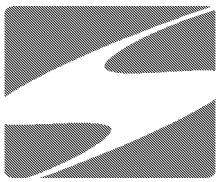
EXHIBIT 2B

Test Report Provided by Sanmina-SCI

Applicant: Nortel Networks Inc.

For Class II Permissive Change Certification on:

AB6NTL100AA



S A N M I N A

Global Design Solutions

Engineering Report PI-TDMA-01-RE90-V1.0

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Calgary, Alberta
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FCC Part 15 Subpart B and FCC Part 22 Subpart H

DMU 110 Watt RF Frame

Revision: 1.0

Prepared for: Nortel Networks

Abstract: Electromagnetic Compatibility – Radiated Emission test report for DMU 110 Watt RF Frame.

Authors: Eric Warkentin, EMC Engineer Intern
Mohammad S. Hossain, EMC Engineer

Product tested: From July 11 – 20, 2001
Report prepared: August 10, 2001

Customer Contacts: Dennis Dreher, Brad Carlson
Sanmina Project Engineer: Troy Williams

Project Number#: TDMA CR, DMU, 29894

Table of Contents

1 Distribution Lists

Customer:

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Brad Carlson	Project Manager / Nortel Networks	WIC
Scott Diamond	System Support / Nortel Networks	WIC

Sanmina:

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Troy Williams	Project Manager	T03
Mohammad Hossain	EMC Engineer	T03
Eric Warkentin	EMC Engineer Intern	T03
Shayne Allarie	EMC Test Technologist	WSIL
Shankara Malwes	EMC Test Technologist	WSIL

2 Release Control Record

Release #	Release authors	Reason for Change	Date of Issue
01	Eric Warkentin Mohammad Hossain	Original Release	August 10, 2001

Please Note that Revision (change) bars are not used

3 Abbreviations

The following abbreviations are relevant to this document.

Abbreviation	Explanation
dB	Decibel
EMC	Electromagnetic Compatibility
EUT	Equipment Under Test
GHz	Gigahertz
HW	Hardware (also H/W)
Hz	Hertz
iaw	In Accordance With
I/O	Input/Output
ITE	Information Technology Equipment
m	Meter
e.r.p.	Effective Radiated Power
MHz	Megahertz
N/A	Not Applicable
PI	Product Integrity
PEC	Procurement Engineering Code
CPC	Common Product Code
RF	Radio Frequency
μV	Microvolts
BTS	Base Station
TRU	Transmit Receive Unit
MCPA	Multi Channel Power Amplifier
LNA	Low Noise Amplifier
PA	Power Amplifier
RF	Radio Frequency
RIP	Rack Interface Panel
H-Pol	Horizontal Polarization
V-Pol	Vertical Polarization

4 References

Federal Communications Commission

1. CFR 47, FCC Part 15 Subpart B, 15.109 : FCC Rules and Regulations, Radio Frequency Devices, Radiated Emission Limits.
2. CFR 47, FCC Part 22 Subpart H, 22.917 : FCC Rules and Regulations, Public Mobile Services. Emission Limitations for Cellular.

International Electrotechnical Commission

3. CISPR 16 : Specification for Radio Disturbance and immunity measuring apparatus and methods, 1993-08

American National Standard Institute

4. ANSI C63.4-1992 : American National Standard for Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz, dated 17 July 1992.

Nortel Networks Documentation

5. GSFC01AG : DMU 110 Watt RF Frame, General Specification, Issue 02, August 1, 2000.

Sanmina Canada ULC Documentation

6. PI Lab Test Method 2.0A : Radiated Emission Test Method (30 MHz to 1 GHz) FCC Part 15
7. PI Lab Test Method. : Radiated Emission Test Method (1 GHz to 5 GHz) FCC Part 15, Issue 01.
8. EMC Test Report : Product Integrity Test Report, Radiated Emissions Tests, FCC Part 15, Subpart B, Class A Compliance Report, March 30' 2001.
9. PI Lab Test Method : Radiated Emissions – 30 MHz to 12.75 MHz Substitution Method, Issue 01.
10. PI-TDMA-01-RE90-V1.0 : EMC Test Plan for Nortel Networks DMU 110 Watt RF Frame, Rev: 2.0

5 Engineering Declaration

The DMU 110 Watt RF Frame has been tested in accordance to the requirements contained in primary test specification. To the best of our knowledge, these tests were performed with good engineering practices using measurement procedures consistent with industry or standards and demonstrate that this equipment complies with the appropriate standards. All tests were performed on a representative sample of the equipment for which acceptance/certification is sought as presented by Nortel Networks.

Report Prepared by:

Eric Warkentin
EMC Engineer Intern

Signature *Date* August 10, 2001

Mohammad Hossain
EMC Engineer

Signature *Date* August 10, 2001

Sanmina Canada ULC
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6 Executive Summary

This report summarizes testing done on Nortel Network's DMU 110 Watt RF Frame (TDMA system). As per the requirements of the test plan, the system passes the FCC Part 15 Subpart B Class A and FCC Part 22 Subpart H radiated emissions requirements.

The minimum pass margins were:

FCC Part 15 Subpart B Class A 30 MHz to 1 GHz: 10.04 dB V-Pol
10.56 dB H-Pol
FCC Part 15 Subpart B Class A 1 GHz to 2 GHz: > 30 dB V-Pol
> 30 dB H-Pol
FCC Part 22 Subpart H: 18.55 dB V-Pol
6.39 dB H-Pol

7 Introduction

This paper documents the EMC qualification tests performed on the DMU 110 Watt RF Frame by Sanmina Canada ULC. The emissions tests were preformed at the Sanmina Canada Product Integrity Lab in Calgary. The EUT was tested to comply with FCC Part 15 Class A and FCC Part 22 limits as requested by the customer.

Recent EMC test cycle of DMU was part of an upgrade and cost reduction program to the existing system. In the previous EMC test program the system passed FCC part 15 Class A and part 22 radiated emission limits and it was observed that radiated emission level at frequency 180.41 MHz was 3 dB over the Class B limits. Due to design changes in the RF transmit circuitry of the same product, it has been re-tested to meet the requirements of FCC Class A. An objective of this test program was to investigate the radiated emission level at frequency 180.41 MHz. The product has also been re-tested to meet the requirements of FCC part 22 radiated emission limit as required.

The specific test methods and results are described in Section 9.

8 Test Summary/Matrix

Description	Test Specification	Pass/Fail	Remarks
Radiated Emissions 30 MHz to 1 GHz	FCC Part 15 Subpart B Class A	Pass	Pass Margin: 10.04 dB V-Pol 10.56 dB H-Pol
Radiated Emissions 1 GHz to 2 GHz	FCC Part 15 Subpart B Class A	Pass	Pass Margin: > 30 dB V-Pol > 30 dB H-Pol
Radiated Emissions 30 MHz to 10 GHz	FCC Part 22 Subpart H	Pass	Pass Margin: 18.55 dB V-Pol 6.39 dB H-Pol

9 Emissions Testing

9.1 Analysis

9.1.1 Radiated Emissions

The radiated emissions tests were performed to demonstrate compliance to the FCC Part 15 Subpart B Class A limits and FCC Part 22 Subpart H limits. Sanmina proprietary test software *AF-ATE Version 2.5* was used to aid radiated emissions testing. The limits for this standard are shown in tables 9.1.1 and 9.1.2.

Table 9.1.1 – Radiated Emissions Limits of FCC Part 15 at 10m distance

Frequency of Emission (MHz)	Field Strength (dBuV/m) at distance of 10 m	
	Class A	Class B
30 – 88	39.0848	30
88 – 216	43.5218	33.52
216 – 960	46.4443	36.02
Above 960	49.54	43.97

Table 9.1.2 – Radiated Emissions Limits of FCC Part 15 at 3m distance

Frequency of Emission	Field Strength (dBuV/m) at distance of 3 m	
	Class A	Class B
Above 1 GHz	60.08	53.97

Radiated Emission Limit of FCC Part 22 is given in the "*EMC Test Plan for DMU 110 Watt RF Frame*" [10]. According to FCC Part 22 radiated emission standard, the e.r.p. (Effective Radiated Power) limit is –13 dBm.

