EXHIBIT 2B

Test Report Provided by Sanmina-SCI

Applicant: Nortel Networks

For Original Equipment Certification on:

AB6NT800MFRM2-CG

SANMINA-SCI

Product Integrity Laboratory

5151-47th Street, NE
Calgary, Alberta T3J 3R2
Tel: (403) 295 5134
Fax : (403) 295 4091

FCC 22 Emissions Test Report
Project Code 80314

800 MHz MFRM2

Revision: 0

Date: April 22, 2003

Prepared for: Nortel Networks Inc.

Author: Duane M. Friesen, C.E.T.
EMC Technical Advisor

Approved by: Glen Moore
EMC Manager

Summary

Sanmina-SCI 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.
5111-47th Street, N.E.
Calgary Alberta T3J 3R2
Phone (403) 769-2425

Customer Representative: Thomas Wong

EUT Description: 800 MHz MFRM2
Model: NTGY30AA rev. X1 & V9
Serial Number: NNTM533GTE75, NNTM533GTDTP, NNTM533GTDXU, NNTM533GTE86, NNTM533GTE53, NNTM533GTDVR

Appendix	Standards		Description & Range	Deviations		Pass / Fail	Criteria
	Base	Test Basis		From Standard	From Test Plan		
B	ANSI C63.4-1992	FCC Part 2.1053 Part 22.917(e)	Out of Band Emissions 30 MHz-1GHz	Yes	No	PASS	None
C	ANSI C63.4-1992	FCC Part 2.1053 Part 22.917(e)	Out of Band Emissions 1GHz-10GHz	No	No	PASS	None

Note: Test Plan deviations are listed in Appendix A.

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

Tested By: Shankara Malwes
EMC Technologist

Checked By: Duane Friesen C.E.T.
EMC Technical Advisor

Table of Contents

REGISTER OF REVISIONS

Revision	Date	Description of Revisions
0	April 22, 2003	Initial Release

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to describe the tests applied by Sanmina-SCI Canada to demonstrate compliance of 800 MHz MFRM2, 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.

1.2 ABBREVIATIONS AND DEFINITIONS

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

Abbreviation	Explanation
dB	Decibel
EMC	Electromagnetic Compatibility
Hz	Hertz
IEC	International Electrotechnical Commission
ITE	Information Technology Equipment
MHz	Megahertz
N/A	Not Applicable
NA	Not Available
PEC	Procurement Engineering Code
σV	Microvolts
BTS	Base Station
dBm	decibel relative to 1 mW
GHz	Giga Hertz
QA	Quality Assurance
BTS	Base Station Transceiver Subsystem
EFT	Electrically Fast Transient
EMI	Electro-Magnetic Interference
ESD	Electrostatic Discharge
EUT	Equipment Under Test
FER	Frame Error Rate
GPS	Global Positioning System
PI	Product Integrity
RF	Radio Frequency

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 (abbreviation): 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, 10-01-00 edition.

American National Standards Institute

- 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, May 26, 1992

Nortel Networks Inc. Documentation

- Sanmina FCC Part 22 Beta plus System Integrity Test Plan
  Stream: 01, Issue: 01.
  Document Status: Approved.
  Issue Date: April 14, 2003.
  Author: Mike Clagget.

Sanmina-SCI Documentation

- Sanmina-SCI EMC Test Method 11.0 Radiated Emissions Signal Substitution Method 30MHz-20GHz
- Sanmina-SCI Radiated Emissions 30MHz – 1GHz Automated Test Method E001R6

2.0 TEST LOG

Appendix	Test Case	Start	End
Date Received: 11APR03			
A	Radiated Emissions 30 MHz-1GHz FCC Part 22 pre-compliance	14APR03	14APR03
C	Radiated Emissions 1GHz-10GHz FCC Part 22	15APR03	21APR03
Date Shipped: 22APR03			

