



**VERIFICATION REPORT
OF
ELECTROMAGNETIC INTERFERENCE**

Per

**CFR 47 Part 15 Subpart B
Conducted Emissions Per EN 55022**

EUT:

PREPARED FOR APPLICANT:

Visionary Product Inc.

11814 South Election Road Ste 200
Draper, UT. 84020



NVLAP Lab Code 200634-0

REPORT # 56015

TEST COMPLETION DATE: December 20, 2004

Prepared By:

DNB ENGINEERING, INC.
1100 East Chalk Creek Rd.
Coalville, Utah 84017
Phone (435) 336-4433

1. CONDUCTED EMISSIONS EN 55022 CLASS A

1.1 Test Setup and Procedure

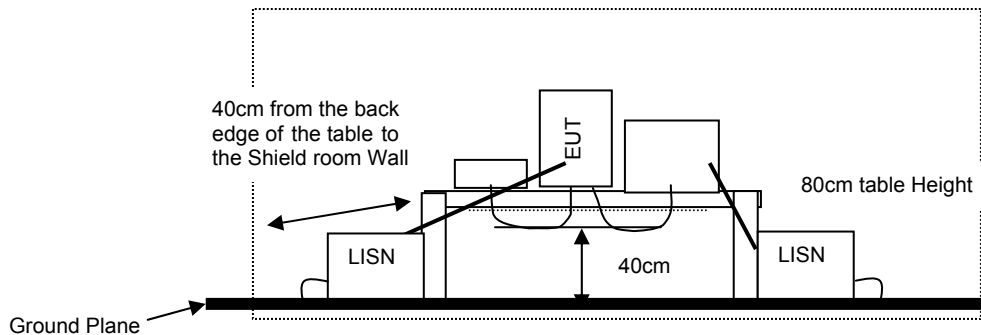
The EUT was placed on a wooden table 1 meter wide and 1.5 meters long. The top of the table is 80 cm above the ground plane and 40 cm from the vertical coupling plane. The EUT was put into the mode of operation as stated in 1.4. The conducted tests are performed by inserting a 50-ohm, 50 uH LISN in series with the power line of the EUT. The tests are either performed on each unit individually or on several units at a time for each test configuration.

The spectrum analyzer is setup to store the peak emissions over the range stated in the applicable standard. Cables are then adjusted to maximize emissions. The peak spectrum analyzer trace and limits are plotted onto graph paper. A receiver (with CISPR quasi peak and average capability) is used to identify the highest frequencies with respect to the limit. Ambients are noted on the graph along with emissions from the EUT. EUT emissions with more than 10 dB margin may only have peak spectrum analyzer measurements taken. The highest levels are listed in the Conducted Emissions Summary Test Data.

Example of Typical Calculation

Rohde and Schwarz reading @ 20 MHz	49.0 dBμV
LISN Factor	+7.5 dB
Cable Loss	+2.0 dB
Total Factors	9.5 dB
Voltage dBμV at LISN =	58.5 dBμV

1.2 Diagram of test setup



1.3 Deviations

The EUT was tested at 2402 MHz and 2441 MHz using the wire Dipole Antenna and at 2480 MHz with the Chip Antenna, and there seemed to be little difference in the results. Therefore the remaining Antenna and Transmit Frequencies was not tested due to time restraints.