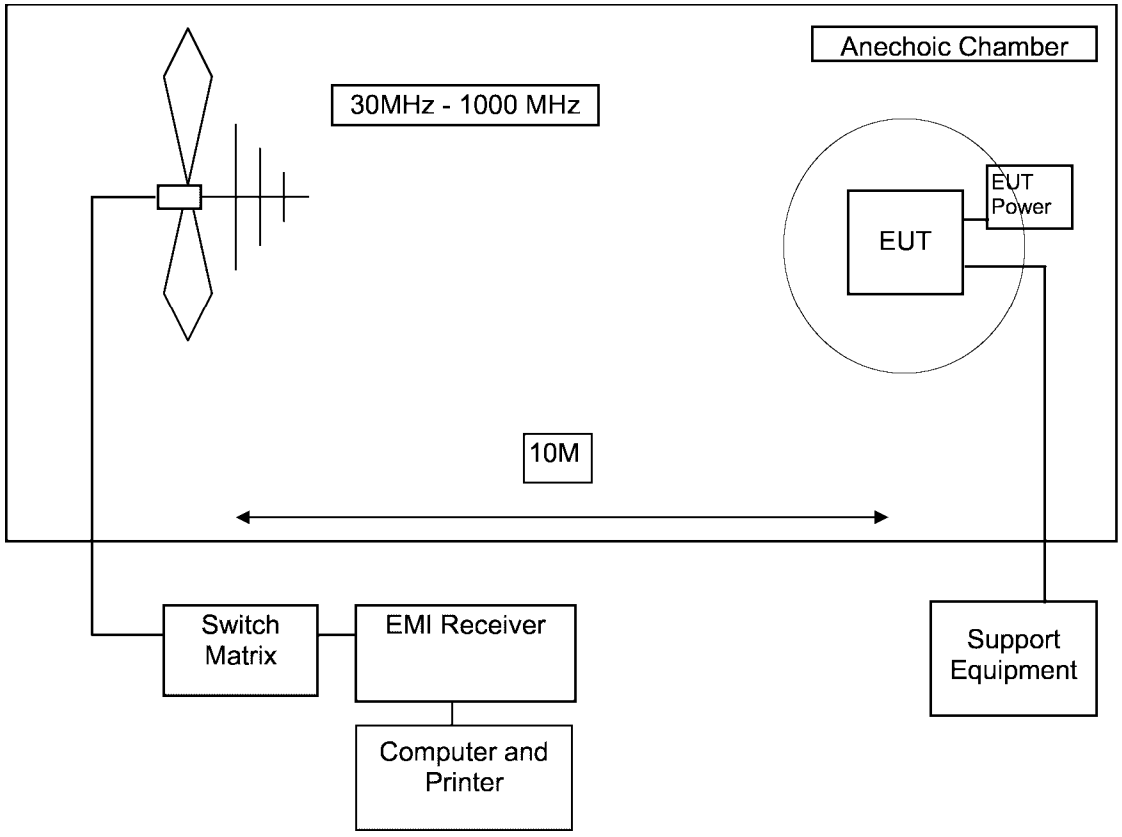
For all of the test cases, the receiving antenna captured the electromagnetic disturbances of the EUT. Orthogonal positioning of the antenna fixture captures both vertical and horizontal polarizations of the EM waves. Peak measurements of the electric field are measured across the entire frequency range (30MHz – 10 GHz), excluding the transmit band (869 to 894 MHz).

For FCC Part 15 tests (30 MHz to 1 GHz), the peaks within 10 dB were used and the final measurements were performed on those points using the quasi-peak detector. For testing from 1 GHz to 2 GHz there were no noticeable peaks in both H-Pol and V-Pol scans. The noise floor was at least 30 dB below the limit line (60.08 dBuV/m). Radiated Emission Test (FCC Part 15) from 1 GHz to 2 GHz were done at 3m distance. A Low Noise Amplifier was in the antenna to EMI receiver path. A notch filter was used to attenuate the main RF carrier of the EUT to prevent equipment saturation.

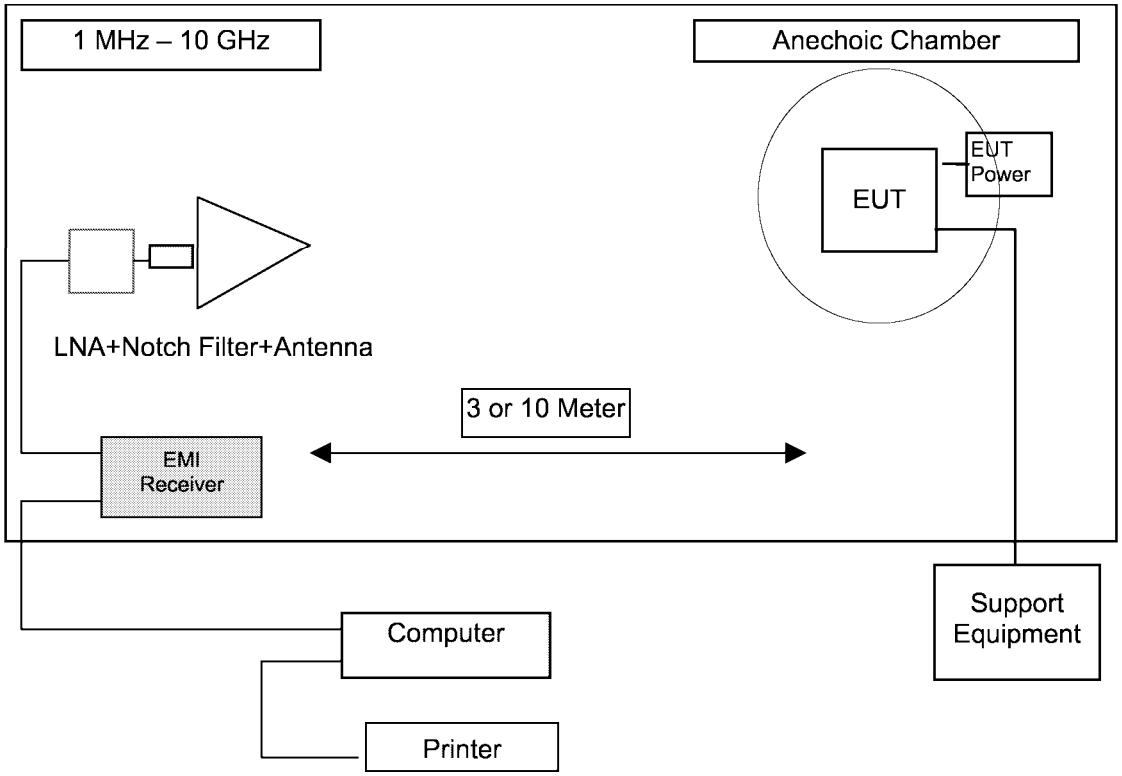
For FCC Part 22 tests, the highest 10 peaks from 30 MHz to 1 GHz were selected from the FCC Part 15 automated compliance scan test data and another 8 peaks were selected from the pre-scans from 1 GHz to 10 GHz in both V-Pol and H-Pol. Turntable angle and mast height data from the previous automated compliance scan (FCC Part 15) were reused to measure the peak emissions for all of the 10 points below 1 GHz. For 1 GHz to 10 GHz test, there were only a few peaks within 6 dB of the theoretical free space E-field limit and the 5 largest peaks (emission) for horizontal polarization and the 3 largest peaks (emission) for vertical polarization were optimized and recorded. The substitution method is then performed at these frequencies to determine the effective radiated power of the EUT, as described in *Radiated Emissions-Substitution Method [9].*

Note: For all measurements above 1 GHz, A notch filter was used to suppress RF transmit carrier (869 to 894 MHz) of the EUT.

