FCC PART 15, SUBPART B AND C
TEST REPORT

for

TRANSCEIVER

Model: DT-7000

Prepared for

VITALCOM
15222 DEL AMO AVENUE
TUSTIN, CALIFORNIA 92780

Prepared by: _____
KYLE FUJIMOTO

Approved by: _____
SCOTT McCUTCHAN

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

DATE: DECEMBER 12, 2000

	REPORT BODY	APPENDICES				TOTAL
		A	*B*	*C*	*D*	
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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: Transceiver
Model: DT-7000
S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: Vitalcom
15222 Del Amo Avenue
Tustin, California 92780

Test Date: December 11, 2000

Test Specifications: EMI requirements
Limits: EN 55022: 1998 Class B and
CFR Title 47, Part 15 Subpart C, Sections 15.205, 15.209, 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 **Class B** limits of EN 55022: 1998
2	Radiated RF Emissions, 10 kHz – 6140 MHz	Complies with the **Class B** limits of EN 55022: 1998; CFR 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) tests performed on the Transceiver Model: DT-7000. 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 **Class B** specification limits defined by C.I.S.P.R. Publication 22 for Information Technology Equipment; and CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.242. Under paragraph E of section 15.107 and paragraph G of section 15.109 of the Code of Federal Regulations Title 47, Part 15 of the FCC rules, FCC accepts the international standards set forth in C.I.S.P.R. Publication 22.

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

Gus Testa	RF 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 December 11, 2000.

2.5 Disposition of the Test Sample

The test sample was returned to Vitalcom on December 12, 2000.

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
CFR	Code of Federal Regulations

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
CFR 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.
EN 55022 1998	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
CISPR 22 1993	Limits and methods of measurements of radio disturbance characteristics of information technology equipment

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Specifics of the EUT and Peripherals Tested

The Transceiver Model: DT-7000 (EUT) was connected to a loopback and AC Adapter via its data and power ports, respectively. The EUT was continuously transmitting and receiving to and from an access point transceiver located 100 feet away from the test site and the data was being loopbacked from the EUT's data port #1 to the EUT's data port #2

The access point transceiver was connected to a server and AC Adapter via its Ethernet and power ports, respectively. The server was also connected to a mouse, keyboard, and monitor via its mouse, keyboard, and video ports, respectively. There was no RF cable nor any type of physical connection from either the access point transceiver or server to the EUT.

The antenna on the EUT is a standard connector, however, the antenna **cannot** be changed during normal use of the EUT. To be able to remove the antenna, the user would have to break open the case, remove the flex cable, and slide out the PCB (the PCB does not slide out easily) in order to get to the antenna section of the EUT. A user doing this will more than likely break the flex cable, making the EUT stop functioning.

Note: During the preliminary investigation, it was determined the EUT had the highest emissions in the horizontal polarization when the EUT was in its X-axis. For the vertical polarization, the highest emissions was when the EUT was in its Y-axis.

The final radiated data was taken in both the transmitting and receiving modes. Please see Appendix D for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1 This is a 2 foot braid and foil shielded cable connecting the EUT's data port #1 to cable #2. It has a metallic Hirose connector at the EUT end and a D-9 pin metallic connector at the other end. The shield of the cable was grounded to the chassis via the connector at the EUT end only.

Cable 2 This is a 2 meter unshielded cable connecting the D-9 pin metallic connectors of cables #1 and #3 in order to achieve a looping back of data for the EUT. The cable was hard wired into the pins of the D-9 pin metallic connector at each end.

Cable 3 This is a 2 foot braid and foil shielded cable connecting the EUT's data port #2 to cable #2. It has a metallic Hirose connector at the EUT end and a D-9 pin metallic connector at the other end. The shield of the cable was grounded to the chassis via the connector at the EUT end only.

Note: The total length of cable connected to the EUT's data ports is 6 feet.

Cable 4 This is a 6 foot unshielded cable connecting the EUT to the AC Adapter. It has a 2 pin power connector at the EUT end and is hard wired into the AC Adapter.

Cable 5 This is a 4 foot foil shielded cable connecting the server to the keyboard. It has a metallic 6 pin mini DIN connector at the server end and is hard wired into the keyboard. The shield of the cable was grounded to the chassis via the connector.

Cable 6 This is a 6 foot foil shielded cable connecting the server to the mouse. It has a metallic 6 pin mini DIN connector at the server end and is hard wired into the mouse. The shield of the cable was grounded to the chassis via the connector.

Cable 7 This is a 6 foot braid and foil shielded cable connecting the server to the monitor. It has a metallic high density D-15 pin metallic connector at the server end and is hard wired into the monitor. The shield of the cable was grounded to the chassis via the connector.

Cable 8 This is a 6 foot unshielded cable connecting the server to the Access Point Transceiver. It has an RJ-45 connector at each end.

Cable 9 This is a 6 foot unshielded cable connecting the AC Adapter to the Access Point Transceiver. It has a 2 pin terminal block at the Access Point Transceiver end and is hard wired into the AC Adapter.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
TRANSCEIVER (EUT)	VITALCOM	DT-7000	N/A	**BQI00DT-7000**
AC ADAPTER FOR THE EUT	JEROME INDUSTRIES	UDKN60-01M	N/A	**N/A**
ACCESS POINT TRANSCEIVER	VITALCOM	DR-10000	N/A	**N/A**
KEYBOARD	BTC	5100C	N94402866	**N/A**
MOUSE	MICROSOFT	2.1A	00619173	**C3KKS5**
SERVER	VITALCOM	CENTRAL STATION	005005	**N/A**
MONITOR	VIEWSONIC	VCD5S21468-1M	EP95191484	**DoC**
AC ADAPTER FOR ACCESS POINT TRANSCEIVER	GROUP WEST	66DT-24-1800	N/A	**N/A**

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer	Hewlett Packard	8566B	3701A22262	June 24, 2000	June 24, 2001
Preamplifier	Com Power	PA-102	1017	Jan. 11, 2000	Jan. 11, 2001
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	June 24, 2000	June 24, 2001
RF Attenuator	Weinschel Corp.	2	BJ6394	Aug. 2, 2000	Aug. 2, 2001
LISN	Com Power	LI-215	12075	Nov. 13, 2000	Nov. 13, 2001
LISN	Com Power	LI-215	12078	Nov. 13, 2000	Nov. 13, 2001
Biconical Antenna	Com Power	AB-100	1548	Oct. 16, 2000	Oct. 16, 2001
Log Periodic Antenna	Com Power	AL-100	16101	Oct. 16, 2000	Oct. 16, 2001
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	Com-Power	PA-122	25195	Jan. 13, 2000	Jan. 13, 2001
Horn Antenna	Antenna Research	DRG-118/A	1053	Dec. 8, 1995	N/A
Loop Antenna	Com-Power	AL-130	25309	May 25, 2000	May 25, 2001

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 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 spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak 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 offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this 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 conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics Conducted Emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix D.

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 Preamplifier 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.

For the peak readings below 1000 MHz that were within 3 dB of the spec limit or higher, the quasi-peak adapter was used.

For the peak readings above 1000 MHz that were within 3dB of the spec limit or higher, the readings were averaged using a duty cycle of 35%. Please see the duty cycle exhibit for how this was obtained.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 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 6.14 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 for the fundamental and harmonics and at 10 meters for the receiver and digital portion to obtain final test data. The final qualification data sheets are located in Appendix D.

