



FCC PART 15 SUB-PART B & C TEST REPORT

On
Field Service Unit Transceiver
[FCC ID: PDVRFLAN]

model
PCA0106

report no.
20020726-01-F15

judgement
Complies

Provided for evaluation by
Metering Technology Corporation
360 El Pueblo Drive
Scotts Valley, CA 95066

evaluated and prepared by
ITC Engineering Services (ITC)
9959 Calaveras Road, Box 543
Sunol, California 94586-0543
Tel: (925) 862-2944
Fax: (925) 862-9013
Email: docs@itcemc.com
Web Site: www.itcemc.com



EN45001 Accredited Compliance Laboratory (RES-GmbH)
Registration number: TTI-P-G 159/98-00 (RES-GmbH)

TABLE OF CONTENTS

TABLE OF CONTENTS	2
PART 1 DOCUMENTATION	5
GENERAL TEST INFORMATION	5
TESTS PERFORMED	5
DECLARATION/DISCLAIMER	6
TEST METHODOLOGY	7
TEST FACILITY	7
ACCURACY OF TEST DATA	7
PART 2 EMISSIONS TESTS	8
OPEN FIELD RADIATED EMISSIONS	8
<i>EUT Configuration</i>	8
<i>Test Equipment</i>	8
<i>Support Equipment</i>	8
<i>Test Procedure</i>	8
<i>Spectrum Analyzer Configuration (During Swept Frequency Scans – Spurious Emissions)</i>	9
<i>Data Table Legend and Field Strength Calculation</i>	9
OPEN FIELD RADIATED EMISSIONS RESULTS	10
<i>Site Used</i>	10
<i>Administrative Details</i>	10
<i>Environmental Conditions</i>	10
<i>Test Results for measurement up to 1 GHz</i>	10
<i>Conclusion</i>	10
<i>Radiated Emissions Test Setup Photographs</i>	11
PART 3 RF MEASUREMENTS	12
EUT CONFIGURATION	12
TEST EQUIPMENT	12
SUPPORT EQUIPMENT FOR ALL TESTS	13
<i>Spectrum Analyzer Configuration (During Swept Frequency Scans – Spurious Emissions)</i>	13
RF MEASUREMENTS RESULTS	14
20dB BANDWIDTH PLOT (TRANSMITTER CONDUCTED)	14
<i>Site Used</i>	14
<i>Administrative Details</i>	14
<i>Test Procedure</i>	14
BANDEDGE MEASUREMENT (TRANSMITTER CONDUCTED) 902MHz (NON-HOPPING)	15
<i>Site Used</i>	15
<i>Administrative Details</i>	15
<i>Test Procedure</i>	15
BANDEDGE MEASUREMENT (TRANSMITTER CONDUCTED) 902MHz (HOPPING)	16
<i>Site Used</i>	16
<i>Administrative Details</i>	16
<i>Test Procedure</i>	16
BANDEDGE MEASUREMENT (TRANSMITTER CONDUCTED) 928MHz (NON-HOPPING)	17
<i>Site Used</i>	17
<i>Administrative Details</i>	17
<i>Test Procedure</i>	17

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcenc.com Web: www.itcenc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFAN