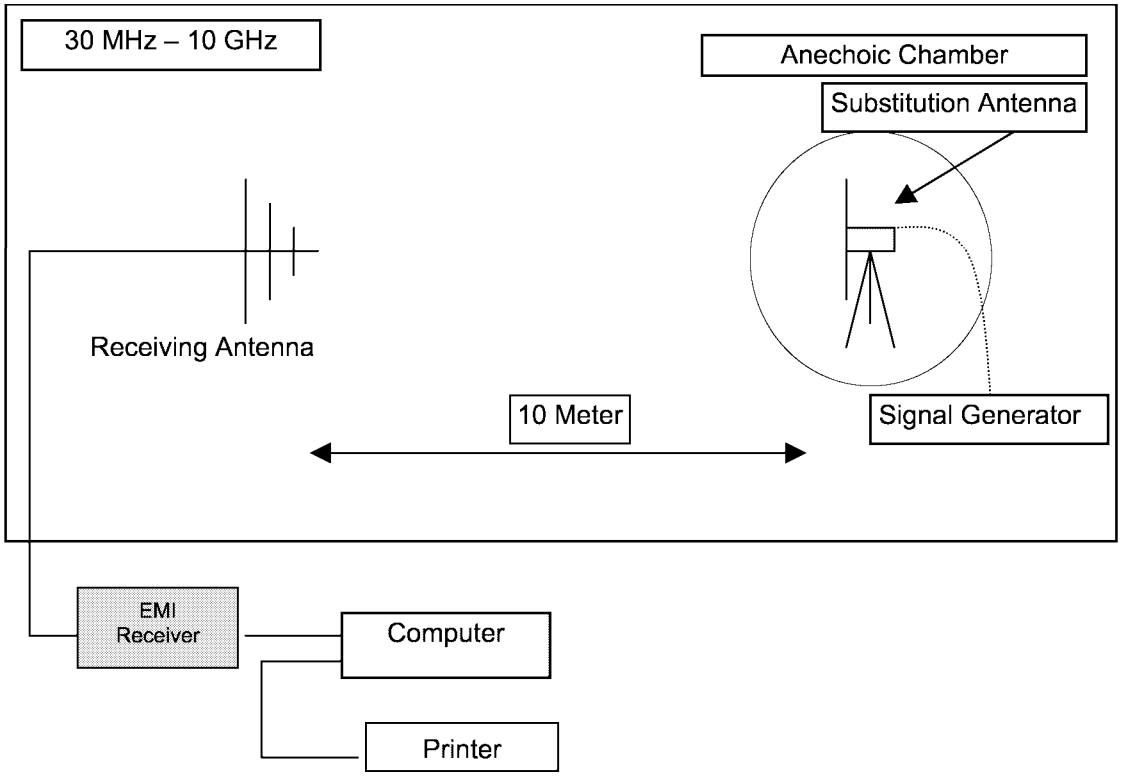
9.2 ***Description of Test Setup***



Test Equipment Set-up for Radiated Emission Test from 30 MHz to 1 GHz



Test Equipment Set-up for Radiated Emission Test from 1 GHz to 10 GHz



Typical Substitution Antenna setup for E.R.P. measurement from 30 MHz to 10 GHz

9.3 General Test Conditions

The radiated emissions tests were performed at the Sanmina Canada Product Integrity Laboratory, 5111 47th Street N.E. in Calgary, Alberta. Instrumentation in use was suitable for FCC Part 15 and FCC Part 22 measurements.

All measurements were taken with standard ambient temperature condition and the test results were not influenced by the electromagnetic condition of the laboratory.

9.4 List of Equipment Used

Table 9.4.1 Radiated Emissions Test Equipment, 30MHz – 1GHz

Manufacturer	Description	Model Number	S/N	Calibration Expiry
Rhode & Schwarz	EMI Receiver • RF Section • Display Section	ESMI ESMI EMI	 848926/002 846839/020	March 09, 2002
Schaffner	Bilog Antenna	CBL 6112B	2701	April 26' 2002
EMCO	Mast Controller	2090	9711-1266	N/A
EMCO	Turntable Controller	2090	9709-1263	N/A
TDL	Switch Matrix Controller	SMC-002	40500189	N/A
Hewlett Packard	Low Noise Amplifier	8447 OPT H64	303A07411	N/A
EMCO	Refrad	4630B	9901-1105	Dec 21, 2001
Sucoflex	Ferrite bead loaded cable	-	FBL-1	N/A
Sucoflex	RF Cable	106	9353/6	N/A
Sucoflex	RF Cable	104	115742	N/A
Sucoflex	RF Cable	104	116567/4	N/A
Sucoflex	RF Cable	104	11576/4	N/A

Table 9.4.2 Radiated Emissions Test Equipment, 1GHz – 10GHz

Manufacturer	Description	Model Number	Serial Number	Calibration Expiry
Rhode & Schwarz	Spectrum Analyzer	FSEK	40500210	Feb 15,2002
Electro Matrix	Antenna	EM-6952	314	June 21,2002
EMCO	Mast Controller	2090	9711-1266	N/A
EMCO	Turntable Controller	2090	9709-1263	N/A
TDL	Switch Matrix Controller	SMC-002	40500189	N/A
Miteq	Low Noise Amplifier	JSD 00121	513176	N/A
Miteq	Low Noise Amplifier	JSD 00121	-	N/A
Sucoflex	RF Cable	-	24227/4	N/A
LORCH Microware	Notch Filter	3BR8-881.5/65-S	29971 X1	N/A

Table 9.4.3 Radiated Emissions Substitution Method Test Equipment, 30MHz – 10GHz

Manufacturer	Description	Model Number	Serial Number	Calibration Expiry
Wiltron	Signal Generator	68369B	40500112	Feb 12, 2003
EMCO	Adjustable Dipole Antenna	3121C DB-3	9611-1233	April 4, 2002

Manufacturer	Description	Model Number	Serial Number	Calibration Expiry
EMCO	Adjustable Dipole Antenna	3121C DB-4	9611-1233	April 4, 2002
EMCO	Pyramidal Horn Antenna	3160-03	9812-1053	N/A
EMCO	Pyramidal Horn Antenna	3160-06	9712-1042	N/A
EMCO	Pyramidal Horn Antenna	3160-07	9810-1108	N/A
Sucoflex	RF Cable	104	9338/6	N/A
HP	Prog. Step Attenuator	84904K	40500275	N/A
HP	Prog. Step Attenuator	84906K	40500276	N/A

9.5 Calibration of Test equipment:

Test equipment in Sanmina PI Laboratory is handled in accordance with internal Quality Assurance systems procedures.

9.6 Equipment under Test: Configuration

9.6.1 System Configuration for Radiated Emission Test

The system was configured as described in the "*EMC Test Plan for DMU 110 Watt RF Frame" [10].* Connections of test equipments are shown in the *Description of Test Setup* section. The system was powered by an external DC power supply located outside and underneath the anechoic chamber. Also external clock source was used to set up the EUT as typical test configuration.

The EUT was configured to transmit at maximum rated RF power on all carriers, while in a maximum omni-cell configuration of 40 TRU modules and 2 MCPA modules.

Table 9.6.1 Hardware Modules for Radiated Emissions tests

Title		PEC	CPC	40 Channel
DMU PH2A 110W PrStr 3.0				**2 PA Mod**
DMU PHASE 2A 1100 WATT RF FRAME	A	NTFC01AG	A0817713	1
Kickplate	P/F		P0855832	2
Blank Panel 5U x 23"	P/F		P0855835	0
Frame Leveling Kit	P	NTFB40AA	A0634172	1
Terminator SMA	P/F		A0686479	1
Alarm Jumper 40 Channel Expansion	P/F	NTFC02AF	A0678751	1
Duplexer K & L FULL Band	P/F	NTFC04AD	A0794451	0 or 1
Powerwave MCPA Rack	P/F	NTL107AC	A0777729	1
Powerwave MCPA 100W Module	P/F	NTL107AA	A0777727	2
MCPA Initialization Software	P/F	NTFC07BC	A0743941	1
MCPA Module Blank Panel	P/F		P0871509	0
Fan Assembly		NTFB24 AA		5
Back plane Cover Assembly		NTFC05 AH		5
Cover Assembly (Transceiver Shelf Back Side)		NTLA 7106		
TRU 2	P/F	NTAX98AA	B0237512	40
Transceiver Shelf DMU2A	P/F	NTFC05AG	A0731839	5

9.6.2 Clocks and system

The following table lists the clock sources (e.g. discrete crystals and VCXOs) used in the EUT configurations under test.

Table 9.6.2 Clocks

Frame	Fundamental Frequencies (MHz)
RF	0.03
RF	0.0486
RF	0.12
RF	0.155
RF	0.48
RF	0.6
RF	1.2
RF	2.561
RF	3.6864
RF	3.1104
RF	4.8
RF	6.2208
RF	10.0
RF	10.244
RF	12.4416
RF	20.0
RF	25.0
RF	27.0
RF	32.0
RF	81.0
RF	82.2
RF	84.96
RF	85.56
RF	130.56
RF	704.5 – 729.6
RF	25.0
RF	30.0
RF	40.0
RF	0.100
RF	0.400
RF	0.192
RF	0.30375
RF	8.0
RF	12.0
RF	9.72

Note: System's (MCPA Module NTL107AA) pilot tone is at 860 MHz.

