Photos				
	Test Setup Diagrams				
	Radiated Emissions Photos				
	Antenna and Effective Gain Factors				
D	Data Sheets				

LIST OF TABLES

TABLE	TITLE
1	Radiated Emissions Test Results

LIST OF FIGURES

FIGURE	TITLE
1	Radiated Emissions Test Setup



GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full with the written permission of Compatible Electronics.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested: V-Link II

Model: DT-5100

S/N: N/A

Modifications: The EUT was not modified during the testing.

Manufacturer: Vitalcom, Inc.

15222 Del Amo Ave. Tustin, California 92780

Test Date: March 30, 1999

Test Specifications: EMI requirements

FCC Title 47, Part 15 Subpart B and Subpart C Sections 15.205, 15.207, and 15.242

Test Procedure: ANSI C63.4: 1992

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 450 kHz - 30 MHz	Complies with the limits of section 15.207 of FCC Title 47, Part 15, Subpart C.
2	Radiated RF Emissions, 10 kHz - 2152 MHz	Complies with FCC Title 47, Part 15 Subpart C, sections 15.205, 15.209, and 15.242



1. **PURPOSE**

This document is a qualification test report based on the Electromagnetic Interference (EMI) test performed on the V-Link Model: DT-5001. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the limits of sections 15.205, 15.207, and 15.242 of FCC Title 47, Part 15, Subpart C; and the Class B limits of FCC Title 47, Part 15, Subpart B.





2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Vitalcom, Inc.

Gus Testa Engineer

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer Scott McCutchan Lab Manager

2.4 Date Test Sample was Received

The test sample was received on March 30, 1999

2.5 Disposition of the Test Sample

The test sample was returned to Vitalcom, Inc. on April 2, 1999.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF Radio Frequency

EMI Electromagnetic Interference EUT Equipment Under Test

P/N Part Number S/N Serial Number HP Hewlett Packard

ITE Information Technology Equipment

CML Corrected Meter Limit

LISN Line Impedance Stabilization Network



3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
FCC Title 47, Subpart C.	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators.
ANSI C63.4 1992	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.



4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Setup and operation of the equipment under test.

The EUT was tested in two different modes:

Ethernet Mode: The antenna is mounted to the EUT by a right angle star & lock washer and nut. The right angle star & lock washer is then soldered on to the RF Module. The EUT was connected to the class two transformer and a loopback ethernet cable via its DC IN and ethernet ports, respectively. The EUT was looping back data from the EUT and then transmitting the data on a continuous basis.

RS-232 Mode: The antenna is mounted to the EUT by a right angle star & lock washer and nut. The right angle star & lock washer is then soldered on to the RF Module. The EUT was connected to the class two transformer and laptop via its DC IN and serial ports, respectively. The laptop is connected to the printer and AC Adapter via its parallel and DC IN ports, respectively. The EUT was receiving patient data from the laptop and then transmitting the data on a continuous basis.

The V-Link II Model: DT-5100 was tested in three orthogonal axis. The worst case Axis for the vertical polarization was when the EUT was placed in the Y-Axis. The worst case Axis for the horizontal polarization was when the EUT was placed in the Z-Axis. The spurious emissions coming from the clock oscillators were also found to be the highest when the EUT was operating in the RS-232 mode above. For the fundamental and harmonics, data was taken for both the Ethernet and RS-232 modes, with the low, medium, and high channels (175.08 MHz, 195.10 MHz, and 215.0 MHz, respectively) being tested. The final radiated data was taken in the worst case Axis as described above. The final conducted data was taken while the EUT was operating in the RS-232 mode (worst case) described above. All initial investigations were performed with the EMI receiver in manual mode scanning the frequency range continuously.



FCC ID: BQI99DT-5100 Report Number: B90330D1 Page 9 of 16

4.1.1 Cable Construction and Termination

RS-232 Mode

- Cable 1 This is a 6 foot unshielded cable connecting the EUT to the laptop. It has an RJ-11 connector at the EUT end and a D-9 pin connector at the laptop end. The cable was bundled to a length of 1 meter.
- <u>Cable 2</u> This is a 6 foot unshielded cable connecting the laptop to the AC Adapter. It has a 1/8 inch power connector at the laptop end and is hard wired into the AC Adapter.
- Cable 3 This is a 6 foot braid and foil shielded cable connecting the printer to the laptop. It has a Centronics metallic type connector at the printer end and a D-25 pin metallic connector at the laptop end. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.
- <u>Cable 4</u> This is a 6 foot unshielded cable connecting the EUT to the class 2 transformer. It has a 1/8 inch power connector at the EUT end and is hard wired into the class 2 transformer.

Ethernet Mode

- <u>Cable 1</u> This is a 6 foot unshielded loopback cable connected to the EUT. It has an RJ-45 connector at the EUT end. The cable was bundled so that it was 40 centimeters above the ground plane.
- <u>Cable 2</u> This is a 6 foot unshielded cable connecting the EUT to the class 2 transformer. It has a 1/8 inch power connector at the EUT end and is hard wired into the class 2 transformer.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT TYPE	MANU- FACTURER	MODEL	SERIAL NUMBER	FCC ID
V-LINK (EUT)	VITALCOM, INC.	DT-5001	610024	BQI99DT-5100
POWER SUPPLY	STACK	DV-980R	N/A	N/A
AC ADAPTER	TOSHIBA	PA2411U	N/A	N/A
LAPTOP COMPUTER	TOSHIBA	PA1108U	03316835 A	DoC
PRINTER	CITIZEN	LSP-10	1266247	DLK66TLSP-10



5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU- FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer	Hewlett Packard	8566B	3638A08784	Nov. 16, 1998	May 16, 1999
Preamplifier	Com Power	PA-102	1017	Feb. 16, 1998	Feb. 16, 1999
Quasi-Peak Adapter	Hewlett Packard	85650A	3303A01688	June 23, 1998	June 23, 1999
Biconical Antenna	Com Power	AB-100	1548	Oct. 15, 1998	Oct. 15, 1999
Log Periodic Antenna	Com Power	AL-100	1117	Oct. 15, 1998	Oct. 15, 1999
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	HP98561A	2522A05178	N/A	N/A
Printer	Hewlett Packard	2225A	2925S33268	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Preamplifier	Hewlett Packard	8449B	3008A008766	Jan. 30, 1999	Jan. 30, 2000
Horn Antenna Antenna Research		DRG-118/A	1053	Dec. 8, 1995	N/A
Loop Antenna	Com-Power	AL-130	25309	Feb. 5, 1999	Feb. 5, 2000



6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.2 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.