FCC Part 15 Sub-Part B & C

TABLE OF CONTENTS

BANDEDGE MEASUREMENT (TRANSMITTER CONDUCTED) 928MHz (HOPPING)	18
<i>Site Used</i>	18
<i>Administrative Details</i>	18
<i>Test Procedure</i>	18
OCCUPIED BANDWIDTH MEASUREMENT (TRANSMITTER CONDUCTED)	19
<i>Site Used</i>	19
<i>Administrative Details</i>	19
<i>Test Procedure</i>	19
NUMBER OF HOPPING FREQUENCIES PLOT PERFORMED WITH A DIRECT CONNECTION	20
<i>Site Used</i>	20
<i>Administrative Details</i>	20
<i>Test Procedure</i>	20
CARRIER FREQUENCY SEPARATION PLOT (TRANSMITTER CONDUCTED)	21
<i>Site Used</i>	21
<i>Administrative Details</i>	21
<i>Test Procedure</i>	21
DWELL TIME MEASUREMENT PERFORMED (TRANSMITTER CONDUCTED)	22
<i>Site Used</i>	22
<i>Administrative Details</i>	22
<i>Test Procedure</i>	22
HARMONIC & SPURIOUS EMISSIONS (TRANSMITTER CONDUCTED).....	23
<i>Site Used</i>	23
<i>Administrative Details</i>	23
<i>Test Procedure</i>	23
<i>Harmonic & Spurious Emissions (Transmitter Conducted) Test Results</i>	24
<i>Test Details</i>	24
<i>Test Data</i>	24
<i>Conclusion</i>	24
<i>Conclusion</i>	25
<i>Test Details</i>	26
<i>Test Data</i>	26
<i>Conclusion</i>	26
<i>Test Details</i>	27
<i>Test Data</i>	27
<i>Conclusion</i>	27
MAXIMUM PEAK OUTPUT POWER (TRANSMITTER CONDUCTED)	28
<i>Site Used</i>	28
<i>Administrative Details</i>	28
<i>Environmental Conditions</i>	28
<i>Test Procedure</i>	28
MAXIMUM PEAK OUTPUT POWER (TRANSMITTER RADIATED).....	29
<i>Site Used</i>	29
<i>Administrative Details</i>	29
<i>Environmental Conditions</i>	29
<i>Test Equipment for Signal Substitution</i>	29
<i>Test Procedure</i>	29
<i>Maximum Peak Output Power (cont)</i>	30
<i>Maximum Peak Output Power Test Results</i>	30
<i>RF Tests Setup Photographs</i>	31

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFAN

FCC Part 15 Sub-Part B & C

TABLE OF CONTENTS

PART 4:	APPENDICES	32
A.	TEST EQUIPMENT	32
B.	EUT TECHNICAL SPECIFICATION	34
C.	EUT PHOTOGRAPHS	35
D.	MODIFICATION LETTER	36

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

PART 1 DOCUMENTATION

General Test Information

Product Name Model(s)	RF LAN Module PCA0106	
Manufacturer's Name Manufacturer's Address	Metering Technology Corp. 360 El Pueblo Drive Scotts Valley, CA 95066	
Contact	Tel: (831) 438-9999 Mr. Vijay Dhingra	Fax: (831) 440-9988 vdhingra@metertech.com
Test Laboratory	ITC Engineering Services (ITC) 9959 Calaveras Road, PO Box 543 Sunol, CA 94586-0543 Web Site: http://www.itcemc.com	Tel: (925) 862-2944 Fax: (925) 862-9013 Email: docs@itcemc.com
Test and Report Numbers	20020726-01	20020726-01-F15
Test and Issue Date	July 30 thru October 2, 2002	October 10, 2002
Project Engineer(s)	Lan Vu & Sandra Sohn	
EMC Manager & Documentation:	Bandeled Adepoju	Emmanuel Akene
Test Results	☒ Pass	☐ Fail
Total Number of Pages	36	

According to testing performed at ITC Engineering Services (ITC) as an independent testing laboratory; the above-mentioned unit is in compliance with the emissions requirements defined in the FCC rules, 47CFR Part 15, Subparts B and C. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

Tests Performed

Emissions Requirements:

- OPEN FIELD RADIATED EMISSIONS in accordance with the FCC PART 15 Sub-Part B.