9.6.3 System Cables and Interconnect

Table 9.6.3 System Cables

Cable PEC	Qty. Per Frame	Cable Function	Description/Notes
NTFC03AL	1	DC Power	DC harness supplies DC from RIP to MCPA shelf
NTFC09AA	1	Data	Cable Data 25 Pair TRU Shelf 1 to RIP
NTFC09AB	1	Data	Cable Data 25 Pair TRU Shelf 2 to RIP
NTFC09AC	1	Data	Cable Data 25 Pair TRU Shelf 3 to RIP
NTFC09AD	1	Data	Cable Data 25 Pair TRU Shelf 4 to RIP
NTFC09AE	1	Data	Cable Data 25 Pair TRU Shelf 5 to RIP

Table 9.6.4 System Cables

Description/Notes	PEC	Qty
System Alarm Cable	NTFC 03 AV	1
RF Cable (Input to PA)	NTTG 4250	1
RF Cable (From PA to Duplexer)	NTFC 09 AH	1
RF Cable (From TRU Shelf)	NTTG 4250	5
DC Power Cable (Ckt Breaker to Power Panel)	NTFC 02 AN	2 Pair
DC Power Cable (Ckt Breaker to Power Panel)	CSA TEW 105 C 10 AWG	2 Sets of 24 Cables

Table 9.6.5 Power and Ground Cables

Title	Length	Cable Type	Quantity
Earth Cable	8.5 m	Polarflex 40, 2 AWG ARC Welding cable	1
DC Power Feed A	9 m	2 ESSEX EXCELENE 600 V Welding Cable.	1 Pair
DC Power Feed B	9 m	2 ESSEX EXCELENE 600 V Welding Cable.	1 Pair

Table 9.6.6 External RF Cables

Title	Cable Type	Quantity
Antenna RF Cable TX to Bulkhead	SUCOFLEX 106, S/N – 9362/6	1
Clock Sync Cable Osc to Bulkhead	A0359667	5

9.7 Procedure

The configuration procedure is detailed in the *EMC Test Plan for DMU 110 Watt RF Frame* [10]. The EUT was configured, installed, arranged and operated in a manner consistent with typical applications.
First Peak emission measurements were made from 30 MHz to 2 GHz for FCC Part 15 Subpart B pre-compliance analysis excluding the transmit band (869 to 894 MHz) and the peak detector setup was 30 kHz IF bandwidth, 30 kHz video bandwidth. From 30 MHz to 1 GHz the final measurements were performed using quasi-peak detector and setup as 120 kHz IF bandwidth and 300 kHz video bandwidth. For the 1-2 GHz analysis, initially the scan was run in peak mode with 100 kHz IF bandwidth and 100 kHz video

bandwidth. The final measurement was done using average detector and the setup was 1 MHz IF bandwidth and 1 MHz video bandwidth.

For FCC Part 22 Subpart H test from 30 MHz to 10 GHz, all radiated peak emission measurements were done using a peak detector. Previous peak emissions data from 30 MHz to 1 GHz test was used for final measurement. Turntable angle and mast height data from the previous automated compliance scan (FCC Part 15) was reused to measure the peak emissions for all of the 10 points. For the 1 GHz to 10 GHz test, the 8 highest peaks (emission) were recorded from pre-scan test using a peak detector and the setup was 1 MHz IF bandwidth and 3 MHz video bandwidth. These peaks emission of electric field strength data were then converted to corresponding effective radiated power using substitution method and verified with the limits for EUT's compliance. Pictures of the test setup are shown in Appendix C.

9.8 Data

Note: FCC Part 15 data is displayed in Appendix A.

Table 9.8.1 Summary of FCC Part 22 Subpart H Substitution Method Emissions Data (30 MHz to 1 GHz)

Frequency (MHz)	Pol	Turntable Angle (Degree)	Mast Height (cm)	Peak Emissions Level (dBuV/m)	Raw E.R.P. Data (dBm)	Cable Factor (dB)	Antenna Factor (dB)	E.R.P. (dBm)	FCC Limit (dBm)	Margin (dB)	Pass/Fail
445.4500	H	0.8	191.1	32.34	-68.50	-0.3473	22.1544	-46.693	-13	33.6929	Pass
479.9900	H	120.1	113	31.48	-71.00	-0.3557	22.0800	-49.276	-13	36.2757	Pass
738.4686	H	65	137	22.13	-74.40	-0.4369	26.1771	-48.660	-13	35.6598	Pass
746.2374	H	43.1	257.4	21.19	-75.30	-0.4411	26.3946	-49.347	-13	36.3465	Pass
859.0810	H	122.4	287	35.79	-72.10	-0.4758	28.2547	-44.321	-13	31.3211	Pass
167.9399	V	37	99.4	40.51	-64.00	-0.2052	12.5000	-51.705	-13	38.7052	Pass
174.1795	V	8.4	170.7	41.63	-64.20	-0.2122	12.7089	-51.703	-13	38.7033	Pass
180.3798	V	7	234.1	41.15	-62.50	-0.2163	13.0113	-49.705	-13	36.7050	Pass
192.8156	V	14.3	115	39.68	-68.50	-0.2201	13.4970	-55.223	-13	42.2231	Pass
861.0415	V	186.5	98.8	33.31	-59.30	-0.4764	28.2233	-31.553	-13	18.5531	Pass

Table 9.8.2 Summary FCC Part 22 Subpart H Substitution Method Emissions Data (1 GHz to 10 GHz)

Frequency (MHz)	Pol	Turntable Angle (Degree)	Mast Height (cm)	Peak Emissions Level (dBuV/m)	Raw E.R.P. Data (dBm)	Cable Factor (dB)	Antenna Factor (dB)	E.R.P. (dBm)	FCC Limit (dBm)	Margin (dB)	Pass/Fail
1739.5540	H	128.3	153.0	71.53	-35.65	-0.7293	14.5582	-21.8211	-13	8.8211	Pass
1751.1600	H	155.4	159.8	70.15	-33.27	-0.7344	14.6046	-19.3998	-13	6.3998	Pass
1762.4200	H	162.8	152.0	69.64	-38.00	-0.7291	14.6576	-24.0715	-13	11.0715	Pass
1774.0200	H	179.9	159.0	65.26	-43.43	-0.7461	14.6960	-29.4801	-13	16.4801	Pass
1785.0000	H	171.9	168.0	67.68	-41.19	-0.7394	14.7400	-27.1894	-13	14.1894	Pass
1740.6800	V	158.2	189.0	61.94	-46.48	-0.7333	14.5627	-32.6506	-13	19.6506	Pass
1751.4600	V	152.0	175.0	58.87	-49.55	-0.7344	14.6058	-35.6786	-13	22.6786	Pass
1763.0420	V	145.0	165.0	58.34	-50.73	-0.7291	14.6521	-36.8070	-13	23.8070	Pass

Note: FCC Part 22 Emissions Limits and effective radiated power Limits are calculated in the test plan and in reference documents (*Radiated Emissions-Substitution Method, Issue 01*) [9].

9.9 Analysis of Data

For radiated emission test from 1-2 GHz (FCC Part 15), the only peak found above the noise floor was at 1743.48 MHz for both V-Pol and H-Pol and this frequency was defined as the first harmonic of the EUT's main RF carrier. Other than this harmonic the radiated emission limit on all other frequencies from 1 to 2 GHz was found to be well below the standards limit.

For the radiated emission test (FCC Part 22), there were only a few peaks within 6 dB of the theoretical free space E-field limit from 1-10 GHz analysis; the 5 largest peaks for horizontal polarization and the 3 largest peaks for vertical polarization were used. The substitution method was then preformed on these peaks to determine the e.r.p. and corresponding margin to the applicable limit.

All effective radiated power readings for all frequencies were below the limit and all data for the substitution method is presented in Table 9.8.1 & 9.8.2.

Appendix A shows the raw scan data and Appendix B shows the graphical data for all the tests.

However, it was found that the EUT came close to passing FCC Part 15 Subpart B Class B limits. Troubleshooting was done to determine the source of the major problem at 180.4225 in vertical polarization. MHz. At this frequency the system failed the FCC Part 15 Class B limits by 0.38 dB. Through near-field probe analysis it was determined that the major source of the radiation at this frequency was the TRU2 (NTAX98AA) Module. These modules produced the radiation from both sides of the casing. Further analysis with the modules running with the cases open showed that the major sources of the radiation was one of the processors and the ribbon cable running from the module (these areas are indicated with arrows in Figure D2 in Appendix D). Due to the fact that the processor is well shielded, the bulk of the emissions are probably due to the ribbon cable, but further testing is required to determine the true cause of the radiation.

With further testing and some modifications, the EUT could likely pass FCC Part 15 Class B requirements.

10 Recommendations

The objective of the Radiated Emission test is to pass the EUT with 6 dB margins of the FCC Class B limits. The current configuration of the EUT passes the desired requirements of the Radiated Emission Class A limits with sufficient margin and no modifications are needed for compliance. But It is recommended to do further investigation in the design level to meet the objective of the radiated emission test.

11 Conclusions

The DMU 110 Watt RF Frame passes the FCC Part 15 Subpart B Class A limit with a margin of 10.04 dB (V-Pol) and 10.56 dB (H-Pol) and it passes FCC Part 22 Subpart H limit with a margin of 6.39 dB (H-Pol) and 18.55 dB (V-Pol).

