



EXHIBIT 2C

**Test Report Provided by
NTS Calgary**

Applicant: Nortel Networks

**For Class II Permissive
Change on:**

**FCC: AB6NT800RM-CBTS
IC: 332D-CBS800RM**



Product Integrity Laboratory

5151-47th Street, NE
Calgary, Alberta T3J 3R2
Tel: (403) 568-6605
Fax : (403) 568-6970

Emissions Test Report
Project Code CG-040044_E
(Report CG-040044_E-2)

Nortel Compact with Optimized RM 800 MHz

Revision: 1

January 26, 2005

Prepared for: Nortel Networks

Author: Eric Warkentin
EMC Specialist

Approved by: Nick Kobrosly
Lab Manager

Confidentiality Statement: This report and the information contained herein represent the results of testing articles/products identified and selected by the client. The tests were performed to specifications and/or procedures approved by the client. National Technical Systems ("NTS") makes no representations expressed or implied that such testing fully demonstrates efficiency, performance, reliability, or any other characteristic of the articles being tested, or similar products. This report should not be relied upon as an endorsement or certification by NTS of the equipment tested, nor does it represent any statement whatsoever as to its merchantability or fitness of the test article or similar products for a particular purpose. This document shall not be reproduced except in full without written approval from National Technical Systems ("NTS") and the customer.

Report Summary NTS Canada

Product Integrity Laboratory
5151-47th Street, N.E. Calgary Alberta T3J 3R2

Accreditation Numbers: FCC 101386
IC 46405-3978 File # IC3978-2
Standards Council of Canada Accredited Laboratory No. 440

Performed For: Nortel Networks Inc.
5050-40th Street, N.E.
Calgary Alberta T3J 4P8
Phone (403) 769-2425

Customer Representative: Thomas Wong
CDMA / TDMA Regulatory Prime

EUT Description:

	Name	Model	Revision	Serial Number
EUT	Optimized RM 800 MHz	NRRZ71AA	P3	See 2.1.1

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

Test Summary

Appendix	Standards		Description & Range	Deviations* from:			Pass / Fail	Criteria
	Base	Test Basis		Base Standard	Test Basis	NTS Procedure		
A	FCC CFR 47 Part 22	ANSI C63.4-2001	Radiated Emissions 30 MHz – 10 GHz	No	No	No	PASS	Subpart H

*Deviation details are outlined in the applicable appendix of this report

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

Test Log and Signatures

Appendix	Test Case	Start	End	Tester / Date
A	Radiated Emissions - 30 MHz – 10 GHz FCC Part 22	November 23, 2004	November 29, 2004	<hr/> Eric Warkentin, EMC Specialist

The test outlined may not be inclusive of all testing required by the Base Standards or fulfill the applicable regulatory requirements in their entirety.

Test Result: The product presented for testing complied with test requirements as shown above.

Prepared By: _____
Eric Warkentin
EMC Specialist

Checked By: _____
Glen Moore
EMC Manager

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Table of Contents

REPORT SUMMARY 2
 TEST SUMMARY 3
 TEST LOG AND SIGNATURES..... 4
 REGISTER OF REVISIONS..... 5
 1.0 INTRODUCTION 6
 1.1 PURPOSE 6
 1.2 ABBREVIATIONS AND DEFINITIONS 6
 1.3 REFERENCES 8
 2.0 EUT 9
 2.1 CONFIGURATION..... 9
 2.1.1 SET UP CONFIGURATION 11
 2.1.2 TEST PLAN CONFIGURATION DEVIATIONS..... 12
 2.1.3 EUT POWER..... 12
 2.1.4 TEST PLAN POWER DEVIATIONS..... 13
 2.2 CABLES 13
 2.2.1 TEST PLAN CABLE LIST DEVIATIONS 13
 2.3 FREQUENCIES 14
 2.3.1 TEST PLAN FREQUENCY LIST DEVIATIONS 14
 2.4 EUT SOFTWARE 14
 2.5 MODE OF OPERATION 14
 2.5.1 TEST PLAN MODE OF OPERATION DEVIATION..... 15
 2.6 PASS / FAIL CRITERIA 15
 3.0 SUPPORT EQUIPMENT 15
 3.1 CONFIGURATION..... 15
 3.2 CABLES 15
 3.3 FREQUENCIES 15
 APPENDICES..... 16
 APPENDIX A: RADIATED E-FIELD EMISSIONS 30 GHZ – 10 GHZ (ERP MEASUREMENT) 17
 APPENDIX B: TEST PLAN 28
 APPENDIX C: SUPPLEMENTARY INFORMATION..... 29
 END OF DOCUMENT 30

REGISTER OF REVISIONS

Revision	Date	Description of Revisions
0	January 20, 2005	Draft release for review
1	January 26, 2005	Release following internal and customer review

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to describe the tests applied by NTS Canada to demonstrate compliance of Nortel Network's Compact with Optimized RM 800 MHz to the applicable Electromagnetic Compatibility (EMC) standards as outlined in section 1.3.

The test outlined may not be inclusive of all testing required by the Base Standards or fulfill the applicable regulatory requirements in their entirety.

The client directed the operation and configuration of the system under test and was responsible for its monitoring and proper operation during the testing,

1.2 ABBREVIATIONS AND DEFINITIONS

The following are the abbreviations and definitions that may be relevant to this document.

<u>Abbreviation</u>	<u>Explanation</u>
A	Amps
AF	Antenna Factor
ANSI	American National Standards Institute
AV	Average
AWG	American Wire Gauge
BW	Bandwidth
C	Carrier
C	Celsius
CDMA	Code Division Multiple Access
CE	Conducted Emissions
CEM	Channel Element Module
CF	Correction Factor
CFR	Code of Federal Regulations
CISPR	International Special Committee on Radio Interference
CL	Cable Loss
cm	centimetre
CM	Control Module
CR	Cost Reduction
dB	Decibel
dB μ V	Decibel relative to 1 microvolt
DC	Direct Current
DPM	Duplexer Module
EMC	Electromagnetic Compatibility
EN	European Norms
EUT	Equipment Under Test
FCC	Federal Communications Commission
GHz	Gigahertz
GPS	Global Positioning System
GPSTM	Global Positioning System Timing Module
Hpol	Horizontal Polarization
Hz	Hertz
IC	Industry Canada
IF	Intermediate Frequency

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

ISO	International Standards Organization
kHz	kilohertz
LISN	Line Impedance Stabilization Network
LNA	Low Noise Amplifier
m	Metre
MHz	Megahertz
μ V	Microvolts
ms	Milli Second
NTS	National Technical Systems
NA	Not Available
N/A	Not Applicable
PI	Product Integrity
PK	Peak
P/N	Part Number
PSU	Power Supply Unit
QP	Quasi-Peak
Qty	Quantity
RE	Radiated Emissions
RF	Radio Frequency
RM	Radio Module
Rx	Receive
S	Sector
TDMA	Time Division Multiple Access
TIIM	T1 Interface Module
TT	Turn Table
Tx	Transmit
V	Volts
VDC	Volts Direct Current
Vpol	Vertical Polarization
XCEM	X Channel Element Module

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

Definitions:

Equipment Under Test (EUT): A representative ITE or functionally interactive group of ITE (that is a system), which includes one or more host units and is used for evaluation purposes.

