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Emissions Test Report
Project Code CG-275
(Report CG-275-EM-1-3)

Nortel CDMA 1900 RM CR FCC Part 24 Report

Revision: 3

April 27, 2006

Prepared for:	Nortel
Author:	Alex Mathews Compliance Specialist
Approved by:	Nick Kobrosly Director of Operations

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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 .
5050-40th Street, N.E.
Calgary Alberta T3J 4P8
Phone (403) 769-4103

Customer Representative: Daryl Therens

EUT Description

	Name	Model	Revision	Serial Number
EUT	CDMA 1900 RM PA Optimization	See equipment list in Section 2.6		

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Test Summary

Standards		Test description & Range	Deviations* from:			Pass / Fail	Criteria
Base	Test Basis		Base Standard	Test Basis	NTS Procedure		
Configuration : 27VDC, 2 cBTS shelves, with 6 x 1900RM PA OPTIMIZATION							
FCC CFR 47 Part 24	ANSI C63.4	Radiated E-Field Emissions 30 MHz – 20 GHz	No	No	No	PASS	Subpart E

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

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Test Log and Signatures

Test Case	Start	End	Tester / Date
Configuration: 02 : 27VDC, 2 cBTS shelves, with 6 x 1900RM PA OPTIMIZATION			
Radiated Emissions 30 MHz – 20 GHz FCC CFR 47 Part 24	Jan 31, 2006	Feb 14, 2006	Deniz Demirci 2006.04.27 09:25:18 -06'00' Deniz Demirci, EMC Engineer Digitally signed by gmoore DN: cn=gmoore, c=US, o=nts, email=glen.moore@ntscorp.com Date: 2006.04.27 12:50:58 -06'00' Glen Moore, EMC Manager

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: Alex Mathews 2006.04.27 09:16:43 -06'00'
Alex Mathews
Compliance Specialist

Reviewed By: Digitally signed by gmoore DN: cn=gmoore, c=US, o=nts, email=glen.moore@ntscorp.com Date: 2006.04.27 12:55:47 -06'00'
Glen Moore
EMC Manager

Checked By: Janet Johanntges
Janet Johanntges
Quality Representative

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Table of Contents

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REGISTER OF REVISIONS

Revision	Date	Description of Revisions
0	Feb 27, 2006	Draft release for review
1	March 29, 2006	Edits based on customer review
2	April 26, 2006	Edits based on customer feed back
3	April 26, 2006	Edits based on customer feed back

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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 CDMA 1900 RM PA Optimization 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.

Abbreviation	Explanation
A	Amps
AC	Alternating Current
AE	Ancillary Equipment
AF	Antenna Factor
ANSI	American National Standards Institute
AWG	American Wire Gauge
BTS	Base Transceiver Station
C	Celsius
CAM	Customer Alarm Module
CDMA	Code Division Multiple Access
CEM	Channel Element Module
CF	Correction Factor
CFR	Code of Federal Regulations
CH	Channel
CISPR	Comite International Special des Perturbations Radioelectriques (The International Special Committee on Radio Interference)
CL	Cable Loss
cm	centimetre
CM	Control Module
dB	Decibel
dBm	Decibel relative to 1 milliwatt
dBµV	Decibel relative to 1 uV
DC	Direct Current
DM	Digital Module
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EN	European Norms
EUT	Equipment Under Test
FCC	Federal Communications Commission
FRU	Flexible Radio Unit
GHz	Gigahertz
GPS	Global Positioning System
GPSTM	Global Positioning System Timing Module
GR	Generic Requirements
Hpol	Horizontal Polarization

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HSSL	High Speed Serial Link
Hz	Hertz
IC	Industry Canada
kHz	kilohertz
LO	Local Oscillator
LNA	Low Noise Amplifier
m	Metre
MHz	Megahertz
ms	Milli Second
NTS	National Technical Systems
NA	Not Available
N/A	Not Applicable
PA	Power Amplifier
PI	Product Integrity
PK	Peak
PLL	Phase Lock Loop
P/N	Part Number
PS	Power Supply
PSU	Power Supply Unit
QP	Quasi-Peak
Qty	Quantity
RE	Radiated Emissions
RF	Radio Frequency
RM	Radio Module
Rx	Receive
TDMA	Time Division Multiple Access
TT	Turn Table
Tx	Transmit
V	Volts
VDC	Volts Direct Current
Vpol	Vertical Polarization
W	Watt
XCEM	X Channel Element Module
Zt	Transfer Impedance

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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

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

US Code of Federal Regulations

- 47 CFR Part 24 — Federal Communications Commission, Part 24

NTS Documentation

- NTS Radiated Emissions 1GHz – 18GHz Manual Test Method E006R4

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2.0 EUT OVERVIEW

The 1900 MHz RM PA Optimization is a one sector, three carrier CDMA radio product. The RM is used only in the Compact BTS.