3.0 EUT

3.1 CONFIGURATION

Description of EUT

Name	800 MHz MFRM2
Model Number	NTGY30AA
Revision Number	X1, V9
Serial Number	NNTM533GTE75, NNTM533GTDTP, NNTM533GTDXU, NNTM533GTE86, NNTM533GTE53, NNTM533GTDVR
Physical Description	 Six MFRM2's were mounted in an in-door Metrocell frame for testing. Each MFRM2 assembly consists of a number of PWA's mounted in a sealed cast metal enclosure with connectors on the front, cooling fins and mounting guides on each side. Provisions are made for the attachment of a grounding strap, power, control and RF connections.
Classification	ITE - Floor standing when installed.
Size (m)	Width: 51cm x Depth: 49 cm x Height: 8 cm (MFRM2 assembly)
Weight	~16 kg per assembly
Power	24 V dc ~24.1A The MFRM2 can be powered with -48 Vdc or 24 Vdc, but 24 Vdc was determined to be worse case during preliminary testing and was used during the measurements described herein.
Functional Description	The Metro Cell MFRM2 is an upgrade to the existing Metro Cell MFRM / MPAM product. It combines the functionality of the MPAM and MTRM into one module. The MFRM2 is a 1 sector, 3-carrier product, similar to the MFRM except that the MPAM and MTRM that existed in the MFRM are integrated into a single module for MFRM2. The resulting new module, named the MFRM2 Radio Module, consists of the following: a wide voltage range Power Entry Module (WR MPEM); a High Power Converter Assembly (WR HCPA); a Radio Power Supply Unit (PSU); a transceiver card; a power amplifier (PA); interface cables; and mechanical assemblies. The product structure for the MFRM2 can be found in the Metro Cell MFRM2 Provisioning Guide lines and Cell Site Requirements. An MFRM2 Radio Brick consists of the following; a Radio Power Supply Unit (PSU); a transceiver card; a power amplifier (PA), and mechanical assemblies. A more detailed description can be found in section 1.2 of the reference test plan.

3.1.1 SET UP CONFIGURATION

EUT Description List – The following modules were verified by Sanmina-SCI.

QTY	Module Description	P/N	Serial Number	Release Number
1	MFRM#1	NTGY30AA	NNTM533GTE75	X1
1	MFRM#2	NTGY30AA	NNTM533GTDTP	V9
1	MFRM#3	NTGY30AA	NNTM533GTDXU	X1
1	MFRM#4	NTGY30AA	NNTM533GTE86	X1
1	MFRM#5	NTGY30AA	NNTM533GTE53	X1
1	MFRM#6	NTGY30AA	NNTM533GTDVR	X1

Co-Located Equipment List– The following modules were verified by Sanmina-SCI

QTY	Module Description	P/N	Serial Number	Release Number
1	DPM #1	NTGS89DC	NNTM5330EAWQ	01
1	DPM#2	NTGS89DC	CLWVPP2007V9	04
1	DPM#3	NTGS89DB	CLWVPP201HFD	04
1	DPM #4	NTGS89DC	CLWVMM10002G	01
1	DPM#5	NTGS89DB	CLWVPP202KA0	10
1	DPM#6	NTGS89DB	CLWVPP200BA5	04
1	FAM#1	NTGY60AH	NNTM533GR5D1	N1
1	FAM#2	NTGY60AH	NNTM533GR5G4	N1
1	FAM#3	NTGY60AH	NNTM533GR5BY	N1
1	FAM#4	NTGY60AH	NNTM533GR56T	N1
1	FAM#5	NTGY60AG	NNTM533GQH54	P1
1	FAM#6	NTGY60AH	NNTM533GR55R	N1
1	Alarm Interface shelf	NTGS37AB	DEVP01042987	03
1	Radios Rack	NTGS65LA	DEVP01043007	05

Note: Special considerations for each test case are noted in the appropriate appendices

3.1.2 TEST PLAN CONFIGURATION DEVIATIONS

As stated by the client, the test plan was followed in determining the EUT configuration**.**

3.1.3 EUT POWER

DC Voltage	24 Vdc*
Number of Feeds	1- Hubble A, 1- Hubble B. (2 Total)
Gauge of cable	6/0
Current Draw	24.17 Amps per MFRM2
Special Requirements	N/A

*during preliminary testing, 24 Vdc was determined to have higher emissions than -48 Vdc

3.1.4 TEST PLAN POWER DEVIATIONS

None

3.2 CABLES

EUT Cable List

Cable list was not provided

3.2.1 TEST PLAN CABLE LIST DEVIATIONS

na

3.3 FREQUENCIES

All listed frequency information was obtained from the reference test plan and was not verified by Sanmina-SCI.