Electromagnetic compatibility (EMC): The ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

1.3 REFERENCES

US Code of Federal Regulations

- 47 CFR Part 22 Federal Communications Commission, Part 22, 10-01-97 edition

American National Standards Institute

- ANSI C63.4-2001 American National Standards for Methods of Measurements of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipments in the range of 9 kHz to 40 GHz, June 6, 2001
- ANSI C63.4-1992 American National Standards for Methods of Measurements of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipments in the range of 9 kHz to 40 GHz, July 17, 1992

NTS Documentation

- NTS Radiated Emissions 30MHz – 1GHz Automated Test Method E001R7
- NTS Radiated Emissions 1GHz – 18 GHz Manual Test Method E006R4
- NTS Radiated Emissions Substitution 30 MHz – 20 GHz Test Method 11.0
- Emissions Test Report CG-040044-1 - Nortel Compact with RM800CR, XCEM Cirrus, and CM2+

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

2.0 EUT

2.1 CONFIGURATION

Description of EUT

	Name	Model	Revision	Serial Number
EUT	Optimized RM 800 MHz	NRRZ71AA	P3	See 2.1.1
Classification	Floor Standing (Modules configured as part of a system in a Nortel Networks indoor Compact BTS system)			
Size (m)	NA			
Weight	NA			
Power	24 VDC			
Functional Description	<p>Compact Dual Voltage Shelf - comprises a common digital/radio shelf with back-plane, and houses the entire Compact BTS that consists of TIIM, GPSTM, CM-2, CEM, RM, CCAM, DC Breaker Module, and Cooling Unit. The back-plane provides the electrical interfaces that support the inter-module communication and DC power distribution to the modules housed within the BTS through a combination of D-sub connectors, 2mm high density connectors, combo D-sub connectors and high power contacts. The DC Breaker Module distributes DC power to the CCAM and fan tray via a 10A breaker, to the digital modules via a 20A breaker, and to each of the radio modules via a separate 40A breaker. The DC Breaker Module also allows for 2, 5A breakers for customer power.</p> <p>CM-2+ - the CM-2+ digital module provides the call-processing capability, overall data flow control, the T1/E1 back-haul interface, and OAM functionality plus the CDMA toolbox interface (DMI and Vortex). The CM2+ has six HSSPC2 links.</p> <p>Optimized RM 800 MHz- the RM provides the radio channel compensation and RF conversion. Once the RM is configured it becomes a data processing pipe with little activity that is not OAM related.</p> <p>Forward Link: - Uses different RF carrier frequencies to transmit the CDMA signals generated by the CEM's.</p> <p>Reverse Link: - Amplifies, filters and down converts signals received from CDMA mobiles so that the CEM's can convert those signals into received data The main changes are: Output stage power transistors Driver stage power transistors Power detection CF3350 bonding interface.</p> <p>GPSTM -The GPSTM is the form fit and function as the same as the existing GPSTM module. 1. The GPSTM provides 9.8304 MHz (8x chip clock) frequency outputs to the CM and CORE modules.</p>			

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

	<p>2. The GPSTM provides 1/2 Hz (Even_Second) timing outputs to the CM and CORE modules.</p> <p>3. The GPSTM provides a communication interface to one CM for control/query purposes.</p> <p>4. The GPSTM provides a 10 MHz output to the user to synchronize test equipment.</p> <p>5. The GPSTM provides a 9.8304 MHz output to the user to synchronize test equipment.</p> <p>6. The GPSTM provides a 1/2 Hz (Even_Second) output to the user to synchronize test equipment.</p> <p>7. The GPSTM provides a communication interface (RS-232) to the user for control/query purposes.</p> <p>8. The GPSTM provides an input to power the active antenna and receive the GPS satellite constellation L1 carrier signal.</p> <p>9. The GPSTM provides different LEDs patterns to indicate the operational modes.</p> <p>XCEM64 Cirrus - The XCEM is a wide range module that can be used in both +24V and -48V system. The XCEM resides in the Digital Shelf. The CEM provides the cell site modem function, converting the encoded voice and data between the network and the air interface. The primary responsibility of the module is to process calls within the CDMA base station. To accomplish this function, it interfaces with the CM2+ module in order to receive digital samples and transmit baseband digital data. The XCEM also interfaces with the CM2+ in order to send and receive traffic and control information. It also interfaces with the system to send and receive control information associated with call setup, tear down, and hand-off.</p> <p>Each Channel Element on a XCEM Card is configured via software to perform a variety of tasks, including:</p> <ul style="list-style-type: none"> * traffic Channel. * pilot Channel. * sync Channel. * paging Channel. * access Channel. * OCNS (Orthogonal Channel Noise Simulator). * some combinations of overhead channels. <p>The Cirrus version is to replace the NIMBUS ASIC and include HSSPC1 functional into the Cirrus ASIC.</p> <p>* TIIM - the TIIM is designed for use as a secondary surge protection device on T1/E1 data lines and to provide T1/E1 routing to the CM-2 and DOM in the Compact BTS. The TIIM is installed in series between primary surge protection (customer supplied) and the CM-2 / DOM to be protected. A single unit can protect up to 8 T1/E1 lines, or eight paired circuits.</p> <p>* CCAM - the CCAM supports 24 customer configurable alarms, a shared GPSTM, Cooling Unit alarm monitoring, and input DC voltage monitoring. Through an Inter-Shelf Alarm cable, the CCAM could also monitor the DC power and Cooling Unit alarm from an extension Compact BTS shelf.</p> <p>* Cooling Unit - the Cooling Unit consists of a fan tray that has temperature controlled fan speed to reduce acoustic noise</p>
<p>Physical Description</p>	<p>The system consisted of three combined radio and digital cBTS shelves in an indoor Metrocell rack. The setup is shown in Figure 1.</p>