2.1 COMPACT BTS

2.1.1 COMPACT DUAL VOLTAGE SHELF

The Compact Dual Voltage Shelf comprises a common digital / radio shelf with backplane, and houses the entire Compact BTS that consists of TIIM, GPSTM, CM-2, CEM, RM, CCAM, VSCU, and DC breaker distribution. The backplane provides the electrical interfaces that support inter-module communication and DC power distribution.

2.1.2 GPSTM

The GPSTM provides the timing reference for the BTS.

2.1.3 TIIM

The TIIM is designed for use as a secondary surge protection device on the T1/E1 lines, and to provide T1/E1 routing to the CM-2 and DOM. The TIIM is installed in series between customer supplied primary surge protection and the CM-2 / DOM to be protected. A TIIM can protect up to eight T1/E1 lines, or eight paired circuits.

2.1.4 CM-2

The CM-2 digital module provides the call processing capability, overall data flow control, the T1/E1 backhaul interface, OAM functionality, plus the CDMA toolbox interface (DMI and Vortex).

2.1.5 CEM

There are three different CEM digital module variants (CEM64, CEM192, DOM) that can be used in the cBTS in any permutation (two DOMs maximum in Compact BTS though). The CEM provides the cell site modem function, converting the encoded voice and data between the network and the air interface. The CEM64 and CEM192 provide 1xRTT voice and data capability. The DOM is an OEM unit that provides 1xEV-DO capability, and also provides its own backhaul interface via T1/E1 or ethernet.

2.1.6 RM

The RM is available in both 800 MHz and 1900MHz versions, and provides the radio channel compensation and RF conversion. Once the radio is configured it becomes a data processing pipe with little activity that is not OAM related. The RM is only supported in the Compact BTS.

2.1.7 CCAM

The CCAM supports twenty-four customer configurable alarms, VSCU alarm monitoring, and input DC voltage monitoring.

2.1.8 VSCU

The VSCU consists of a fan tray that has temperature controlled fan speed to reduce acoustic noise.

2.2 BTS DIMENSIONS

With the equipment installed in the standard Nortel seven foot frame the dimensions are:

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•2.13 meter high
•1.37 meter wide
•0.74 meter deep

2.3 BTS WEIGHT

With the equipment installed in the standard Nortel seven foot frame the fully assembled weight of the system is no more than 450 kg.

2.4 TEST CONFIGURATION

Refer to Figures 1 and 2 below for the shelf and system configuration for emissions testing.