7.3 RF Band Edges

Spectral plots of both the low and high channels were taken of the EUT to show that the emissions at the band edges (608 and 614 MHz) were attenuated to the general radiated emissions limits in FCC Title 47, Subpart C, section 15.209. The spectral plots and data sheets are located in Appendix D.

8. CONCLUSIONS

The Transceiver Model: DT-7000 meets all of the **Class B** specification limits defined by C.I.S.P.R. Publication 22 for Information Technology Equipment; and CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.242. Under paragraph E of section 15.107 and paragraph G of section 15.109 of the Code of Federal Regulations Title 47, Part 15 of the FCC rules, FCC accepts the international standards set forth in C.I.S.P.R. Publication 22.

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.

No modifications were made to the EUT during the testing.

APPENDIX B

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Transceiver
Model: DT-7000
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

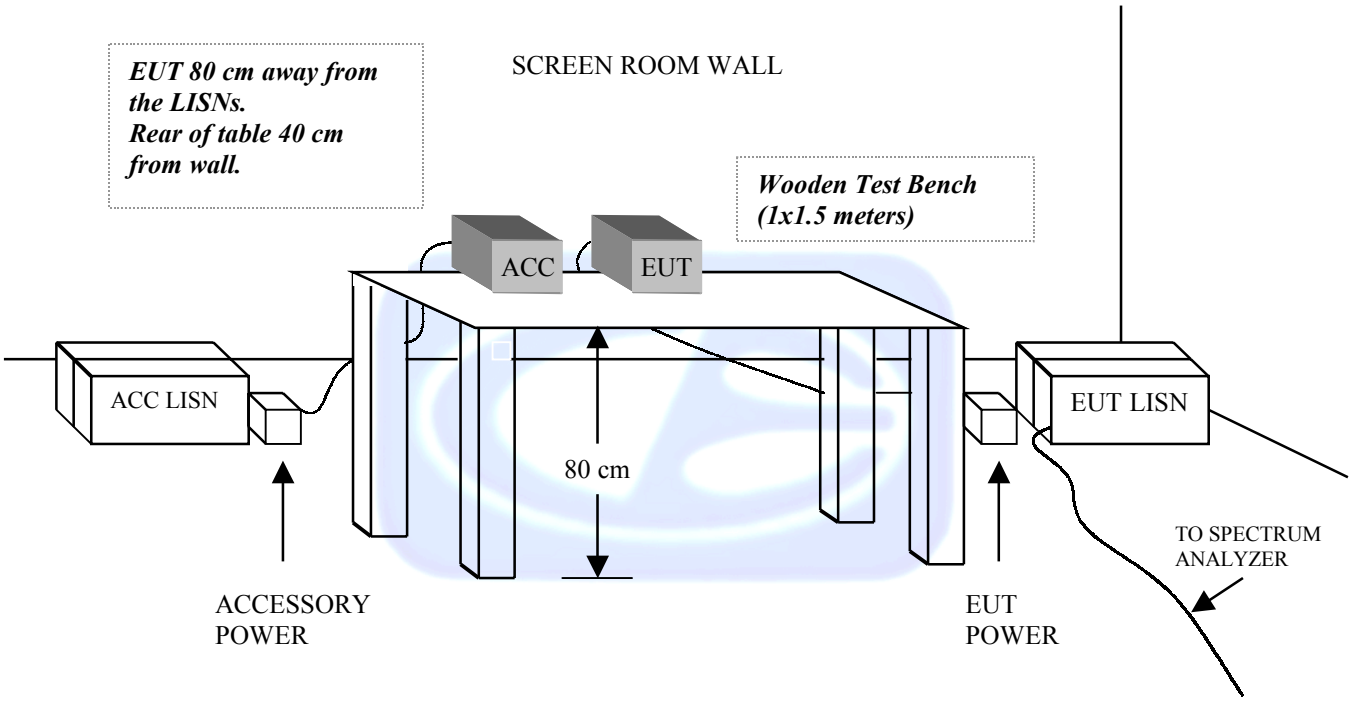
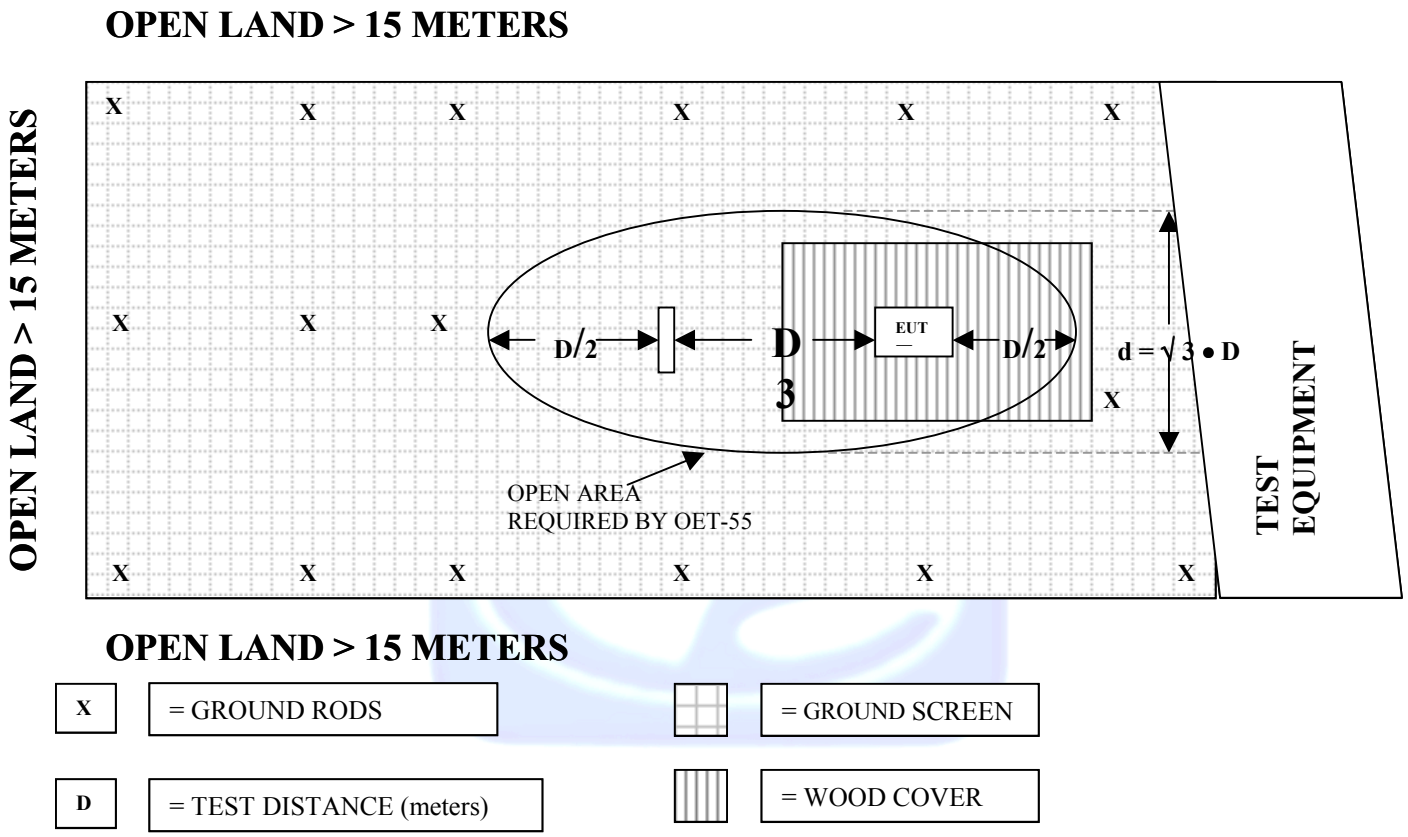
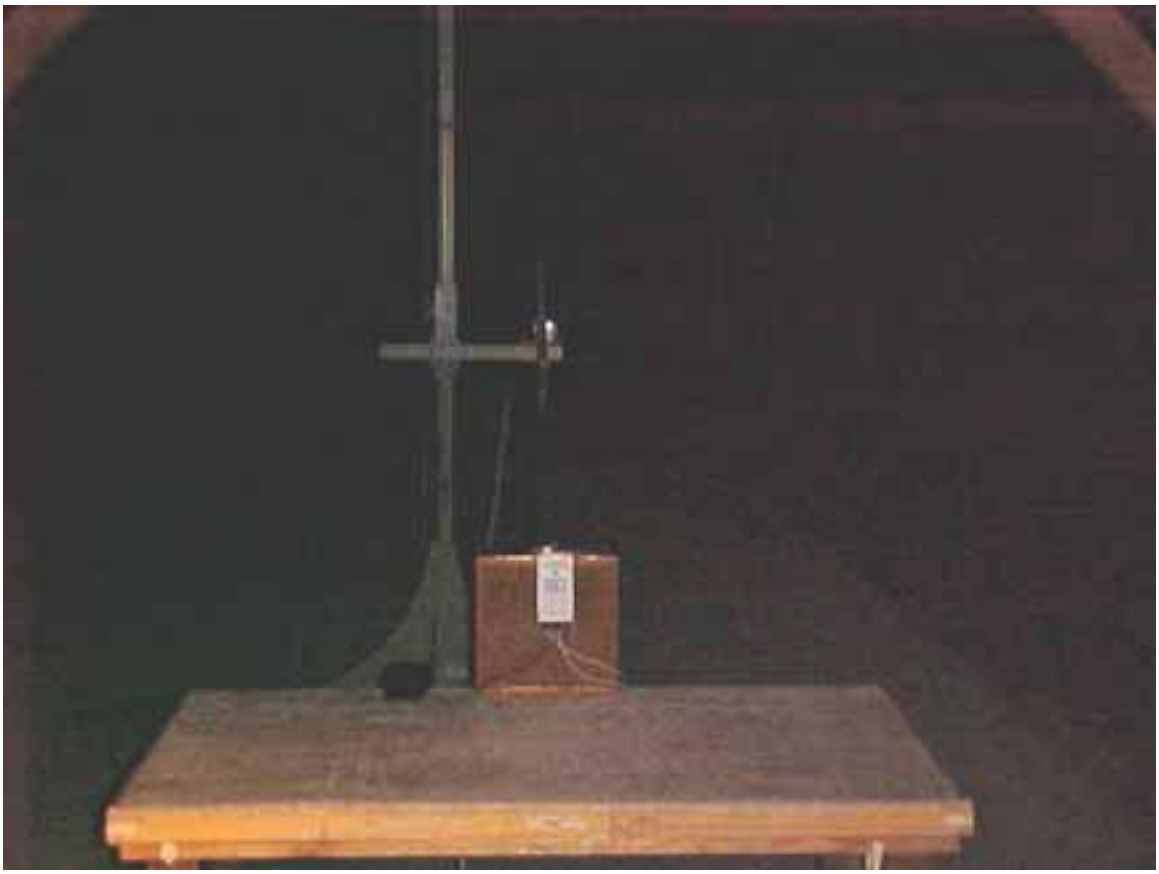