Clock Frequencies on the NTGY32AA subassembly contained in the NTGY30AA

Clock (Fc = 1.2288 Chips/s)	Frequency MHZ	Rise Time	Section of Radio Board
64 * Fc	78.6432	CMOS logic (< 5 ns)	Distributed in clock distribution area, Tx DAC, BBPD ADC area and Digital section.
32 * Fc	39.3216	CMOS logic (< 5 ns)	Distributed 2 X 32Fc (64fc) PLL, in clock distribution, Rx ADC area and Digital section.
24 MHz		TTL/CMOS logic (< 5 ns)	Around Reference VCXO & PLL, plus all RF LO PLLs.
520 * Fc	638.976	N/A	Optical TXR
52 * Fc	63.6976	N/A	Clock Recovery
32 * Fc	39.3216	N/A	HSSPC II, TX Ch, RX Ch
64 * Fc	78.6432	N/A	BBPC FGGA,

Digital Base Band Signals

Signal	Description	Source	Destination	Technology	Frequency
FP	Frame Pulse all Channelizers)	HSSPC-2	TX Channelizers	LVCMOS	16fc
RX_M/D_I, BB_I	baseband I data (all channelizers)	RX Channelizers	HSSPC-2	LVCMOS	32fc
RX_M/D_Q, BB_Q	baseband Q data (all channelizers	RX Channelizers	HSSPC-2	LVCMOS	32fc
BBCLK	RX channelizer baseband data clock	RX Channelizers	HSSPC-2	LVCMOS	32fc
TDI	JTAG data in	TX Connector	FPGA	LVCMOS	< 1 MHz
TDO	JTAG data out	JTAG Connector	FPGA	LVCMOS	< 12 MHz
TCK	JTAG data clock	JTAG Connector	FPGA	LVCMOS	< 12 MHz
TMS	JTAG mode select	JTAG Connector	FPGA	LVCMOS	DC
SDA	IIC data line to rest of analog card	FPGA	TX connector	LVCMOS	400 kbit/s
SCL	IIC clock lint to rest of analog card	FPGA	TX connector	LVCMOS	400 kbit/s
dI, dQ	distorted I and Q data to DACs	FPGA	TX DACs	LVCMOS	64fc
RST	all resets	FPGA	ASICs	LVCMOS	DC
INT	all interrupts	ASICs and FPGA		LVCMOS	DC
ADC DATA	ADC data to RX Channelizers	ADC	RX Channelizer	LVCMOS	32fc
PRE-D ADC DATA	Pre-D receiver ADC data to FPGA	Pre-D ADC	FPGA	LVCMOS	64fc

Possible Conducted and Radiated Spurious Emissions from NTGY32AA subassembly contained in the NTGY30AA

Source	Frequency	Waveform	Section of Radio Board
1st DAC Alias	Tx_Freq + 9.8303 MHz	CDMA Modulation	Transmitter
Tx Pre-D RF LO	Tx_Freq - 153.6 MHz	Sinusoidal	Transmitter, Receiver, LO's
Digital LO Reference LO RX LO RX IF TX LO RX BBPD LO RX BBPD IF	9.83040 MHz 19.2 MHz Rx fc -88.5 = RX LO 88.5 MHz Tx fc Tx fc + 57.6MHz 57.6 MHz	Sinusoidal	RF Board

3.3.1 TEST PLAN FREQUENCY LIST DEVIATIONS

None

3.4 EUT SOFTWARE

No description supplied by the client

3.5 MODE OF OPERATION

As defined in the reference test plan, the EUT was configured and operated in the following manner during testing:

3.5.1 BTS SET UP & CONFIGURATIONS DETAILS

3-MFRM-2 on Side 0

Carrier	Channel	Base-band Configuration	Output Power
Left Carrier	1015	IS-95	47.3[1]
Centre Carrier	33	IS-95	
Right Carrier	74	Is-856,	

3-MFRM-2 on Side 1

Carrier	Channel	Format	Output Power
Left Carrier	1015	IS-95	47.3[2]
Centre Carrier	33	IS-95	
Right Carrier	74	IS-864,	

IS- 95 Base-band Configuration

Type	Number of Channels	Fraction of Power (linear	Fraction of Power (dB)	Comments
Pilot	1	0.200	-7.0	Code Channel 0
Sync	1	0.0471	-13.3	Code Channel 32, 1/8 rate
Paging	1	0.1882	-7.3	Code Channel 1, full rate
Traffic (OCNS)	6	0.09412	-10.3	Variable code channel assignments; full rate only

3.5.2 TEST PLAN MODE OF OPERATION DEVIATION

None

[1] The Output power includes a 1.5 db back-off for the Data Only channel

3.6 PASS / FAIL CRITERIA

The pass/fail criteria is defined by:

ü CFR 47 FCC Part 2.1053 & Part 22.917 (e)

The standard limits are described in each appendices of this report.