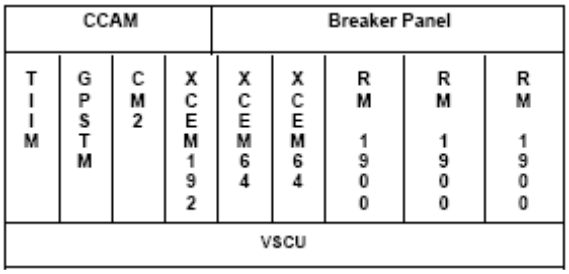

Figure 1: Compact Emissions Shelf Configuration

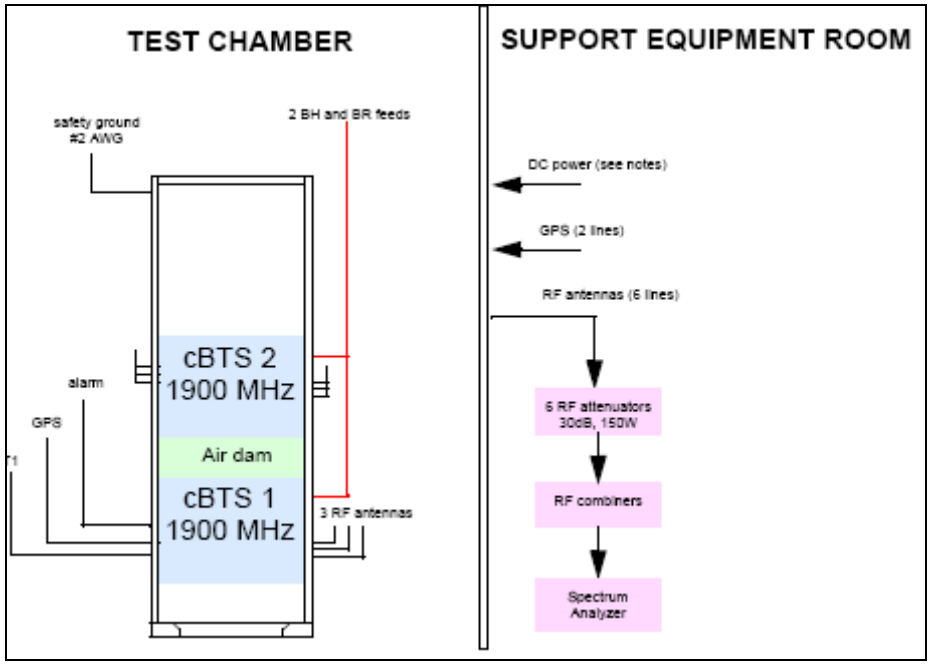

Figure 2: Compact system configuration

- Each cBTS requires its own BH and BR DC feed. Each cBTS requires approximately 40A at -48V operation, or approximately 80A at +24V operation. The DC power cables should

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be 2 AWG, and approximately 8 meters in length in the test chamber. Tie-wrap the BH and BR feeds every 30 centimeters to ensure close coupling.

- For each cBTS use the 16 meter A0821394 alarm cable. Each alarm pair + shall be connected to its alarm - for <no alarm> status.
- Each cBTS requires three RF antenna cables and one GPS antenna cable. In the test chamber the cables should be LMR-400 or equivalent, and approximately 8 meters in length.
- For each cBTS, use the 16 meter NTBW4032 T1/E1 cable. All eight T1s shall be active, and each T1 span Tx should be connected to its Rx for loopback mode.
- Connect the RF frame to the lab safety ground via a 2 AWG cable. The cable should be approximately 8 meters in length.
- Configure each cBTS as 3 carrier - 3 sector.
- Use B/E band channels 425, 450, 475 for cBTS 1 and for cBTS 2 use channels 500, 525, 550. Do not re-use the same channels between cBTS's. Otherwise, if performing FCC Part24 testing, high levels at carrier harmonic frequencies may be observed. Refer to Table 11 for supported 1900 MHz channels.
- Configure each cBTS to provide maximum transmit RF power output (for XCEMs - pilot 254, paging 245, sync 123, 6 OCNS, TPTL 50).
- The PC is not connected to the BTS during emissions scans.

The setup of the EUT on the 10m chamber turn table is shown in Photo 1.0 below. Setup of the EUT was conducted by the customer.

2.5 EUT LIST

Description	PEC	SN
Frame	NTRZ51AA 03	NNTMGY00275E
Digital shelf (Top)	NTRZ60AA 18	NNTM538YYV8D
CCAM	NTRZ64AA 04	NNTM74XL3JV7
TIM	NTGS3188 04	NNTM74XL40PK
GPSTM	NTBW50AA 11	NNTM74TC1NDM
CM-2	NTBW40BA 41	NNTM74X19JPX
XCEM 192	NTRZ80BA 50	NNTM74X199PC
XCEM 64	NTRZ80AA 12	NNTM74X180XN
XCEM 64	NTRZ80AA 12	NNTM74X18124
1900 RM1	NRRZ71CA P5	NNTM536G3LDW
DPM B/E Band 1	NTRZ69CA	CLWVWW100HBF
1900 RM2	NRRZ71CA P6	NNTM536G3U6W
DPM B/E Band 2	NTRZ69CA	CLWVWW100HBH
1900 RM3	NRRZ71CA P6	NNTM536G3U5V
DPM B/E Band 3	NTRZ69CA	CLWVWW100HBJ
Cooling Fan	NTBW18AB 02	NNTM74XL310H
Digital shelf (Bottom)	NTRZ60AA 18	NNTM538YYUHM
CCAM	NTRZ64AA 04	NNTM74XL3JPJ
TIM	NTGS3188 04	NNTM74XL40MW