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE





FRONT VIEW

VITALCOM
TRANSCEIVER
MODEL: DT-7000
FCC SUBPART C - RADIATED EMISSIONS – 12-11-00

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

VITALCOM
TRANSCEIVER
MODEL: DT-7000
FCC SUBPART C - RADIATED EMISSIONS – 12-11-00

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

VITALCOM
TRANSCEIVER
MODEL: DT-7000
FCC SUBPART B - RADIATED EMISSIONS – 12-11-00

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

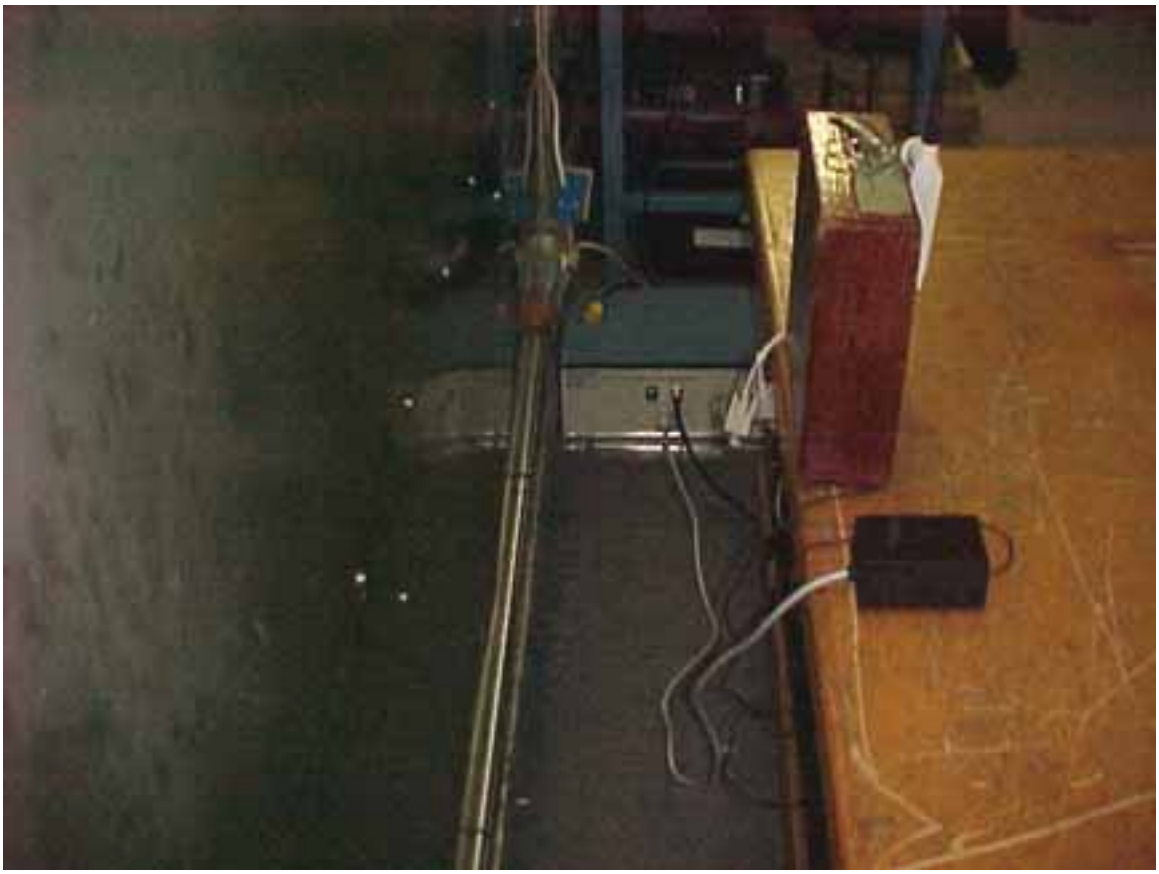
VITALCOM
TRANSCEIVER
MODEL: DT-7000
FCC SUBPART B - RADIATED EMISSIONS – 12-11-00