RF Requirements:

- OCCUPIED BANDWIDTH Test in accordance with the FCC 47 CFR 15.247(b)(2)
- 20DB BANDWIDTH Measurement in accordance with the FCC 47 CFR 15.247(a)(1)(i)
- BANDEDGE Measurement in accordance with the FCC 47 CFR 15.247(c)
- NUMBER OF HOPPING FREQUENCIES in accordance with the FCC 47 CFR 15.247(a)(1)
- CARRIER FREQUENCY SEPARATION in accordance with the FCC 47 CFR 15.247(a)(1)
- DWELL TIME Measurement in accordance with the FCC 47 CFR 15.247(a)(1)(i)
- HARMONIC & SPURIOUS EMISSIONS (TRANSMITTER CONDUCTED) Measurement in accordance with the FCC 47 CFR 2.1051 and 47 CFR 15.247(c)
- MAXIMUM PEAK OUTPUT POWER Measurement in accordance with the FCC 47CFR 2.1046 and 47 CFR 15.247(b)2

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Declaration/Disclaimer

ITC Engineering Services (ITC) reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. ITC Engineering Services (ITC) shall have no liability for any deductions, inferences or generalizations drawn by the client or others from ITC Engineering Services (ITC) issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full with our written approval. The applicant/manufacturer shall not use this report to claim product endorsement by NVLAP or any US Government agency.

ITC Engineering Services is:

Accepted by the Federal Communications Commission (FCC) for FCC Methods, CISPR Methods and AUSTEL Technical Standards (Ref: NVLAP Lab Code 200172-0)

Approved by the Industry Canada for Telecom Testing

Certified by RES GmbH for EMC Testing according to the European EMC Directive 89/336/EEC per EN45001

Certified by Reg. TP for EMC Testing according to the European EMC Directive 89/336/EEC per EN45001 for RES GmbH (DAR-Registration number: TTI-P-G 159/98-00)

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Test Methodology

The electromagnetic interference tests, which this report describes, were performed by an independent electromagnetic compatibility consultant, ITC Engineering Services, in accordance with the FCC test procedure ANSI C63.4-1992 and EIA 603.

Test Facility

The open area test site, the conducted measurement facility, and the test equipment used to collect the emissions data is located in Sunol, California, and is fully described in site attenuation report. The approved site attenuation description is on file at the Federal Communications Commission.

Accuracy of Test Data

The test results contained in this report accurately represent Open Field Radiated Emissions, Occupied Bandwidth, RF Power Output, Spurious and Harmonic tests generated by the sample equipment under test.

Equipment Tested	RF-LAN Module
FCC ID	PCA0106
Date of Test	July 30 thru October 2, 2002

The results show that the sample equipment tested as described in this report is in compliance with the Open Field Radiated Emissions requirements of FCC Rules Part 15, Sub-Part B; the Occupied Bandwidth, Harmonics and Spurious Emissions, Maximum Peak Output Power tests requirement limits of FCC 47CFR Part 15.247.

DOCUMENTATION BY:



Emmanuel Akene
DOCUMENTATION DEPARTMENT

REVIEWED AND APPROVED BY:



Bandele Adepoju
ENGINEERING MANAGER

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543
Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

PART 2 EMISSIONS TESTS

OPEN FIELD RADIATED EMISSIONS

Test Specification: FCC 47 CFR PART 15, Sub-Part B

Test Method: ANSI C63.4-1992

EUT Configuration

Pre-scan measurements are first performed by collecting data with a spectrum analyzer. Significant peaks are marked and then quasi-peaked. Measurement range investigated was from 30 MHz to 1 GHz. The EUT was set up in accordance with the suggested configuration given in FCC Measurement Procedure ANSI C63.4-1992. The measurement instrumentation used was a receiver with bandwidth parameters as stipulated in ANSI C63.4-1992. The RF-LAN Module was inserted into an evaluation board that was connected to a personal computer system and set up on a wooden non-conductive tabletop, 80 cm above the ground reference plane, in an open field. Excess cords were left hanging from the edge of the table.

Test Equipment

Equipment Description	Manufacturer	Model Name	Serial Number
Spectrum Analyzer	Hewlett-Packard	8566B	2618A02909
Spectrum Analyzer Display	Hewlett-Packard	85662A	2848A17028
Quasi Peak Adapter	Hewlett-Packard	85650	2521A00871
Preselector	Hewlett-Packard	85685A	2620A00265
Antenna Cable (OPTK45)	RG8/u	-	-
Biconical Antenna	EMCO	3104	3549
L. P. Ant. (200-1000 MHz)	EMCO	3146	2075

Equipment calibration data is listed in Appendix A at the end of this report.

