DNB ENGINEERING, INC.
"One World, One EMC Solution"

APPLICATION FOR CERTIFICATION OF A CLASS B DEVICE (Scanning Receiver)

Per
47 CFR, Part 15 Subpart B

EUT: PR-75a
FCC ID # C6ZPR75A

Nemko
ELA #116

NVLAP
NVLAP Lab Code 200634-0

PREPARED FOR APPLICANT:
COMTEK
357 West 2700 South
Salt Lake City, Utah 84115

REPORT # 46048FCC
Test Completion Date: **February 24, 2004**

Prepared By:
DNB ENGINEERING, INC.
1100 East Chalk Creek Rd.
Coalville, Utah 84017
Tel: 1(435) 336-4433

EXECUTIVE SUMMARY

The purpose of this series of tests was to demonstrate the Electromagnetic Compatibility (EMC) characteristics of the PR-75a, the following tests were performed:

REQUIREMENTS	STATUS	COMPLIANT Yes/No/NA
47 CFR Part 15, EN 55022 (1998)	ITE Emissions	Yes
Radiated Emissions	Class B	Yes

Compliance to EN 55022 is acceptable for demonstration of compliance to FCC Part 15 Subpart B, reference CFR 47 15.107(e) and 15.109(g).

Signed By:

Clay Allred
Lab Manager
DNB Engineering Inc.

DOCUMENT HISTORY

Revision Letter	Number of Pages	Page No. of Rev.	Description	Date
1A	41		Document Release	3/1/2004

TABLE OF CONTENTS

TRANSMITTAL SUMMARY

Unit tested:	PR-75a
FCC ID#	C6ZPR75A
Specifications:	ANSI C63.4 2000 47 CFR, Part 15 Subpart B
Purpose of Report:	This report was prepared to document the status of the PR-75a with requirements of the regulations listed above.
Test Summary	The EUT's compliance status according to the tests performed is as follows.

Refer to Section page 2 Executive Summary.

CERTIFICATION OF TEST DATA

This report, containing emissions test data and evaluations, has been prepared by an independent electromagnetic compatibility laboratory, DNB ENGINEERING, in accordance with the applicable specifications and instructions required per the Introduction. NEMKO and the National Institute of Standards and Technology have evaluated DNB Engineering to do these tests for NVLAP.

NEMKO EMC Laboratory Authorization No.: ELA 116

NVLAP Lab Code: 200634-0

The data evaluation and equipment configuration presented herein are a true and accurate representation of the measurements of the test emissions characteristics as of the months and at the times of the test under the conditions herein specified.

Equipment Tested:	PR-75a
FCC ID	C6ZPR75A
Test Completion Date:	February 24, 2004

Report Written By:

3/1/2004

Jeffrey L. Williams
Documentation Supervisor

Date

Report Reviewed By:

3/1/2004

Carrie Yates
Quality Assurance Manager

Date

Report Reviewed By:

3/1/2004

Clay Allred
Lab Manager

Date

1. INTRODUCTION

1.1 Administrative Data Per 2.1033(a) and 2.911(c)

1.1.1 REQUEST FOR CERTIFICATION Per 2.1033(b)1:

Applicant:	COMTEK 357 West 2700 South Salt Lake City, Utah 84115
Contact:	Ralphael Belgique
Phone:	800-496-3463
Manufacturer:	Same as above
Test Completion Date:	February 24, 2004
Equipment Under Test (EUT):	PR-75a
FCC ID:	C6ZPR75A

1.2 Related Submittals/Grants

All Peripherals possess grants.

2. TEST DESCRIPTION

2.1 System Configuration Table

Config-uration	Unit Name - Processor, Monitor, Printer, Cable, etc. (indent for features of a unit)	Style/Model/ Part No.	Serial Number	Obj. of test	2 AA 1.5V Batteries	Comments/ FCC ID#
1A	PR-75a			X	X	

X - Specific device(s) for which this test is being conducted.

2.2 Equipment Description

Brief Description of Operation and Frequencies Generated

PR-75A

The PR-75 receiver automatically turns itself on when a load (headphone) is plugged into earphone output jack J1. The load completes the circuit of R13, the load, and R14. This biases the gate of turn on transistor Q2 to ground, which turns on the p channel mosfet powering the receiver. On power up the Voltage controlled oscillator (VCO) starts oscillating at an unknown frequency in the upper part of the 72 to 76 MHz range. The microcontroller U6 immediately after power on reset turns on its on chip crystal oscillator and verifies that it has started to oscillate. The microcontroller then divides the 4 MHz signal from the crystal oscillator by 8 and routes the resulting 500 KHz signal out port two bit zero located at pin eight of the IC. This becomes the reference frequency for the phase lock loop U5 which does not have its own oscillator. The processor then reads the current channel(s) that are programmed into the processors re-writeable FLASH memory. The current channel(s) are programmed into this memory by the FP-75 field programmer. There are 10 possible channels that the PR-75 can be programmed to be active. Any number or combination of channels is possible depending on the users needs. If all of the channels are programmed to be active the receiver goes through and stops on all ten channels and remembers which channel had the strongest signal. It then tunes to that channel and stays there until the user presses the AST tunning button. The receiver then will stop on the remaining channels, determines which of the remaining channels is strongest and then tunes to that channel and again waits until the user presses the AST tunning button. If there are no more remaining channels the process starts over and the receiver tunes to all ten channels remembering which one has the strongest signal and then tunes to that channel. If the receiver is not programmed to have all ten channels active the receiver when first turned on will stop on the first channel programmed to be active. A press by the user will tune the receiver to the next active channel and stop. After there are no more channels the process starts over and the receiver tunes to the first active channel just as before.

After the processor knows what channel(s) the receiver is supposed to be on it sends three separate packets of data to the phase lock loop. One tells the phase lock loop (PLL) to divide the 500 KHz reference by 20 setting the final reference frequency for the phase detector to 25 KHz. Another sets up the configuration of the PLL, such as the phase of the resulting output from the phase detector and wether the external phase lock signal should be active or not, among other things. The last one tells the PLL the number to divide the signal received from the VCO which is then compared against the 25 KHz reference signal by the phase detector. This number corresponds to the channels frequency. The output of the phase detector is filtered and controls the frequency and phase of the VCO. This causes the frequency and phase of the VCO to lock onto the appropriate frequency. If the user presses the AST tune button the processor will, depending on the number of channels programmed, make the receiver tune to the next active channel or search the remaining channels to determine which has the strongest signal and then tune to that signal. If the receiver has stopped on the last programmed channel or available and the AST tune button is pressed it will then start over by stopping on the first channel repeating the process.

2.3 Circuit Description - per 2.1033(b)4

Refer to Test Block Diagram 2.3.5

2.3.1 Mode of Operation

The EUT was set to scan the frequency range of 72.1 MHz – 75.9 MHz.

2.3.2 Modifications to EUT

None

2.3.3 Deviations

The design of the device makes it impossible for the receiver to scan the Cellular Radiotelephone band. Refer to Section 2.3.4 for manufacturer description.

2.3.4 Receiver's Incapability to Receive Information

COMTEK®

Statement of PR-75a Receiver's Incapability to Receive Any Cell Phone Signals from Public Mobile Services Under FCC Part 22

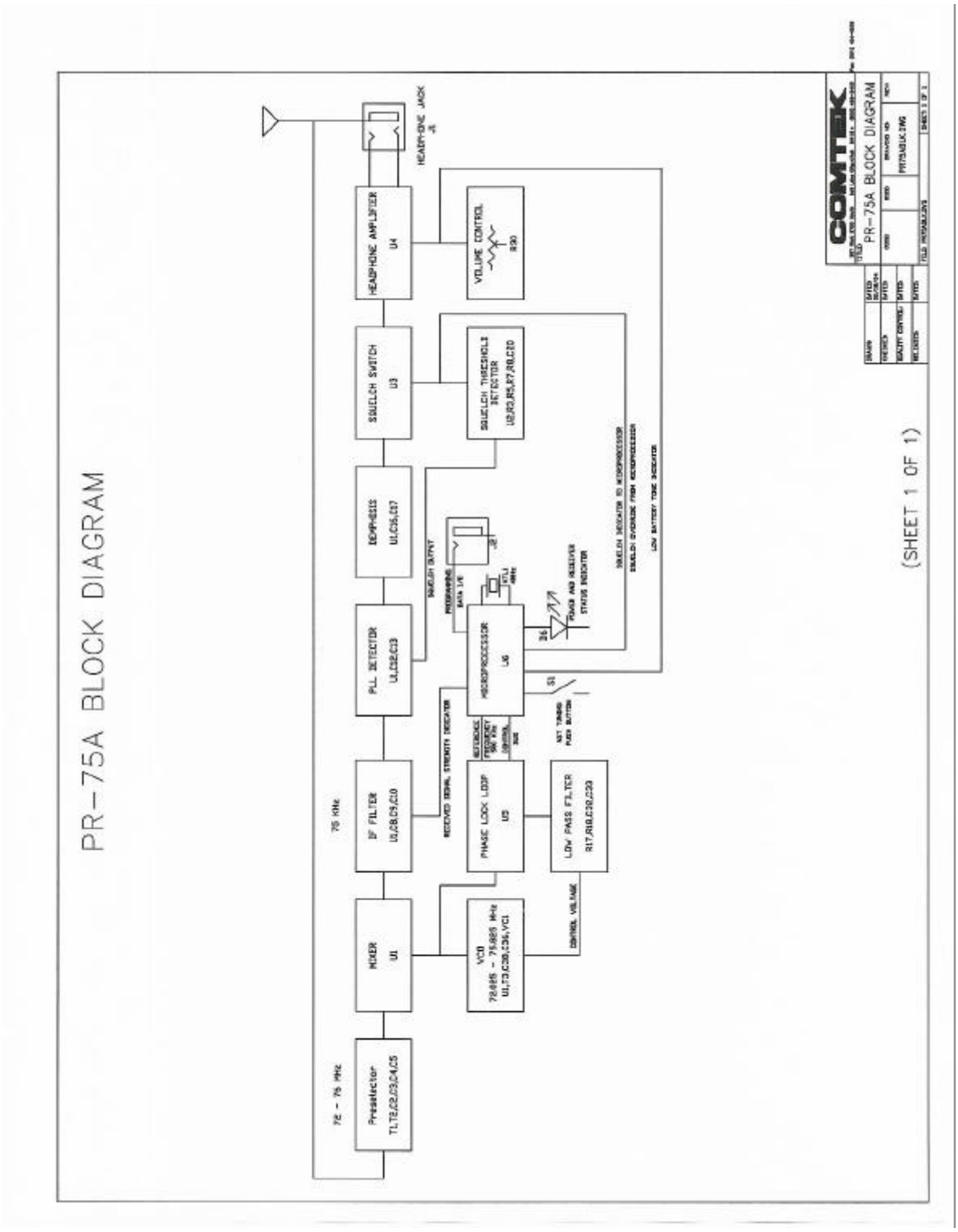
The PR-75a personal receiver is designed to operate in the 72-76 MHz band and is based on the Philip's TDA 7021T integrated radio receiver circuit for portable FM band radios where a minimum of periphery is important. This integrated radio receiver I.C. is limited by design to have a maximum RF input operating frequency acceptance of only 110 MHz, and has no active component circuit in front of this I.C. With extreme input level, the second and third harmonic from LO circuit can cause the receiver to respond, but the level must be above 10 mV of R.F. input before detection will occur. This is over 75 dB above the normal R.F. input where detection occurs to produce a 12 dB SINAD signal. An investigative search for responses in the public mobile radiotelephone service 800 to 900 MHz range with R.F. input signal as high as 100 mV did not result in any kind of response at all.