7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 Conducted Emissions Test

The HP 8566B spectrum analyzer was used as a measuring meter along with the HP 85650A quasi-peak adapter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak detector was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the spectrum analyzer offset was adjusted accordingly to read the actual data measured. The LISN output was read by the HP 8566B spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for the conducted emissions test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 1992. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The initial test data was taken in manual mode while scanning the frequency ranges of 0.45 MHz to 1.6 MHz, 1.6 MHz to 5 MHz and 5 MHz to 30 MHz. The conducted emissions from the EUT were maximized for operating mode as well as cable placement. Once a predominant frequency (within 12 dB of the limit) was found, it was more closely examined with the spectrum analyzer span adjusted to 1 MHz.

The final data was collected under program control by the HP 9000/300 in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave.



7.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com Power Microwave Amplifier Model: PA-122 was used for frequencies above 1 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets. The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 1 Hz and slowing the sweep time to keep the amplitude reading calibrated. The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER		
10 kHz to 150 kHz	200 Hz	Active Loop Antenna		
150 kHz to 30 MHz	9 kHz	Active Loop Antenna		
30 MHz to 300 MHz	120 kHz	Biconical Antenna		
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna		
1 GHz to 2152 GHz	1 MHz	Horn Antenna		

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 1992. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.



Radiated Emissions (Spurious and Harmonics) Test (con't)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data.





8. CONCLUSIONS

The V-Link II Model: DT-5100 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.242.





APPENDIX A

MODIFICATIONS TO THE EUT



MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.242 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

	r	1.0		. •	
NΛ	α	111	100	t1/	ons:
LVI	U	ш.	ıva	ш	mo.

No modifications were made to the EUT.



APPENDIX B

ADDITIONAL MODELS COVERED UNDER THIS REPORT



FCC ID: BQI99DT-5100 Report Number: B90330D1

Page B2

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

V-Link II

Model: DT-5100

S/N: N/A

There were no additional models covered under this report.



APPENDIX C

DIAGRAMS, CHARTS AND PHOTOS



FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

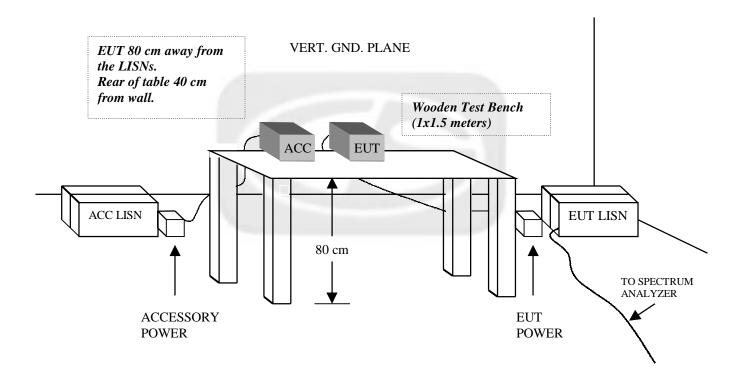
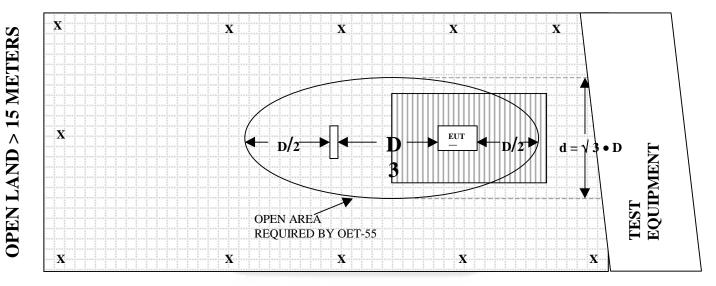




FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X = GROUND RODS = GROUND SCREEN

D = TEST DISTANCE (meters) = WOOD COVER





FRONT VIEW

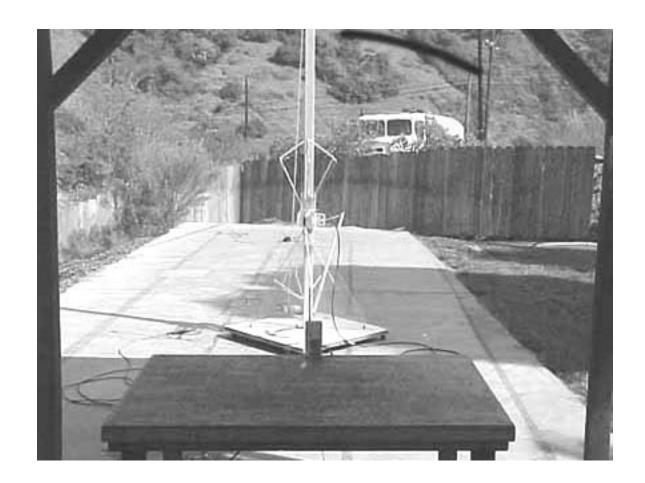
VITALCOM, INC.
V-Link II
Model: DT-5100 – SERIAL MODE
FCC SUBPART C - RADIATED EMISSIONS – 3-30-99





REAR VIEW

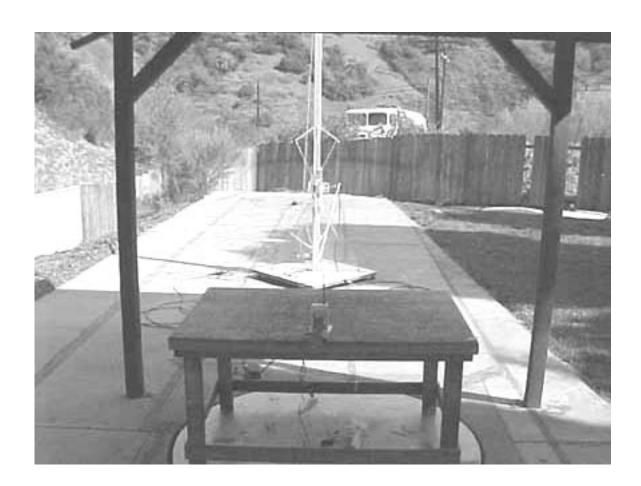
VITALCOM, INC.
V-Link II
Model: DT-5100 – SERIAL MODE
FCC SUBPART C - RADIATED EMISSIONS – 3-30-99