1.4 Conducted Compliance Test Data

EN 55022 Class B at 120 Volts 60Hz

Run 1 Wire Dipole Antenna Transmitting at 2402 MHz

Customer: Visionary Products Inc.							EUT: VMX-100						
Equipment on LISN	Freq. MHz	Meas'd (dBuV)	Filter Factors (dB)	AMP Factors (dB)	LISN Factors	Cable Factors	Total Factors	Total (dBuV)	Limit (dBuV)	Delta (dB)	Limit Type AVE, QP	Line	Meas. Mode
VMX-100	0.198	48.40	0.00	0.00	0.10	0.20	0.30	48.70	55.0	-6.30	AVE	L2	QP
VMX-100	0.198	48.20	0.00	0.00	0.10	0.20	0.30	48.50	55.0	-6.50	AVE	L1	QP
VMX-100	1.389	38.10	0.00	0.00	0.10	0.20	0.30	38.40	46.0	-7.60	AVE	L2	QP
VMX-100	1.456	37.60	0.00	0.00	0.10	0.20	0.30	37.90	46.0	-8.10	AVE	L2	QP
VMX-100	0.158	47.00	0.00	0.00	0.30	0.10	0.40	47.40	56.0	-8.60	AVE	L2	QP
VMX-100	0.158	46.80	0.00	0.00	0.30	0.10	0.40	47.20	56.0	-8.80	AVE	L1	QP

- 6 Highest frequencies relative to the Limit.

Run 1.1 Dipole Wire Antenna Transmitting at 2441 MHz

Customer: Visionary Products Inc.							EUT: VMX-100						
Equipment on LISN	Freq. MHz	Meas'd (dBuV)	Filter Factors (dB)	AMP Factors (dB)	LISN Factors	Cable Factors	Total Factors	Total (dBuV)	Limit (dBuV)	Delta (dB)	Limit Type AVE, QP	Line	Meas. Mode
VMX-100	0.198	48.20	0.00	0.00	0.10	0.20	0.30	48.50	55.0	-6.50	AVE	L2	QP
VMX-100	0.198	48.20	0.00	0.00	0.10	0.20	0.30	48.50	55.0	-6.50	AVE	L1	QP
VMX-100	1.389	38.10	0.00	0.00	0.10	0.20	0.30	38.40	46.0	-7.60	AVE	L2	QP
VMX-100	0.158	47.40	0.00	0.00	0.30	0.10	0.40	47.80	56.0	-8.20	AVE	L1	QP
VMX-100	0.158	46.70	0.00	0.00	0.30	0.10	0.40	47.10	56.0	-8.90	AVE	L2	QP
VMX-100	1.456	36.40	0.00	0.00	0.10	0.20	0.30	36.70	46.0	-9.30	AVE	L2	QP

- 6 Highest frequencies relative to the Limit.

Run 1.2 Chip Antenna Transmitting at 2480 MHz

Customer: Visionary Products Inc.							EUT: VMX-100						
Equipment on LISN	Freq. MHz	Meas'd (dBuV)	Filter Factors (dB)	AMP Factors (dB)	LISN Factors	Cable Factors	Total Factors	Total (dBuV)	Limit (dBuV)	Delta (dB)	Limit Type AVE, QP	Line	Meas. Mode
VMX-100	0.198	48.40	0.00	0.00	0.10	0.20	0.30	48.70	55.0	-6.30	AVE	L2	QP
VMX-100	0.198	48.10	0.00	0.00	0.10	0.20	0.30	48.40	55.0	-6.60	AVE	L1	QP
VMX-100	1.456	37.80	0.00	0.00	0.10	0.20	0.30	38.10	46.0	-7.90	AVE	L2	QP
VMX-100	1.390	37.50	0.00	0.00	0.10	0.20	0.30	37.80	46.0	-8.20	AVE	L2	QP
VMX-100	0.159	46.50	0.00	0.00	0.30	0.10	0.40	46.90	56.0	-9.10	AVE	L2	QP
VMX-100	0.158	46.30	0.00	0.00	0.30	0.10	0.40	46.70	56.0	-9.30	AVE	L1	QP

- 6 Highest frequencies relative to the Limit.