It is therefore the opinion of COMTEK's engineering department that the PR-75a cannot be altered by the user or anyone else to ever be capable of receiving transmissions from the cellular radiotelephone service in the frequency range covered by the channels provided under Part 22 of FCC regulations.

By,_____
Ralph Belgique, President

357 West 2700 South
Salt Lake City, Utah 84115
Phone (801) 466-3463
FAX: (801) 484-6906

2.3.5 Test Block Diagram



2.4 Photograph of EUT - per 2.1033(b)(7)

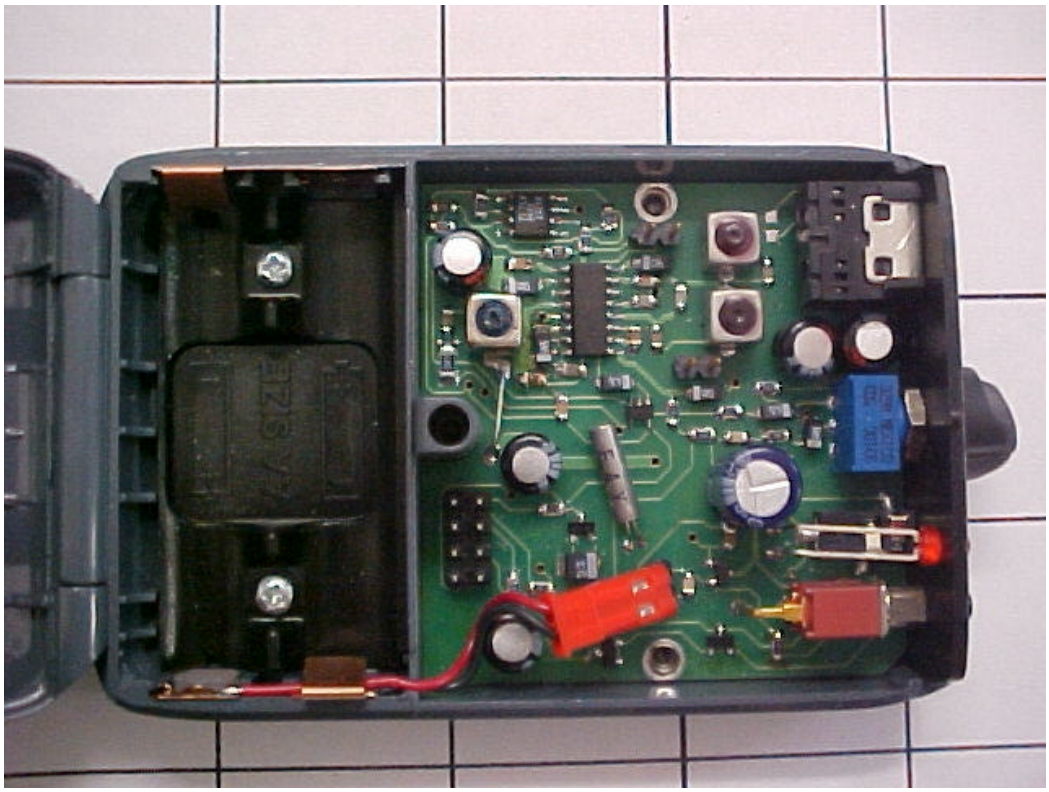
EUT: PR-75a
VIEW: Back

2.5 Photograph of EUT - per 2.1033(b)(7)

EUT: PR-75a
VIEW: Front

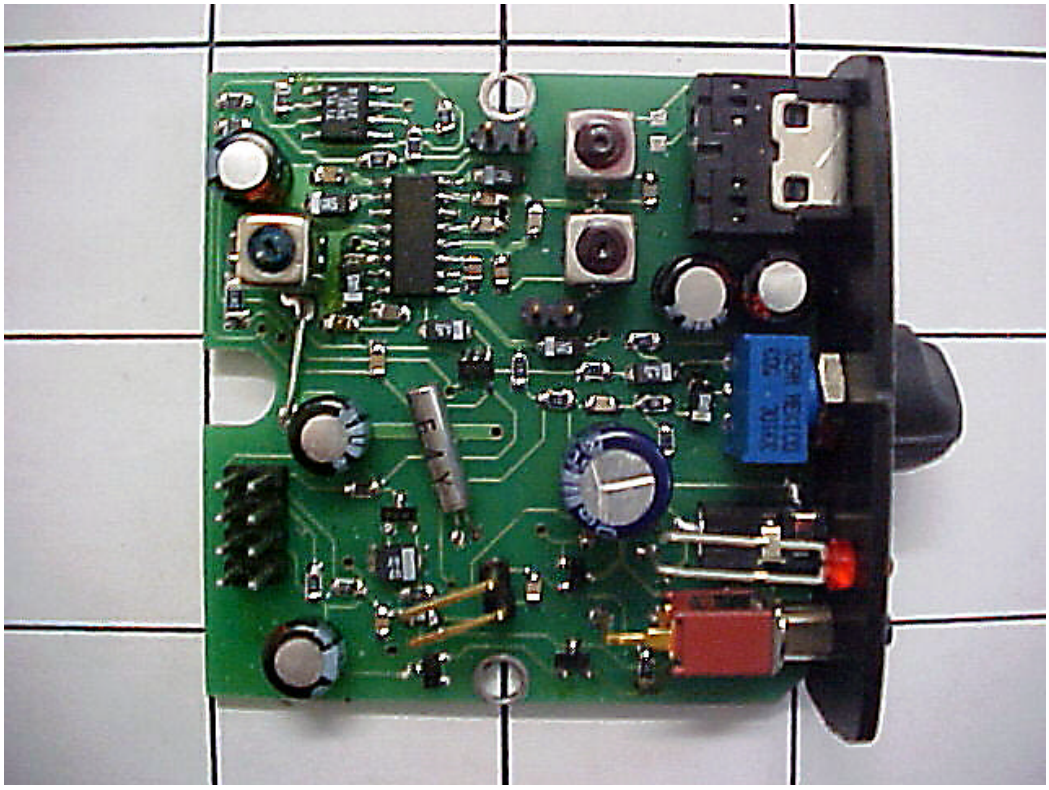
2.6 Photograph of EUT - per 2.1033(b)(7)

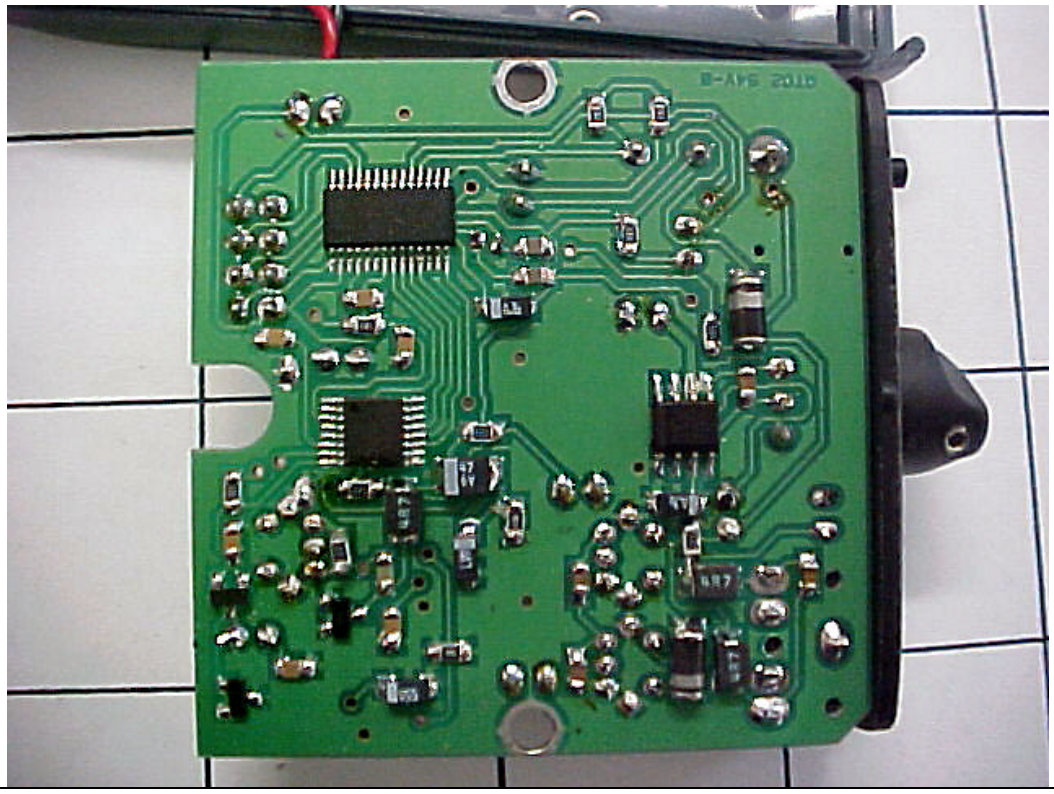
EUT: PR-75a
VIEW: Back w/Battery Cover open/Batteries out