FRONT VIEW

VITALCOM, INC.
V-Link II
Model: DT-5100 – ETHERNET MODE
FCC SUBPART C - RADIATED EMISSIONS – 3-30-99





REAR VIEW

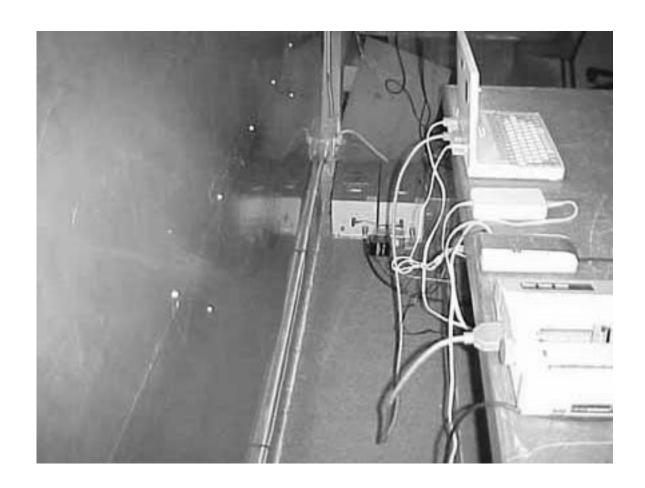
VITALCOM, INC.
V-Link II
Model: DT-5100 – ETHERNET MODE
FCC SUBPART C - RADIATED EMISSIONS – 3-30-99



FRONT VIEW

VITALCOM, INC.
V-Link II
Model: DT-5100
FCC SUBPART C - CONDUCTED EMISSIONS – 3-30-99



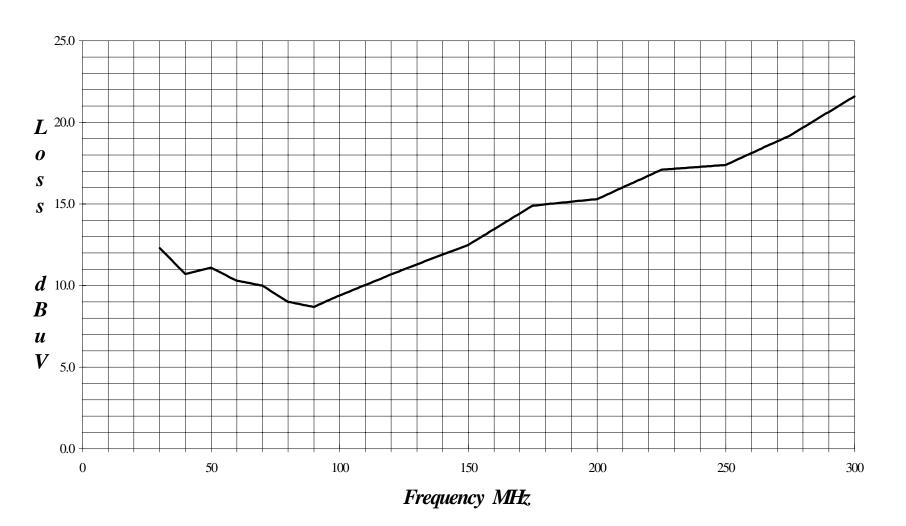


REAR VIEW

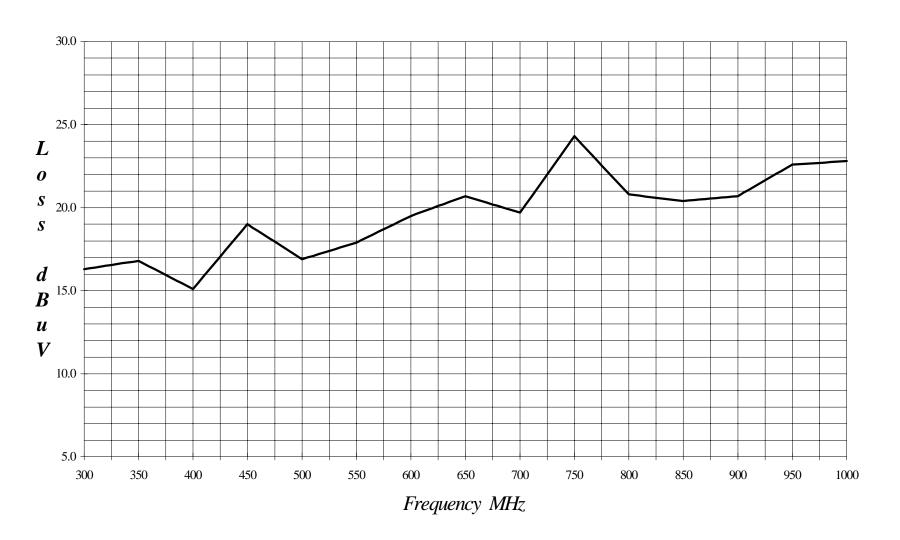
VITALCOM, INC.
V-Link II
Model: DT-5100
FCC SUBPART C - CONDUCTED EMISSIONS – 3-30-99