1.5 Compliant Statement

The EUT was compliant with EN 55022

YES	NO
CA	

CA Test Engineer's Initials

1.6 Test Data for Conducted Emissions

1.6.1 Run 1 Wire Dipole Antenna Transmitting at 2402 MHz Spread Sheet

56015 DMX-100b

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CONDUCTED EMISSIONS

International .01-30MHz [Based on CISPR 22, CISPR 11, ANSI C63.4, GR-1089-CORE(O3-7)]

File #: 56015 Engr.: Clay Allred Date: Dec 20, 2004 Standard: EN 55022
 Site: 1 Temp: 16 Humidity: 33 Receiver: U-082
 LISN: 286 Filter: NA Cable: 1.2 Class: B Amp: NA

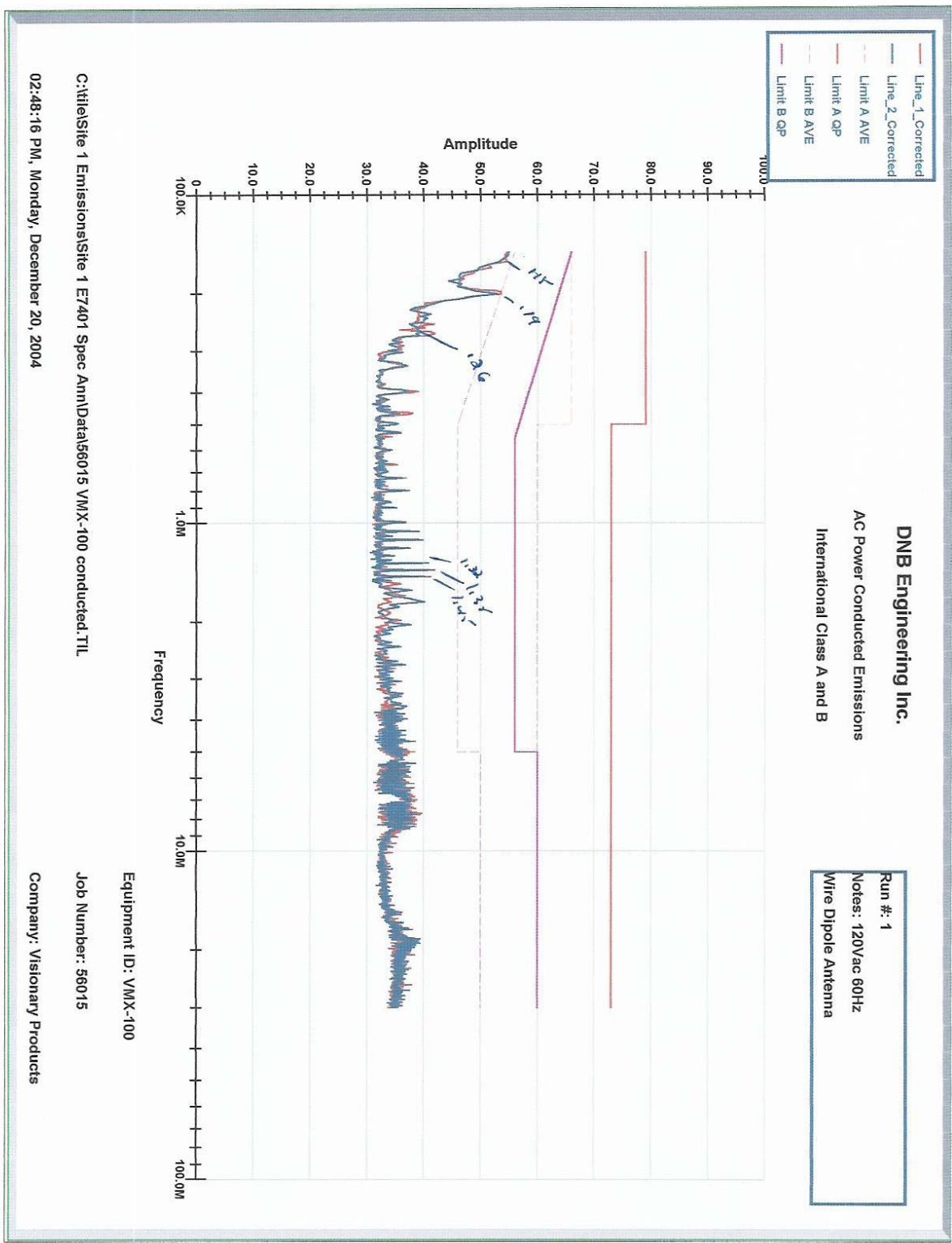
Freq. (MHz)	Meas'd (dBuV)	Filter Factors (dB)	Amp Factors (dB)	LISN Factors (dB)	Cable Factors (dB)	Total Factors (dB)	Total (dBuV)	Limit (dBuV)	Delta (dB)	Limit Type	Line	HP/ R&S	Type AVE, QP, Peak	Comments
0.198	48.40			0.1	0.2	0.3	48.70	55.0	-6.30	AVE	L2	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
0.198	48.20			0.1	0.2	0.3	48.50	55.0	-6.50	AVE	L1	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
1.389	38.10			0.1	0.2	0.3	38.40	46.0	-7.60	AVE	L2	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
1.456	37.60			0.1	0.2	0.3	37.90	46.0	-8.10	AVE	L2	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
0.158	47.00			0.3	0.1	0.4	47.40	56.0	-8.60	AVE	L2	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
0.158	46.80			0.3	0.1	0.4	47.20	56.0	-8.80	AVE	L1	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
1.389	36.20				0.2	0.2	36.40	46.0	-9.60	AVE	L1	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
1.456	35.50				0.2	0.2	35.70	46.0	-10.30	AVE	L1	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
1.323	34.10			0.1	0.2	0.3	34.40	46.0	-11.60	AVE	L2	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
1.323	32.90				0.2	0.2	33.10	46.0	-12.90	AVE	L1	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
0.264	36.30			0.1	0.2	0.3	36.60	53.0	-16.40	AVE	L1	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz
0.264	35.80			0.1	0.2	0.3	36.10	53.0	-16.90	AVE	L2	R&S	QP	Run 1 Wire Dipole Antenna @2402MHz