12 Appendix A – Raw Test Data

Page 1 of 2 — **Compliance Scan Peaks** — Horizontal — 12/07/2001 13:15

Sanmina Product Integrity Laboratory V2.6

Project Name: DMU 110W RF Frame **Tester:** Shayne Allarie
Model: NTFC01AG **Test ID:** RE02C-10M-2001-011
Comments: MCPA Transistor change.

Pre-Compliance		Verified Compliance Scan														
Emission Frequency (MHz)	Emission Level (dBuV/m)	Peak Status	Emission Frequency (MHz)	QP Measured Level (dBuV)	QP Emission Level (dBuV/m)	FCC15A Limit (dBuV/m)	FCC15A Margin (dB)	FCC15B Limit (dBuV/m)	FCC15B Margin (dB)	QP Mast Height (cm)	QP Turntable Angle (deg)	Correction Factors (dB/m)				
108.3270	26.20	Verify	107.9794	38.08	24.66	43.52	18.86	33.10	8.44	371.6	42.5	-13.42				
432.0868	29.85	Verify	431.9598	35.89	29.27	46.44	17.17	35.60	6.33	185.8	0.0	-6.62				
445.6618	26.96	Verify	445.4434	34.88	28.09	46.44	18.35	35.60	7.51	189.0	0.2	-6.79				
459.2369	26.07	Verify	458.9497	33.53	26.67	46.44	19.77	35.60	8.93	139.8	17.8	-6.86				
478.2180	26.61	Adjacent														
480.1402	28.15	Verify	480.0027	36.60	30.10	46.44	16.34	35.60	5.50	113.7	119.0	-6.50				
486.1468	27.36	Adjacent														
496.2380	25.86	Adjacent														
738.6674	32.68	Verify	738.4857	37.29	33.98	46.44	12.46	35.60	1.62	137.8	65.7	-3.31				
739.5083	25.82	Adjacent														
741.7909	29.13	Adjacent														
743.3526	30.41	Verify	743.1031	35.61	32.40	46.44	14.04	35.60	3.20	200.6	17.3	-3.21				
743.7130	26.57	Adjacent														
746.4761	34.21	Verify	746.2534	39.27	35.88	46.44	10.56	35.60	-0.28	256.2	43.7	-3.39				
859.4016	28.64	Verify	859.1015	22.79	21.55	46.44	24.89	35.60	14.05	286.2	122.4	-1.24				
860.8432	31.51	Verify	861.0384	24.29	23.08	46.44	23.36	35.60	12.52	228.1	277.2	-1.21				
861.9244	29.45	Verify	862.2858	22.53	21.30	46.44	25.14	35.60	14.30	228.1	304.9	-1.23				
862.1646	27.44	Adjacent														
862.5250	30.99	Verify	862.3543	28.78	27.55	46.44	18.89	35.60	8.05	196.6	210.5	-1.23				
862.7653	29.93	Adjacent														
863.1257	28.65	Adjacent														
863.8465	27.44	Adjacent														
864.8076	29.00	Verify	865.2759	23.09	21.82	46.44	24.62	35.60	13.78	175.2	212.4	-1.27				
866.4894	30.35	Adjacent														
866.7297	30.53	Adjacent														
867.5706	31.58	Adjacent														
868.0512	33.56	Verify	868.4450	31.73	30.15	46.44	16.29	35.60	5.45	205.4	200.1	-1.58				
868.4116	32.54	Adjacent														
869.4928	72.81	Carrier														
869.8532	70.68	Carrier														
870.3337	72.51	Carrier														
870.6941	73.32	Carrier														
871.1746	72.03	Carrier														
871.6552	73.06	Carrier														
872.0156	74.39	Carrier														
872.3760	73.06	Carrier														

Notes:
1. Positive Margin indicates a pass
2. Correction factors include all factors between the recieving antenna and the reciever including the antenna
3. Emissions more than 10 dB below the margin are not selected
4. EUT faces front towards the antenna, 10.6° wrt turntable zero

Figure A1 – Horizontal Compliance Scan Data (Page 1)

Page 2 of 2

Compliance Scan Peaks — **Horizontal** — 12/07/2001 13:15

Sanmina Product Integrity Laboratory Y2.6

Project Name: DMU 110W RF Frame **Tester:** Shayne Allarie
Model: NTFC01AG **Test ID:** RE02C-10M-2001-011
Comments: MCPA Transistor change.

Pre-Compliance		Verified Compliance Scan														
Emission Frequency (MHz)	Emission Level (dBuV/m)	Peak Status	Emission Frequency (MHz)	QP Measured Level (dBuV)	QP Emission Level (dBuV/m)	FCC15A Limit (dBuV/m)	FCC15A Margin (dB)	FCC15B Limit (dBuV/m)	FCC15B Margin (dB)	QP Mast Height (cm)	QP Turntable Angle (deg)	Correction Factors (dB/m)				
872.6162	73.08	Carrier														
872.8565	71.48	Carrier														
873.2169	71.18	Carrier														
873.6974	71.26	Carrier														
873.9377	71.02	Carrier														
874.2981	71.90	Carrier														
874.5384	71.35	Carrier														
874.8988	72.13	Carrier														
875.1390	72.69	Carrier														
875.6196	73.03	Carrier														
876.2202	71.87	Carrier														
876.4605	72.37	Carrier														
876.8209	72.98	Carrier														
877.0612	72.61	Carrier														
877.3014	70.21	Carrier														
877.6618	30.78	Adjacent														
877.9021	33.26	Verify	877.5994	26.42	24.62	46.44	21.82	35.60	10.98	196.1	209.3	-1.80				
878.1424	31.96	Adjacent														
878.5028	28.71	Adjacent														
878.7430	27.70	Adjacent														
879.1034	31.11	Verify	878.7024	33.45	31.69	46.44	14.75	35.60	3.91	203.9	195.7	-1.76				
879.3437	30.25	Adjacent														
879.5840	28.92	Adjacent														
880.3048	72.17	Carrier														
881.0256	30.19	Freq Adjust	880.5784	31.22	29.49	46.44	16.95	35.60	6.11	200.1	191.9	-1.73				
883.3081	27.64	Verify	883.7481	27.16	25.52	46.44	20.92	35.60	10.08	186.2	194.8	-1.64				

Notes:
1. Positive Margin indicates a pass
2. Correction Factors include all Factors between the recieving antenna and the reciever including the antenna
3. Emissions more than 10 dB below the margin are not selected
4. EUT faces front towards the antenna, 10.6° wrt turntable zero

Figure A2 – Horizontal Compliance Scan Data (Page 2)

Page 1 of 2

Compliance Scan Peaks

Vertical

12/07/2001 13:15

Sanmina
Product Integrity
Laboratory Y2.6

Project Name: DMU 110W RF Frame
Tester: Shayne Allarie
Model: NTFC01AG
Test ID: RE02C-10M-2001-011
Comments: MCPA Transistor change.

Pre-Compliance		Verified Compliance Scan														
Emission Frequency (MHz)	Emission Level (dBuV/m)	Peak Status	Emission Frequency (MHz)	QP Measured Level (dBuV)	QP Emission Level (dBuV/m)	FCC15A Limit (dBuV/m)	FCC15A Margin (dB)	FCC15B Limit (dBuV/m)	FCC15B Margin (dB)	QP Mast Height (cm)	QP Turntable Angle (deg)	Correction Factors (dB/m)				
30.3604	19.53	Verify	30.0711	21.24	13.01	39.08	26.07	29.50	16.49	211.8	170.4	-8.23				
51.9844	21.60	Verify	52.0638	32.03	13.18	39.08	25.90	29.50	16.32	395.4	16.9	-18.85				
168.1535	25.82	Verify	167.9610	44.07	29.34	43.52	14.18	33.10	3.76	98.6	36.7	-14.78				
174.4004	30.88	Verify	174.1960	45.34	30.96	43.52	12.56	33.10	2.14	171.4	7.7	-14.38				
180.6474	37.82	Verify	180.4225	47.60	33.48	43.52	10.04	33.10	-0.38	234.6	6.7	-14.12				
193.1413	27.67	Verify	192.8572	43.33	29.17	43.52	14.35	33.10	3.93	114.2	13.7	-14.16				
860.6029	31.23	Verify	861.0786	28.40	26.80	46.44	19.64	35.60	8.80	101.3	186.8	-1.60				
862.1646	29.70	Adjacent														
862.4049	27.67	Adjacent														
862.7653	32.55	Adjacent														
863.0056	32.80	Verify	862.9748	29.67	28.09	46.44	18.35	35.60	7.51	299.5	229.5	-1.58				
863.6062	27.17	Adjacent														
863.9666	27.71	Adjacent														
864.6874	30.70	Verify	864.5534	25.10	23.61	46.44	22.83	35.60	11.99	145.7	207.6	-1.49				
866.7297	28.32	Adjacent														
867.0901	32.25	Adjacent														
867.8109	37.89	Verify	867.9763	28.53	27.04	46.44	19.40	35.60	8.56	283.5	204.6	-1.49				
868.1713	29.54	Adjacent														
868.5317	33.64	Adjacent														
868.8921	33.23	Freq Adjust	868.6247	23.35	21.92	46.44	24.52	35.60	13.68	100.8	5.9	-1.43				
869.2525	72.95	Carrier														
869.4928	72.59	Carrier														
869.8532	72.12	Carrier														
870.3337	72.16	Carrier														
870.8142	71.68	Carrier														
871.1746	71.30	Carrier														
871.5350	72.12	Carrier														
871.7753	71.47	Carrier														
872.0156	72.08	Carrier														
872.3760	72.96	Carrier														
872.6162	72.80	Carrier														
872.9766	70.84	Carrier														
873.2169	70.38	Carrier														
873.6974	71.22	Carrier														
874.5384	70.79	Carrier														
874.8988	69.20	Carrier														