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

VITALCOM
TRANSCEIVER
MODEL: DT-7000
FCC SUBPART B AND C - CONDUCTED EMISSIONS – 12-11-00

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

VITALCOM
TRANSCEIVER
MODEL: DT-7000
FCC SUBPART B AND C - CONDUCTED EMISSIONS – 12-11-00

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

COM-POWER AB-100

BICONICAL ANTENNA

S/N: 01548

CALIBRATION DATE: OCTOBER 16, 2000

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	14.01	120	10.33
35	13.63	125	11.61
40	13.26	140	12.70
45	11.62	150	12.95
50	11.03	160	13.58
60	8.52	175	14.82
70	8.94	180	14.84
80	8.17	200	14.80
90	8.08	250	16.42
100	8.64	300	20.26

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16101

CALIBRATION DATE: OCTOBER 16, 2000

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.96	700	19.24
400	16.92	800	21.37
500	16.73	900	22.13
600	16.32	1000	22.19

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 11, 2000

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.3	300	38.6
40	38.6	350	38.6
50	38.7	400	38.6
60	38.8	450	38.1
70	38.9	500	37.9
80	38.8	550	39.2
90	38.6	600	38.3
100	38.6	650	38.4
125	38.8	700	38.3
150	38.8	750	38.2
175	38.7	800	37.7
200	38.8	850	37.5
225	38.6	900	37.5
250	38.6	950	37.7
275	38.5	1000	37.3

COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: JANUARY 13, 2000

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	34.4	9.0	30.7
1.1	34.1	9.5	31.5
1.2	34.2	10.0	31.0
1.3	34.1	10.5	31.4
1.4	33.9	11.0	30.7
1.5	33.8	11.5	29.5
1.6	33.0	12.0	27.8
1.7	33.3	12.5	31.4
1.8	33.3	13.0	31.0
1.9	31.9	13.5	31.0
2.0	32.7	14.0	31.5
2.5	31.8	14.5	30.2
3.0	31.7	15.0	29.2
3.5	31.9	15.5	30.1
4.0	31.0	16.0	29.0
4.5	31.4	16.5	27.8
5.0	31.1	17.0	30.8
5.5	31.0	17.5	31.5
6.0	32.0	18.0	30.8
6.5	31.6		
7.0	32.3		
7.5	32.9		
8.0	32.1		
8.5	31.6		

ANTENNA RESEARCH ASSOCIATES, INC.
11317 Frederick Avenue, Beltsville, MD 20705

E-FIELD ANTENNA FACTOR CALIBRATION

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

Model number : DRG-118/A

Frequency GHz	AFE dB/m	Gain dBi
1	22.3	8.0
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

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

Calibrated By

Com-Power Corporation

(949) 587-9800

Antenna Calibration

Antenna Type:	Loop Antenna
Model:	AL-130
Serial Number:	25309
Calibration Date:	05/25/00

Frequency MHz	Magnetic (dB/m)	Electric dB/m
0.009	-41.0	10.5
0.01	-41.0	10.5
0.02	-41.9	9.6
0.05	-41.9	9.6
0.075	-41.8	9.7
0.1	-42.2	9.3
0.15	-42.2	9.3
0.25	-40.7	10.8
0.5	-42.1	9.4
0.75	-40.9	10.6
1	-41.3	10.2
2	-40.8	10.7
3	-41.1	10.4
4	-41.2	10.3
5	-40.7	10.8
10	-40.6	10.9
15	-42.0	9.5
20	-42.0	9.5
25	-42.9	8.6
30	-42.3	9.2