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

2.1.1 SET UP CONFIGURATION

Description	P/N	RLS	Serial Number
Rack	NA		NA
Top Shelf	NTRZ61AA	03	SNMN5300R60K
CCAM	NTRZ64AA	P5	NNTM74XL1WCC
TIIM	NTGS3188	03	NNTM74XL0N3G
GPSTM Trimble	NTBW50AA	08	NNTM74TC0SNG
CM	NTBW40CA	N2	NNTM74X10DCV
CEM Slot1	NRRZ80AA	N1	NNTM74X10Y87
CEM Slot2	NRRZ80AA	N1	NNTM74X10Y8C
CEM Slot3	NRRZ80AA	N1	NNTM74X10Y86
RM 800 MHz with ACBEL PSU Slot1	NTRZ71AA	29	NNTM538JRM P2
DPM Slot1	NTRZ79CA	02	ALLG74000JX7
RM 800 MHz with ACBEL PSU Slot2	NTRZ71AA	29	NNTM538JRN1D
DPM Slot2	NTRZ79CA	02	ALLG74000JXK
RM 800 MHz with ACBEL PSU Slot3	NTRZ71AA	29	NNTM538JRM R4
DPM Slot3	NTRZ79CA	02	ALLG74000JXE
Fan Tray	NTBW18AB	P4	NNTM74XL268M
Middle Shelf	NTRZ61AA	03	SNMN5300R60H
CCAM	NTRZ64AA	04	NNTM74XL30M1
TIIM	NTGS3188	01	NNTM74XL05VF
GPSTM Trimble	NTBW50AA	07	NNTM74TC0H69
CM	NTBW40CA	N2	NNTM74X10DCX
CEM Slot1	NRRZ80AA	N1	NNTM74X10Y89
CEM Slot2	NRRZ80AA	N1	NNTM74X10Y83
CEM Slot3	NRRZ80AA	N1	NNTM74X10Y88
RM 800 MHz with Acbel PSU Slot1	NTRZ71AA	29	NNTM538JRM KX
DPM Slot1	NTRZ79AA	P4	ALLG74000JC7
RM 800 MHz with Acbel PSU Slot2	NTRZ71AA	29	NNTM538JRM U6
DPM Slot2	NTRZ79AA	P4	ALLG74000GO4
RM 800 MHz with Acbel PSU Slot3	NTRZ71AA	29	NNTM538JRM 8K
DPM Slot3	NTRZ79AA	02	ALLG74000JVX
Fan Tray	NTBW18AB	P4	NNTM74XL268N
Bottom Shelf	NTRZ61AA	03	SNMN5300R60L
CCAM	NTRZ64AA	P5	NNTM74XL1WC8
TIIM	NTGS3188	03	NNTM74XL144M
GPSTM Trimble	NTBW50AA	07	NNTM74TC0EIX
CM	NTBW40CA	N2	NNTM74X10DCT
CEM Slot1	NRRZ80AA	N1	NNTM74X10Y8E
CEM Slot2	NRRZ80AA	N1	NNTM74X10J5X
CEM Slot3	NRRZ80AA	N1	NNTM74X10J62
Optimized RM 800 MHz with Astec PSU Slot1	NRRZ71AA	P3	NNTM536G2WRH
DPM Slot1	NTRZ79AA	P4	ALLG74000GO6
Optimized RM 800 MHz with Astec PSU Slot2	NRRZ71AA	P3	NNTM536G2WVL
DPM Slot2	NTRZ79AA	02	ALLG74000JVT
Optimized RM 800 MHz with Astec PSU Slot3	NRRZ71AA	P3	NNTM536G2WUK
DPM Slot3	NTRZ79AA	P4	ALLG74000JBY
Fan Tray	NTBW18AB	P4	NNTM74XL268Y

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

The setup of the EUT on the turn table is shown in Figure 1. Setup of the EUT was conducted by the customer.



Figure 1 EUT Setup – Front View

2.1.2 TEST PLAN CONFIGURATION DEVIATIONS

GPSTM

Prior to testing the GPSTM modules designed by Symmetricom were replaced with modules designed by Trimble.

2.1.3 EUT POWER

Voltage	24 VDC
Number of Feeds	3 (1 Hot and 1 Return each)
Gauge of cable	2 AWG
Current Draw	210 Amps (total combined current – all cables)
Special Requirements	The power (3 hot and 3 return) was supplied through six 2 AWG power cords into the EUT. Shelf 1 (bottom) was powered off of Hubble B (Hot LISN B1, Return LISN B2); Shelf 2 (middle) was powered off of Hubble A (Hot LISN A3, Return LISN A4); Shelf 3 (top) was powered off of Hubble A (Hot LISN A1, Return LISN A2).

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

2.1.4 TEST PLAN POWER DEVIATIONS

None

2.2 **CABLES**

EUT Cable List

Quantity	Model	Routing		Description	Cable Length (m)
		From	To		
6	NA	Hubble A	Shelf Power Input	2 AWG DC Power Cables (2 to each shelf – Hot and Return)	6
9	LMR400	RM	Chamber Bulkhead	N Male – N Male Cable	9
3	LMR400	Chamber Bulkhead	GPS Distribution Block	N Male – N Male Cable	3
3	NTBW4032	TIIM's	Looped back	T1 Cable	3
3	NTGS3518	CCAM	Looped back	Alarm Cable	3

2.2.1 TEST PLAN CABLE LIST DEVIATIONS

No cable list provided

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

2.3 FREQUENCIES

EUT Frequency List

Module	Frequency(MHz)
XCEM Cirrus	1.2288
XCEM Cirrus	9.3216
XCEM Cirrus	10.0
XCEM Cirrus	19.6608
XCEM Cirrus	20.0
XCEM Cirrus	33.0
XCEM Cirrus	63.8976
XCEM Cirrus	319.488
XCEM Cirrus	638.976
CM2+	0.15-0.75
CM2+	400kbit/s
CM2+	1.2288
CM2+	1.544
CM2+	2.048
CM2+	3.3Mbit/s
CM2+	4.096
CM2+	6.6
CM2+	8.192
CM2+	9.8304
CM2+	10.0
CM2+	16.5
CM2+	19.44
CM2+	25.0
CM2+	39.3216
CM2+	63.8976

Module	Frequency(MHz)
CM2+	66.666
CM2+	100.0
CM2+	200.0
CM2+	400.0
CM2+	638.976
800MHz RM	9.8304
800MHz RM	19.2
800MHz RM	19.6608
800MHz RM	24.0
800MHz RM	39.3216
800MHz RM	63.8976
800MHz RM	78.6432
800MHz RM	638.976
800MHz RM Tx Freq	153.6
800MHz RM Rx Freq	88.5
800MHz RM Tx Freq	9.8304
800MHz RM Tx Freq	57.6
CCAM	8.0
GPSTM (Trimble)	0.032768
GPSTM (Trimble)	3.6864
GPSTM (Trimble)	9.8304
GPSTM (Trimble)	10
GPSTM (Trimble)	19.6

2.3.1 TEST PLAN FREQUENCY LIST DEVIATIONS

None.

2.4 EUT SOFTWARE

Software Name	Software Release Number	Software Configuration
Vortex	Vortex 12.1	dd Load

2.5 MODE OF OPERATION

As defined by Nortel Networks, the EUT was operated in a typical manner. During testing, the customer monitored the system operation. See Section 2.4 for software mode of operation information.

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

2.5.1 TEST PLAN MODE OF OPERATION DEVIATION

None indicated by customer.

2.6 **PASS / FAIL CRITERIA**

The pass/fail criteria are defined by the emission limits outlined in each reference base standard. The specific limits are described in each test appendices of this report.

3.0 **SUPPORT EQUIPMENT**

3.1 **CONFIGURATION**

All support equipment information was supplied by the client and was not verified by NTS.