2.7 Photograph of EUT - per 2.1033(b)(7)

EUT: PR-75a
VIEW: Internals Front/Back Panel





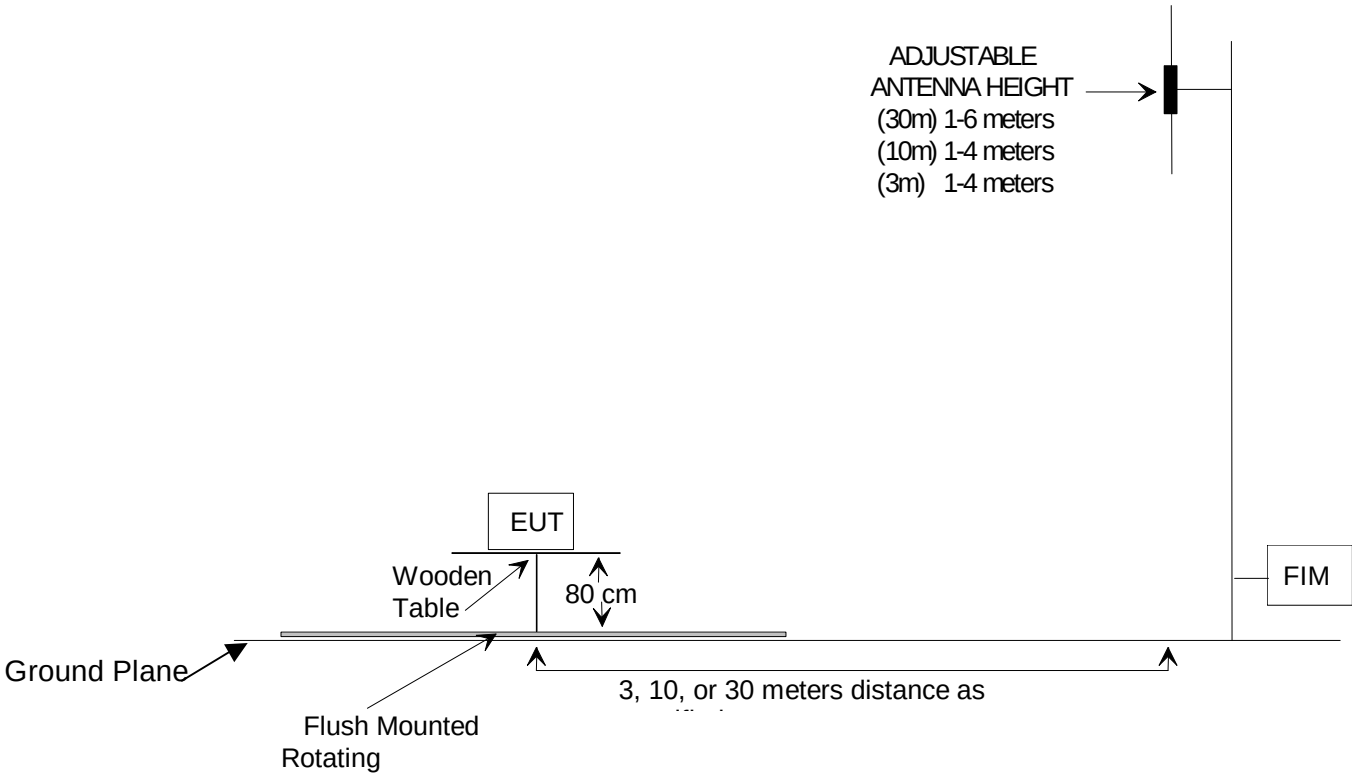
3. EMISSIONS FCC PART 15

per 47 CFR, Part 15 Subpart B

3.1 Radiated Emissions Test Setup and Procedure - Per 2.1033(b)(6) Per 2.947(a)

The EUT was placed on a wooden table 1 meter wide and 1.5 meters long which rests on a flush mounted, steel-top turntable on the open area test site as shown below. The top of the table is 80 cm above the ground plane. The turntable can be rotated 360 degrees. Measuring antenna is set at the prescribed distance. Measurements are made with broadband antennas that have been correlated with tuned dipole antennas. The mast is 4.5 meters high and is self-supporting. The height of the antenna can be varied from 1 to 4 meters. Positioning of the antenna is controlled remotely.

3.1.1 Spurious Radiation Test Site Per 2.1033(b)6



Radiated Test Setup and Procedure - cont'd

The EUT is put into the operational test mode as stated in Section 2.3.1 is then started.

The spectrum analyzer is setup to store the peak emission over the frequency range of the antenna. Peak EUT and ambient emissions are stored while the turntable is rotated 360^0. The Peak spectrum analyzer trace is then plotted with the addition of antenna and cable correction factors. The limit is plotted on the same graph. A receiver with CISPR Quasi Peak detector is then used on the frequencies identified as the highest with respect to the plotted limit. Ambients are noted on the graph along with EUT emissions. The highest emissions are maximized.

To maximize emissions levels, the turntable is rotated and the antenna is raised and lowered to determine the point of maximum emanations. The cables are then manipulated at that point to maximize emissions. Measurements are made with the antennas in each horizontal and vertical polarization. The data obtained from these tests is corrected with the proper cable, preamplifier and antenna factors. The results are then transcribed onto tables that show the maximum emission levels. The highest emissions are listed in a Radiated Emissions Summary table.

If no emissions can be found, the lowest harmonics of the EUT clocks within the bands of the standard are tuned to with the receiver. If no emissions are found, the noise floor will be entered into the table and noted. A minimum of six frequencies will be logged. Summary results will reflect only actual emissions from the EUT.

Radiated Test Setup and Procedure - cont'd

The field intensity measurements are made using standard techniques with a spectrum analyzer or EMI receiver as the calibrated Field Intensity Meter (FIM). Preamplifiers and filters are used when required.

When using the Hewlett Packard Model 8568B Spectrum Analyzer as the FIM, the Analyzer is calibrated to read signal level in dBm. Where:

0 dBm (50 ohms) = 107 dBuV (50 ohms)

The signal level (dBuV) = indicated signal level (dBm) + 107 dB. To obtain the signal level in dBuV/m it is necessary to add the antenna factor in dB.

Example of Typical Calculation Per 2.1033 (b)6

Measurement Distance = 3 Meter

Rohde and Schwarz reading @ 60 MHz	49.0	dBµV
Antenna Factor	+7.5	dB/m
Cable Loss	+2.0	dB
Preamplifier	-25.5	dB
	-16.0	dB/m
Field Strength dBµV/m at 3 Meter =	33.0	dBµV/m

Radiated testing in the range of 1000 MHz to 2000 MHz was investigated with the spectrum (peak detector function) under the FCC regulation section 15.35 (b). The test performed at an antenna to EUT distance of three meters.

3.1.2 Radiated Emissions Compliance Data

The EUT was compliant with FCC part 15 class B radiated emissions requirements.

Radiated Emissions Summary Test Data
Per EN 55022, class B at 10 meters

COMTEK	EUT: PR-75a

Freq. (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (dB)	**Corrected signal (dBuV/m)**	Limit (dBuV/m)	**Delta (dB)**	**Antenna Hort/Vert**
144.04	22.5	25.9	3.4	14.1	-8.4	**14.10**	30.0	**-15.90**	**Vert**
144.03	20.4	25.9	3.4	14.5	-8.0	**12.40**	30.0	**-17.60**	**Hor/**
432.13	20.6	26.3	5.9	17.9	-2.5	**18.10**	37.0	**-18.90**	**Hor/**
432.13	19.8	26.3	5.9	17.4	-3.0	**16.80**	37.0	**-20.20**	**Vert**

- Highest frequencies relative to the Limit.