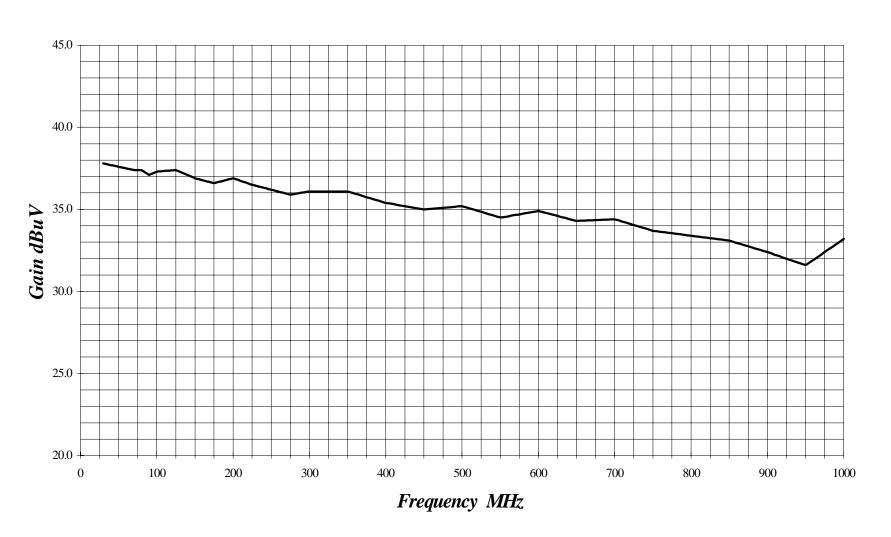
LAB ''D'' BICONICAL ANTENNA AB-100 S/N 01548



LAB "D" LOG PERIODIC ANTENNA AL-100 S/N 01117



PREAMPLIFIER EFFECTIVE GAIN AT 3 METERS PA-102 S/N: 1017



HEWLETT PACKARD 8449B

MICROWAVE PREAMPLIFIER

S/N: 3008A008766

CALIBRATION DATE: JANUARY 30, 1999

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	36.9	9.5	34.3
1.1	36.3	10.0	33.7
1.2	36.4	10.5	34.1
1.3	36.2	11.0	33.7
1.4	36.3	11.5	34.0
1.5	35.7	12.0	33.9
1.6	35.9	12.5	34.4
1.7	35.7	13.0	32.9
1.8	35.6	13.5	31.6
1.9	35.5	14.0	31.8
2.0	35.4	14.5	31.9
2.5	35.6	15.0	32.2
3.0	35.2	15.5	32.8
3.5	35.2	16.0	32.4
4.0	34.3	16.5	32.1
4.5	34.1	17.0	32.3
5.0	34.3	17.5	30.3
5.5	33.0	18.0	31.5
6.0	34.1	18.5	31.2
6.5	34.5	19.0	32.2
7.0	34.3	19.5	32.0
7.5	33.9	20.0	32.0
8.0	34.5	20.5	33.2
8.5	34.5	21.0	30.9
9.0	34.4	22.0	32.1



E-FIELD ANTENNA FACTOR CALIBRATION

E(dB V/m) = Vo(dB V) + AFE(dB/m)

Model number: DRG-118/A

Frequency	AFE	Gain
GHz	dB/m	dBi
4	00.2	8.0
1	22.3	
2	26.7	9.5
3	29 .7	10.1
4	29.5	12.8
5	32 .3	12.0
6	32.4	13.4
7	36 .1	11.0
8	37.4	10.9
9	36 .8	12.5
10	39 .5	10.7
11	39 .6	11.5
12	39 .8	12.0
13	39.7	12.8
14	41.8	11.3
15	41.9	11.9
16	38.1	16.3
17	41.0	13.9
18	46.5	8.9

Calibrated By

Serial number: 1053 Job number: 96-092

Remarks: 3 meter calibration Standards: LPD-118/A, TE-1000

Temperature: 72° F Humidity: 56 % Traceability: A01887

Date: December 08, 1995

COM-POWER CORPORATION

LOOP ANTENNA

S/N: 25309

CALIBRATION DATE: FEBRUARY 5, 1999

FREQUENCY (MHz)	ELECTRIC FACTOR (Db/m)	FREQUENCY (MHz)	ELECTRIC FACTOR (Db/m)
0.01	11.0	1	10.4
0.02	9.9	2	10.8
0.03	11.5	3	10.8
0.04	11.2	4	10.6
0.05	9.9	5	11.4
0.06	10.4	6	11.5
0.07	10.2	7	11.2
0.08	9.9	8	11.7
0.09	9.8	9	12.7
0.1	9.7	10	10.7
0.2	7.5	12	10.1
0.3	9.9	14	10.1
0.4	9.8	15	10.6
0.5	9.8	16	10.7
0.6	10.0	18	10.0
0.7	10.0	20	10.0
0.8	9.9	25	10.3
0.9	9.9	30	10.1

FCC ID: BQI99DT-5100 Report Number: B90330D1

Page D1

APPENDIX D

DATA SHEETS



Test location: Compatible Electronics

Date: 3/30/1999

Customer : VITALCOM, INC. Manufacturer : VITALCOM, INC. Time : 10.35 Model: DT-5100 EUT name : V-LINK II

Specification: Fcc_B Test distance: 3.0 mtrs Lab: D

Distance correction factor(20*log(test/spec)) : 0.00

Test Mode LOW CHANNEL

TEMPERATURE 61 DEGREES F.

RELATIVE HUMIDITY 85%
TESTED BY: Mr. Jaureto
KYLE FUJIMOTO

Pol/ Harm		Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	limit = L	Delta R-L
No.	MHz	dBuV	đB	đВ	đВ	dBuV	dBuV/m	đВ
ETHER.	NET MODE							15 00
1V	175.08	71.40	1.80	14.90	00.00	88.10	106.00	-17.90
2 V	350.08	58.10	2.50	16.80	38.60	38.80	46.00	-7.20
3 V	525.13	44.60	3.25	17.40	38.10	27.15	46.00	-18.85
4V	700.13	44.00	3.80	19.71	38.20	29.31	46.00	-16.69
5V	875.13	44.60	4.70	20.55	37.45	32.40	46.00	-13.60
6V	1050.00	50.10	3.10	22.30	36.30	39.20	54.00	-14.80
7 V	1225.00	48.90	3.20	22.30	36.40	38.00	54.00	-16.00
87	1400.30	48.50	3.50	22.30	36.30	38.00	54.00	-16.00
9V	1575.00	45.30	3.90	24.50	35.90	37.80	54.00	-16.20
10V	1750.10	45.10	3.90	24.50	35.60	37.90	54.00	-16.10
1H	175.08	81.10	1.80	14.90	00.00	97.80	106.00	-8.20
2H	350.13	59.90	2.50	16.80	38.60	40.60	46.00	-5.40
3H	525.13	43.50	3.25	17.40	38.10	26.05	46.00	-19.95
4H	700.15	46.80	3.80	19.71	38.20	32.12	46.00	-13.88
5H	875.13	40.90	4.70	20.55	37.45	31.60	46.00	-17.30
6H	1050.00	49.10	3.10	22.30	36.30	38.20	54.00	-15.80
7H	1225.00	44.80	3.20	22.30	36.40	33.90	54.00	-20.10
8H	1400.30	48.10	3.50	22.30	36.30	37.60	54.00	-16.40
9H	1575.00	43.00	3.90	24.50	35.90	35.50	54.00	-18.50
10H	1750.10	44.50	3.90	24.50	35.60	37.30	54.00	-16.70