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GPSTM	NTBW50AA 11	NNTM74TC1OIN
CM-2	NTBW40BA 41	NNTM74X19G68
XCEM 192	NTRZ80BA 50	NNTM74X199PD
XCEM 64	NTRZ80AA 12	NNTM74X1811M
XCEM 64	NTRZ80AA 12	NNTM74X17YJ1
1900 RM1	NRRZ71CA P6	NNTM536G3LEX
DPM B/E Band 1	NTRZ69CA P3	CLWVWW100DC4
1900 RM2	NRRZ71CA P5	NNTM536G3LFY
DPM B/E Band 2	NTRZ69CA P3	CLWVWW100HBM
1900 RM3	NRRZ71CA P5	NNTM536G3LCV
DPM B/E Band 3	NTRZ69CA P3	CLWVWW100HBD
Cooling Fan	NTBW18AB 02	NNTM74XL398P

The 1900 RM PA OPTIMIZATION program introduces the following into the RM:

- PA OPTIMIZATION PA pallet (NTGY33FB)
- RF cable (NTGY3041)
- RF cable (NTGY3042)
- RF cable (NTRZ6050)
- Center shield (N0015633)

The RM PEC (NTRZ71CA) will not be changed, although a temporary pseudo code for the 1900 MHz RM PA OPTIMIZATION will be used (N**R**RZ71CA).

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Photograph 1: EUT Setup – Close Up View

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2.5.1 TEST PLAN CONFIGURATION DEVIATIONS

None.

2.5.2 EUT POWER

Parameter	Minimum	Typical	Maximum	Units
Operating Voltage[a] (24V mode)	21	24	28.5	Vdc
Operating Current[b] (24V mode)			81	A
Operating Voltage (-48V mode)	-40.5	-48	-57	Vdc
Operating Current (-48V mode)			41	A

2.5.3 TEST PLAN POWER DEVIATIONS

None

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2.6 CABLES

EUT Cable List

Cable	# of units	Length
DC power cables	**2**	**25'**
T1/E1	**2**	**50'**
Customer Alarms	**2**	**50'**
RF Cables	**6**	**30'**
GPS Cables	**2**	**30'**

Note: Cable details were provided by the customer and were not verified by NTS

2.6.1 TEST PLAN CABLE LIST DEVIATIONS

None indicated by the customer.

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2.7 FREQUENCIES

EUT Frequency List

Frequency (MHz)	GPSTM	CM-2 and CM-2+	CEM64 CR	CEM192	RM	CCAM	VSCU
0.040							X
0.090							
0.100							
0.138							
0.280							
0.15 TO 0.75	X	X	X	X	X		
400 kbit/s		X	X	X	X		
1.2288		X	X				
1.544		X					
2.048		X					
3.3 Mbit/s		X					
3.6864	X						
4.096		X					
6.6		X					
8						X	
8.192		X					
9.8304	X	X	X	X	X		
10	X	X	X				
12							X
12.5	X						
16.5		X					
19.2					X		
19.44		X					
19.6608	X		X	X	X		
20	X		X				
24					X		
25		X		X			
33			X	X			
33.25				X			
39.3216		X	X	X	X		
40							
63.8976		X	X	X	X		
66.666		X					
78.6432					X		
100		X					
133			X	X			
200		X	X				
400		X					
638.976		X	X	X	X		

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Frequency (MHz)	GPSTM	CM-2 and CM-2+	CEM64 CR	CEM192	RM	CCAM	VSCU
867				X			
Tx frequency - 153.6					X		
Rx frequency - 88.5					X		
Tx frequency + 9.8304					X		
Tx frequency + 57.6					X		