Co-Located Support Equipment/Assemblies

Position	QTY	Description	P/N	Serial Number	Revision Number
No co-located support equipment					

Offsite Support Equipment/Assemblies

Position	QTY	Description	P/N	Serial Number
None				

3.2 **CABLES**

Support Cable List

Quantity	Model	Routing		Description	Cable Length (m)
		From	To		
9	NA	Chamber Bulkhead	Support Room Bulkhead	N Male – N Male Cable	2.14
9	NTMY00CL-SF	Support Room Bulkhead	RF Loads	N Male – N Male Cable	8

3.3 **FREQUENCIES**

Support Frequency List

Assembly	Signal	Frequency (MHz)
NA		

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

APPENDICES

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

APPENDIX A: RADIATED E-FIELD EMISSIONS 30 GHZ – 10 GHZ (ERP MEASUREMENT)

A.1. Base Standard & Test Basis

Base Standard	<input checked="" type="checkbox"/>	CFR Title 47 – Telecommunications, Chapter I - FCC Part 22 – Public Mobile Services – Subpart H – Cellular Radiotelephone Service
	<input type="checkbox"/>	CFR Title 47 – Telecommunications, Chapter I - FCC Part 24 – Personal Communication Services – Subpart E – Broadband PCS
Test Basis		ANSI C63.4-2001 Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Test Method		NTS Radiated Emissions Test Method E006R4 NTS Radiated Emissions Signal Substitution Method 30MHz - 20GHz. EMC Test Method 11.0, Revision 01

A.2. Specifications

Frequency	<input checked="" type="checkbox"/>	47 CFR FCC Part 22	
	<input type="checkbox"/>	47 CFR FCC Part 24	
		Theoretical Peak @ 3m¹	ERP²
MHz		dBμV/m	dBm
1000 - 10000		84.3	-13

Note 1: Calculated using: $P_d - (43 + 10 \log(P_w))$

where P_d is the EUT power in dBm and P_w is the EUT power in watts

Note 2: Calculated using: $120 + 20 \log(\text{SQRT}(49.2 * P_w) / 3)$

where P_w is the EUT power in watts

A.3. Measurement Uncertainty

Frequency Range	Measurement Uncertainty (dB)	Expanded Uncertainty (K=2) (dB)
30 MHz – 1 GHz	+2.32/-2.36	+4.65/-4.72
1 GHz – 10 GHz	+3.48/-3.51	+6.96/-7.02

A.4. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
None						

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

A.5. Radiated Emissions Measurement Equipment

Radiated Emissions 30 MHz – 1 GHz Measurement Equipment

Description	Manufacturer	Type/Model	Asset #	Cal Due	Cal Date
10m ANECHOIC CHAMBER					
Bilog Antenna	<input type="checkbox"/> Chase	CBL 6111B	260301	09JULY05	09JULY04
	<input checked="" type="checkbox"/> Chase	CBL6112B	260398		
RF Cable	Suhner Succoflex	Ferrite bead loaded cable	260388	07JAN06	07JAN04
CONTROL ROOM					
Test Receiver	<input type="checkbox"/> Rohde & Schwarz	ESMI	260424 / 260423	27MAR05	27MAR04
	<input checked="" type="checkbox"/> Rohde & Schwarz	ESMI	260424 / 260423		
Mast Controller	EMCO	2090	260166	N/A	N/A
Multi Device Controller TT1 (Turntable)	EMCO	2090	260165	N/A	N/A
RF 10m East site Link				07JAN06	07JAN04
- Cable 1	Suhner Succoflex	NA	263191		
- Cable 2	Suhner Succoflex	NA	263135		
- Cable 3	Suhner Succoflex	NA	263161		
- Cable 4	Suhner Succoflex	NA	263162		
- Switch Matrix Controller	TDL	SMC-002	260162		
- Amplifier	Hewlett Packard	8447F	260164		

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Radiated Emissions 1 GHz – 10 GHz Measurement Equipment

Description	Manufacturer	Type/Model	Asset #	Cal Due	Cal Date
10m ANECHOIC CHAMBER					
Horn Antenna (Rx) 1 G – 18 G	<input checked="" type="checkbox"/> EMCO	3115	260092	16JUN05	16JUN04
Standard Gain Horn (Rx) 5.95 G – 8.2G	<input type="checkbox"/> EMCO	3160-06	260090	27NOV04	27NOV01
Standard Gain Horn (Rx) 8.2G – 12.5 G	<input type="checkbox"/> EMCO	3160-07	260089	27NOV04	27NOV01
Standard Gain Horn (Rx) 12.5G – 18 G	<input type="checkbox"/> EMCO	3160-08	260074	27NOV04	27NOV01
High pass filter	K&L	11SH10-3860	263124	08JAN06	08JAN04
High frequency Link				07JAN06	07JAN04
Step Attenuator/Switch (0dB & 10 dB)	HP	11713A	260048 260097		
LNA	Miteq	JSD000121	260477		
Cable from LNA to SA	Succoflex	101PEA	263187		
Spectrum Analyzer 9k-40GHz	Rohde & Schwarz	FSEK	260104	27MAR05	27MAR04
LNA DC Power Supply	Xantrex	LXO 30-2	260483	NA	NA
HPIB Extender	HP	37204	260096	N/A	N/A
10dB Attenuator	Wiltron	41KC-10	260449	05APR05	05APR04
CONTROL ROOM					
PC with FSEK Manual ctrl S/W	N/A	N/A	N/A	N/A	N/A
HPIB Extender	HP	37204	260168	N/A	N/A
Mast Controller	EMCO	2090	260166	N/A	N/A
Multi Device Controller TT1	EMCO	2090	260165	N/A	N/A
VERIFICATION EQUIPMENT					
Horn Antenna (Tx)	<input checked="" type="checkbox"/> EMCO	3115	260088	N/A	N/A
Signal Generator	<input type="checkbox"/> Rohde & Schwarz	SMP-04	260425	N/A	N/A
	<input type="checkbox"/> Rohde & Schwarz	SMIQ		N/A	N/A
	<input checked="" type="checkbox"/> Wiltron	68369B	Serial 691006	N/A	N/A
Cable RX antenna to 3M center bulk head	Succoflex	104	263136	N/A	N/A
Cable 3M center bulk head to Control room	Succoflex	104	263188	N/A	N/A
Cable Control room bulk head to Signal Generator	Succoflex	104	263134	N/A	N/A

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.


Description	Manufacturer	Type/Model	Asset #	Cal Due	Cal Date
SUBSTITUTION EQUIPMENT					
Horn Antenna (Tx) 1 G – 18 G	<input checked="" type="checkbox"/> EMCO	3115	260091	08NOV05	08NOV04
Signal Generator	<input checked="" type="checkbox"/> Rohde & Schwarz	SMP-04	260425	19MAR06	19MAR03
Cable RX antenna to 3M center bulk head	Succoflex	104	263136	N/A	N/A
Cable 3M center bulk head to Control room	Succoflex	104	263188	N/A	N/A
Cable Control room bulk head to Signal Generator	Succoflex	104	263134	N/A	N/A

A.6. Special Considerations

None.