Trans. Antenna Height	2 meter
Receiving Antenna Height	2 meter

APPENDIX D

DATA SHEETS

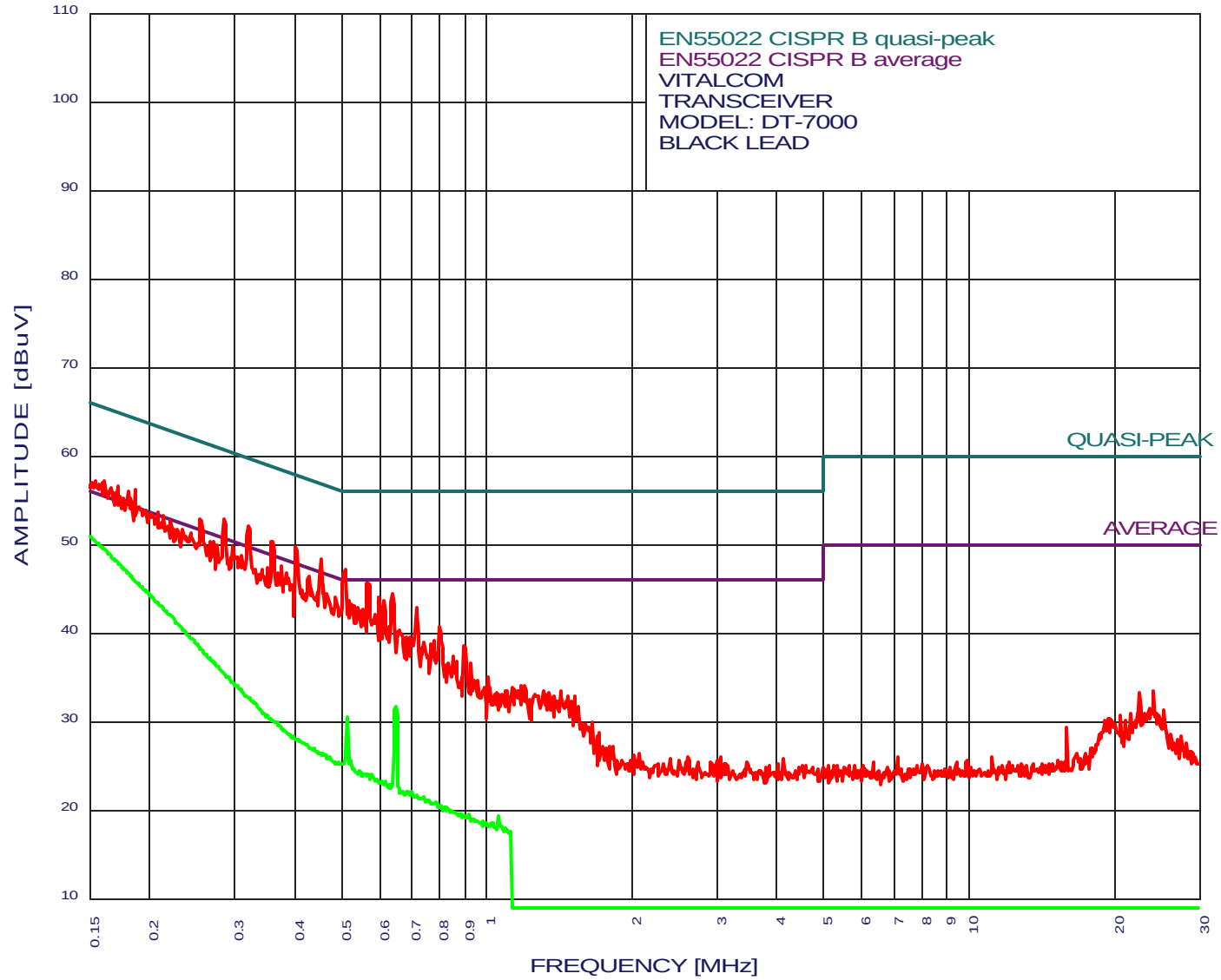
CONDUCTED EMISSIONS

DATA SHEETS

COMPATIBLE ELECTRONICS

EMISSION LEVEL [dBuV] PEAK
Graph for Peak& Average

12/11/2000 18:13:33



COMPATIBLE ELECTRONICS

12/11/2000 18:13:33

VITALCOM
TRANSCEIVER
MODEL: DT-7000
EN 55022 - BLACK LEAD
TEST ENGINEER : KYLE FUJIMOTO

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25 highest peaks above -50.00 dB of AVERAGE limit line
Peak criteria : 3.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.320	51.97	49.70	2.27*
2	0.285	52.89	50.67	2.22*
3	0.186	56.18	54.19	1.98*
4	0.402	49.77	47.80	1.97*
5	0.360	50.27	48.73	1.54*
6	0.452	48.37	46.84	1.54*
7	0.255	52.92	51.60	1.32*
8	0.508	47.17	46.00	1.17*
9	0.150	56.31	56.00	0.31*
10	0.568	45.67	46.00	-0.33*
11	0.638	44.37	46.00	-1.63*
12	0.598	44.07	46.00	-1.93*
13	0.611	43.57	46.00	-2.43*
14	0.713	42.87	46.00	-3.13*
15	0.797	40.68	46.00	-5.32*
16	0.895	38.48	46.00	-7.52*
17	0.929	36.58	46.00	-9.42*
18	1.005	35.08	46.00	-10.92*
19	1.199	34.08	46.00	-11.92*
20	1.419	33.48	46.00	-12.52
21	1.520	32.89	46.00	-13.11
22	24.149	33.34	50.00	-16.66
23	22.562	33.28	50.00	-16.72
24	1.708	28.79	46.00	-17.21

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* Please see the Average Readings on the Next Page and on the Plot

COMPATIBLE ELECTRONICS

12/11/2000 18:13:33

VITALCOM
TRANSCEIVER
MODEL: DT-7000
EN 55022 - BLACK LEAD
TEST ENGINEER : KYLE FUJIMOTO

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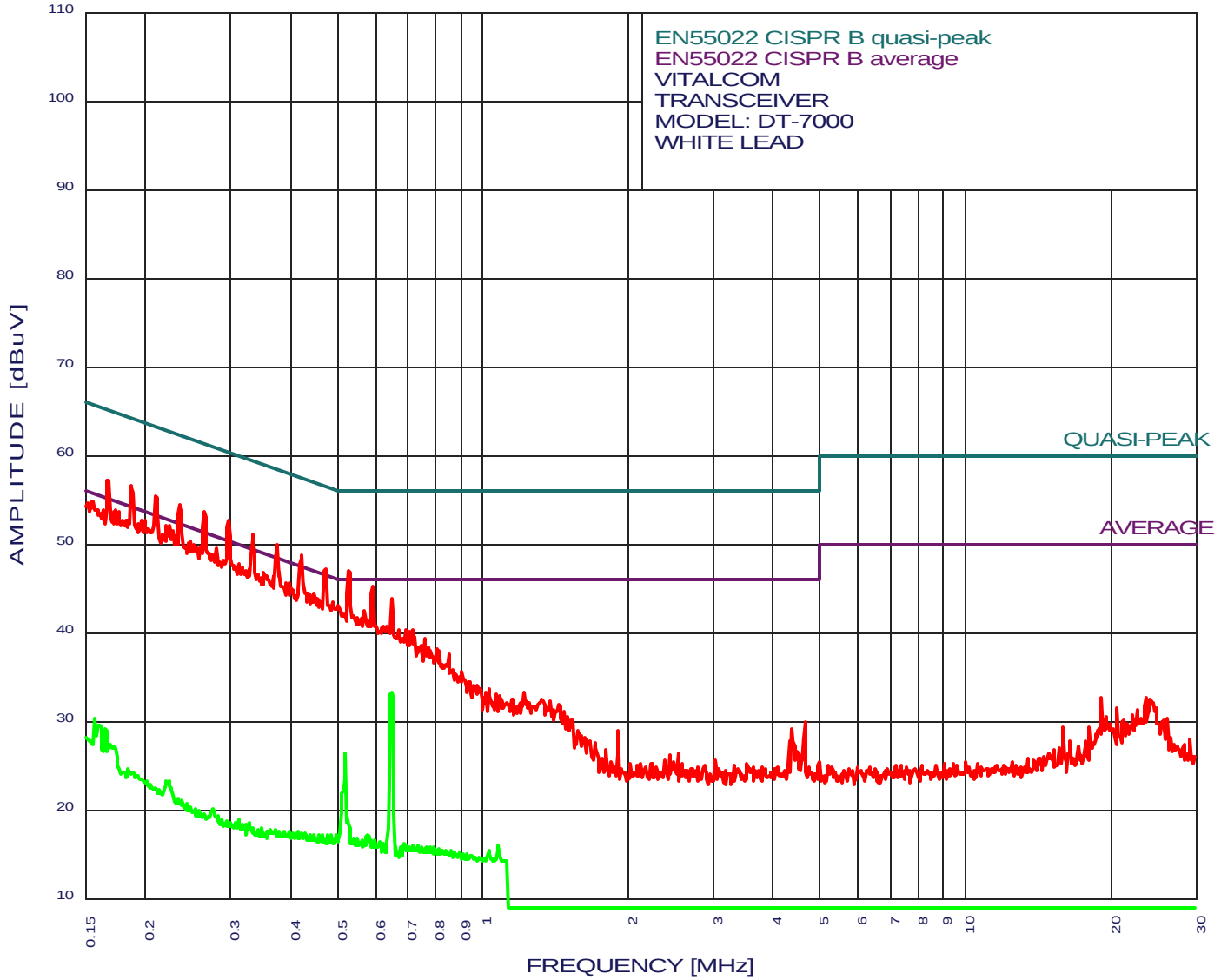
36 highest peaks above -50.00 dB of AVERAGE limit line
Peak criteria : 0.10 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.150	50.96	56.00	-5.04
2	0.648	31.57	46.00	-14.43
3	0.513	30.50	46.00	-15.50
4	0.352	30.67	48.91	-18.24
5	0.409	27.93	47.67	-19.74
6	0.438	26.89	47.11	-20.22
7	0.459	26.34	46.70	-20.36
8	0.522	25.53	46.00	-20.47
9	0.472	25.91	46.49	-20.58
10	0.492	25.46	46.13	-20.67
11	0.500	25.27	46.00	-20.73
12	0.544	24.47	46.00	-21.53
13	0.559	24.07	46.00	-21.93
14	0.568	24.00	46.00	-22.00
15	0.577	23.98	46.00	-22.02
16	0.592	23.41	46.00	-22.59
17	0.605	23.27	46.00	-22.73
18	0.615	23.24	46.00	-22.76
19	0.628	22.81	46.00	-23.19
20	0.683	22.12	46.00	-23.88
21	0.669	22.08	46.00	-23.92
22	0.698	21.98	46.00	-24.02
23	0.717	21.70	46.00	-24.30
24	0.739	21.42	46.00	-24.58
25	0.752	21.18	46.00	-24.82
26	0.785	20.90	46.00	-25.10
27	0.805	20.41	46.00	-25.59
28	0.827	20.21	46.00	-25.79
29	0.817	20.21	46.00	-25.79
30	0.845	19.90	46.00	-26.10
31	0.886	19.54	46.00	-26.46
32	0.919	19.43	46.00	-26.57
33	1.061	19.35	46.00	-26.65
34	0.900	19.35	46.00	-26.65
35	0.934	19.01	46.00	-26.99
36	0.944	18.93	46.00	-27.07