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1.6.2 Run 1 Wire Dipole Antenna Transmitting at 2402 MHz Plot



1.6.3 Run 1.1 Wire Dipole Antenna Transmitting at 2441 MHz Spread Sheet

56015 DMX-100b

DNB Engineering Inc.

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CONDUCTED EMISSIONS
 International .01-30MHz [Based on CISPR 22, CISPR 11, ANSI C63.4, GR-1089-CORE(O3-7)]

File #: 56015 Engr.: Clay Allred Date: Dec 20, 2004 Standard: EN 55022
 Site: 1 Temp: 16 Humidity: 33 Receiver: U-082
 LSN: 286 Filter: NA Cable: 1.2 Class: B Amp: NA

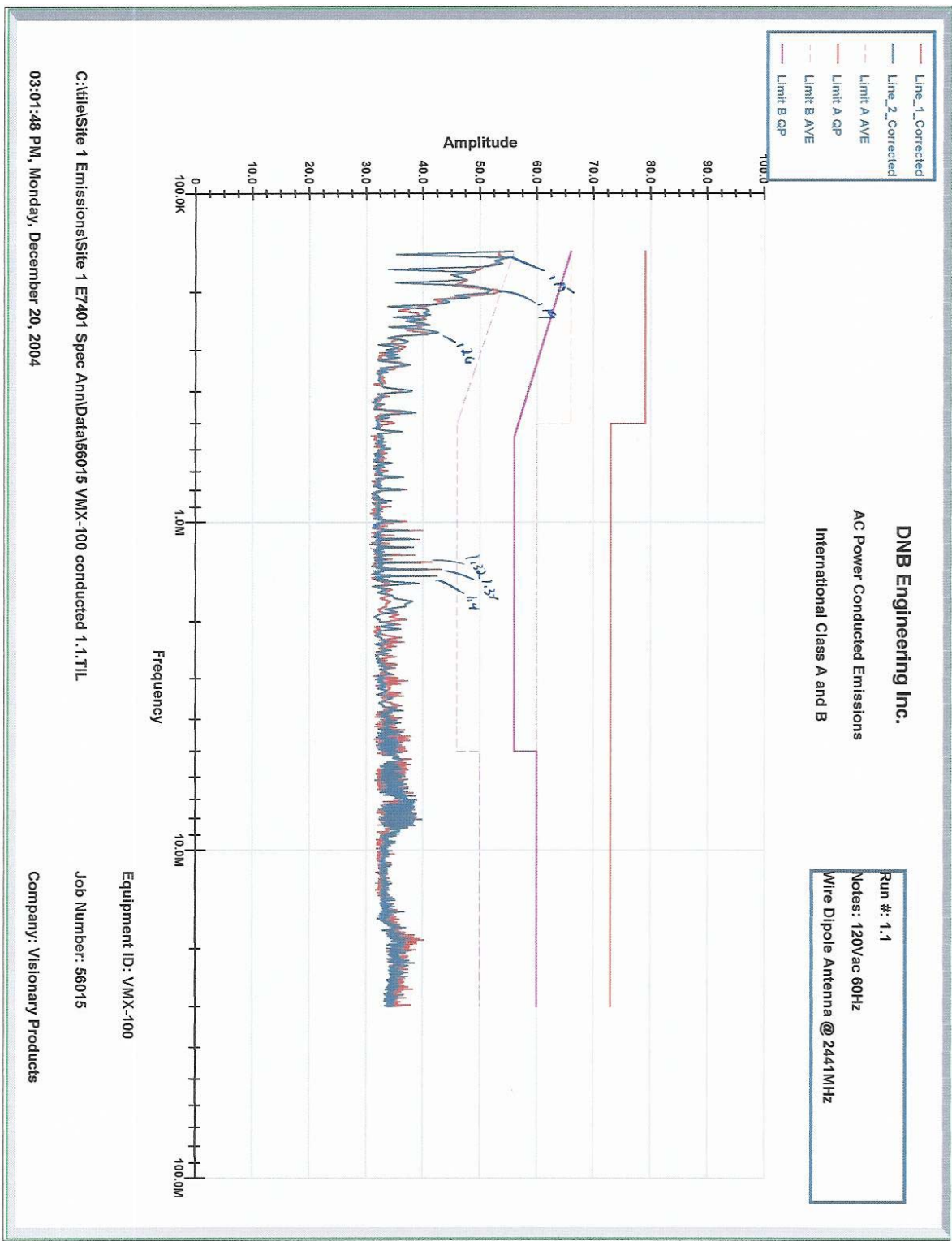
Freq. (MHz)	Meas'd (dBuV)	Filter Factors (dB)	Amp Factors (dB)	LSN Factors (dB)	Cable Factors (dB)	Total Factors (dB)	Total (dBuV)	Limit (dBuV)	Delta (dB)	Limit Type	Line L1 L2 L3 L4	HP/ R&S	Type AVE, QP, Peak	Comments
0.198	48.20			0.1	0.2	0.3	48.50	55.0	-6.50	AVE	L2	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
0.198	48.20			0.1	0.2	0.3	48.50	55.0	-6.50	AVE	L1	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
1.389	38.10			0.1	0.2	0.3	38.40	46.0	-7.60	AVE	L2	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
0.158	47.40			0.3	0.1	0.4	47.80	56.0	-8.20	AVE	L1	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
0.158	46.70			0.3	0.1	0.4	47.10	56.0	-8.90	AVE	L2	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
1.456	36.40			0.1	0.2	0.3	36.70	46.0	-9.30	AVE	L2	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
1.456	35.90			0.2	0.2	0.2	36.10	46.0	-9.90	AVE	L1	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
1.389	35.60			0.2	0.2	0.2	35.80	46.0	-10.20	AVE	L1	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
1.323	30.40			0.1	0.2	0.3	30.80	46.0	-15.40	AVE	L2	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
0.264	36.50			0.1	0.2	0.3	36.80	53.0	-16.20	AVE	L1	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz
0.264	35.50			0.1	0.2	0.3	35.80	53.0	-17.20	AVE	L2	R&S	QP	Run 1.1 Wire Dipole @ 2441MHz

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1.6.4 Run 1.1 Wire Dipole Antenna Transmitting at 2441 MHz Plot



1.6.5 Run 1.2 Chip Antenna Transmitting at 2480 MHz Spread Sheet

56015 DMX-100b

DNB Engineering Inc.