Support Equipment

Description	Manufacturer	Model No.	Serial No.
Computer	Compaq	Presario 163881-004	1x01DCTXE1XJ
Monitor	Samtron	SC-528UXL	X9550021 903
Keyboard	HP	SK-2506	C0007264336
Mouse	Logitech	CA-93-6MD	LU098903438
AC Adapter (Host)	Condor	D9500	
MTC Test board			

Test Procedure

The EUT was set up as described above, with the RF-LAN Module was running in a continuous mode. The RF-LAN Module was rotated 360 degrees azimuth and the search antenna height varied 1 to 4m in order to maximize the emissions from the EUT. The highest emissions were also analyzed in detail by operating the spectrum analyzer in fixed tuned mode to determine the precise amplitude of the emissions. While doing so, interconnecting cables were moved around to maximize the emissions.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Spectrum Analyzer Configuration (During Swept Frequency Scans – Spurious Emissions)

IF Bandwidth 120 kHz
 Measurements below 1000 MHz (unless stated otherwise)
 Analyzer Mode (for Peak Measurements)..... Peak
 Resolution Bandwidth..... 100 kHz
 Video Bandwidth..... 100 kHz
 Quasi-Peak Adapter Mode Disabled
 Analyzer Mode (for Quasi-Peak Measurements)..... Ouasi-Peak/Linear
 Quasi-Peak Adapter Mode Normal
 Quasi-Peak Adapter Bandwidth 1000 kHz
 Measurements above 1000 MHz (unless stated otherwise)
 Quasi-Peak Adapter Mode Disabled
 Analyzer Mode (for Peak Measurements)..... Peak
 Resolution Bandwidth..... 1000 kHz
 Video Bandwidth..... 1000 kHz
 Analyzer Mode (for Average Measurements) Video Filter/Linear
 Resolution Bandwidth..... 1000 kHz
 Video Bandwidth..... 10 Hz
 Offset 0dB

Data Table Legend and Field Strength Calculation

1) Detector mode: Peak (P) or Quasi-Peak (QP) or Average (A)

2) Turntable - Antenna - Polarity (Turntable - Ant - Pol):

	Polarization	Antenna	Freq Range (MHz)
VB	Vertical	EMCO 3104/sn 3549 Biconical	30 – 200
HB	Horizontal	EMCO 3104/sn 3549 Biconical	30 – 200
VL	Vertical	EMCO 3146/sn. 2075 Log Periodic	200 – 1000
HL	Horizontal	EMCO 3146/sn. 2075 Log Periodic	200 – 1000
VH	Vertical	Eaton 96001/sn. 2632 Horn	Above 1000
HH	Horizontal	Eaton 96001/sn. 2632 Horn	Above 1000

The margin is calculated as follows:

Margin = Corrected Amplitude - Limit; where Corrected Amplitude = Amplitude + Cable Loss + Antenna Factor, the amplitude measured in a quasi peak mode.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
 9959 Calaveras Road, PO Box 543
 Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
 Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
 Model PCA0106
 FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

OPEN FIELD RADIATED EMISSIONS RESULTS

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
☒ Site 1 - 10m Open Field Radiated Site
☐ Semi-Anechoic Absorber Lined Shielded Room

Administrative Details

Test Date:	July 30, 2002
Test Engineer:	Lan Vu

Environmental Conditions

Temperature	22.8°C
Humidity	53%

Test Results for measurement up to 1 GHz

The table below shows a summary of the highest amplitudes of the radiated emissions from the equipment under test at various antenna heights, antenna polarization, and EUT orientations.