COMPATIBLE ELECTRONICS

EMISSION LEVEL [dBuV] PEAK
Graph for Peak& Average

12/11/2000 18:36:51



COMPATIBLE ELECTRONICS

12/11/2000 18:36:51

VITALCOM
TRANSCEIVER
MODEL: DT-7000
EN55022 - WHITE LEAD
TEST ENGINEER : KYLE FUJIMOTO

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22 highest peaks above -50.00 dB of AVERAGE limit line
Peak criteria : 3.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.298	52.62	50.31	2.31*
2	0.186	56.49	54.19	2.29*
3	0.265	53.54	51.28	2.26*
4	0.210	55.37	53.22	2.15*
5	0.236	54.36	52.25	2.11*
6	0.167	57.20	55.12	2.08*
7	0.334	51.10	49.34	1.75*
8	0.374	49.97	48.42	1.55*
9	0.422	48.77	47.41	1.36*
10	0.527	46.97	46.00	0.97*
11	0.474	47.07	46.44	0.62*
12	0.592	45.27	46.00	-0.73*
13	0.150	54.31	56.00	-1.69*
14	0.648	43.87	46.00	-2.13*
15	4.653	29.96	46.00	-16.04
16	4.364	29.06	46.00	-16.94
17	1.908	29.00	46.00	-17.00
18	23.661	32.69	50.00	-17.31
19	19.142	32.57	50.00	-17.43
20	4.320	27.65	46.00	-18.35
21	20.623	31.54	50.00	-18.46
22	2.543	26.41	46.00	-19.59

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* Please see the Average Readings on the Next Page and on the Plot

COMPATIBLE ELECTRONICS

12/11/2000 18:36:51

VITALCOM
TRANSCEIVER
MODEL: DT-7000
EN55022 - WHITE LEAD
TEST ENGINEER : KYLE FUJIMOTO

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36 highest peaks above -50.00 dB of AVERAGE limit line
Peak criteria : 0.10 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.648	33.15	46.00	-12.85
2	0.519	26.42	46.00	-19.58
3	0.158	30.34	55.59	-25.26
4	0.160	29.60	55.46	-25.86
5	0.165	29.08	55.20	-26.12
6	0.524	19.38	46.00	-26.62
7	0.172	27.19	54.85	-27.66
8	0.169	27.26	55.03	-27.77
9	0.150	28.16	56.00	-27.84
10	0.153	27.84	55.82	-27.98
11	0.155	27.69	55.73	-28.04
12	0.497	17.17	46.04	-28.88
13	0.577	17.08	46.00	-28.92
14	0.487	17.08	46.23	-29.15
15	0.550	16.78	46.00	-29.22
16	0.538	16.73	46.00	-29.27
17	0.476	17.08	46.40	-29.32
18	0.562	16.63	46.00	-29.37
19	0.467	17.17	46.57	-29.40
20	0.586	16.58	46.00	-29.42
21	0.223	23.17	52.69	-29.53
22	0.598	16.47	46.00	-29.53
23	0.221	23.20	52.78	-29.58
24	0.457	17.13	46.75	-29.62
25	0.611	16.37	46.00	-29.63
26	0.184	24.53	54.28	-29.75
27	0.447	17.17	46.92	-29.76
28	0.687	16.15	46.00	-29.85
29	0.621	16.15	46.00	-29.85
30	0.189	24.25	54.10	-29.86
31	0.717	16.04	46.00	-29.96
32	0.428	17.32	47.28	-29.96
33	0.413	17.60	47.58	-29.99
34	0.422	17.41	47.41	-30.00
35	0.438	17.08	47.11	-30.03
36	0.193	23.87	53.92	-30.05

RADIATED EMISSIONS

DATA SHEETS FOR THE TRANSMITTER PORTION

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.242)

COMPANY	**VITALCOM**	**DATE**	**12/11/00**
EUT	**TRANSCEIVER**	**DUTY CYCLE**	**35%**
MODEL	**DT-7000**	**PEAK TO AVG**	**-9.1 dB**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**Kyle Fujimoto**	**LAB**	**D**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
608.7000	84.2	84.0 Q	V	1.0	180	Y	HI	16.7	3.5	0.0	**104.2**	**-1.8**	**106.0**	
608.7000	82.5	82.0 Q	H	1.0	180	X	HI	16.6	3.5	0.0	**102.1**	**-3.9**	**106.0**	
611.1960	85.3	85.1 Q	V	1.0	180	Y	HI	16.7	3.5	0.0	**105.3**	**-0.7**	**106.0**	
611.1960	83.0	82.8 Q	H	1.0	180	X	HI	16.7	3.5	0.0	**103.0**	**-3.1**	**106.0**	
612.9650	85.6	85.4 Q	V	1.0	180	Y	HI	16.7	3.5	0.0	**105.6**	**-0.4**	**106.0**	
612.9600	82.7	82.5 Q	H	1.0	180	X	HI	16.7	3.5	0.0	**102.7**	**-3.3**	**106.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.242)

COMPANY	**VITALCOM**	**DATE**	**12/11/00**
EUT	**TRANSCEIVER**	**DUTY CYCLE**	**35%**
MODEL	**DT-7000**	**PEAK TO AVG**	**-9.1 dB**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**Kyle Fujimoto**	**LAB**	**D**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1217.4000	68.6	59.5 A	H	2.0	180	X	LOW	22.3	2.8	34.2	**50.4**	**-3.6**	**54.0**	
1217.4000	69.4	60.3 A	V	1.0	270	Y	LOW	22.3	2.8	34.2	**51.2**	**-2.8**	**54.0**	
1222.3920	67.9	58.8 A	H	1.0	270	X	MID	22.3	2.8	34.2	**49.7**	**-4.3**	**54.0**	
1222.3920	70.1	61.0 A	V	1.0	0	Y	MID	22.3	2.8	34.2	**51.9**	**-2.1**	**54.0**	
1225.9300	71.4	62.3 A	H	1.0	270	X	HI	22.3	2.8	34.2	**53.2**	**-0.8**	**54.0**	
1225.9300	69.1	60.0 A	V	1.0	270	Y	HI	22.3	2.8	34.2	**50.9**	**-3.1**	**54.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.242)