A.7. Test Results

Compliance Scan Summary

		Project Name: CG-040044		Tester: Eric Warkentin														
		Model: Compact - 3cBTS(1,2&3), 24VDC		Test ID: RE03c-10m-040044														
		Comments: 9XCEM64CIRRUS.3CM2+,3GPSTMTTrimble,Shellf1,2and3-On																
Standard		FCC 22		3 meters														
Rx Antenna	Tx Antenna	Frequency	E-Field Peak Emission Level	Substituted Measured Rx Level	Rx AF	Rx Link	Rx FL	Total Rx CF	Det	Substituted Rx E-Field Emission	Signal Generator	Tx Num Gain	Tx Cable	Total Tx CF	Effective Radiated Power (E.R.P.)	ERP Limit	ERP Margin	
		MHz	dBuV/m	dBuV	dB/m	dB	dB	dB		dBuV/m	dBm	dB	dB	dB	dBm	dBm	dB	
Hpol	260092	260091	1766.69	60.59	63.32	26.47	-29.18	0.00	-2.71	PK	60.61	-43.00	7.08	6.82	0.25	-42.75	-13.00	29.75
Vpol	260092	260091	1766.95	62.28	65.14	26.42	-29.18	0.00	-2.76	PK	62.38	-41.20	7.08	6.82	0.26	-40.94	-13.00	27.94

AF: Antenna Factors Link: Link Loss FL: Filter Loss CF: Correction Factor Det: Detector Type Rx: Receive Tx: Transmit
Link = Attenuator Loss+Cable Loss + Amplifier Loss Rx E-Field Emission = Measured Rx Level + AF + Link + FL E.R.P. = Signal Generator + Tx Num Gain - Tx Cable

E-Field Peak Emissions Level: Corrected level measured from the system
Substituted Measured Rx Level: Uncorrected level measured from substitution transmit antenna
Substituted Rx E-Field Emission: Corrected level measured from the substitution transmit antenna

The EUT is in compliance with the limits as specified above.

Notes:

- Frequencies chosen from compliance are radio harmonics, all other emissions are digital harmonics and fall under Part 15 tests (See report CG-040044-1).
- Only radio emissions observed were at 1766 MHz. No radio emissions were observed above (testing performed up to 10 GHz) or below (testing performed from 30 MHz) this frequency.

A.8. Observations

None

A.9. Deviations from Normal Operating Mode During Test

None

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

A.10. Sample Calculation

3m Limit = 10m Limit – 20 * log (3/10)

Emission Level = Measured Level + Correction Factors

Margin = Limit – Emission Level

ERP Limit (dBm) = Pd-(43 + 10 log(Pw))

where Pd is the EUT power in dBm and Pw is the EUT power in watts

Theoretical ERP Limit (dBuV/m) $120+20\log(\text{SQRT}(49.2*Pw)/3)$

where Pw is the EUT power in watts

A.11. Test Data & Photographs

The test data and photographs collected during this test appear following this page.

A.12. Tested By

This testing was conducted in accordance with the ISO 17025:1999 scope of accreditation, table 1; Quality Manual.