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CONDUCTED EMISSIONS
 International .01 - 30MHz [Based on CISPR 22, CISPR 11, ANSI C63.4, GR-1089-CORE(O3-7)]

File #: 56015 Engr.: Clay Allred Date: Dec 20, 2004 Standard: EN 55022
 Site: 1 Temp: 16 Humidity: 33 Receiver: U-082
 LISN: 286 Filter: NA Cable: 1.2 Class: B Amp: NA

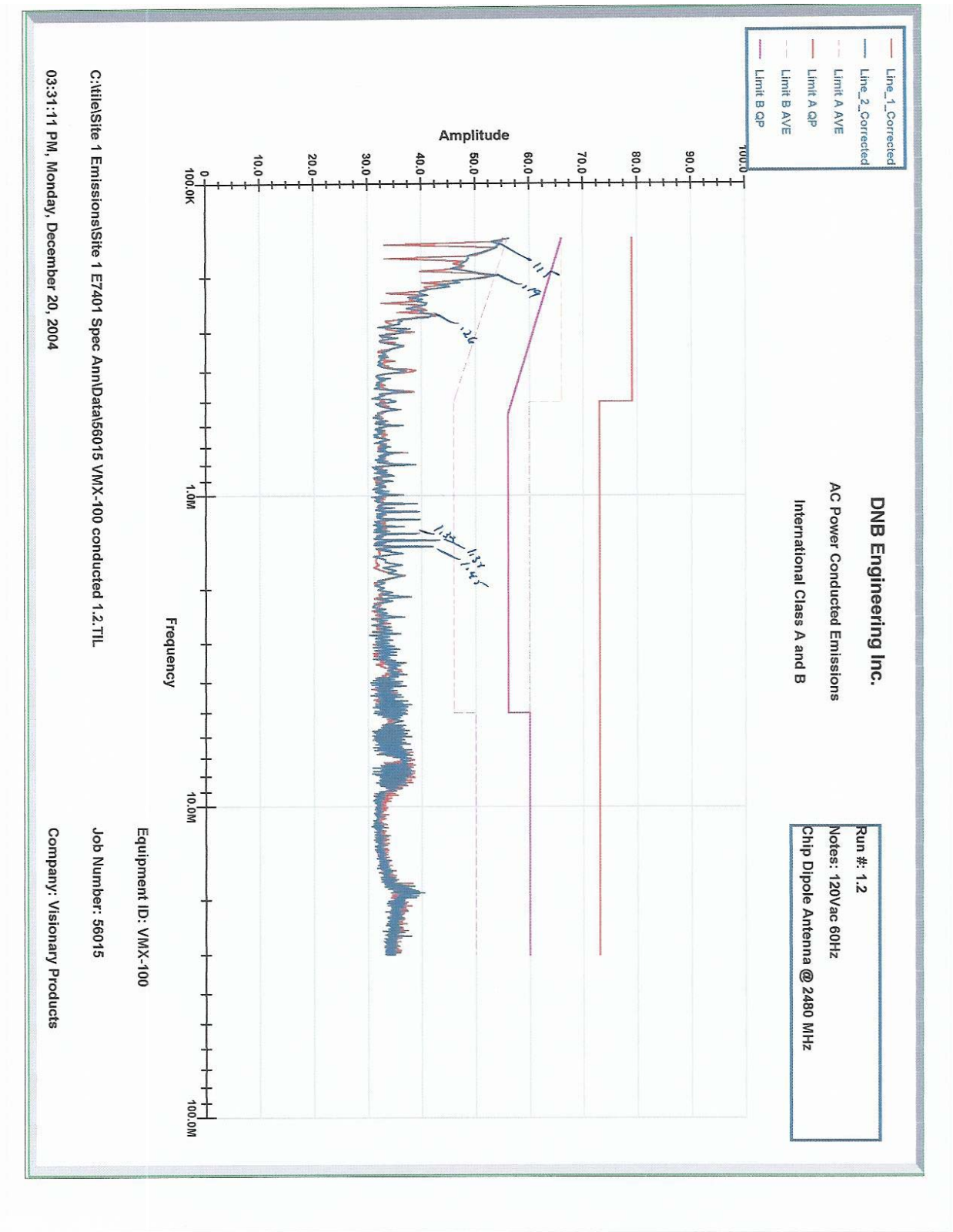
Freq. (MHz)	Meas'd (dBuV)	Filter Factors (dB)	Amp Factors (dB)	LISN Factors (dB)	Cable Factors (dB)	Total Factors (dB)	Total (dBuV)	Limit (dBuV)	Delta (dB)	Limit Type	Line L1 L2 L3 L4	HP/ R&S	Type AVE, QP, Peak	Comments
0.198	48.40			0.1	0.2	0.3	48.70	55.0	-6.30	AVE	L2	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
0.198	48.10			0.1	0.2	0.3	48.40	55.0	-6.60	AVE	L1	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
1.456	37.80			0.1	0.2	0.3	38.10	46.0	-7.90	AVE	L2	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
1.390	37.50			0.1	0.2	0.3	37.80	46.0	-8.20	AVE	L2	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
0.159	46.50			0.3	0.1	0.4	46.90	56.0	-9.10	AVE	L2	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
0.158	46.30			0.3	0.1	0.4	46.70	56.0	-9.30	AVE	L1	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
1.389	35.90				0.2	0.2	36.10	46.0	-9.90	AVE	L1	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
1.456	35.70				0.2	0.2	35.90	46.0	-10.10	AVE	L1	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
1.323	31.90			0.1	0.2	0.3	32.20	46.0	-13.80	AVE	L2	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
1.323	31.50				0.2	0.2	31.70	46.0	-14.30	AVE	L1	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
0.264	36.60			0.1	0.2	0.3	36.90	53.0	-16.10	AVE	L1	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz
0.264	36.50			0.1	0.2	0.3	36.80	53.0	-16.20	AVE	L2	R&S	QP	Run 1.2 Chip Antenna @ 2480 MHz