Notes:
1. Positive Margin indicates a pass
2. Correction Factors include all factors between the recieving antenna and the reciever including the antenna
3. Emissions more than 10 dB below the margin are not selected
4. EUT faces front towards the antenna, 10.6° wrt turntable zero

Figure A3 – Vertical Compliance Scan Data (Page 1)

Page 2 of 2

Compliance Scan Peaks

Vertical

12/07/2001 13:15

Sanmina Product Integrity Laboratory V2.6

Project Name: DMU 110W RF Frame
Model: NTFC01AG
Comments: MCPA Transistor change.
Tester: Shayne Allarie
Test ID: RE02C-10M-2001-011

Pre-Compliance		Verified Compliance Scan														
Emission Frequency (MHz)	Emission Level (dBuV/m)	Peak Status	Emission Frequency (MHz)	QP Measured Level (dBuV)	QP Emission Level (dBuV/m)	FCC15A Limit (dBuV/m)	FCC15A Margin (dB)	FCC15B Limit (dBuV/m)	FCC15B Margin (dB)	QP Mast Height (cm)	QP Turntable Angle (deg)	Correction Factors (dB/m)				
875.1390	69.00	Carrier														
875.7397	70.46	Carrier														
876.2202	69.83	Carrier														
876.5806	70.57	Carrier														
877.3014	70.19	Carrier														
877.6618	34.08	Freq Adjust	877.8700	36.25	35.18	46.44	11.26	35.60	0.42	100.8	197.3	-1.07				
878.1424	34.54	Verify	877.6545	35.08	33.99	46.44	12.45	35.60	1.61	123.9	189.4	-1.09				
878.3826	33.41	Adjacent														
878.7430	31.76	Adjacent														
878.9833	32.31	Adjacent														
879.3437	32.10	Adjacent														
879.5840	31.67	Adjacent														
880.1846	69.98	Carrier														
880.7853	30.51	Freq Adjust	880.7859	32.11	31.25	46.44	15.19	35.60	4.35	101.6	188.0	-0.86				
881.2659	28.56	Adjacent														
881.6263	29.95	Verify	881.2347	30.71	29.81	46.44	16.63	35.60	5.79	140.6	199.9	-0.90				
881.8665	28.09	Adjacent														
882.1068	27.49	Adjacent														
882.4672	30.57	Verify	882.2389	27.18	26.35	46.44	20.09	35.60	9.25	142.2	223.3	-0.83				
883.4283	29.20	Verify	882.8456	26.09	25.33	46.44	21.11	35.60	10.27	215.7	187.2	-0.76				

Notes:
1. Positive Margin indicates a pass
2. Correction factors include all factors between the recieving antenna and the reciever including the antenna
3. Emissions more than 10 dB below the margin are not selected
4. EUT faces front towards the antenna, 10.6° wrt turntable zero

Figure A4 – Vertical Compliance Scan Data (Page 2)

13 Appendix B – Graphical Test Data

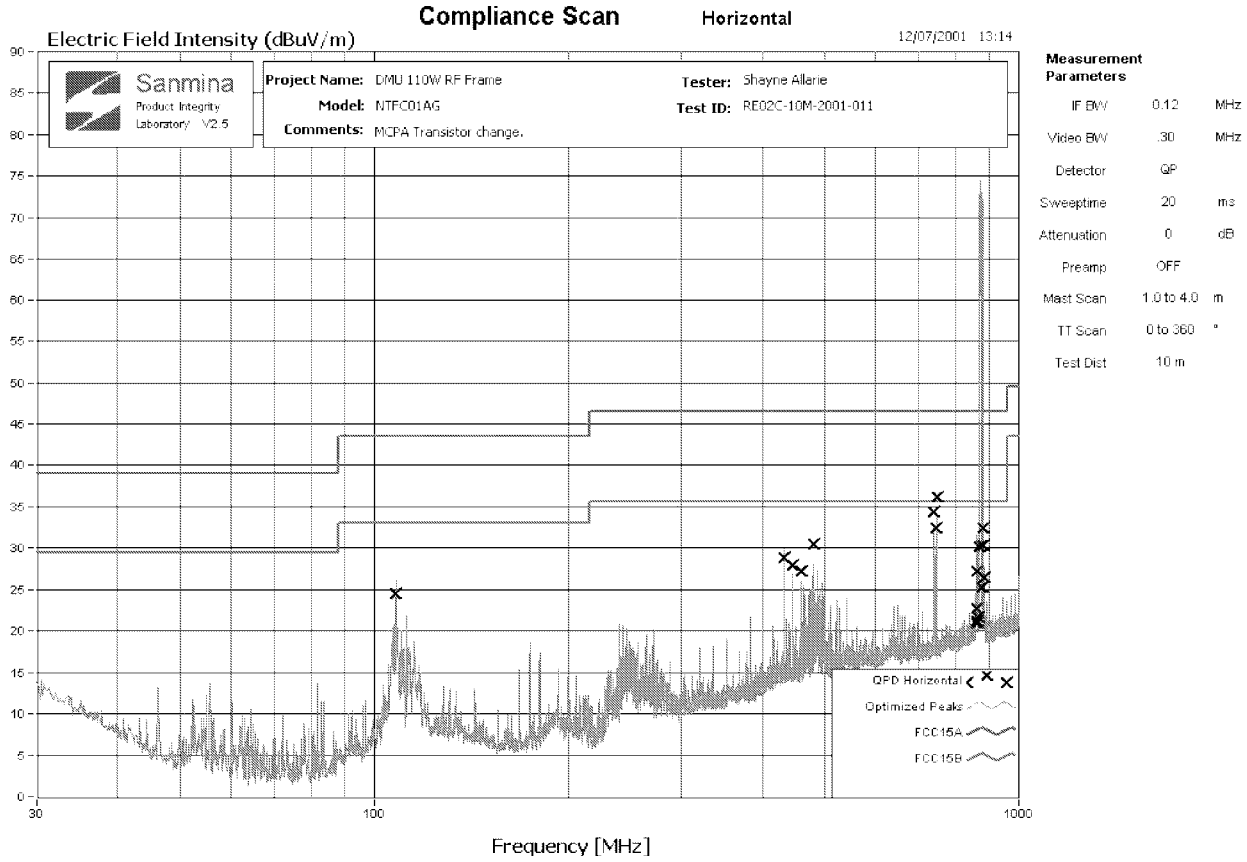


Figure B1 – Radiated Emissions 30 MHz to 1GHz H-Pol

This graph represents compliance scan data for FCC Part 15 at 120 kHz RBW and 300 kHz VBW