1900MHz Cellular Band Channels

CDMA Channel #	BTS Rx frequency (MHz)	BTS Tx frequency (MHz)	Band
25	1851.25	1931.25	A
50	1852.50	1932.50	
75	1853.75	1933.75	
100	1855.00	1935.00	
125	1856.25	1936.25	
150	1857.50	1937.50	
175	1858.75	1938.75	
200	1860.00	1940.00	
225	1861.25	1941.25	
250	1862.50	1942.50	
275	1863.75	1943.75	
300	1865.00	1945.00	
325	1866.25	1946.25	D
350	1867.50	1947.50	
375	1868.75	1948.75	
400	1870.00	1950.00	
425	1871.25	1951.25	B
450	1872.50	1952.50	
475	1873.75	1953.75	
500	1875.00	1955.00	
525	1876.25	1956.25	
550	1877.50	1957.50	
575	1878.75	1958.75	
600	1880.00	1960.00	
625	1881.25	1961.25	
650	1882.50	1962.50	
675	1883.75	1963.75	
700	1885.00	1965.00	

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725	1886.25	1966.25	E
750	1887.50	1967.50	
775	1888.75	1968.75	
800	1890.00	1970.00	

825	1891.25	1971.25	F
850	1892.50	1972.50	
875	1893.75	1973.75	
900	1895.00	1975.00	C
925	1896.25	1976.25	
950	1897.50	1977.50	
975	1898.75	1978.75	
1000	1900.00	1980.00	
1025	1901.25	1981.25	
1050	1902.50	1982.50	
1075	1903.75	1983.75	
1100	1905.00	1985.00	
1125	1906.25	1986.25	
1150	1907.50	1987.50	
1175	1908.75	1988.75	

2.7.1 TEST PLAN FREQUENCY LIST DEVIATIONS

None.

2.8 EUT SOFTWARE

Software Name	Software Release Number	Software Configuration
Vortex 12.1C w/DD Load	Not provided	6 Carrier 3 Sector

2.9 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 2.8 for software mode of operation information. Six MFRM2 1900MHz were used. The 1900MHz MFRM2s were configuration as 6 carriers and 3 sectors. The radios were set to transmit full RF power. The carriers were all 1xRTT carriers.

2.9.1 TEST PLAN MODE OF OPERATION DEVIATION

None

2.10 PASS / FAIL PA 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.

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3.0 SUPPORT EQUIPMENT

The following equipments were available for PI testing.

- PC with Windows 2000, ethernet, Vortex 12.1
- Agilent Spectrum Analyzer, 8596E
- Agilent Vector Signal Analyzer, E4406A
- Agilent CDMA Base Station test Set, 8935
- Agilent Power Meter, E4419B, with E9300A Power Sensor
- Vortex Cable (rolled ethernet)
- RF attenuator, 30dB, 150 W
- GPS antenna and cable (may be required at some test labs)
- Miscellaneous RF interconnect cables
- Digital multi meter

3.1 CONFIGURATION

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

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3.2 CABLES

Support Cable List

None provided by the customer.

3.3 FREQUENCIES

Support Frequency List

Assembly	Signal	Frequency (MHz)
NA		

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APPENDICES

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APPENDIX A: RADIATED E-FIELD EMISSIONS – 30 MHZ – 20 GHZ (INTENTIONAL RADIATOR)

Configuration: 02: 27VDC, 2 cBTS shelves, with 6 x 1900 RM PA Optimization

A.1. Base Standard & Test Basis

Base Standard	☐	CFR Title 47 – Telecommunications, Chapter I - FCC Part 22 – Public Mobile Services – Subpart H – Cellular Radiotelephone Service
	☒	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	☐	**47 CFR FCC Part 22**	
	☒	**47 CFR FCC Part 24**	
		Theoretical Peak @ 3m[1]	**ERP[2]**
MHz		**dBµV/m**	**dBm**
1000 - 10000		84.3	-13

Note 1: Calculated using: Pd-(43 + 10 log(Pw)
where Pd is the EUT power in dBm and Pw is the EUT power in watts
Note 2: Calculated using: 120+20log(SQRT(49.2*Pw)/3)
where Pw 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 – 18 GHz	+3.48/-3.51	+6.96/-7.02

A.4. Deviations

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

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A.5. Radiated Emissions Measurement Equipment