4.0 SUPPORT EQUIPMENT

As defined in the reference test plan, the following is the support equipment used during testing:

Description	Model
Cell Site Tester	EPM442A/ HP, HP8921A Option 600 / HP
Power Meter	E4419A
Power Sensor	
Power Sensor	
Spectrum Analyzer	HP8594E / HP
RS422 Converter	
PC	Personal Computer (256 M/b RAM, 20 G HD)
Variable Power Supply	24/48V 30A min
Software	Labview 6i V6.02 Test Stand 2.0, Win 2000, Vortex 3.1

APPENDICES

Sanmina-SCI Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-295-5134, Fax: 403-295-4091

APPENDIX A: TEST PLAN DEVIATION LOG

Deviation Number	Time & Date	Reference to Test Plan	Deviation from Standard (Y/N)	Description and Justification of Deviation	Core Standard Affected	Approval
1			Y	Due to the large margin in the 30 MHz – 1 GHz pre-compliance measurements, no signal substitution was performed.	FCC Part 22	Thomas Wong

APPENDIX B: RADIATED EMISSIONS 30MHZ – 1GHZ PART 22

B.1. Base Standard & Test Basis

Base Standard	ANSI C 63.4-1992
Test Basis	47 CFR FCC Part 2.1053 & Part 22.917(e)
Test Method	Sanmina–SCI RE Signal Substitution Method 30MHz-20GHz Revision 1.0.

B.2. Specifications

47 CFR FCC Part 22, Radiated Emissions		
Frequency	ERP limit	Theoretical Peak Limit @ 10m*
MHz	dBm	dBσV/m
30MHz – 1 GHz	-13	73.90

* Theoretical field strength based on a dipole

B.3. Measurement Uncertainty

Radiated Emissions 30MHz –1GHz	Measurement Uncertainty	Expanded Uncertainty (K=2)
(dB)	+2.15/-2.19	+4.29/-4.37

Radiated Emissions Signal Substitution 30MHz –1GHz	Measurement Uncertainty	Expanded Uncertainty (K=2)
	+/-2.74	+/-5.49

B.4. Deviations

From Standard

Since no pre-compliance peaks were found within 32 dB of the theoretical limit in the frequency range of 30 MHz – 1GHz, no signals were substituted.

From Test Plan

None

B.5. Measurement Equipment

Radiated Emissions 30MHz – 1GHz

Description	Type/Model	Manufacturer	Serial #	Cal Due	Cal Date
10m ANECHOIC CHAMBER					
Bilog Antenna	CBL 6112B	Chase	260232	21May03	21May02
RF Cable 10mEast site	Ferrite bead loaded cable	Suhner Succoflex	260388	17Mar/04	17/Mar/03
CONTROL ROOM					
ESMI	1032.5510.23	Rohde & Schwarz	260141/ 260142	27Jun03	27Jun02
Amplifier	HP-8447F OPT H64	Hewlett Packard	260164	10Jan04	10Jan03
Mast Controller	2090	EMCO	260166	N/A	N/A
Multi Device Controller TT1	2090	EMCO	260165	N/A	N/A
RF Cable from ctrl room Bulkhead to SW Matrix ANT2	Succoflex 100	Suhner Succoflex	40500623	10Jan04	10Jan03
RF Cable from SW Matrix to LNA	Succoflex 100	Suhner Succoflex	40500621	10Jan04	10Jan03
RF Cable from ctrl room Bulkhead to 10m East site bulkhead	Succoflex	Suhner Succoflex	40500622	10Jan04	10Jan03
Switch Matrix Controller	SMC-002	TDL	260162	N/A	N/A
VERIFICATION EQUIPMENT					
Signal Generator 10MHz – 40GHz	SMP04	Rohde & Schwarz	260425	19Mar06	19Mar03
Cable RX antenna to 3M center bulk head in 10M Chamber	104	Succoflex	116558/4	30Jan04	30Jan03
Cable from 3M center bulk head to Control room	104	Succoflex	40500627	30Jan04	30Jan03
Cable from Control room bulk head to Signal Generator	104	Succoflex	40500626	30Jan04	30Jan03

B.6. Test Set-up Special Considerations

None

B.7. Test Results

Peak Scan 30MHz – 1GHz - Horizontal

Project Name: PI80314 Nortel **Tester:** Shankara Malwes
Model: MFRM2 **Test ID:**
Comments:

Standard FCC 22 Measurement Distance 10 meters

Antenna	CL	Start Frequency	Stop Frequency	Frequency	AF	CL+LNA	Detector	Measured Value	Corrected Value	Theoretical Limit	Theoretical Margin
		MHz	MHz	MHz	dB/m	dB		dBuV	dBuV/m	dBuV/m	dB
2701 RX BiCon Hpol	10M Total Link Factor	30	1000	211.24	9.50	-24.90	PK	47.40	32	73.90	**41.90**
2701 RX BiCon Hpol	10M Total Link Factor	30	1000	247.10	11.78	-24.61	PK	43.02	30.2	73.90	**43.70**
2701 RX BiCon Hpol	10M Total Link Factor	30	1000	390.62	15.05	-24.81	PK	36.56	26.8	73.90	**47.10**
2701 RX BiCon Hpol	10M Total Link Factor	30	1000	511.17	17.40	-25.19	PK	42.97	35.18	73.90	**38.72**
2701 RX BiCon Hpol	10M Total Link Factor	30	1000	550.50	18.64	-25.20	PK	47.58	41.02	73.90	**32.88**
2701 RX BiCon Hpol	10M Total Link Factor	30	1000	943.72	20.57	-23.77	PK	37.46	34.26	73.90	**39.64**

Corrected Value: Measured Value + AF + CL + LNA. AF: Antenna Factors & CL: Cable Loss & LNA: Amplifier

Peak Scan 30MHz – 1GHz – Vertical

Project Name: PI80314 Nortel **Tester:** Shankara Malwes
Model: MFRM2 **Test ID:**
Comments:

Standard FCC 22 Measurement Distance 10 meters

Antenna	CL	Start Frequency	Stop Frequency	Frequency	AF	CL+LNA	Detector	Measured Value	Corrected Value	Theoretical Limit	Theoretical Margin
		MHz	MHz	MHz	dB/m	dB		dBuV	dBuV/m	dBuV/m	dB
2701 RX BiCon Vpol	10M Total Link Factor	30	1000	123.35	12.12	-25.70	PK	38.88	25.3	73.90	**48.60**
2701 RX BiCon Vpol	10M Total Link Factor	30	1000	511.17	17.46	-25.19	PK	41.85	34.12	73.90	**39.78**
2701 RX BiCon Vpol	10M Total Link Factor	30	1000	550.50	18.74	-25.20	PK	41.66	35.2	73.90	**38.70**
2701 RX BiCon Vpol	10M Total Link Factor	30	1000	943.72	21.67	-23.77	PK	35.59	33.49	73.90	**40.41**

Corrected Value: Measured Value + AF + CL + LNA. AF: Antenna Factors & CL: Cable Loss & LNA: Amplifier

Note: Positive Margin indicates a Pass.

Note: Since no pre-compliance peaks were found within 32 dB of the theoretical limit in the frequency range of 30 MHz – 1GHz, no signals were substituted.

B.8. Observations

None.

B.9. Deviations from Normal Operating Mode During Test

None

B.10. Sample Calculation

Emission Level = Measured Level + Correction Factors
Margin = Limit – Emission Level

ERP Limit = P_{dBm} – (43 + 10Log(P))
Example: P=20w
ERP Limit = 43dBm – (43 + 10Log(20)) = -13dBm

Peak Limit = 120 + 20Log(SQRT (49.2 * P) / D)
Example: P= -13dBm = 0.00005w
D= 10m
Peak Limit = 120 + 20Log(SQRT (49.2 * 0.00005)) / **10**)
= 73.9 dBuV/m

Peak Limit = 120 + 20Log(SQRT (49.2 * P) / D)
Example P= -13dBm = 0.00005w
D= 3m
Peak Limit = 120 + 20Log((SQRT (49.2 * 0.00005)) / **3**)
=84.3

B.11. Photographs

The photographs for the Radiated Emissions test appear following this page.

B.12. Signature

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

Signature/Date:
Name: Shankara Malwes
Function: EMC Technologist

Photograph 1. Radiated Emissions

APPENDIX C: RADIATED EMISSIONS 1GHZ – 10GHZ PART 22

C.1. Base Standard & Test Basis

Base Standard	ANSI C 63.4-1992
Test Basis	47 CFR FCC Part 2.1053, Part 22.917(e)
Test Method	Sanmina–SCI RE Manual Method E006R4. 1GHz-18GHz. Sanmina–SCI RE Signal Substitution Method 11.0 Revision 1.0 30MHz-20GHz

C.2. Specifications

47 CFR FCC Part 22, Radiated Emissions		
Frequency	ERP limit	Theoretical Peak Limit @ 3m*
MHz	dBm	dBσV/m
1GHz – 10GHz	-13	84.3