Name: Eric Warkentin
Function: EMC Specialist

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

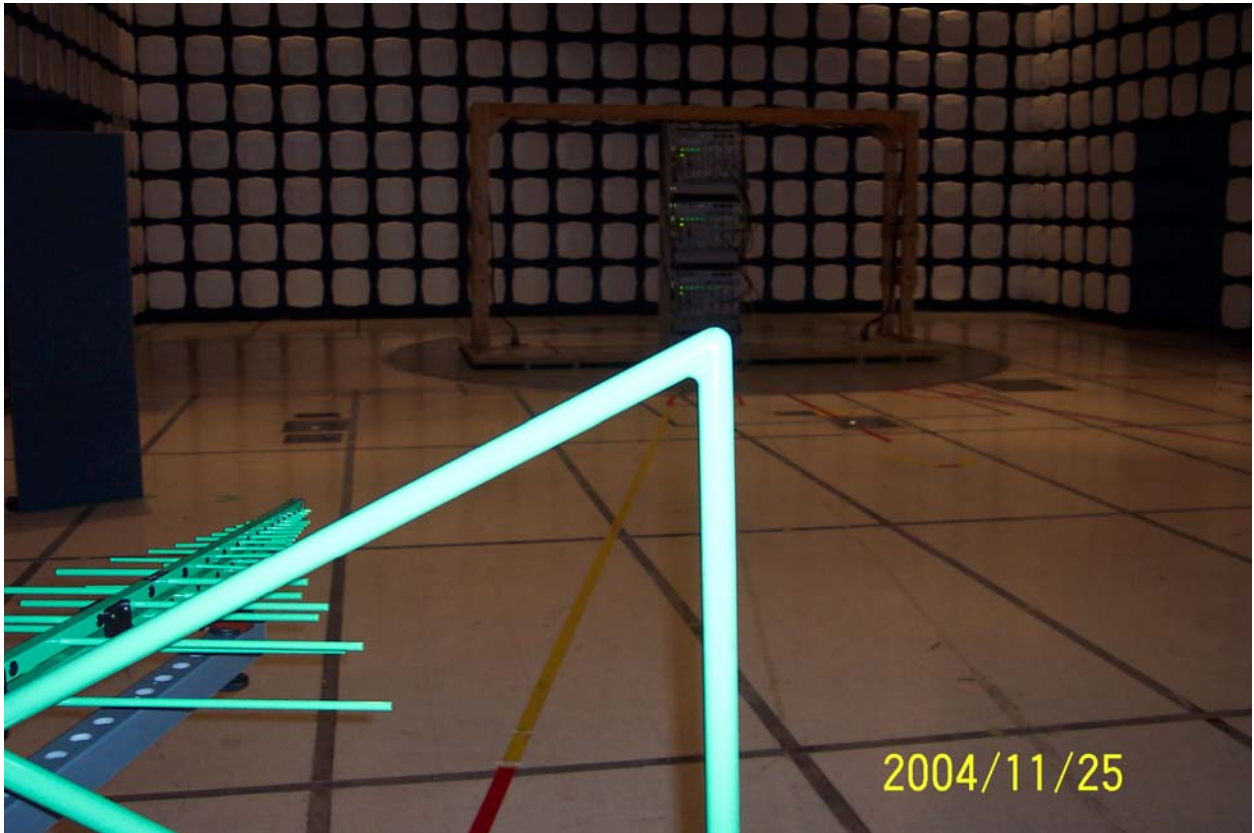


Figure 2 RE 30 MHz - 1 GHz EUT Configuration

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

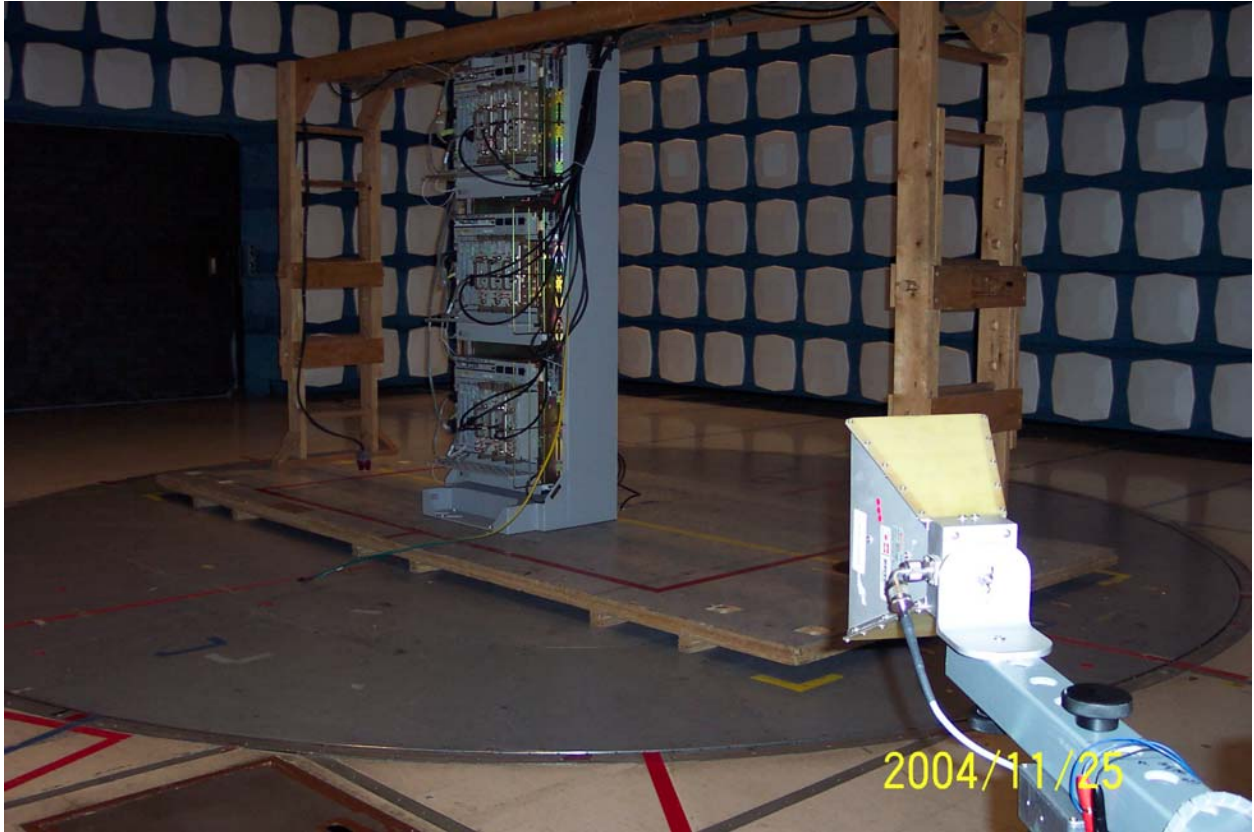


Figure 3 RE 1 GHz – 18 GHz EUT Configuration

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

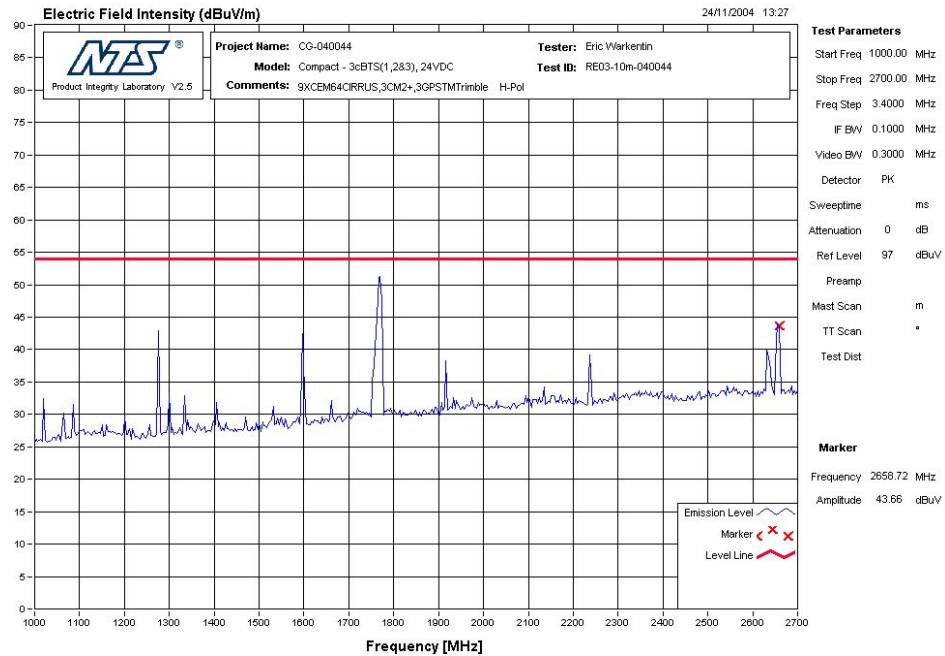


Figure 4 RE - Horizontal - 1 GHz - 2.7 GHz Pre-scan
Note: Limit line shown is for Part 15 Class B, not Part 22

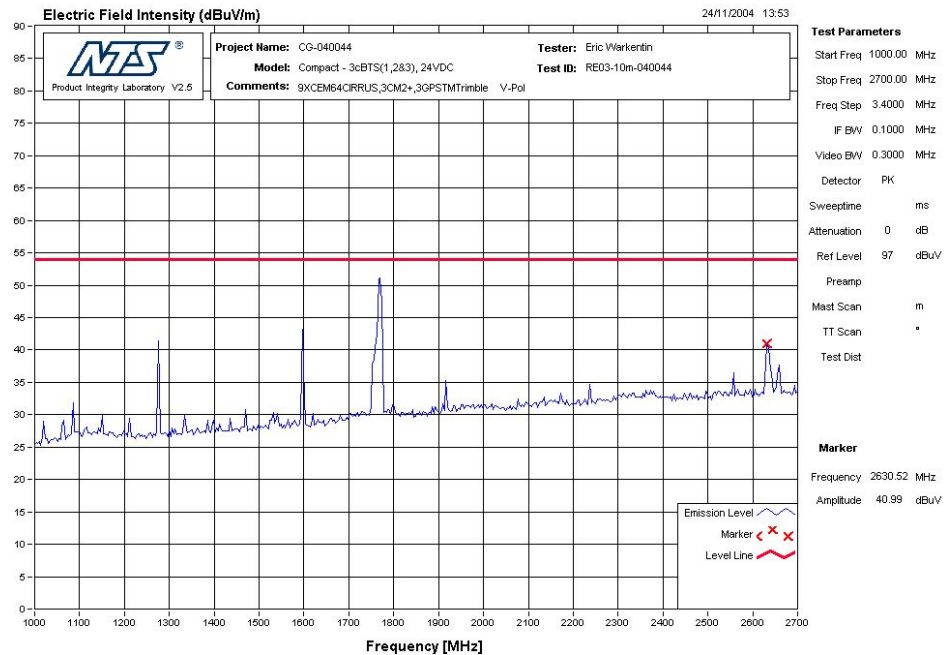


Figure 5 RE - Vertical - 1 GHz - 2.7 GHz Pre-Scan
Note: Limit line shown is for Part 15 Class B, not Part 22