3.1.3 Climatic Conditions

The climatic conditions during the Radiated Emissions tests were recorded as follows:

Ambient Temperature	Measured Value 15C
Relative Humidity	30%

3.1.4 Compliant Statement

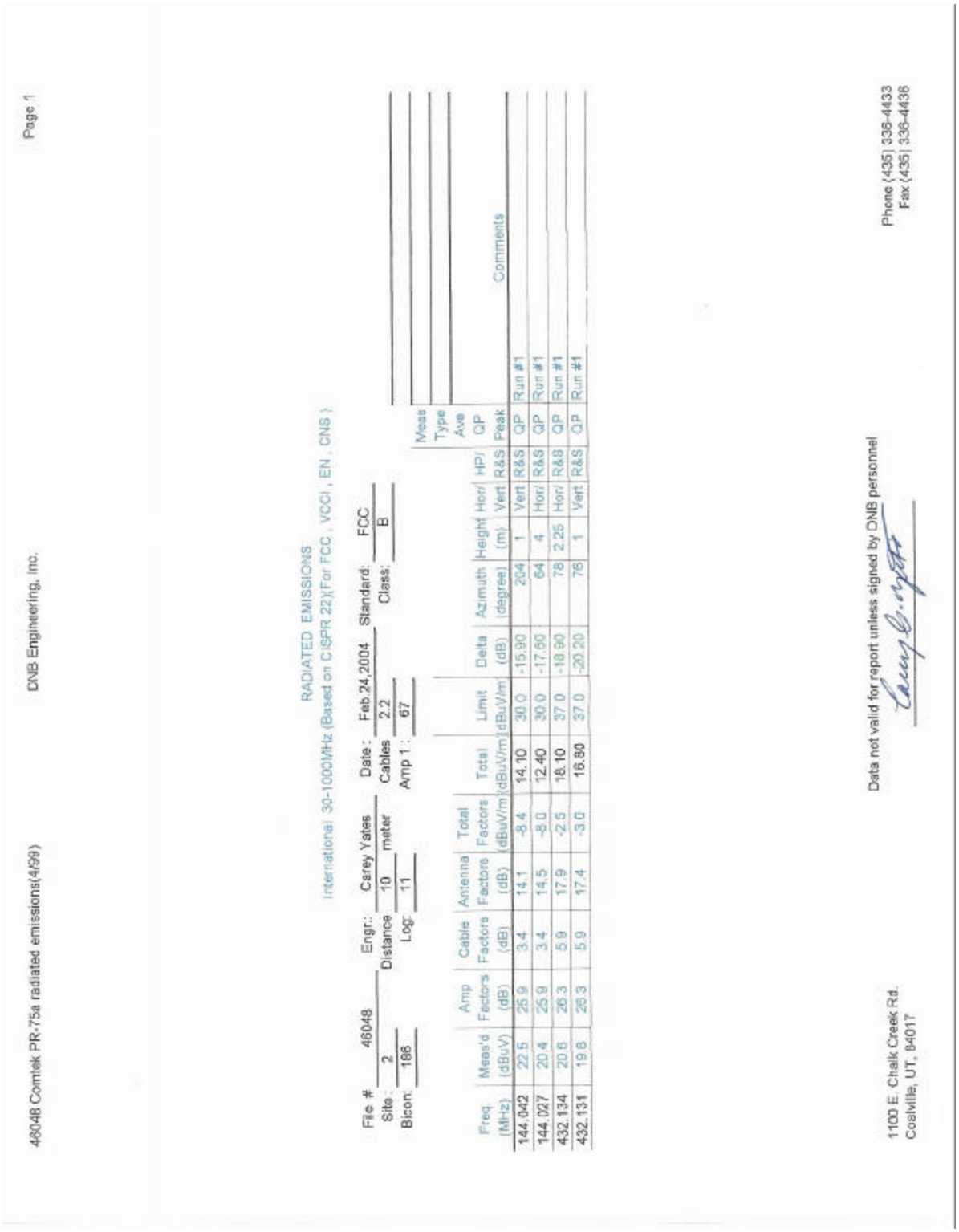
The EUT was compliant with EN 55022, class B

YES	**NO**
CA	

CA Test Engineer's Initials

3.1.5 Test Data For Radiated Emissions

(PR-75a)



48048 Comtek PR-75a radiated emissions(4/99) DNB Engineering, Inc. Page 1

RADIATED EMISSIONS

International 30-1000Mhz (Based on CISPR 22)(For FCC , VCCI , EN , CNS)

File # 48048 Engr.: Carey Yates Date : Feb.24,2004 Standard: FCC
Site : 2 Distance 10 meter Cables 2.2 Class: B
Bicon: 186 Log: 11 Amp 1 : 67

Freq (MHz)	Meas'd (dBuV)	Amp Factors (dB)	Cable Factors (dB)	Antenna Factors (dB)	Total Factors (dBuV/m)	Total (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Azimuth (degree)	Height (m)	Hor/ Vert	HP/ R&S	Meas Type Ave QP Peak	Comments
144.042	22.5	25.9	3.4	14.1	-8.4	14.10	30.0	-15.90	204	1	Vert	R&S	QP	Run #1
144.027	20.4	25.9	3.4	14.5	-8.0	12.40	30.0	-17.60	64	4	Hori	R&S	QP	Run #1
432.134	20.6	26.3	5.9	17.9	-2.5	18.10	37.0	-18.90	78	2.25	Hori	R&S	QP	Run #1
432.131	19.8	26.3	5.9	17.4	-3.0	16.80	37.0	-20.20	76	1	Vert	R&S	QP	Run #1

Meas Type: Ave / QP / Peak

Comments

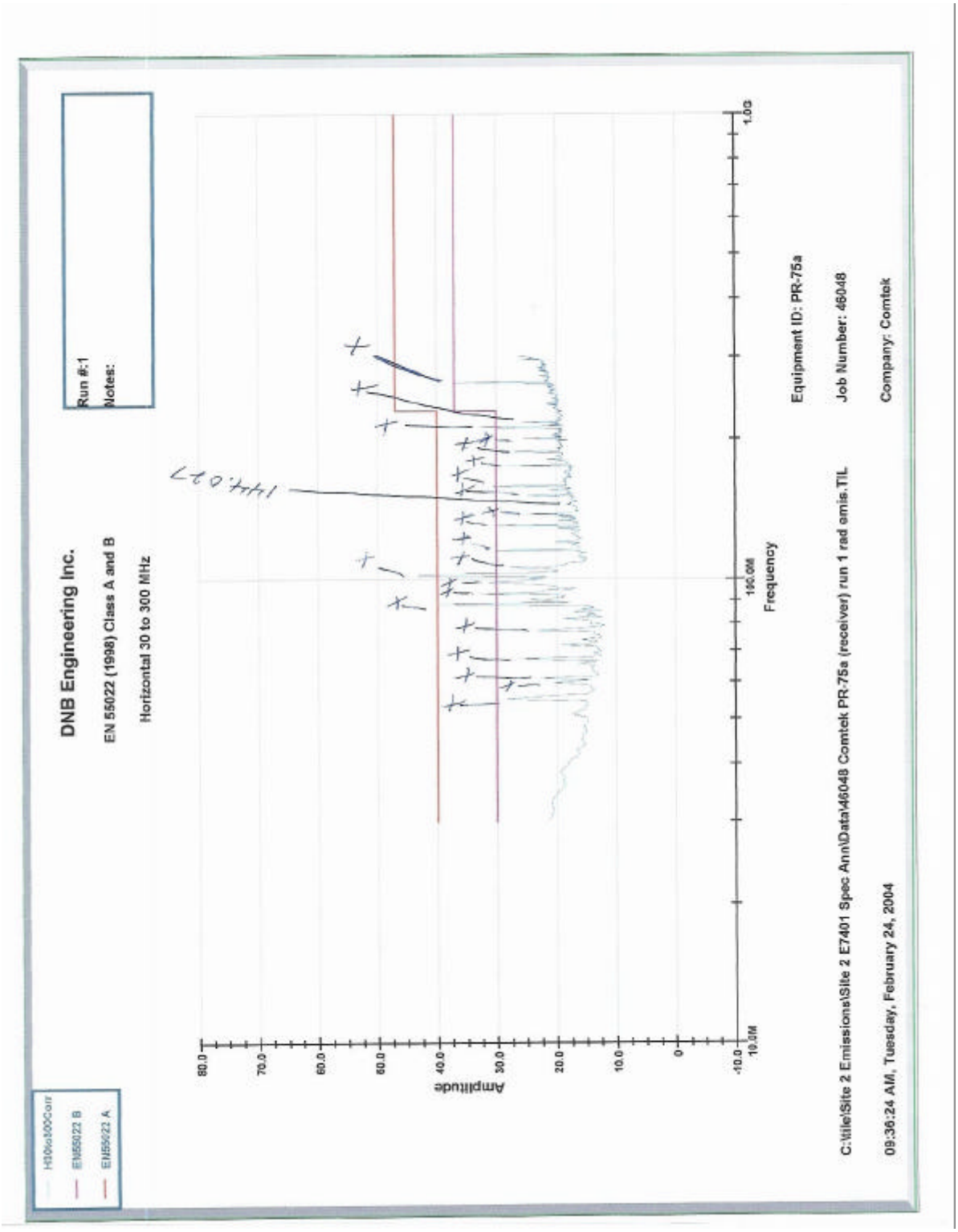
Data not valid for report unless signed by DNB personnel