Test location: Compatible Electronics

Date: 3/30/1999

Customer : VITALCOM, INC.
Manufacturer : VITALCOM, INC. Time : 11.03 Model: DT-5100 EUT name : V-LINK II

Specification: Fcc_B Test distance: 3.0 mtrs Lab: D

Distance correction factor(20*log(test/spec)) : 0.00

Test Mode LOW CHANNEL

TEMPERATURE 61 DEGREES F. RELATIVE HUMIDITY 85% TESTED BY: Kulo Fairmoto

KYLE FUJIMOTO

Pol/ Harm No.	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	limit = L dBuV/m	Delta R-L dB
SERIA	MODE							
1V	175.08	72.00	1.80	14.90	00.00	88.70	106.00	-17.30
2V	350.08	57.40	2.50	16.80	38.60	39.70	46.00	-7.90
3 V	525.13	41.40	3.25	17.40	38.10	23.95	46.00	-22.05
4V	700.13	43.90	3.80	19.71	38.20	29.21	46.00	-16.79
5V	875.13	43.20	4.70	20.55	37.45	31.00	46.00	-15.00
6V	1050.00	48.90	3.10	22.30	36.30	38.00	54.00	-16.00
7 V	1225.00	48.60	3.20	22.30	36.40	37.70	54.00	-16.30
8V	1400.30	49.10	3.50	22.30	36.30	38.60	54.00	-15.40
9V	1575.00	43.80	3.90	24.50	35.90	36.30	54.00	-17.70
10V	1750.10	42.20	3.90	24.50	35.60	35.00	54.00	-19.00
1H	175.08	80.30	1.80	14.90	00.00	97.00	106.00	-9.00
2H	350.13	58.10	2.50	16.80	38.60	38.80	46.00	-7.20
3H	525.13	42.80	3.25	17.40	38.10	25.35	46.00	-20.65
4H	700.15	46.50	3.80	19.71	38.20	31.82	46.00	-14.18
5H	875.13	40.30	4.70	20.55	37.45	31.00	46.00	-17.90
6H	1050.00	47.80	3.10	22.30	36.30	36.90	54.00	-17.10
7H	1225.00	44.70	3.20	22.30	36.40	33.80	54.00	-20.20
8H	1400.30	48.40	3.50	22.30	36.30	37.90	54.00	-16.10
9H	1575.00	41.50	3.90	24.50	35.90	34.00	54.00	-20.00
10H	1750.10	44.40	3.90	24.50	35.60	37.20	54.00	-16.80

Test location: Compatible Electronics

Customer : VITALCOM, INC.

Date : 3/30/1999

Manufacturer: VITALCOM, INC.

EUT name: V-LINK II

Time: 11.32

Model: DT-5100

Specification: Fcc_B Test distance: 3.0 mtrs Lab: D

Distance correction factor(20*log(test/spec)) : 0.00

Test Mode : MIDDLE CHANNEL

TEMPERATURE 61 DEGREES F. RELATIVE HUMIDITY, 85%

TESTED BY: Kule Fundo

KYLE FUJIMOTO

Pol/ Harm. No.	Freq MHz	Rdng dBuV	Cable loss f dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	limit = L dBuV/m	Delta R-L dB
ETHER 1H 2H 2H 3H 4H 5H 6H 7H 8H 9H 10H	RNET MODE 195.10 390.29 390.29 585.43 780.67 975.61 1170.05 1365.00 1560.06 NO EMISSI		2.50 2.74 2.74 3.47 4.06 4.90 3.20 3.50 3.90 AT THIS AT THIS	15.20 15.43 15.43 19.03 22.15 22.70 22.30 22.30 24.50 HARMONIC		99.70 44.79 44.44Qp 24.15 26.74 31.68 39.40 38.20 37.70	106.00 46.00 46.00 46.00 54.00 54.00 54.00 54.00	-6.30 -1.21 -1.56 -21.85 -19.26 -20.32 -14.60 -15.80 -16.30
1V 2V 3V 4V 5V 6V 7V 8V 9V 10V	195.10 390.32 585.40 780.58 975.61 1170.05 1365.00 1560.06 NO EMISSI		2.50 2.74 3.47 4.06 4.90 3.20 3.50 3.90 AT THIS	15.20 15.43 19.03 22.16 22.70 22.30 22.30 24.50 HARMONIO		94.10 43.09 28.55 25.44 31.68 39.80 36.00 37.70	106.00 46.00 46.00 54.00 54.00 54.00 54.00	-11.90 -2.91 -17.45 -20.56 -22.32 -14.20 -18.00 -16.30

Date: 3/30/1999

Test location: Compatible Electronics
Customer : VITALCOM, INC.
Manufacturer : VITALCOM, INC. Time : 12.16 Model: DT-5100 EUT name : V-LINK II

Specification: Fcc_B Test distance: 3.0 mtrs Lab: D

Distance correction factor(20*log(test/spec)) : 0.00

Test Mode

TEMPERATURE 61 DEGREES F. RELATIVE HUMIDITY 85%
TESTED BY: You Farmed
KYLE FUJIMOTO

Pol/ Harm. No.	Freq MHz	Rdng dBuV	Cable loss d dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	limit = L dBuV/m	Delta R-L dB
SERIAI 1V 2V 3V 4V 5V 6V 7V 8V 9V 10V	MODE 195.10 390.32 585.44 780.10 975.62 1170.05 1365.00 1560.06 NO EMISSI		2.50 2.74 3.47 4.06 4.90 3.20 3.50 3.90 AT THIS AT THIS	15.20 15.43 19.03 22.19 22.70 22.30 22.30 24.50 HARMONIO		90.40 41.09 26.45 29.97 31.98 40.30 40.20 38.20	106.00 46.00 46.00 46.00 54.00 54.00 54.00	-15.60 -4.91 -19.55 -16.03 -22.02 -13.70 -13.80 -15.80
1H 2H 3H 4H 5H 6H 7H 8H 9H		80.00 61.50 41.30 43.60 41.70 49.10 49.00 45.10 ION FOUND	2.50 2.74 3.47 4.06 4.90 3.20 3.50 3.50 3.70 AT THIS			97.70 41.39 25.54 32.27 31.98 38.40 38.50 37.60	106.00 46.00 46.00 46.00 54.00 54.00 54.00	-8.30 -4.61 -20.46 -13.73 -22.02 -15.60 -15.50 -16.40

Test location: Compatible Electronics

Customer : VITALCOM, INC.