Radiated Emissions 30 MHz – 18 GHz Measurement Equipment

DesPA Optimizationiption	Manufacturer	Type/Model	Asset #	Cal Due	Cal Date
10m ANECHOIC CHAMBER					
Horn Antenna (Rx) 1 G – 18 G	☒ EMCO	3115	260092	25AUG06	25AUG05
Standard Gain Horn (Rx) 5.95 G – 8.2G	☒ EMCO	3160-06	260090	N/A	27NOV01
Standard Gain Horn (Rx) 8.2G – 12.5 G	☒ EMCO	3160-07	260089	N/A	27NOV01
Standard Gain Horn (Rx) 12.5G – 18 G	☒ EMCO	3160-08	260074	N/A	27NOV01
Standard Gain Horn (Rx) 18G – 26.5 G	☒ EMCO	3160-09	260044	N/A	27NOV01
High frequency Link				10NOV06	10NOV05
Step Attenuator/Switch (0dB & 10 dB)	HP	11713A	260048 260097		
LNA	Miteq	JSD000121	260477		
Cable from LNA to SA	Sucoflex	101PEA	263187		
Spectrum Analyzer 9k-40GHz	Rohde & Schwarz	FSEK	260104	05APR06	05APR05
LNA DC Power Supply	Xantrex	LXO 30-2	260483	NA	NA
HPIB Extender	HP	37204	260096	N/A	N/A
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)	☒ EMCO	3115	260088	N/A	N/A
Signal Generator	☐ Rohde & Schwarz	SMP-04	260425	N/A	N/A
	☐ Rohde & Schwarz	SMIQ		N/A	N/A
	☒ Wiltron	68369B	Serial 691006	N/A	N/A
Cable RX antenna to 3M center bulk head	Sucoflex	104	263136	N/A	N/A
Cable 3M center bulk head to Control room	Sucoflex	104	263188	N/A	N/A
Cable Control room bulk head to Signal Generator	Sucoflex	104	263134	N/A	N/A

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Substitution Measurement Equipment

DesPA Optimizationiption	Manufacturer	Type/Model	Asset #	Cal Due	Cal Date
SUBSTITUTION EQUIPMENT					
Horn Antenna (Tx) 1 G – 18 G	☒ EMCO	3115	260091	N/A	N/A
Signal Generator	☒ Rohde & Schwarz	SMP-04	260425	19MAR06	19MAR03
Cable RX antenna to 3M center bulk head	Sucoflex	104	263136	N/A	N/A
Cable 3M center bulk head to Control room	Sucoflex	104	263188	N/A	N/A
Cable Control room bulk head to Signal Generator	Sucoflex	104	263134	N/A	N/A

A.6. Special Considerations

None

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A.7. Test Results

Product Integrity Laboratory **V2.5**

Project Name: CG-275 **Tester:** Glen Moore
Model: CDMA 1900RM PA Optimization **Test ID:** RE03-10m-275
Comments: 27VDC, 2 cBTS shelves, with 6 x 1900RM PA Optimization

Standard FCC Part 24

Polarization	Test Distance (m)	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 Output	Tx Ant Num Gain	Tx Cable Loss	Total Tx CF	Effective Radiated Power (ERP)	ERP Limit	ERP Margin	Mast Height
				MHz	dBuV/m	dBuV	dB/m	dB	dB	dB		dBuV/m	dBm	dB	dB	dB	dBm	dBm	dB	cm
Hpol	3	9711-5362	9711-5361	3916.82	52.50	52.46	32.45	-26.16	0.26	6.55	PK	67.78	-54.40	9.60	10.56	-0.95	-55.35	-13.00	**42.35**	139.90
Hpol	3	9711-5362	9711-5361	7849.90	63.92	62.09	36.81	-19.87	0.17	17.11	PK	67.78	-50.70	13.76	15.30	-1.54	-52.24	-13.00	**39.24**	139.90
Vpol	3	9711-5362	9711-5361	3915.05	49.85	49.94	32.36	-26.17	0.25	6.45	PK	71.02	-59.10	9.58	10.57	-0.99	-60.09	-13.00	**47.09**	131.40
Vpol	3	9711-5362	9711-5361	7849.90	61.62	61.62	36.78	-19.87	0.17	17.08	PK	67.11	-50.70	13.73	15.30	-1.57	-49.13	-13.00	**36.13**	144.3

AF: Antenna Factors Ant: Antenna 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. ERP = 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.

Note: There was no Part 24 related frequencies found between 30 MHz and 1 GHz, so data within this frequency span is not included in the report.