1100 E. Chalk Creek Rd.
Coalville, UT, 84017

Phone (435) 336-4433
Fax (435) 336-4436

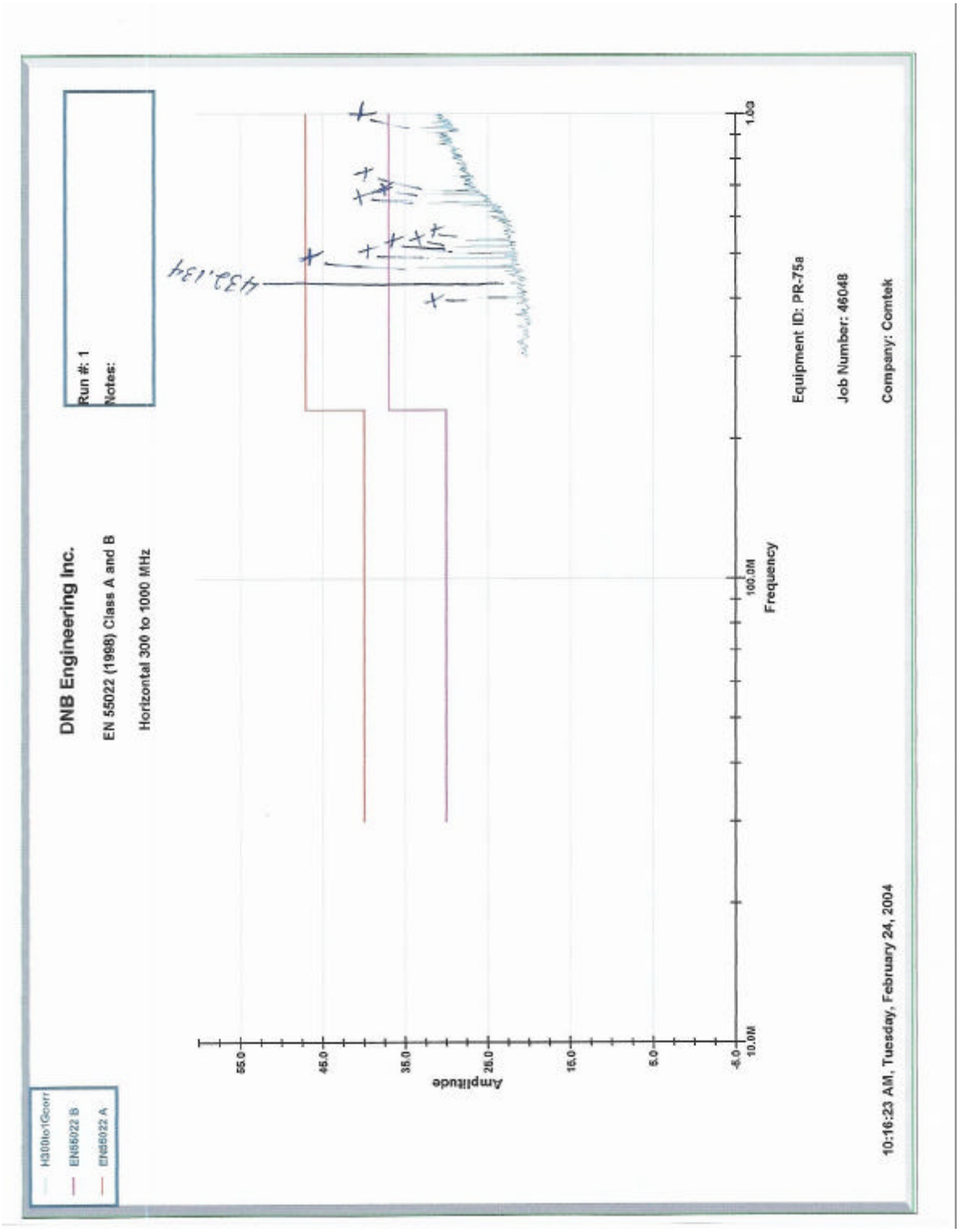
3.1.6 Test Data For Radiated Emissions

(PR-75a) 30-300 MHz Horizontal



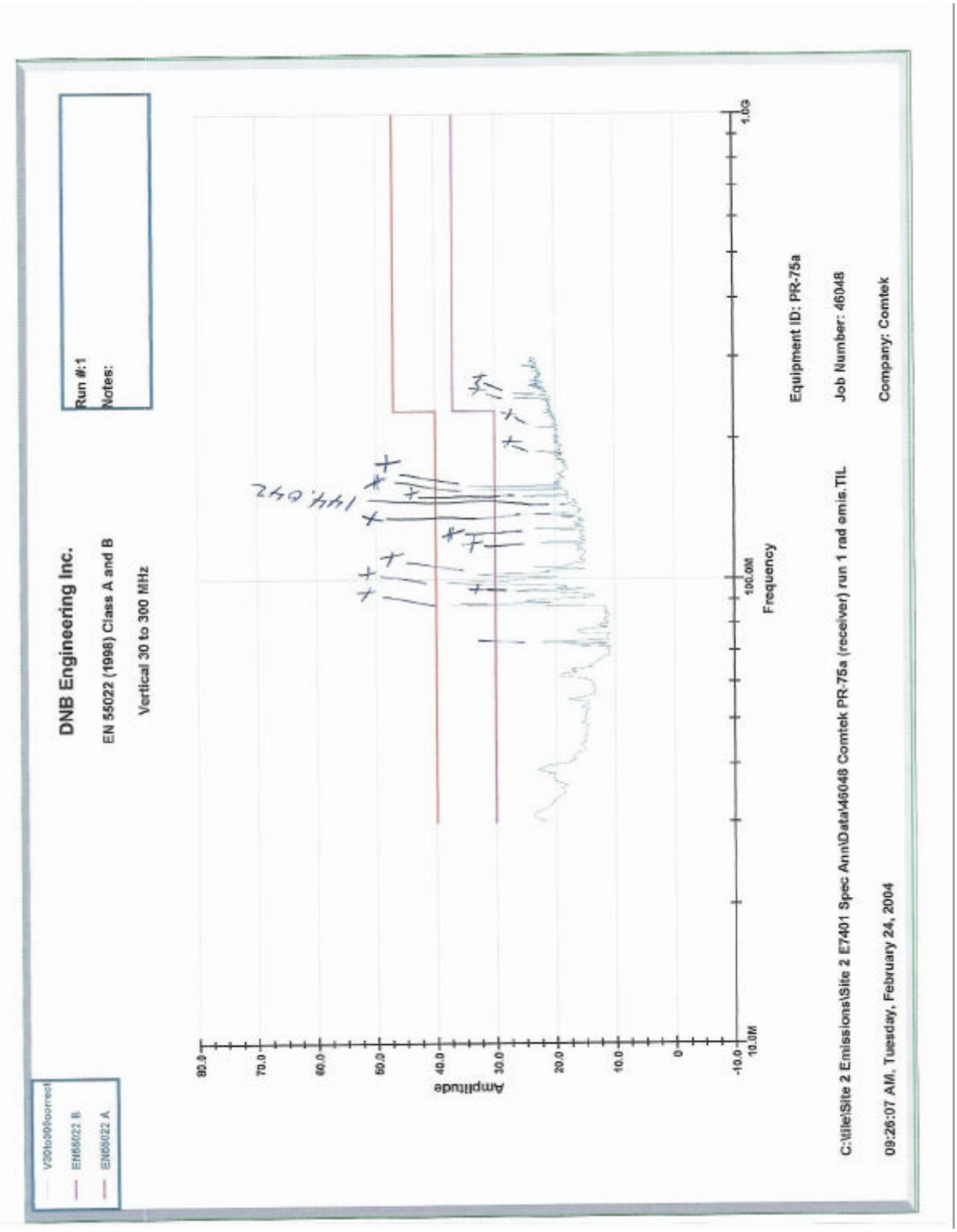
3.1.7 Test Data For Radiated Emissions

(PR-75a) 300-1000 MHz Horizontal



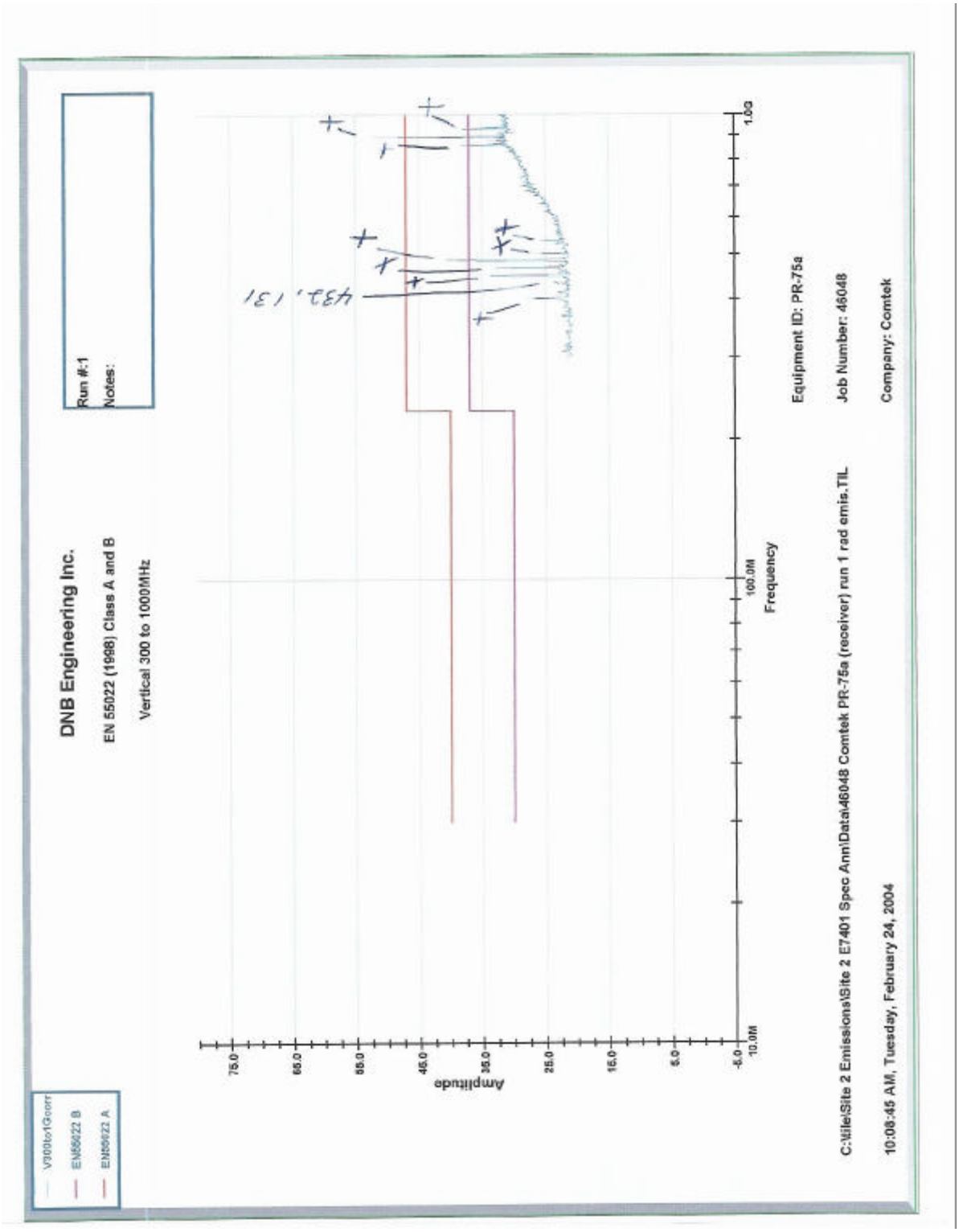
3.1.8 Test Data For Radiated Emissions

(PR-75a) 30-300 MHz Vertical



3.1.9 Test Data For Radiated Emissions

(PR-75a) 300-1000 MHz Vertical



3.1.10 Photograph of Radiated Test Setup per 2.1033(b)5

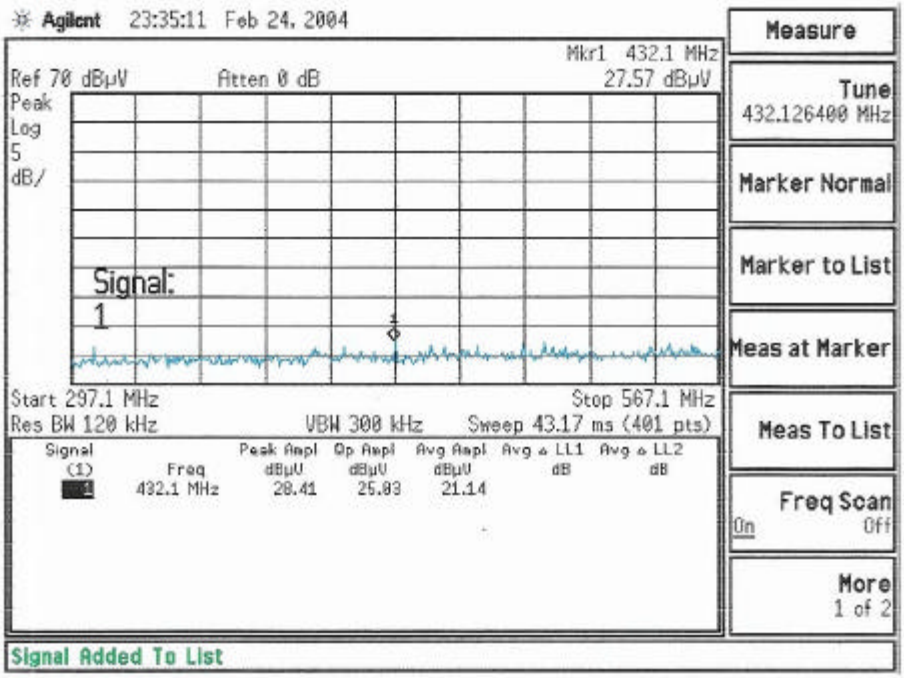
EUT: PR-75a
View: Test Setup

4. EXPLORATORY EMISSIONS

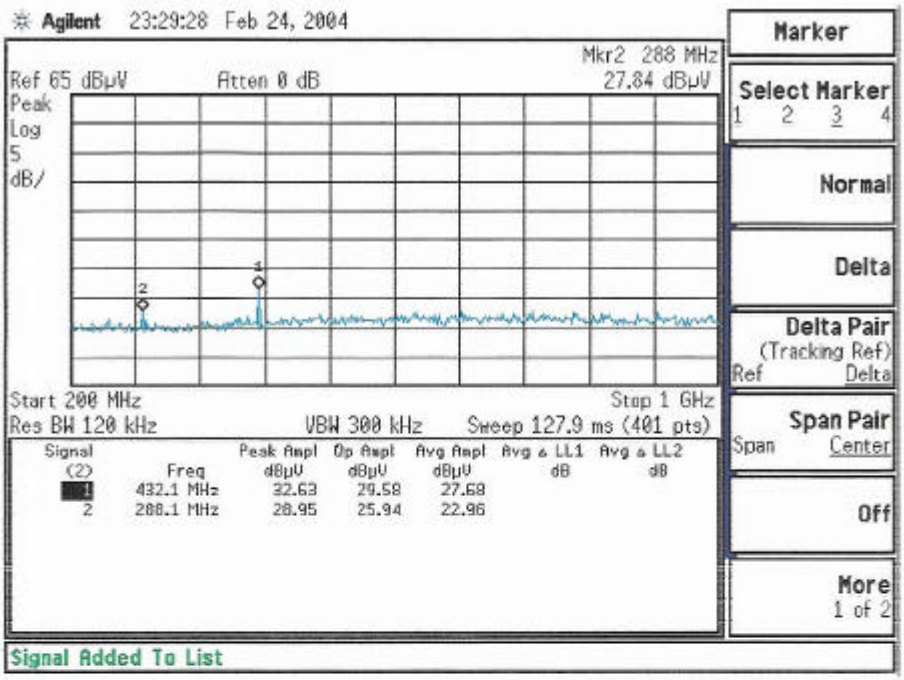
Due to low emission levels from the EUT, Exploratory Emissions were performed to the following procedure.

The Device was placed in an anechoic chamber with the receive antenna set 3 meters away from the EUT. A sweep of 30-300 MHz was performed using a biconical antenna in order to find any signal being emitted from the EUT, as well as finding the worse case mode of operation. This was repeated for the range of 200-1000 MHz using a log periodic antenna.