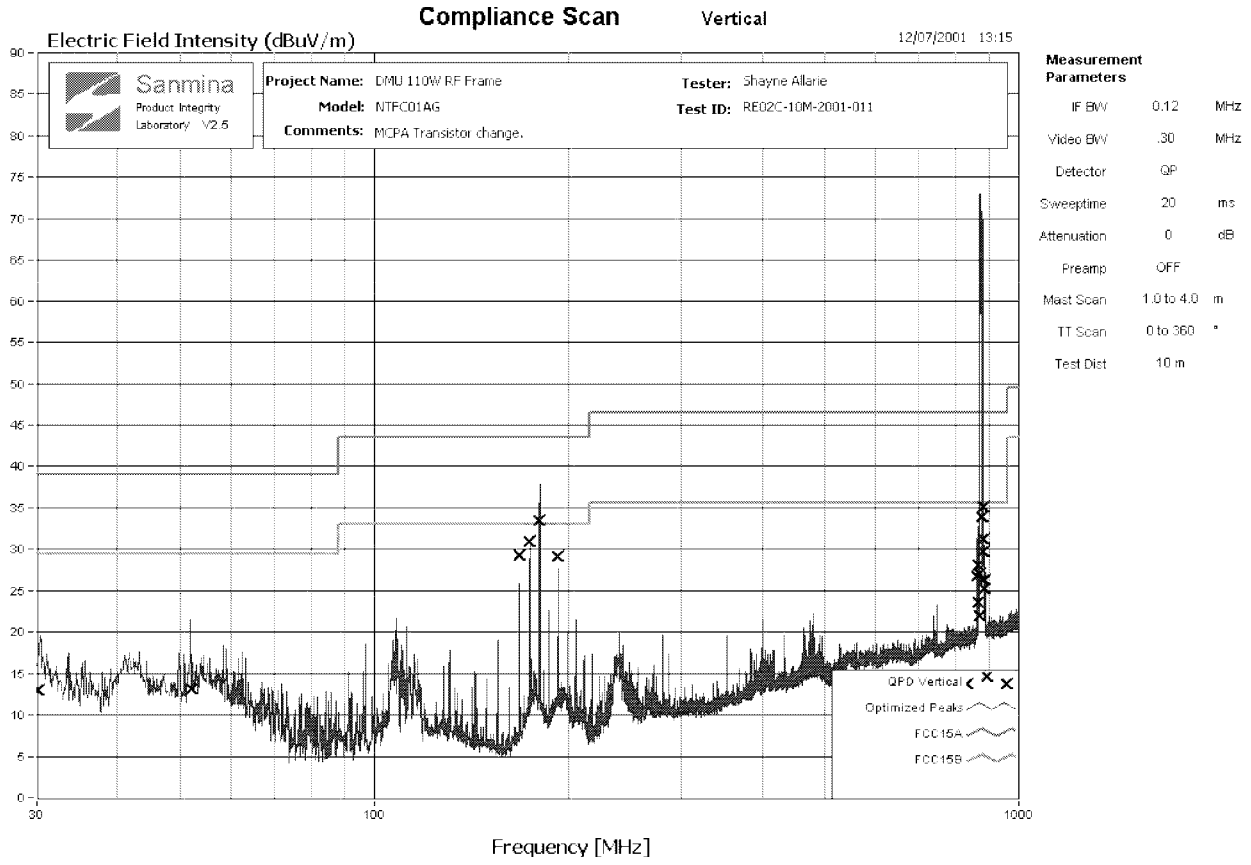


Figure B2 – Radiated Emissions 30 MHz to 1 GHz V-Pol

This graph represents compliance scan data for FCC Part 15 at 120 kHz RBW and 300 kHz VBW

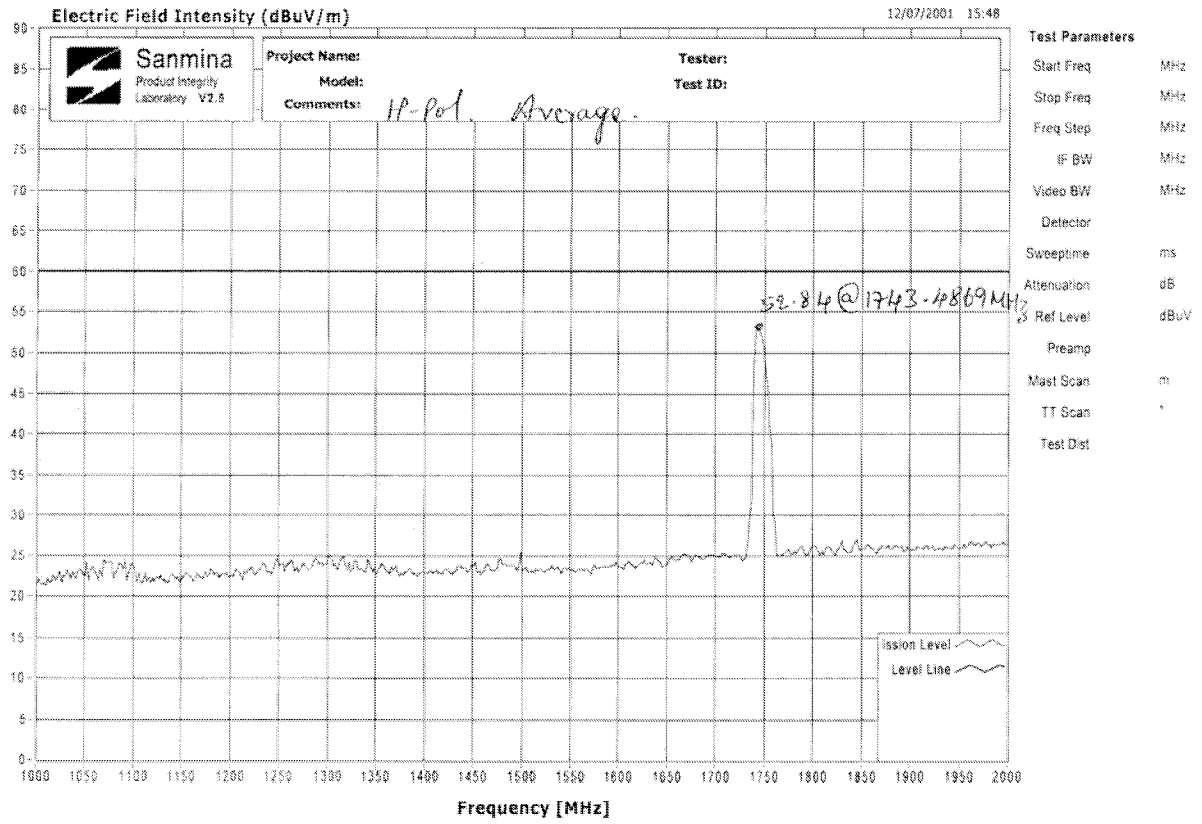


Figure B3 – FCC Part 15 1-2 GHz H-Pol Results

Note: Only obvious peak is at 1743.5 MHz, a harmonic of the fundamental. All other levels are due to the noise floor.

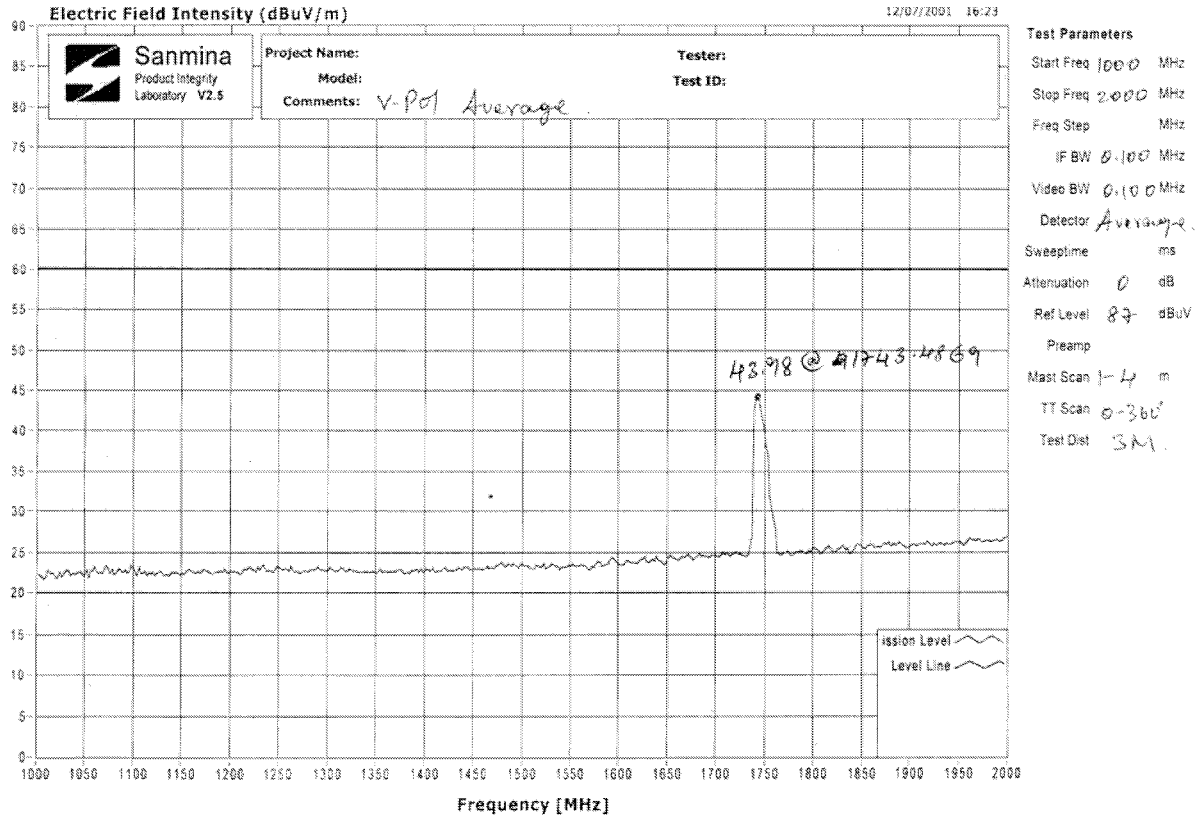


Figure B4 – FCC Part 15 1-2 GHz V-Pol Results

Note: Only obvious peak is at 1743.5 MHz, a harmonic of the fundamental. All other levels are due to the noise floor.