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1.6.6 Run 1.2 Chip Antenna Transmitting at 2480 MHz Plot



1.7 Photographs of Test Setup Conducted Emissions

EUT: VMX-100
View: Test Setup



1.8 APPENDIX: EMC INSTRUMENTATION AND MEASUREMENT EQUIPMENT

Calibration of test and measurement equipment is performed by an approved commercial facility, whose standards are traceable to the National Institute of Science and Technology.

Conducted Emissions Equipment

Description	Manufacturer/MN	Asset #	Serial #	Cal Due
LISN	Fisher LISN-50-32-4-01	U-286	02020	18MAR05
QP Adapter	HP/85650 A	U-001	2043A00277	05JAN04
Receiver	R&S/ESH3	U-081	872742/045	20SEP05
Receiver	R&S/ESH3	U-082	882399/025	23MAR05
Spectrum Analyzer	Agilent	U-257	MY 42000103	19JAN04
Spectrum Analyzer	HP/8566B	U-138	2421A00516	06MAR05
75 Ohm CDN	FCC/FCC-801-C1-8	U-339	9940	14AUG05
50 Ohm CDN	FCC/FCC-801-C1-B	U-338	9908	27AUG05
Current Probe	Solar 6741-1	U-267	966727	13JAN05
Telecom Impedance Stabilization	Fischer FCC-T-LISN-T4	U-023	40020	15AUG05