4.1.1 Test Data For Radiated Emissions (Exploratory Emissions)



4.1.2 Test Data For Radiated Emissions (Exploratory Emissions)



4.1.3 Photograph of Exploratory Emissions per 2.1033(b)5

EUT: PR-75a
View: Test Setup

5. LABELING REQUIREMENTS - PER 2.1033(B)(7)

Label will be constructed of 0.02 inch plastic attached as shown on the equipment with permanent adhesive.

All information on the label will be etched or screened. All methods will exceed the expected lifetime of the equipment.

The label will be large enough to allow all information to be readily legible.

5.1 Additional Label Required

This device complies with Part 15 of the FCC Rules. Operation is subject to the following tow conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Shown above is a copy of the label with the Part 15.19 Compliance Statement, Location of required information is checked "below".

☐ The label will be placed in a conspicuous location on the device.

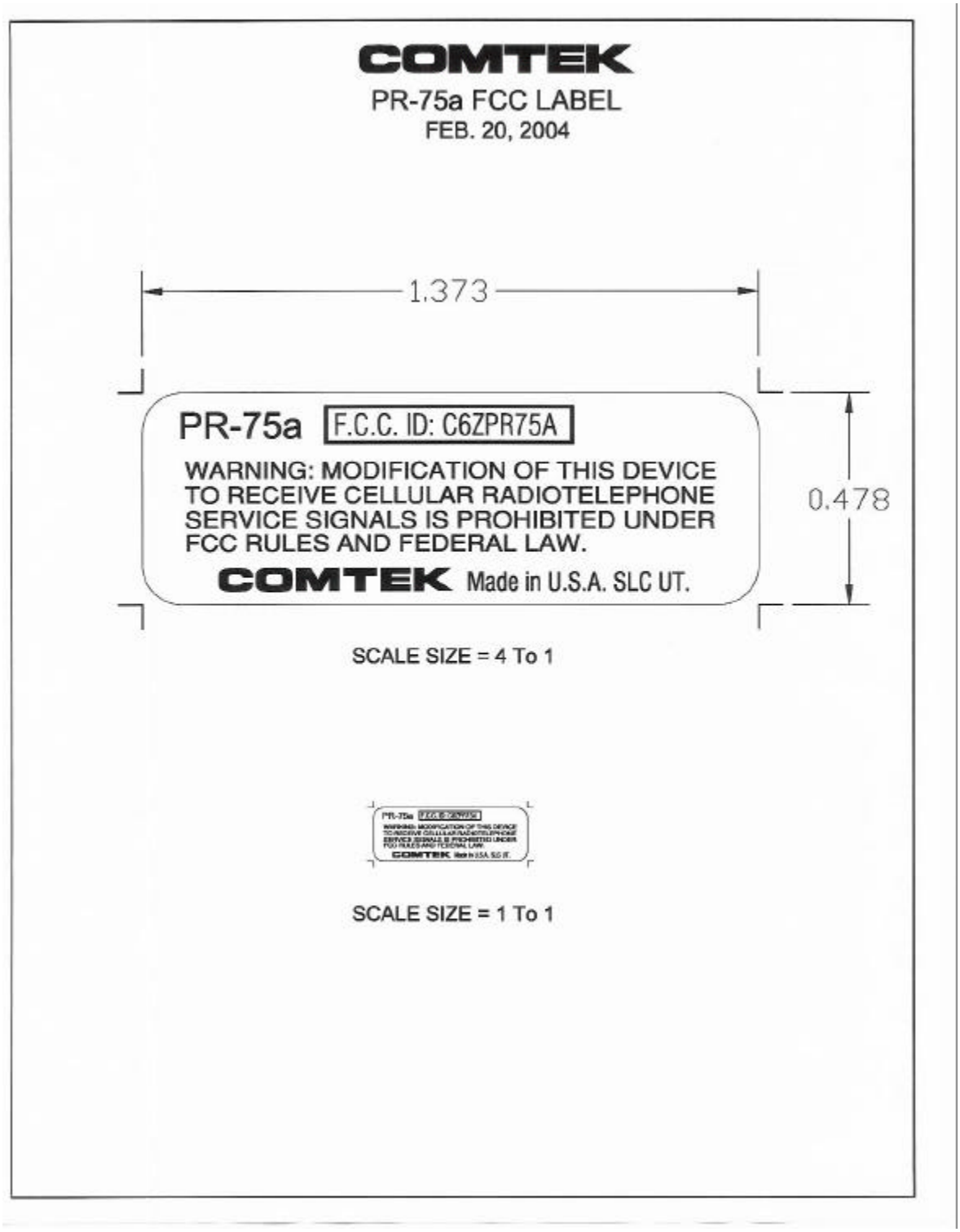
☐ The device is too small for a compliance label. Therefore the label will be placed in a prominent location in the Instruction Manual or other information supplied to the user.