14 Appendix C – Test Setup Photos

Figure C1 – EUT Front View

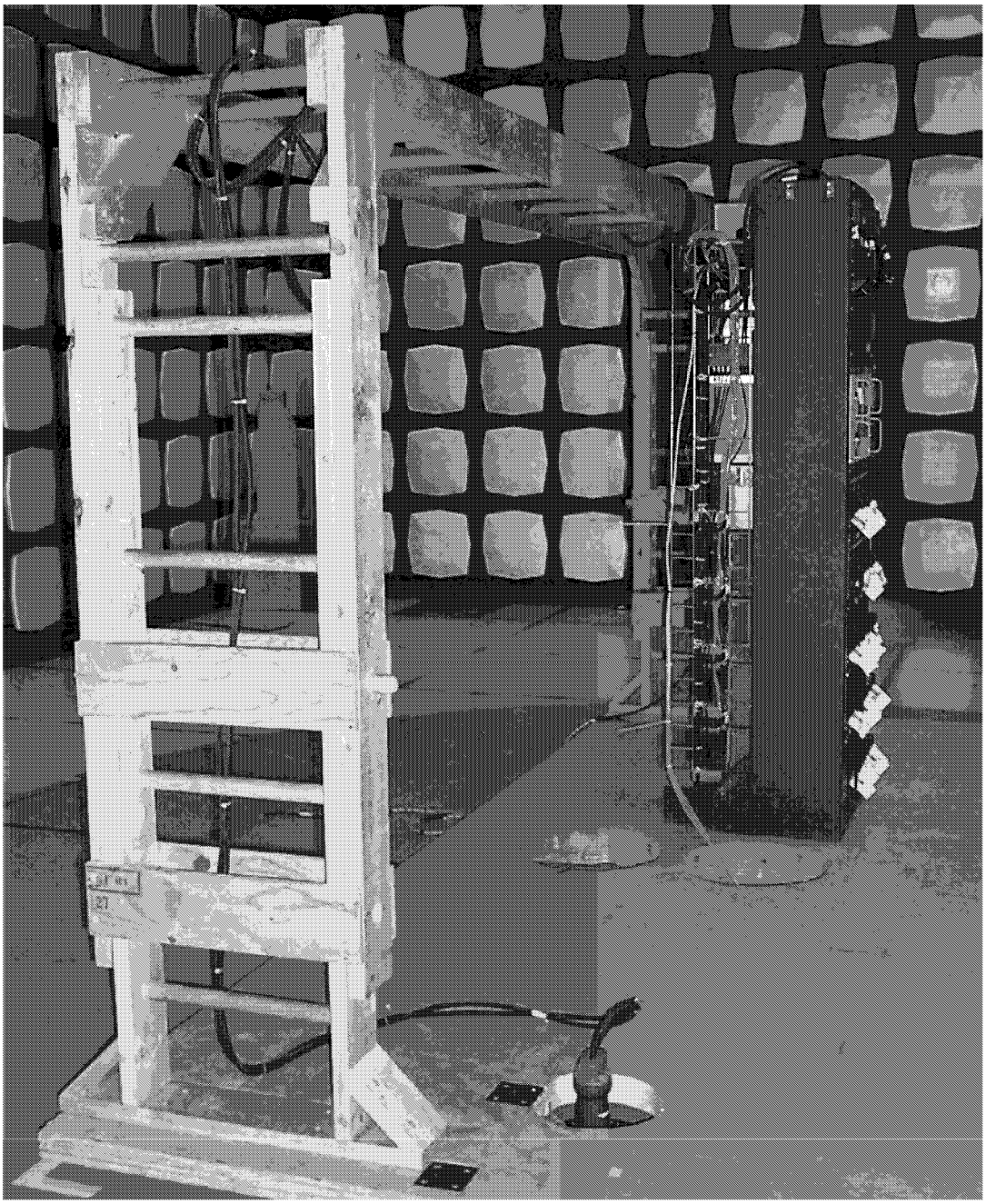


Figure C2 – EUT Left Side View

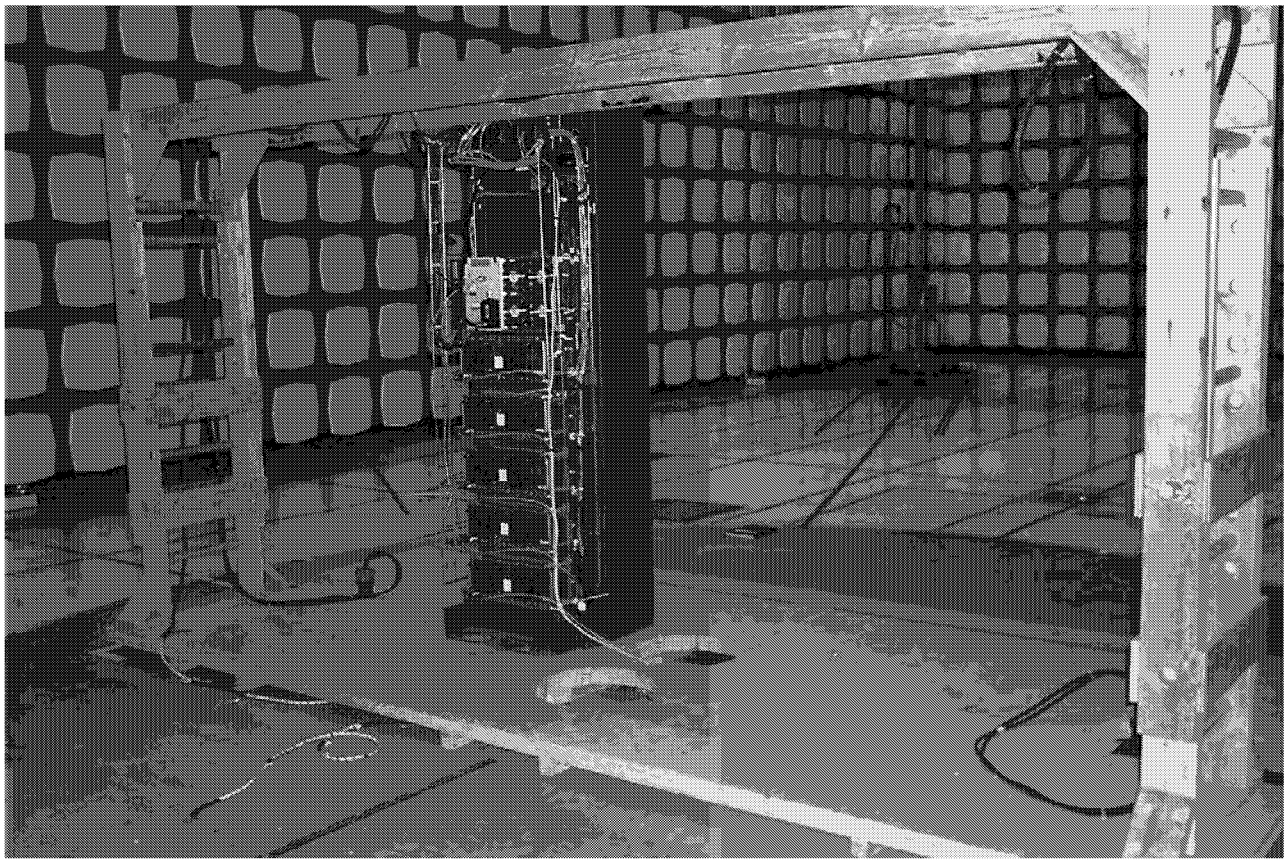


Figure C3 – EUT Rear-Left View