Date : 3/30/1999

Manufacturer: VITALCOM, INC.

EUT name: V-LINK II

Time: 9.25

Model: DT-5100

Specification: Fcc_B Test distance: 3.0 mtrs Lab: D

Distance correction factor(20*log(test/spec)) : 0.00

Test Mode HIGH CHANNEL

TEMPERATURE 61 DEGREES F.

RELATIVE HUMIDITY 85%

TESTED BY: KYLE FUJIMOTO

Pol/ Harm. No.	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	limit = L dBuV/m	Delta R-L dB
ETHER 1V 2V 3V 4V 5V 6V 7V 8V 9V 10V	RNET MODE 215.00 429.90 644.80 859.63 1074.99 1289.90 1504.96 1719.75 1934.20 2149.89	82.60 60.20 47.20 42.80 49.80 52.90 48.10 43.50 48.40 43.90	1.90 2.80 3.68 4.52 2.90 3.40 3.60 3.90 3.70 4.10	16.40 17.43 20.58 20.46 22.30 22.30 24.50 24.50 24.50 24.50	00.00 37.96 38.04 37.48 36.90 36.20 36.30 35.60 35.50	100.90 42.47 33.41 30.29 38.10 42.40 39.90 36.30 41.10 39.30	106.00 46.00 46.00 54.00 54.00 54.00 54.00 54.00	-5.10 -3.53 -12.59 -15.71 -15.90 -11.60 -14.10 -17.70 -12.90 -14.70
1H 2H 2H 3H 4H 5H 6H 7H 8H 9H	215.00 429.90 429.90 644.80 859.63 1074.99 1289.90 1504.96 1719.75 1934.20 2149.89	81.50 61.80 61.45 47.70 41.90 49.00 51.80 46.80 45.90 42.40 43.70	1.90 2.80 2.80 3.68 4.52 2.90 3.40 3.60 3.70 4.10	16.40 17.43 17.43 20.58 20.46 22.30 22.30 24.50 24.50 24.50 26.70	00.00 37.96 37.96 38.04 37.48 36.90 36.20 36.30 35.60 35.50	99.80 44.07 43.72 33.92 29.40 37.30 41.30 38.60 38.70 35.10 39.10	106.00 46.00 46.00 46.00 54.00 54.00 54.00 54.00 54.00	-6.20 -1.93 -2.28 -12.08 -16.60 -16.70 -12.70 -15.40 -15.30 -18.90 -14.90

Test location: Compatible Electronics

Date: 3/30/1999

Customer : VITALCOM, INC. Manufacturer : VITALCOM, INC. Time: 9.56 EUT name : V-LINK II Model: DT-5100

Specification: Fcc_B Test distance: 3.0 mtrs Lab: D : 0.00 Distance correction factor(20*log(test/spec))

Test Mode HIGH CHANNEL

TEMPERATURE 61 DEGREES F. RELATIVE HUMIDITY 85% TESTED BY: Like Treat

KYLE FUJIMOTO

Pol/ Harm No.	-	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	limit = L dBuV/m	Delta R-L dB
SERIA	L MODE							
1V	215.00	81.30	1.90	16.40	00.00	99.60	106.00	-6.40
2V	429.90	58.70	2.80	17.43	37.96	40.97	46.00	-5.03
3 V	644.80	46.00	3.68	20.58	38.04	32.21	46.00	-13.79
4 V	859.63	41.90	4.52	20.46	37.48	29.39	46.00	-16.61
5V	1074.99	49.20	2.90	22.30	36.90	37.50	54.00	-16.50
6V	1289.90	49.70	3.40	22.30	36.20	39.20	54.00	-14.80
7V	1504.96	47.40	3.60	24.50	36.30	39.20	54.00	-14.80
8V	1719.75	43.30	3.90	24.50	35.60	36.10	54.00	-17.90
9V	1934.20	48.00	3.70	24.50	35.50	40.70	54.00	-13.30
10V	2149.89	43.20	4.10	26.70	35.40	38.60	54.00	-15.40
1H	215.00	81.50	1.90	16.40	00.00	99.80	106.00	-6.20
2H	429.90	61.70	2.80	17.43	37.96	43.97	46.00	-2.03
2H	429.90	61.38	2.80	17.43	37.96	43.65	46.00	-2.35
3H	644.80	46.60	3.68	20.58	38.04	32.81	46.00	-13.19
4H	859.63	40.90	4.52	20.46	37.48	28.39	46.00	-17.61
5H	1074.99	47.60	2.90	22.30	36.90	35.90	54.00	-18.10
6H	1289.90	49.70	3.40	22.30	36.20	39.20	54.00	-14.80
7H	1504.96	46.50	3.60	24.50	36.30	38.30	54.00	-15.70
8H	1719.75	44.90	3.90	24.50	35.60	37.70	54.00	-16.30
9H	1934.20	42.20	3.70	24.50	35.50	34.90	54.00	-19.10
10H	2149.89	43.00	4.10	26.70	35.40	38.40	54.00	-15.60

Test location: Compatible Electronics

Date : 3/30/1999Time : 12.54

Customer : VITALCOM, INC.
Manufacturer : VITALCOM, INC.
EUT name : V-LINK II Model: DT-5100

Specification: Fcc_B Test distance: 3.0 mtrs Lab: D Distance correction factor(20*log(test/spec)) : 0.00