COMPANY	**VITALCOM**	**DATE**	**12/11/00**
EUT	**TRANSCEIVER**	**DUTY CYCLE**	**35%**
MODEL	**DT-7000**	**PEAK TO AVG**	**-9.1 dB**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**Kyle Fujimoto**	**LAB**	**D**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1826.1000	52.6	43.5 A	H	1.0	90	X	LOW	24.5	3.5	33.3	**38.2**	**-15.8**	**54.0**	
1826.1000	60.9	51.8 A	V	1.0	180	Y	LOW	24.5	3.5	33.3	**46.5**	**-7.5**	**54.0**	
1833.5880	56.9	47.8 A	H	1.0	180	X	MID	24.5	3.5	33.3	**42.5**	**-11.5**	**54.0**	
1833.5880	56.0	46.9 A	V	1.0	180	Y	MID	24.5	3.5	33.3	**41.6**	**-12.4**	**54.0**	
1838.8950	64.3	55.2 A	H	1.0	270	X	HI	24.5	3.5	33.3	**49.9**	**-4.1**	**54.0**	
1838.8950	55.2	46.1 A	V	1.0	180	Y	HI	24.5	3.5	33.3	**40.8**	**-13.2**	**54.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.242)

COMPANY	**VITALCOM**	**DATE**	**12/11/00**
EUT	**TRANSCEIVER**	**DUTY CYCLE**	**35%**
MODEL	**DT-7000**	**PEAK TO AVG**	**-9.1 dB**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**Kyle Fujimoto**	**LAB**	**D**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2434.8000	44.1	35.0 A	H	1.0	180	X	LOW	28.2	4.5	31.8	**35.9**	**-18.1**	**54.0**	
2434.8000	53.8	44.7 A	V	1.0	270	Y	LOW	28.2	4.5	31.8	**45.6**	**-8.4**	**54.0**	
2444.7840	41.5	32.4 A	H	1.0	180	X	MID	28.2	4.5	31.8	**33.3**	**-20.7**	**54.0**	
2444.7840	53.6	44.5 A	V	1.0	270	Y	MID	28.2	4.5	31.8	**45.4**	**-8.6**	**54.0**	
2451.8600	45.2	36.1 A	H	1.0	180	X	HI	28.2	4.5	31.8	**37.0**	**-17.0**	**54.0**	
2451.8600	43.2	34.1 A	V	1.0	180	Y	HI	28.2	4.5	31.8	**35.0**	**-19.0**	**54.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.242)

COMPANY	**VITALCOM**	**DATE**	**12/11/00**
EUT	**TRANSCEIVER**	**DUTY CYCLE**	**35%**
MODEL	**DT-7000**	**PEAK TO AVG**	**-9.1 dB**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**Kyle Fujimoto**	**LAB**	**D**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3043.5000	38.8	29.7 A	H	1.0	270	X	LOW	29.7	4.6	31.7	**32.3**	**-21.7**	**54.0**	
3043.5000	52.7	43.6 A	V	1.0	270	Y	LOW	29.7	4.6	31.7	**46.2**	**-7.8**	**54.0**	
3055.9800	46.4	37.3 A	H	1.0	270	X	MID	29.7	4.6	31.7	**39.9**	**-14.1**	**54.0**	
3055.9800	50.1	41.0 A	V	1.0	90	Y	MID	29.7	4.6	31.7	**43.6**	**-10.4**	**54.0**	
3064.8250	49.7	40.6 A	H	1.0	90	X	HI	29.7	4.6	31.7	**43.2**	**-10.8**	**54.0**	
3064.8250	39.4	30.3 A	V	1.0	270	Y	HI	29.7	4.6	31.7	**32.9**	**-21.1**	**54.0**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

No Harmonics Nor Emissions Found After the 5th Harmonic

Test location: Compatible Electronics
Customer : VITALCOM Date : 12/11/2000
Manufacturer : VITALCOM Time : 19.57
EUT name : TRANSCEIVER Model: DT-7000
Specification: Cispr_B Test distance: 10.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : SPURIOUS EMISSIONS FROM THE EUT
HORIZONTAL AND VERTICAL POLARIZATION 10 kHz to 30 MHz
TEMPERATURE 55 DEGREES F.
RELATIVE HUMIDITY 69%
TESTED BY: KYLE FUJIMOTO

NO EMISSIONS FOUND IN EITHER POLARIZATION
FOR THE EUT FROM 10 kHz TO 30 MHz

RADIATED EMISSIONS

DATA SHEETS FOR THE DIGITAL PORTION

Test location: Compatible Electronics
Customer : VITALCOM Date : 12/11/2000
Manufacturer : VITALCOM Time : 18.24
EUT name : TRANSCEIVER Model: DT-7000
Specification: Cispr_B Test distance: 10.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : SPURIOUS EMISSIONS FROM THE EUT
HORIZONTAL AND VERTICAL POLARIZATION 30 MHz TO 300 MHz
TEMPERATURE 55 DEGREES F.
RELATIVE HUMIDITY 69%
TESTED BY: KYLE FUJIMOTO

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	Db
VERTICAL POLARIZATION								
1V	57.33	46.50	1.50	9.19	38.77	18.42	30.00	-11.58
2V	73.33	39.90	1.67	8.68	38.87	11.38	30.00	-18.62
3V	114.66	48.10	2.08	9.88	38.72	21.34	30.00	-8.66
4V	122.94	52.90	2.18	11.08	38.78	27.37	30.00	-2.63
5V	122.94	52.37	2.18	11.08	38.78	26.84Qp	30.00	-3.16
6V	136.85	45.70	2.25	12.47	38.75	21.67	30.00	-8.33
7V	168.69	44.20	2.60	14.30	38.77	22.32	30.00	-7.68
8V	174.52	44.40	2.69	14.78	38.80	23.07	30.00	-6.93
9V	193.30	44.90	2.77	14.81	38.65	23.83	30.00	-6.17
10V	208.95	42.20	2.84	15.09	38.67	21.45	30.00	-8.55
11V	220.72	46.30	2.88	15.47	38.77	25.89	30.00	-4.11
12V	224.82	45.00	2.90	15.60	38.80	24.71	30.00	-5.29
13V	258.13	44.80	3.37	17.04	38.57	26.64	37.00	-10.36
14H	57.16	47.10	1.50	9.23	38.77	19.06	30.00	-10.94
15H	77.77	47.20	1.76	8.34	38.82	18.47	30.00	-11.53
HORIZONTAL POLARIZATION								
16H	111.67	40.70	2.04	9.63	38.69	13.67	30.00	-16.33
17H	126.07	37.60	2.20	11.69	38.80	12.70	30.00	-17.30
18H	143.29	41.30	2.27	12.78	38.73	17.63	30.00	-12.37
19H	152.09	40.90	2.33	13.08	38.71	17.61	30.00	-12.39
20H	161.44	44.30	2.48	13.70	38.75	21.74	30.00	-8.26
21H	171.57	47.80	2.65	14.54	38.79	26.20	30.00	-3.80
22H	178.06	41.00	2.71	14.83	38.78	19.77	30.00	-10.23
23H	194.82	43.10	2.78	14.81	38.64	22.05	30.00	-7.95
24H	204.83	41.40	2.82	14.96	38.64	20.54	30.00	-9.46
25H	217.69	39.40	2.87	15.37	38.74	18.90	30.00	-11.10
26H	233.54	42.20	3.04	15.89	38.73	22.39	37.00	-14.61
27H	245.90	45.50	3.23	16.29	38.63	26.39	37.00	-10.61
28H	270.45	41.30	3.46	17.99	38.52	24.24	37.00	-12.76