* Theoretical field strength based on a dipole

C.3. Measurement Uncertainty

Radiated Emissions 1GHz-18GHz	**Measurement Uncertainty**	**Expanded Uncertainty (K=2)**
(dB)	+3.48/-3.51	+6.96/-7.02
Radiated Emissions 1GHz-20GHz Signal Substitution	**Measurement Uncertainty**	**Expanded Uncertainty (K=2)**
(dB)	+/-2.74	+/-5.49

C.4. Deviations

From Standard
None

From Test Plan
None

C.5. Measurement Equipment

Radiated Emissions - 1GHz – 18GHz

Description	Type/Model	Manufacturer	Serial #	Cal Due	Cal Date
10m ANECHOIC CHAMBER					
Horn Antenna	3115	EMCO	260092	24Oct03	24Oct02
High pass filter	11SH103860	K&L	1	17Apr04	17Apr03
Spectrum Analyzer 9K-40GHz	FSEK	Rohde & Schwarz	260104	31Mar04	31Mar03
Step Attenuator/Switch	HP11713A	HP	260098 260097	N/A	N/A
DC Power Supply	LXO 30-2	Xantrex	40500211	N/A	N/A
LNA	JSD000121	Miteq	260304	9Apr04	9Apr03
HPIB Extender	HP37204	HP	260096	N/A	N/A
Cable from LNA to SA	101PEA	Succoflex	1713/1PEA	9Apr04	9Apr03
CONTROL ROOM					
PC with FSEK Manual ctrl S/W	N/A	N/A	N/A	N/A	N/A
HPIB Extender	HP37204	HP	260168	N/A	N/A
Mast Controller	2090	EMCO	260166	N/A	N/A
Multi Device Controller TT1	2090	EMCO	260165	N/A	N/A
VERIFICATION EQUIPMENT					
Horn Antenna (TX)	3115	EMCO	260088	N/A	N/A
Signal Generator 10M -40GHz	SMP04	Rohde & Schwarz	260425	19Mar06	19Mar03
Cable RX antenna to 3M center bulk head	104	Succoflex	116558/4	30Jan04	30Jan03
Cable 3M center bulk head to Control room	104	Succoflex	40500627	30Jan04	30Jan03
Cable Control room bulk head to Signal Generator	104	Succoflex	40500626	30Jan04	30Jan03

Signal Substitution – 1GHz – 18GHz

Description	Type/Model	Manufacturer	Serial #	Cal Due	Cal Date
10m ANECHOIC CHAMBER					
Horn Antenna 1G-10GHz (TX)	3115	EMCO	260091	24Oct03	24Oct02
Horn Antenna 1G-5.95GHz (Rx)	3115	EMCO	260092	21Jun03	21Jun02
Std Gain Horn 5.95G-8.2GHz	3160-06	EMCO	260090	N/A	N/A
Std Gain Horn 8.2G-12.5GHz	3160-07	EMCO	260089	N/A	N/A
High pass filter	11SH103860	K&L	1	17Apr04	17Apran03
Spectrum Analyzer 9K-40GHz	FSEK	Rohde & Schwarz	260104	4Mar04	4Mar03
Step Attenuator/Switch	HP11713A	HP	260097 260098	N/A	N/A
DC Power Supply	LXO 30-2	Xantrex	40500211	N/A	N/A
LNA	JSD000121	Miteq	830620 in box	9Apr04	9Apr03
HPIB Extender	HP37204	HP	260096	N/A	N/A
Cable from LNA to SW	101PEA	Succoflex	1713/1PEA	9Apr04	9Apr03
CONTROL ROOM					
PC with FSEK Manual ctrl S/W	N/A	N/A	N/A	N/A	N/A
Signal Generator 10M -40GHz	SMP04	Rohde & Schwarz	260425	19Mar06	19Mar03
HPIB Extender	HP37204	HP	260168	N/A	N/A
Mast Controller	2090	EMCO	260166	N/A	N/A
Multi Device Controller TT1	2090	EMCO	260165	N/A	N/A
VERIFICATION EQUIPMENT					
Horn Antenna (TX) 1GHz-18GHz	3115	EMCO	40500088	N/A	N/A
Signal Generator 10M -40GHz	SMP04	Rohde & Schwarz	260425	19Mar06	19Mar03
Cable RX antenna to 3M center bulk head	104	Succoflex	116558/4	30Jan04	30Jan03
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Cable Control room bulk head to Signal Generator	104	Succoflex	40500626	30Jan04	30Jan03

C.6. Test Set-up Special Considerations

None

C.7. Test Results

Peak Scan 1GHz – 10GHz Horizontal Polarization

Project Name: PI80314 Nortel **Tester:** Shankara Malwes
Model: MFRM2 **Test ID:**
Comments:

Standard FCC 22 Measurement Distance 3 meters

Antenna	CL	Start Frequency	Stop Frequency	Frequency	AF	CL+LNA	Detector	Measured Value	Corrected Value	Theoretical Limit	Theoretical Margin
		MHz	MHz	MHz	dB/m	dB		dBuV	dBuV/m	dBuV/m	dB
3115 Hpol	HFM 10dB	1000	2700	1022.33	25.28	-20.68	PK	36.49	41.09	84.30	**43.21**
3115 Hpol	HFM 10dB	1000	2700	1179.66	25.81	-20.32	PK	39.95	45.44	84.30	**38.86**
3115 Hpol	HFM 10dB	1000	2700	1670.66	27.72	-19.39	PK	44.24	52.57	84.30	**31.73**
3115 Hpol	HFM 10dB	1000	2700	1742.80	28.07	-19.26	PK	56.49	65.3	84.30	**19.00**
3115 Hpol	HFM 10dB	1000	2700	1916.87	28.90	-19.06	PK	38.55	48.39	84.30	**35.91**
3115 Hpol	HFM 10dB	1000	2700	2555.88	30.52	-18.07	PK	38.01	50.46	84.30	**33.84**
3115 Hpol	HFM 10dB	1000	2700	2616.04	30.66	-17.98	PK	40.18	52.85	84.30	**31.45**
3115 Hpol	HFM 0dB filter	2700	5950	3194.80	32.01	-26.48	PK	55.32	60.85	84.30	**23.45**
3115 Hpol	HFM 0dB filter	2700	5950	3833.82	33.73	-25.65	PK	46.45	54.53	84.30	**29.77**
3160-06	HFM 0dB filter	5950	8200	6070.41	29.90	-22.36	PK	35.92	43.46	84.30	**40.84**
3160-06	HFM 0dB filter	5950	8200	7026.70	29.90	-20.86	PK	37.19	46.23	84.30	**38.07**
3160-07	HFM 0dB filter	8200	10000	9675.00	33.47	-17.80	PK	23.59	39.26	84.30	**45.04**

Corrected Value: Measured Value + AF + CL + LNA. AF: Antenna Factors & CL: Cable Loss & LNA: Amplifier

Peak Scan 1GHz – 10GHz Vertical Polarization

Project Name: PI80314 Nortel **Tester:** Shankara Malwes
Model: MFRM2 **Test ID:**
Comments:

Standard FCC 22 Measurement Distance 3 meters

Antenna	CL	Start Frequency	Stop Frequency	Frequency	AF	CL+LNA	Detector	Measured Value	Corrected Value	Theoretical Limit	Theoretical Margin
		MHz	MHz	MHz	dB/m	dB		dBuV	dBuV/m	dBuV/m	dB
3115 Vpol	HFM 10dB	1000	2700	1020.36	25.27	-20.68	PK	39.06	43.65	84.30	**40.65**
3115 Vpol	HFM 10dB	1000	2700	1179.60	25.81	-20.32	PK	37.92	43.41	84.30	**40.89**
3115 Vpol	HFM 10dB	1000	2700	1670.77	27.65	-19.39	PK	44.66	52.92	84.30	**31.38**
3115 Vpol	HFM 10dB	1000	2700	1743.44	27.97	-19.26	PK	59.82	68.53	84.30	**15.77**
3115 Vpol	HFM 10dB	1000	2700	2555.89	30.52	-18.07	PK	42.62	55.07	84.30	**29.23**
3115 Vpol	HFM 10dB	1000	2700	2616.08	30.66	-17.98	PK	39.58	52.25	84.30	**32.05**
3115 Vpol	HFM 10dB	1000	2700	3194.89	31.93	-17.03	PK	45.12	60.02	84.30	**24.28**
3115 Vpol	HFM 0dB filter	2700	5950	3833.82	33.67	-25.65	PK	47.53	55.55	84.30	**28.75**
3115 Vpol	HFM 0dB filter	2700	5950	4153.19	34.05	-25.18	PK	45.95	54.82	84.30	**29.48**
3160-06	HFM 0dB filter	5950	8200	6070.65	29.90	-22.36	PK	40.03	47.57	84.30	**36.73**
3160-06	HFM 0dB filter	5950	8200	6389.34	29.90	-21.86	PK	43.26	51.3	84.30	**33.00**
3160-06	HFM 0dB filter	5950	8200	7028.80	29.90	-20.86	PK	37.66	46.7	84.30	**37.60**
3160-07	HFM 0dB filter	5950	8200	9675.35	33.47	-17.80	PK	24.42	40.09	84.30	**44.21**