Test Mode SERIAL MODE

TEMPERATURE 61 DEGREES F. RELATIVE HUMIDITY 85%
TESTED BY: // Lamb

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	limit = L dBuV/m	Delta R-L dB
1H 2H 3H 4H 5H	40.16 49.95 60.01 80.06 100.08	47.10 51.60 16.60 58.70 52.00	0.90 1.00 1.10 1.20 1.30	10.71 11.10 10.30 9.00 9.41	38.60 38.60 38.60 38.60 38.60	20.11 25.10 -10.60 30.30 24.10	40.00 40.00 40.00 40.00 43.50	-19.89 -14.90 -50.60 -9.70 -19.40
6H 7H 8H 9H 10H	110.06 119.92 130.09 180.07 190.08	43.70 61.20 51.30 55.80 44.40	1.34 1.38 1.44 1.82	10.04 10.67 11.31 14.98 15.14	38.68 38.76 38.74 38.48 38.64	16.40 34.49 25.31 34.12 22.76	43.50 43.50 43.50 43.50 43.50	-27.10 -9.01 -18.19 -9.38 -20.74
11H 12H 13H 14H 15H	200.11 203.07 203.07 204.65 204.65	52.80 62.70 62.28 62.50 61.60	1.90 1.89 1.89 1.88	15.31 15.52 15.52 15.63 15.63	38.80 38.74 38.74 38.71 38.71	31.21 41.37 40.95Qp 41.31 40.41Qp	43.50 43.50 43.50 43.50 43.50	-12.29 -2.13 -2.55 -2.19 -3.09
16H 17H 18H 19H 20H	210.09 230.11 250.09 270.09 300.09	38.90 54.10 49.80 49.50 42.20	1.86 1.88 2.20 2.44 2.40	16.03 17.16 17.41 18.85 16.30	38.60 38.32 38.40 38.40 38.50	18.19 34.82 31.01 32.39 22.40	43.50 46.00 46.00 46.00 46.00	-25.31 -11.18 -14.99 -13.61 -23.60
21H 22H 23H 24H 25H	330.07 340.07 350.10 380.10 430.09	57.40 54.80 55.60 48.70 56.10	2.46 2.48 2.50 2.68 2.80	16.60 16.70 16.80 15.78 17.45	38.56 38.58 38.60 38.36 37.96	37.90 35.40 36.30 28.80 38.39	46.00 46.00 46.00 46.00 46.00	-8.10 -10.60 -9.70 -17.20 -7.61
26H 27H 28H 29H 30H	450.09 490.13 510.10 530.10 780.10	56.70 51.60 56.00 56.50 41.30	2.80 3.04 3.16 3.28 4.06	19.00 17.31 17.10 17.50 22.19	37.80 38.20 38.22 38.06 37.58	40.70 33.75 38.04 39.22 29.97	46.00 46.00 46.00 46.00	-5.30 -12.25 -7.96 -6.78 -16.03

Test location: Compatible Electronics

Date : 3/30/1999Time : 13.28

Customer : VITALCOM, INC. Manufacturer : VITALCOM, INC. EUT name : V-LINK II Model: DT Specification: Fcc_B Test distance: 3.0 mtrs Lab: D Model: DT-5100

Distance correction factor(20*log(test/spec)) : 0.00

Test Mode SERIAL MODE

TEMPERATURE 61 DEGREES F. RELATIVE HUMIDITY 85%
TESTED BY: KYLE FUJIMOTO

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	limit = L dBuV/m	Delta R-L dB
1V	40.02	54.50	0.90	10.70	38.60	27.50	40.00	-12.50
2V	49.92	58.30	1.00	11.10	38.60	25.50	40.00	-8.20
3V	60.09	59.40	1.10	10.30	38.60	32.20	40.00	-7.80
4V	80.09	63.60	1.20	9.00	38.60	35.20	40.00	-4.80
5V	100.08	60.20	1.30	9.40	38.60	32.30	43.50	-11.20
6V	110.09	52.10	1.34	10.05	38.68	24.81	43.50	-18.69
7V	120.08	63.00	1.38	10.68	38.76	33.30	43.50	-7.20
8V	150.08	50.90	1.60	12.51	38.50	26.51	43.50	-16.99
9V	170.08	50.60	1.76	14.43	38.42	28.37	43.50	-15.13
10V	180.08	48.30	1.82	14.98	38.48	26.62	43.50	-16.88
11V 12V 13V 14V 15V	203.06 203.06 204.61 204.61 230.10	63.50 63.18 62.80 62.59 46.40	1.89 1.89 1.88 1.88	15.52 15.52 15.63 15.63 17.16	38.74 38.74 38.71 38.71 38.32	42.17 41.85Qp 41.61 41.40 27.12	43.50 43.50 43.50 43.50 46.00	-1.33 -1.65 -1.89 -2.10 -18.88
16V	240.10	42.30	2.04	17.28	38.36	23.26	46.00	-22.74
17V	310.10	51.30	2.42	16.40	38.52	31.60	46.00	-14.40
18V	330.10	51.00	2.46	16.60	38.56	31.50	46.00	-14.50
19V	410.08	60.00	2.80	15.89	38.12	40.57	46.00	-5.43
20V	430.09	58.80	2.80	17.45	37.96	41.09	46.00	-4.91
21V	450.09	53.60	2.80	19.00	37.80	37.60	46.00	-8.40
22V	490.09	58.40	3.04	17.32	38.20	40.56	46.00	-5.44
23V	510.09	59.50	3.16	17.10	38.22	41.54	46.00	-4.46
24V	520.09	48.20	3.22	17.30	38.14	30.58	46.00	-15.42
25V	530.09	60.60	3.28	17.50	38.06	43.32	46.00	-2.68
26V	530.09	59.69	3.28	17.50	38.06	42.41Qp	46.00	-3.59
27V	540.09	55.00	3.34	17.70	37.98	38.06	46.00	-7.94
28V	600.09	45.50	3.50	19.50	38.40	30.10	46.00	-15.90
29V	720.09	46.80	3.88	21.55	38.00	34.23	46.00	-11.77

Test location: Compatible Electronics

3/30/1999 Date : Customer : VITALCOM, INC.