Test location: Compatible Electronics
Customer : VITALCOM Date : 12/11/2000
Manufacturer : VITALCOM Time : 17.43
EUT name : TRANSCEIVER Model: DT-7000
Specification: Cispr_B Test distance: 10.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : SPURIOUS EMISSIONS FROM THE EUT
HORIZONTAL AND VERTICAL POLARIZATION 300 MHz TO 1000 MHz
TEMPERATURE 55 DEGREES F.
RELATIVE HUMIDITY 69%
TESTED BY: KYLE FUJIMOTO

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
HORIZONTAL POLARIZATION								
1H	320.07	42.00	3.70	13.75	38.60	20.85	37.00	-16.15
2H	330.07	44.80	3.80	14.15	38.60	24.15	37.00	-12.85
3H	339.23	48.80	3.89	14.51	38.60	28.60	37.00	-8.40
4H	353.97	43.20	4.01	15.09	38.60	23.70	37.00	-13.30
5H	383.44	47.20	4.07	16.26	38.60	28.92	37.00	-8.08
6H	400.07	48.50	4.10	16.91	38.60	30.91	37.00	-6.09
7H	440.73	45.50	4.34	16.84	38.19	28.49	37.00	-8.51
8H	531.36	42.90	4.99	16.60	38.72	25.77	37.00	-11.23
9H	675.28	42.80	5.70	18.52	38.35	28.67	37.00	-8.33
VERTICAL POLARIZATION								
10V	320.13	45.70	3.70	13.75	38.60	24.56	37.00	-12.44
11V	340.13	45.40	3.90	14.54	38.60	25.25	37.00	-11.75
12V	368.74	41.80	4.04	15.68	38.60	22.91	37.00	-14.09
13V	400.09	47.30	4.10	16.91	38.60	29.71	37.00	-7.29
14V	420.09	45.10	4.22	16.87	38.40	27.80	37.00	-9.20
15V	450.85	41.90	4.41	16.82	38.10	25.03	37.00	-11.97
16V	500.07	43.30	4.80	16.73	37.90	26.93	37.00	-10.07

RADIATED EMISSIONS

DATA SHEETS FOR THE RECEIVER PORTION

Test location: Compatible Electronics
Customer : VITALCOM Date : 12/11/2000
Manufacturer : VITALCOM Time : 17.58
EUT name : TRANSCEIVER Model: DT-7000
Specification: Cispr_B Test distance: 10.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode : RECEIVING MODE FOR THE EUT
TEMPERATURE 55 DEGREES F.
RELATIVE HUMIDITY 69%
TESTED BY: KYLE FUJIMOTO

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
VERTICAL POLARIZATION								
1V	537.69	36.00	5.03	16.58	38.88	18.73	37.00	-18.27
2V	539.88	39.60	5.04	16.57	38.94	22.27	37.00	-14.73
3V	541.92	39.50	5.05	16.56	38.99	22.12	37.00	-14.88
HORIZONTAL POLARIZATION								
4H	537.86	34.70	5.05	16.56	38.99	17.32	37.00	-19.68
5H	540.69	35.10	5.04	16.56	38.96	17.74	37.00	-19.26
6H	541.79	41.80	5.05	16.56	38.99	24.42	37.00	-12.58

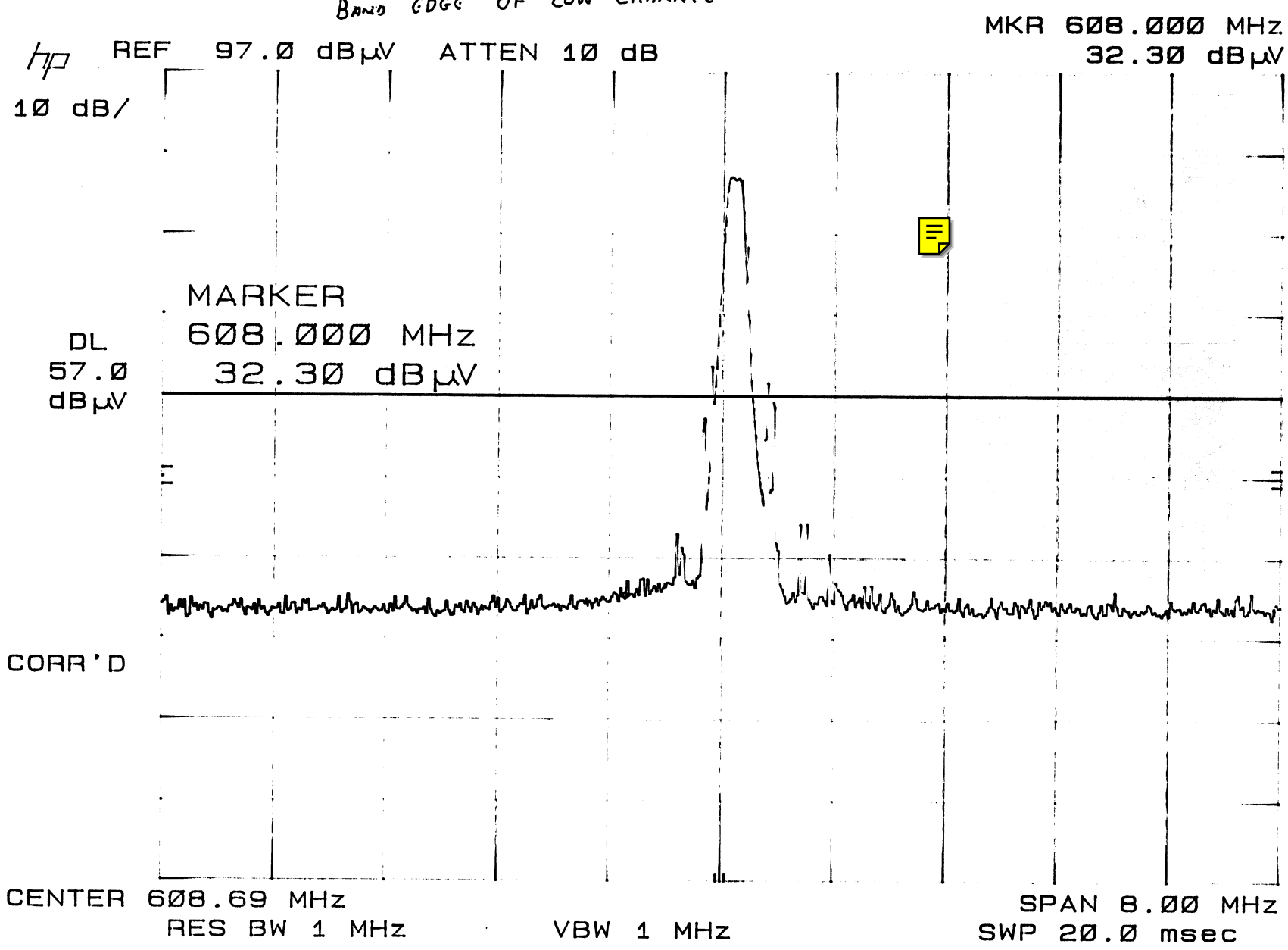
NO OTHER EMISSIONS FROM THE RECEIVER PORTION FOUND FOR THE EUT

BAND EDGE

DATA SHEETS

BAND EDGE OF LOW CHANNEL

12-11-00



Band Edge Of High Channel

12-11-00