☐ The device is too small for a compliance label. The label will be placed on the container in which the device will be marketed.

5.2 Photograph of Label Placement and Contents

PDF File. See the attachment that was electronically submitted.

5.3 SAMPLE OF LABELING



6. OWNERS MANUAL

PDF File. See the attachment that was electronically submitted.

7. APPENDIX SECTION

7.1 APPENDIX B: UNCERTAINTY TOLERANCE

DNB Engineering's Utah Facility is within acceptable uncertainty tolerances per ANSI C63.4 (2000) sections 5.4.6.1 and 5.4.6.2 as well as CISPR 16-1(2002) Annex M, section M.2.

ANSI C63.4 (2000)

5.4.6.1 Site Attenuation. A measurement site shall be considered acceptable for radiated electromagnetic field measurements if the horizontal and vertical NSA derived from measurements, i.e., the "measured NSA," are within ±4 dB of the theoretical NSA (5.4.6.3) for an ideal site.

5.4.6.1 NSA Tolerance. The ±4 dB tolerance in 5.4.6.1 includes instrumentation calibration errors, measurement technique errors, and errors due to site anomalies. These errors are analyzed in ANSI C63.6-1988 [3], wherein it is shown that the performance of a well-built site contributes only 1 dB of the total allowable tolerance.

CISPR 16-1 (2002)

M.2 Error analysis

. . . The total estimated errors are the basis for the ±4 dB site acceptability criterion consisting of approximately 3 dB measurement uncertainty and an additional allowable 1 dB for site imperfections.

7.2 APPENDIX C: TEST SITE CERTIFICATION, CHALK CREEK EMI SITE - per 2.948(a)

The DNB Engineering test facility is located in Chalk Creek Canyon near Coalville, Utah. Site characteristics were measured according to the procedures outlined in ANSI C63.4 (2000) “Characteristics of Open Field Test Site”. The results of these characterizations indicate that the Chalk Creek site is an outstanding facility to perform accurate and repeatable EMI tests.

7.2.1 Ambient Emissions

Ambient Emission measurements were made to determine the level of the ambient emanations at the DNB test facility. The results indicate that all ambient signals are below the FCC Radiated Emission limits or that each can easily be identified as an ambient signal.

7.2.2 FCC Certification

FEDERAL COMMUNICATIONS COMMISSION
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

May 14, 2002

Registration Number: 90532

DNB Engineering, Inc.
1100 E. Chalk Creek Rd.
Coalville, UT 84017

Attention: Bryan Broaddus

Re: Measurement facility located at Chalk Creek
3, 10 & 30 meter sites
Date of Listing: May 14, 2002

Gentlemen:

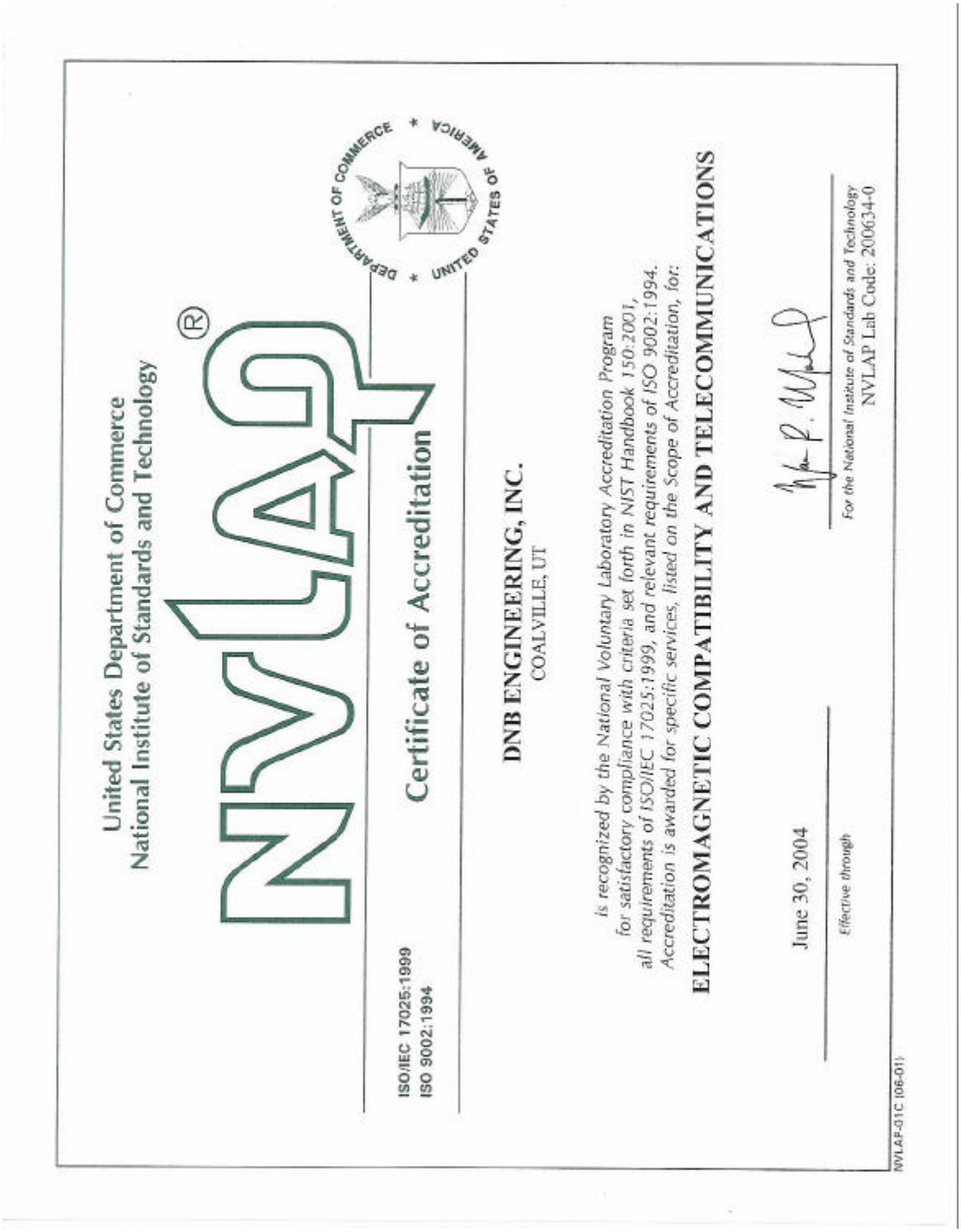
Your request for registration of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC rules. The information has, therefore, been placed on file and the name of your organization added to the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website www.fcc.gov under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Thomas W Phillips
Electronics Engineer

7.2.3 NVLAP Accreditation



United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation

ISO/IEC 17025:1999
ISO 9002:1994

DNB ENGINEERING, INC.
COALVILLE, UT

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

June 30, 2004
Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 200634-0

NVLAP-01C (06-01)

7.2.4 NVLAP Accreditation

National Institute of Standards and Technology NVLAP National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Revised Scope 10/23/2003 — Page: 1 of 4

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200634-0**

DNB ENGINEERING, INC.
1100 E. Chalk Creek Road
Coalville, UT 84017
Mr. Michael Nuis
Phone: 714-870-7581 Fax: 714-870-5081
E-Mail: mnuis@dnbengine.com
URL: http://www.dnbengine.com

NVLAP Code	*Designation / Description*
Emissions Test Methods:	
12/CIS14	CISPR 14-1 (March 30, 2000): Limits and Methods of Measurement of Radio interference Characteristics of Household Electrical Appliances, Portable Tools and Similar Electrical Apparatus - Part 1: Emissions
12/CIS14a	EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
12/CIS14b	AS/NZS 1044 (1995)
12/CIS14c	CNS 13783-1
12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22 (1993): Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1 (1995) and Amendment 2 (1996)

June 30, 2004 (Effective through) — For the National Institute of Standards and Technology

National Institute of Standards and Technology NVLAP National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Revised Scope 10/23/2003 — Page: 2 of 4

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200634-0**

DNB ENGINEERING, INC.