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

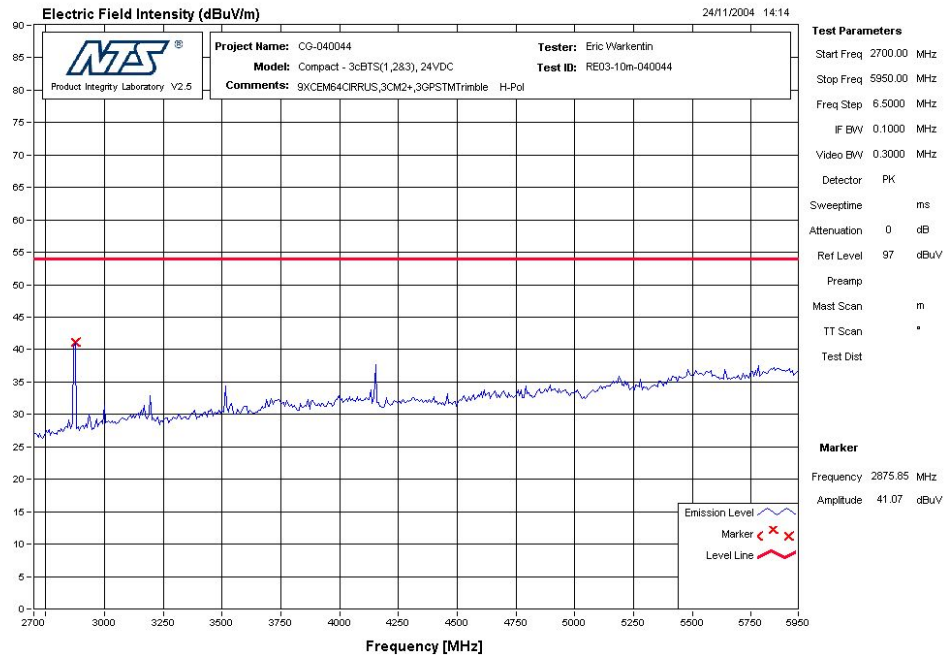


Figure 6 RE - Horizontal – 2.7 GHz – 5.95 GHz Pre-scan
Note: Limit line shown is for Part 15 Class B, not Part 22

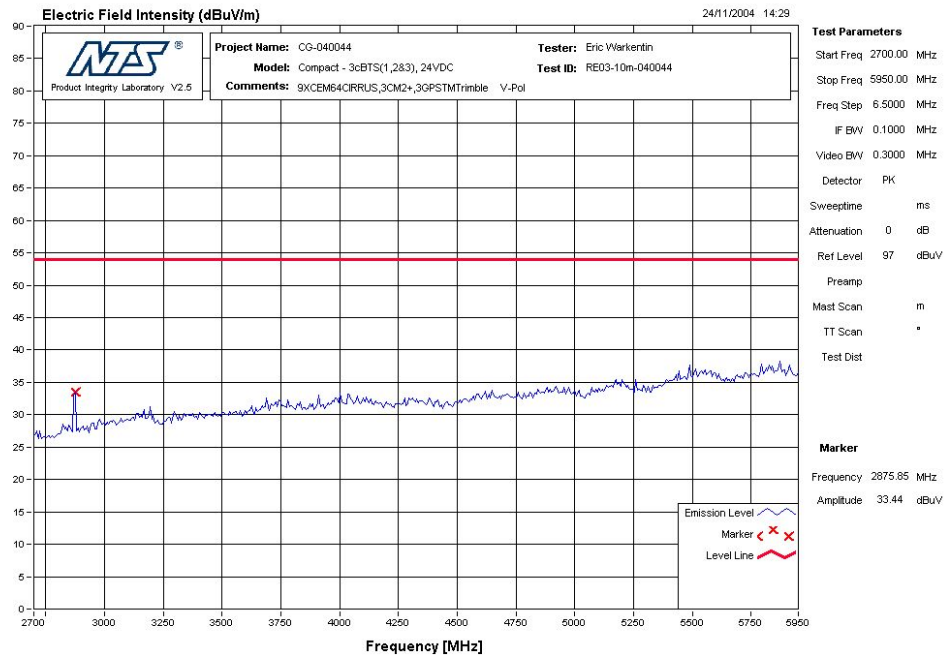


Figure 7 RE - Vertical – 2.7 GHz – 5.95 GHz Pre-Scan
Note: Limit line shown is for Part 15 Class B, not Part 22

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

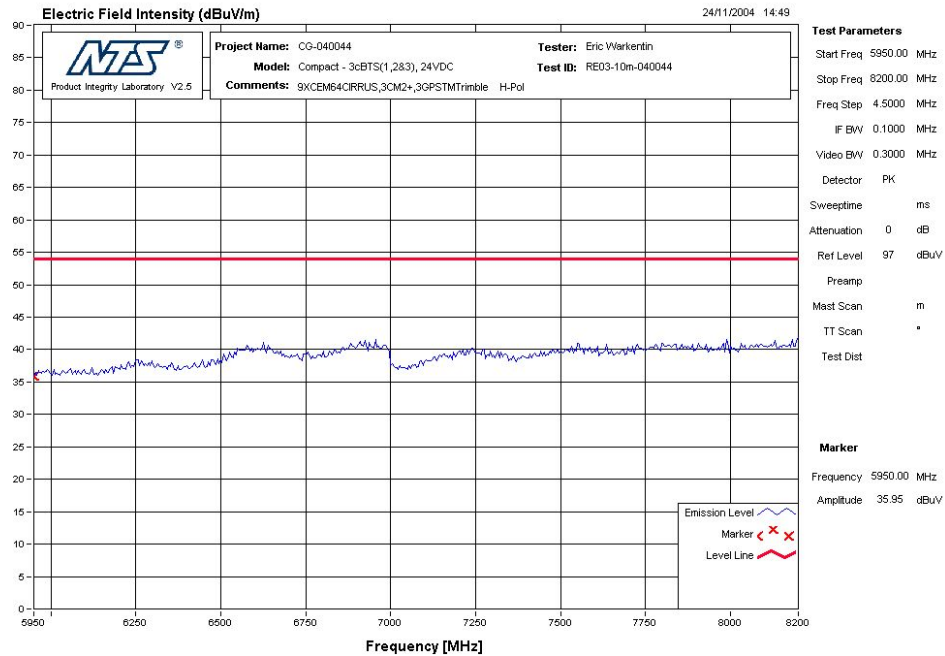


Figure 8 RE - Horizontal - 5.95 GHz - 8.2 GHz Pre-scan
Note: Limit line shown is for Part 15 Class B, not Part 22