15.05 Manufacturer : VITALCOM, INC. Time : Model: DT-5100 EUT name : V-LINK II

Specification: Fcc_B Test distance: 3.0 mtrs Lab: D

Distance correction factor(20*log(test/spec)) : 0.00

Test Mode

TEMPERATURE 61 DEGREES F. RELATIVE HUMIDITY 85% TESTED BY: Note Typinon

KYLE FUJIMOTO

Delta limit Cor'd Amp Cable Ant Rdng Pol/ Freq = L R-L rdq = Rgain factor loss dΒ dBuV/m dB dBuV ďΒ dΒ MHz dBuV

> NO EMISSIONS FOUND FROM 10 kHz TO 30 MHz IN EITHER POLARIZATION FOR BOTH THE SERIAL AND ETHERNET MODES.



VITALCOM, INC. V-LINK II MODEL: DT-5100 FCC C - BLACK LFAD

TEST ENGINEER : Kale Fyunds KYLE FUJIMOTO

20 highest peaks above -50.00 dB of CLASS B limit line

Peak criteria : 0.30 dB, Curve : Peak

Peak# Freg(Mhz) Amp(dBuV) Limit(dB) Delta(dB)

Peak#	Freq(Mhz)	Amp(dBuV)	Limit(dB)	Delta(dB)	Ì
1	0.454	46.19	48.00	-1.81	
2	0.485	45.59	48.00	-2.41	
3	0.466	45.59	48.00	-2.41	
4	0.462	45.39	48.00	-2.61	
5	0.519	44.59	48.00	-3.41	
6	0.474	44.59	48.00	-3.41	•
7	0.470	44.49	48.00	-3.51	•
8	0.458	44.19	48.00	-3.81	
9	0.502	43.79	48.00	-4.21	
10	0.480	43.69	48.00	-4.31	
11	0.528	43.59	48.00	-4.41	
12	0.507	42.79	48.00	-5.21	
13	0.511	42.69	48.00	-5.31	
14	0.524	42.59	48.00	-5.41	
15	0.560	42.19	48.00	-5.81	
16	0.539	42.09	48.00	-5.91	
17	0.553	41.89	48.00	-6.11	
18	0.515	41.69	48.00	-6.31	
19	0.565	41.19	48.00	-6.81	

48.00 -7.01

20 0.544 40.99

PLEASE SEE QP READINGS ON NEXT PAGE AND ON PLOT



VITALCOM, INC. V-LINK II MODEL: DT-5100

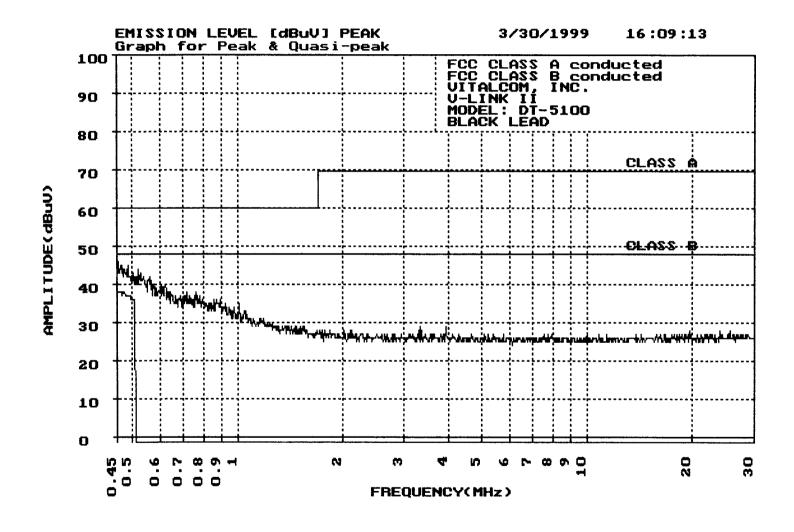
FCC C - BLACK LEAD

TEST ENGINEER : Kyle Turn

8 highest peaks above -50.00 dB of CLASS B limit line

Peak criteria: 0.00 dB, Curve: Quasi-peak
Peak# Freq(Mhz) Amp(dBuV) Limit(dB) Delta(dB)

48.00 -9.48 0.454 38.52 1 -9.64 48.00 2 0.460 38.36 -9.68 0.466 38.32 48.00 3 -9.74 48.00 0.474 38.26 4 48.00 -9.78 38.22 0.470 -10.5337.47 48.00 0.484 48.00 -10.59 0.487 3/.41 -11.59 36.41 48.00 8 0.509





VITALCOM, INC. V-LINK II MODEL: DT~5100

FCC C - WHITE LEAD THE FARMET

20 highest peaks above -50.00 dB of CLASS B limit line

Peak criteria : 0.30 dB, Curve : Peak

	criteria :			Eak						
Peak#	Freq(Mhz)	Amp(dBuV)	Limit(dB)	Delta(dB))		~0	PERRINGS	ON NEXT	PRGG
1	0.454	45.20	48.00	-2.807	PLEASE	D. OT	QΓ	REROINUS		
2	0.464	44.70	48.00	-3.30 3	AND UN	,-00,				
3	0.480	44.00	48.00	-4.00						
4	0.492	43.70	48.00	-4.30						
5	0.539	41.20	48.00	-6.80						
6	0.558	40.30	48.00	-7.70						
1	0.572	39.70	48.00	-8.30						
8	0.577	39.20	48.00	-8.80						
9	0.584	38.80	48.00	-9.20						
10	0.764	38.20	48.00	-9.80						
11	0.602	38.20	48.00	-9.80						
12	0.755	3/.80	48.00	-10.20						
13	0.800	37.71	48.00	-10.29						
14	0.657	37.50	48.00	-10.50						
15	0.821	37.41	48.00	-10.59						
16	0.643	37.40	48.00	-10.60						
17	0.622	37.40	48.00	-10.60						
18	0./94	37.30	48.00	-10.70						
19	0.736	37.30	48.00	-10.70						
20	0.682	37.30	48.00	-10.70						



VITALCOM, INC. V-LINK II MODEL: DT-5100

FCC C - WHITE LEAD
TEST ENGINEER: He Fuend

1 highest peaks above -50.00 dB of CLASS B limit line

Peak criteria : 0.00 dB, Curve : Quasi-peak Peak# Freq(Mhz) Amp(dBuV) Limit(dB) Delta(dB) 1 0.474 37.27 48.00 -10.73