NVLAP Code	*Designation / Description*
12/CIS22b	CNS 13438 (1997): Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/EM02a	IEC 61000-3-2, Edition 2.1 (2001-10) and EN 61000-3-2 (2000) : Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A)
12/EM03b	IEC 61000-3-3 (2002-03), edition 1.1: Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitations of voltage changes, voltage fluctuations and flicker, in public low-voltage supply-systems, for equipment with rated current <=16 A per phase and not subject to conditional
12/FCC15b	ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart B: Unintentional Radiators
12/T51	AS/NZS CISPR 22 (2002) and AS/NZS 3548 (1997): Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment
Immunity Test Methods:	
12/I01	IEC 61000-4-2, Edition 2.1 (2001) including Amds. 1 & 2 and EN 61000-4-2: Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (2002) and EN 61000-4-3: Radiated Radio-Frequency Electromagnetic Field Immunity Test

June 30, 2004 (Effective through) — For the National Institute of Standards and Technology

National Institute of Standards and Technology NVLAP National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Revised Scope 10/23/2003 — Page: 3 of 4

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200634-0**

DNB ENGINEERING, INC.

NVLAP Code	*Designation / Description*
12/I03	IEC 61000-4-4 (1995) + Amd. 1 (2000) & Amd. 2 (2001) and EN 61000-4-4: Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995) + Amd. 1 (2000) and EN 61000-4-5: Surge Immunity Test
12/I05	IEC 61000-4-6, Edition 2.0 (2003) and EN 61000-4-6: Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields
12/I06	IEC 61000-4-8, Edition 1.1 (2001) and EN 61000-4-8: Power Frequency Magnetic Field Immunity Test
12/I07	IEC 61000-4-11 (1994) + Amd. 1 (2000) and EN 61000-4-11: Voltage Dips, Short Interruptions and Voltage Variation Immunity Tests
Safety Test Methods:	
12/S60065	IEC 60065 (2001-12), 7th edition: Audio, video and similar electronic apparatus - Safety requirements
12/S01a	IEC 601-1 (1988), 2nd edition: Medical electrical equipment - Part 1: General requirements for safety
12/S60601c	IEC 60601-1-1 (2000-12), 2nd edition: Medical electrical equipment - Part 1-1: General requirements for safety - Collateral standard: Safety requirements for medical electrical systems

June 30, 2004 (Effective through) — For the National Institute of Standards and Technology

National Institute of Standards and Technology NVLAP National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Revised Scope 10/23/2003 — Page: 4 of 4

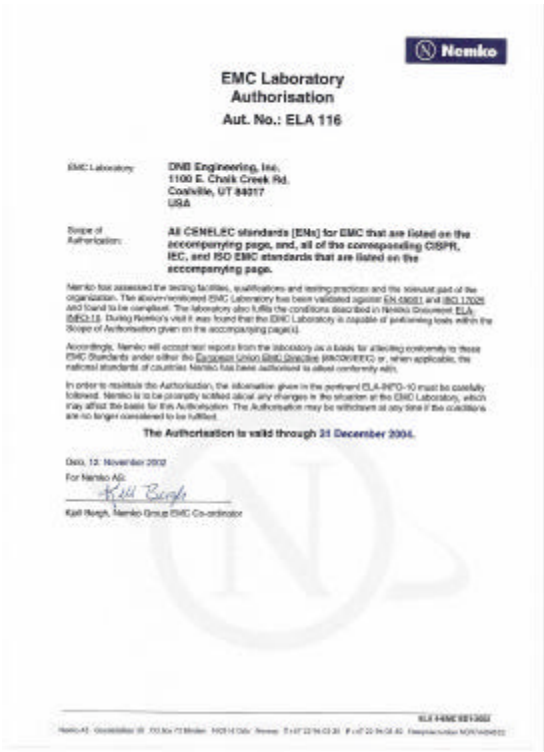
ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200634-0**

DNB ENGINEERING, INC.

NVLAP Code	*Designation / Description*
12/S1010a	IEC 61010-1 (2001-02), 2nd edition: Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
12/T41b	IEC 60950 (1991-04), 3rd edition: Safety of information technology equipment

June 30, 2004 (Effective through) — For the National Institute of Standards and Technology

7.2.5 Nemko Accreditation



Nemko

EMC Laboratory
Authorisation
Aut. No.: ELA 116

EMC Laboratory: DNB Engineering, Inc.
1100 E. Chalk Creek Rd.
Coalville, UT 84017
USA

Scope of Authorization: **All CENELEC standards [ENs] for EMC that are listed on the accompanying page, and, all of the corresponding CISPR, IEC, and ISO EMC standards that are listed on the accompanying page.**

Nemko has assessed the testing facilities, qualifications and testing practices and the relevant part of the organization. The above-mentioned EMC Laboratory has been validated against EN 45001 and ISO 17025 and found to be compliant. The laboratory also fulfills the conditions described in Nemko Document ELA-INFO-10. During Nemko's visit it was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page(s).

Accordingly, Nemko will accept test reports from the laboratory as a basis for attesting conformity to those EMC Standards under either the European Union EMC Directive 89/336/EEC or, when applicable, the national standards of countries Nemko has been authorised to attest conformity with.

In order to maintain the Authorisation, the information given in the pertinent ELA-INFO-10 must be carefully followed. Nemko is to be promptly notified about any changes in the situation at the EMC Laboratory, which may affect the basis for this Authorisation. The Authorisation may be withdrawn at any time if the conditions are no longer considered to be fulfilled.

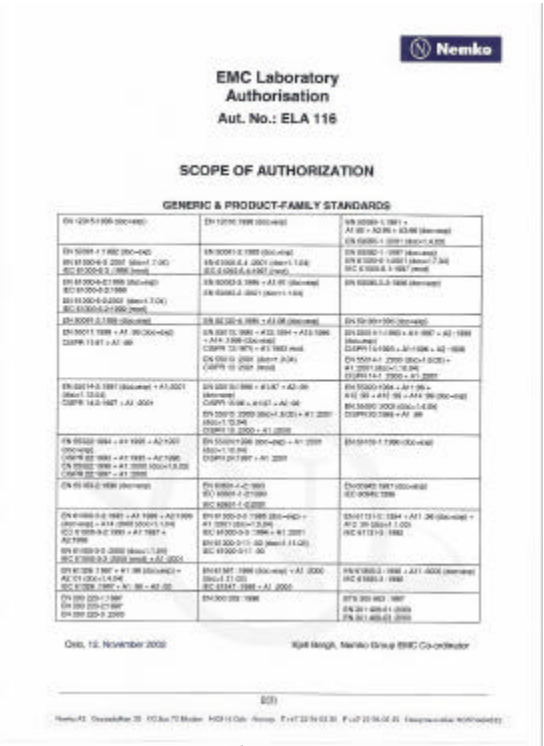
The Authorisation is valid through 31 December 2004.

Oslo, 12. November 2002

For Nemko AS:

Kjell Bergh, Nemko Group EMC Co-ordinator

ELA 116/EMC 001.3002



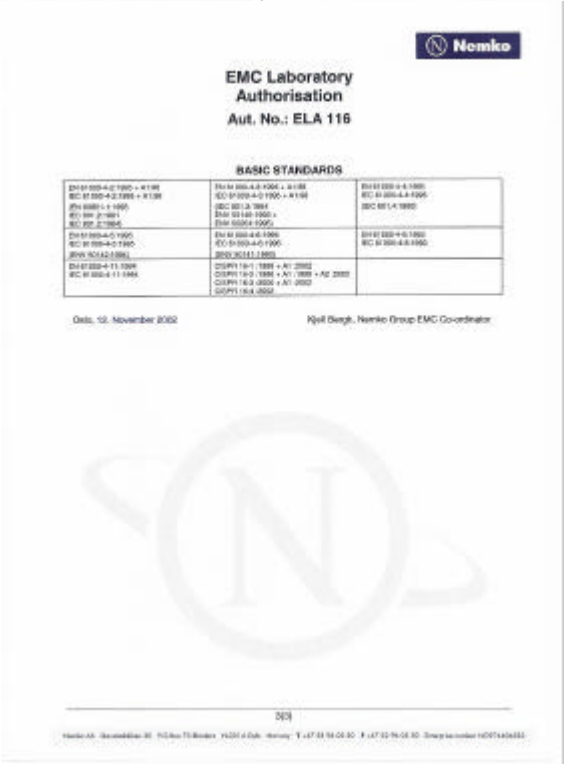
Nemko

EMC Laboratory
Authorisation
Aut. No.: ELA 116

SCOPE OF AUTHORIZATION

GENERIC & PRODUCT-FAMILY STANDARDS

Oslo, 12. November 2002 — Kjell Bergh, Nemko Group EMC Co-ordinator



Nemko

EMC Laboratory
Authorisation
Aut. No.: ELA 116

BASIC STANDARDS

Oslo, 12. November 2002 — Kjell Bergh, Nemko Group EMC Co-ordinator

7.3 APPENDIX C:

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.

7.4 APPENDIX D: Equipment Used for Test Data

Radiated Emissions

Description	Manufacturer/MN	Asset #	Serial #	Cal Due
Amplifier	HP/8447D	U-067	2727A06182	03APR04
Amplifier	HP/8447D	U-065	2727A06180	03APR04
Amplifier	HP/8447D	U-066	2727A06181	03APR04
Amplifier	HP/8447D	U-068	2727A06184	03APR04
Bicon Antenna	SCH/BBA9106	U-187	6	20AUG04
Bicon Antenna	SCH/BBA9106	U-186	7	26JUN04
Log P Antenna	SCH/UJALP9107	U-011	11	26JUN04
Log P Antenna	SCH/UHAL09107	U-010	10	25AUG04
Loop Antenna	R&S/HFH 2-Z2	U-016	880665/-40	22JUL04
QP Adapter	HP/85650 A	U-001	2043A00277	11MAY04
Receiver	R&S/ESVP	U-078	879807/048	14MAR04
Receiver	R&S/ESVP	U-083	882402/005	30JAN05
Spectrum Analyzer	Agilent	U-257	MY 42000103	Reference
Spectrum Analyzer	HP/8566B	U-138	2421A00516	26MAR04

End of Report 46048FCC