A.8. Observations

None

A.9. Deviations from Normal Operating Mode During Test

None

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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+20log(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. Note: In some bands, a lower rbw detector was used to identify and detect emissions with better measurement system sensitivity. Scans to identify emissions were conducted with a peak detector, for detected emissions final readings were taken with an average detector

A.12. Tested By

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

Name:	Deniz Demirci	Glen Moore
Function:	EMC Engineer	EMC Manager

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Figure 1 RE 1 GHz - 20 GHz EUT Configuration

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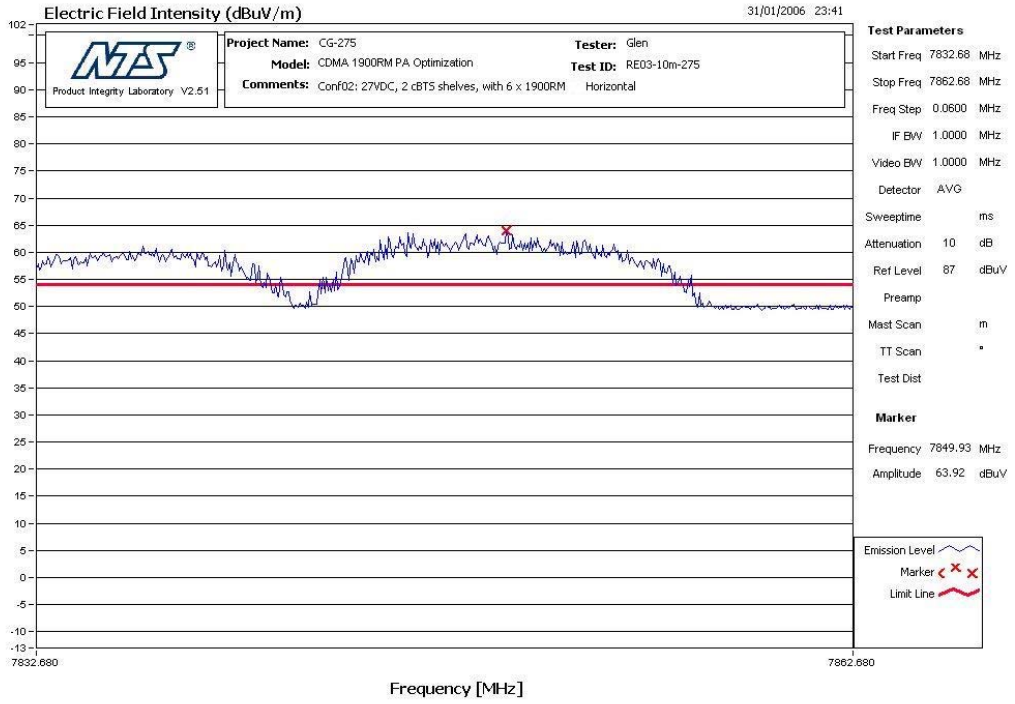
Horizontal Compliance Scan @ 3916.35 MHz