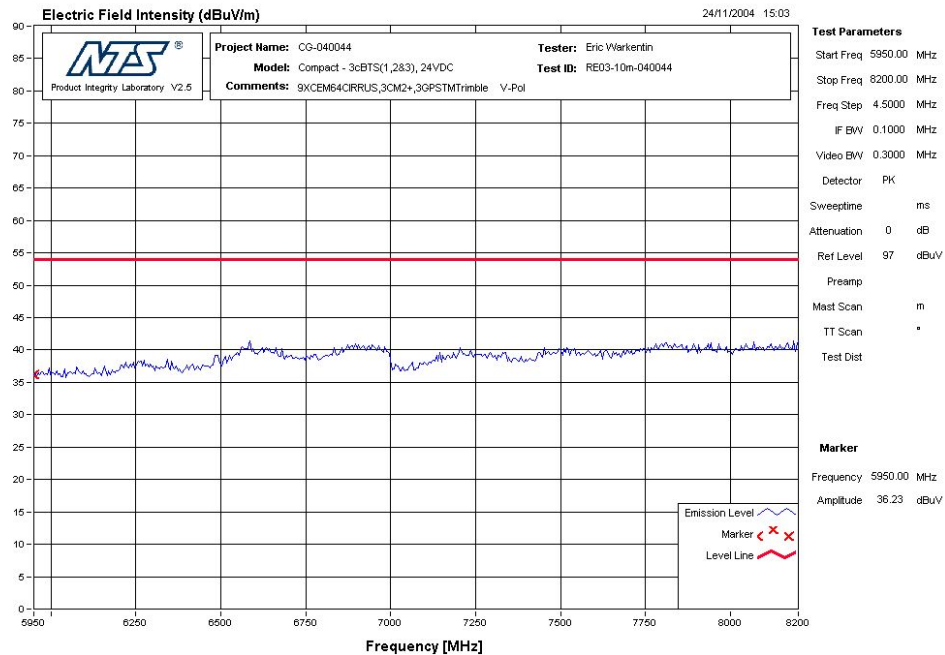


Figure 9 RE - Vertical - 5.95 GHz - 8.2 GHz Pre-Scan
Note: Limit line shown is for Part 15 Class B, not Part 22

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

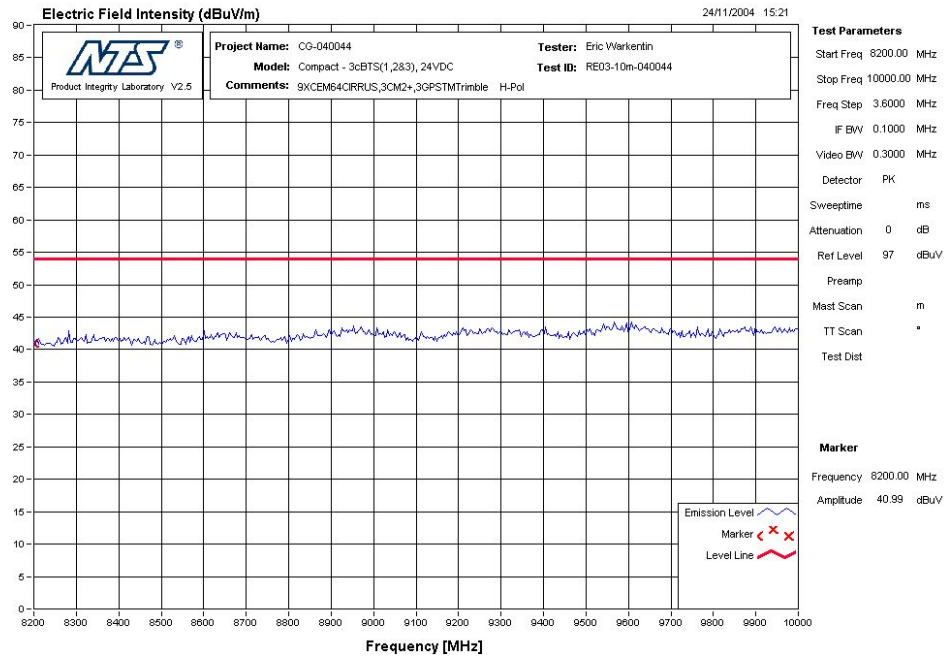


Figure 10 RE - Horizontal - 8.2 GHz - 10 GHz Pre-scan

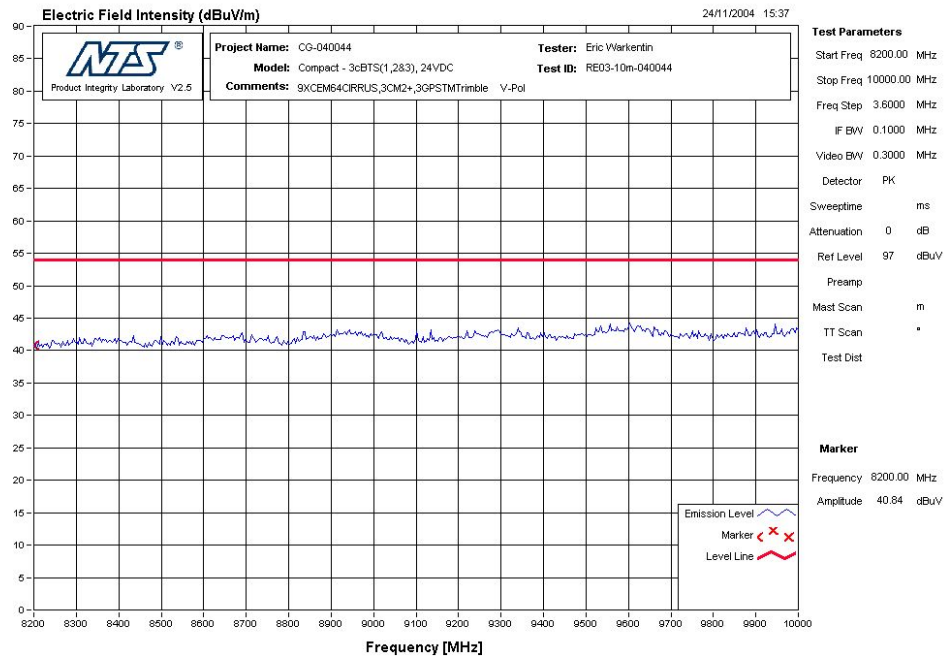


Figure 11 RE - Vertical - 8.2 GHz - 10 GHz Pre-Scan

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

APPENDIX B: TEST PLAN

Not Attached

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

APPENDIX C: SUPPLEMENTARY INFORMATION

None attached

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

END OF DOCUMENT

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970