Corrected Value: Measured Value + AF + CL + LNA. AF: Antenna Factors & CL: Cable Loss & LNA: Amplifier

Substitution Data 1GHz – 10GHz

Project Name: PI80314 Nortel
Model: 800 MHz MFRM2
Comments:
Tester: Shankara Malwes
Test ID:

Frequency (MHz)	Polarization (V/H)	Emission level	Corrected Substitution measure level	Signal Generator level (source)	Cable factor	Antenna Gain	Effective Radiated Power (E.R.P.)	E.R.P Limit	Margin
		dBuV/m	dBuV/m	dBm	dB	dB	dBm	dBm	dB
1022.33	H	41.09	41.33	-65.70	-3.99	5.08	**-66.76**	-13	53.76
1179.66	H	45.44	45.45	-62.20	-4.31	5.65	**-63.01**	-13	50.01
1670.66	H	52.57	52.36	-56.20	-5.16	6.87	**-56.64**	-13	43.64
1742.80	H	65.30	62.52	-43.80	-5.26	6.90	**-44.31**	-13	31.31
1916.88	H	48.39	48.38	-60.00	-5.54	6.97	**-60.72**	-13	47.72
2555.88	H	50.46	50.11	-59.20	-6.47	7.84	**-59.98**	-13	46.98
2616.04	H	52.85	52.41	-55.30	-6.54	7.89	**-56.09**	-13	43.09
3194.80	H	60.85	60.63	-44.30	-7.27	8.24	**-45.48**	-13	32.48
3833.82	H	54.53	54.82	-50.00	-8.03	8.10	**-52.08**	-13	39.08
6070.41	H	43.46	43.50	-63.80	-10.29	9.38	**-66.85**	-13	53.85
7028.70	H	46.23	46.53	-55.30	-11.12	10.29	**-58.28**	-13	45.28
1020.36	V	43.65	43.45	-64.40	-3.98	5.07	**-65.46**	-13	52.46
1179.60	V	43.41	43.42	-64.20	-4.31	5.65	**-65.01**	-13	52.01
1670.78	V	52.92	52.76	-55.60	-5.16	6.90	**-56.01**	-13	43.01
1743.44	V	68.53	68.53	-37.80	-5.26	6.95	**-38.27**	-13	25.27
2555.89	V	55.07	55.52	-50.90	-6.47	7.84	**-51.68**	-13	38.68
2616.08	V	52.25	52.50	-54.20	-6.54	7.89	**-54.99**	-13	41.99
3194.89	V	60.02	59.88	-45.50	-7.27	8.32	**-46.60**	-13	33.60
3833.82	V	55.55	55.54	-49.40	-8.03	8.17	**-51.42**	-13	38.42
4153.19	V	54.82	54.48	-51.90	-8.35	8.49	**-53.91**	-13	40.91
6070.65	V	47.57	47.33	-56.80	-10.29	9.37	**-59.87**	-13	46.87
6389.34	V	51.30	51.44	-51.80	-10.53	10.13	**-54.35**	-13	41.35
7028.80	V	46.70	46.99	-54.40	-11.12	10.28	**-57.40**	-13	44.40

Effective Isotropic Radiate Power (E.I.R.P) = Signal Generator + Cable Factor + Isotropic Antenna Gain
Effective Radiated Power (E.R.P.) = E.I.R.P - 2.15

Note: Positive Margin indicates a Pass.

The EUT is in compliance with the limits as specified in the standard 47 CFR FCC Part 22.

C.8. Observations

None.

C.9. Deviations from Normal Operating Mode During Test

None

C.10. Sample Calculation

Emission Level = Measured Level + Correction Factors
Margin = Limit – Emission Level
Effective Radiated Power (ERP) = signal generator + cable factor + Antenna Gain

C.11. Photographs

The photographs for the Radiated Emissions test appear following this page.

C.12. Signature

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

Signature/Date: Signature Not Verified Digitally signed by Shankara Malwes DN: cn=Shankara Malwes, o=Sanmina-SCI, c=CA Date: 2003.04.29 09:46:14 -07'00' Location: Calgary

Name: Shankara Malwes
Function: EMC Technologist

Photograph 1. Radiated Emissions - 47 CFR FCC Part 22

APPENDIX D: TEST PLAN

Not attached.

APPENDIX E: SUPPLEMENTARY INFORMATION

None

END OF DOCUMENT