Horizontal Compliance Scan @ 7849.93 MHz

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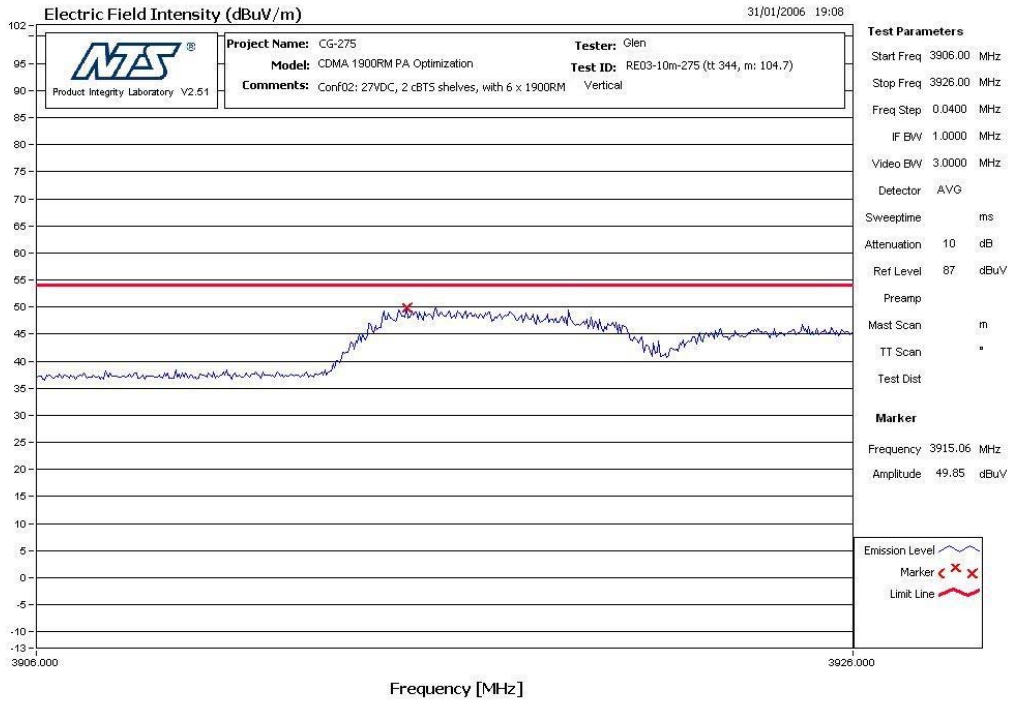
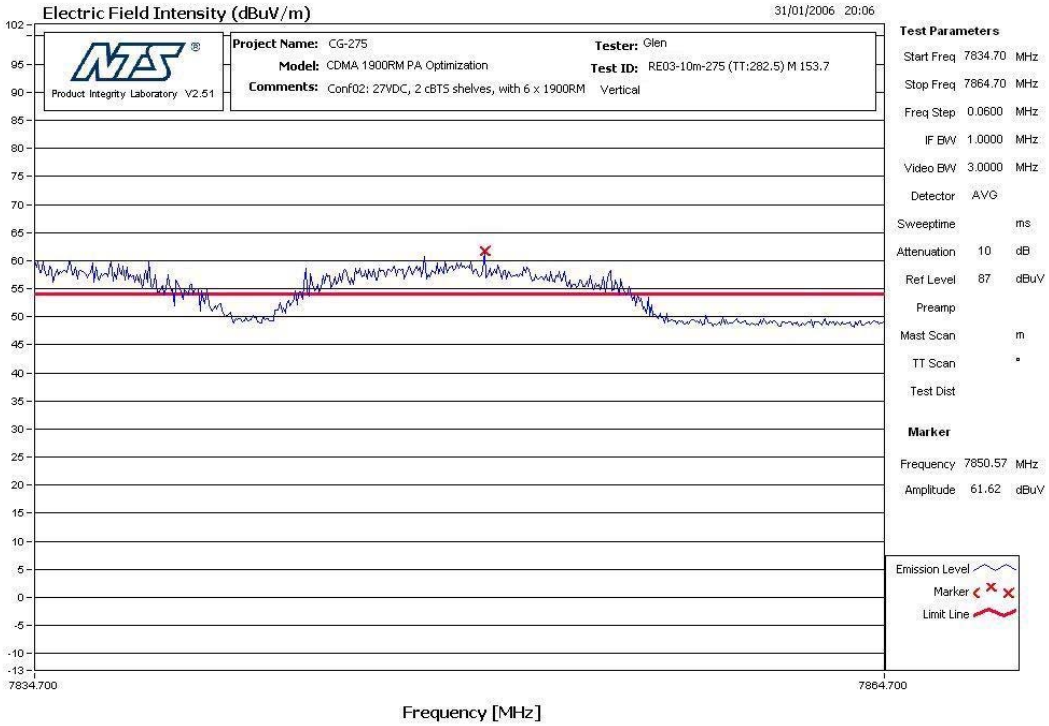


Vertical Compliance Scan @ 3915.06 MHz



Vertical Compliance Scan @7850.57 MHz

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APPENDIX B: TEST PLAN

Refer to Nortel Document “CDMA 1900 RM PA OPTIMIZATION Product Integrity Test Plan” Stream 00 Issue 1.0 – January 26, 2006

NORTEL NETWORKS

[redacted]

CDMA 1900 RM CR

Product Integrity

Test Plan

Document Status:	Approved
Stream:	00
Issue:	1.0
Date:	January 26, 2006
Security Status:	Proprietary - Confidential
Author:	Daryl Therens

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APPENDIX C: SUPPLEMENTARY INFORMATION

None attached

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END OF DOCUMENT

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