INDICATED		CORRECTION		CORR	TURNTABLE ANT			CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	DET
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db	MODE
33.22	8.8	8.9	1.2	18.9	90	1.0	VB	-	-	30.0	-11.1	P
48.03	10.1	7.7	1.6	19.4	90	1.0	VB	-	-	30.0	-10.6	P
83.27	8.5	3.7	2.3	14.5	90	1.0	HB	-	-	30.0	-15.5	P
121.72	7.4	11.7	2.7	21.8	0	1.0	VB	-	-	33.0	-11.2	P
147.25	9.3	10.2	2.8	22.3	180	1.0	VB	-	-	33.0	-10.7	P
211.34	9.0	9.4	3.7	22.1	90	1.0	VL	-	-	33.0	-10.9	P
270.05	6.3	11.9	4.7	22.9	0	1.0	VL	-	-	36.0	-13.1	P
282.05	7.2	12.3	5.0	24.5	0	1.0	VL	-	-	36.0	-11.5	P
294.05	5.4	13.1	5.2	23.8	90	1.0	HL	-	-	36.0	-12.2	P
306.03	5.5	13.3	5.3	24.1	90	1.0	VL	-	-	36.0	-11.9	P
318.05	3.7	12.7	5.4	21.8	90	1.0	HL	-	-	36.0	-14.2	P
407.45	6.6	13.0	6.4	26.0	90	1.0	HL	-	-	36.0	-10.0	P
451.33	5.7	13.5	7.3	26.5	180	1.0	VL	-	-	36.0	-9.5	P
490.94	6.3	14.4	7.8	28.4	90	1.0	VL	-	-	36.0	-7.6	P
500.89	4.5	14.5	7.9	26.9	90	1.0	VL	-	-	36.0	-9.1	P
507.27	9.6	14.5	8.0	32.1	0	1.0	HL	-	-	36.0	-3.9	P
627.29	6.5	15.9	8.7	31.1	0	1.0	VL	-	-	36.0	-4.9	P
902.16	0.1	21.3	9.9	31.1	90	1.0	VL	-	-	36.0	-4.9	P
902.16	0.9	21.3	9.9	32.1	90	1.0	HL	-	-	36.0	-3.9	P

No emission of significant level was observed above 30 MHz thru 1GHz.

Conclusion

The RF-LAN Module meets the requirements of the test reference for Open Field Radiated Emissions.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
 9959 Calaveras Road, PO Box 543
 Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
 Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
 Model PCA0106
 FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Radiated Emissions Test Setup Photographs

Radiated Emissions Photographs Attached

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

PART 3 RF MEASUREMENTS

EUT Configuration

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10°C to 40°C (50°F to 104°F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

Measurement Guide(s): EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996
FCC Public Notice DA 00-705

Test Equipment

Test Equipment	Manufacturer	Model Number	Serial Number
Preamplifier	Hewlett-Packard	8449B	3008A00101
Half-wave Dipole Antenna	EMCO	3121C-DB4	
RF Power Amplifier	Amplifier Research	5S1G4	18220
Signal Generator	Hewlett Packard	8673C	2918A00649
Quasi Peak Adapter	Hewlett-Packard	85650A	2521A00737
Spectrum Analyzer	Hewlett-Packard	8566B	2618A02909
Spectrum Analyzer Display	Hewlett-Packard		
Amplifier	Hewlett-Packard	8449B	3008A00101
Signal Generator	Hewlett-Packard	8656B	2623A04271
Spectrum Analyzer	Hewlett-Packard	8591A	3149A2541
Attenuator	Hewlett-Packard	8496A	48169

Equipment calibration data is listed in Appendix A at the end of this report.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543
Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcenc.com Web: www.itcenc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Support Equipment for all tests

Description	Manufacturer	Model No.	Serial No.
Computer	Compaq	Presario 163881-004	1x01DCTXE1XJ
Monitor	Samtron	SC-528UXL	X9550021 903
Keyboard	HP	SK-2506	C0007264336
Mouse	Logitech	CA-93-6MD	LU098903438
AC Adapter (Host)	Condor	D9500	
MTC Test board			

Spectrum Analyzer Configuration (During Swept Frequency Scans – Spurious Emissions)

Measurements 9 kHz to 30MHz (unless stated otherwise)

Analyzer Mode (for Peak Measurements)..... Peak
 Sweep Speed Manual
 IF Bandwidth 9 kHz
 Resolution Bandwidth 10 kHz
 Video Bandwidth 10 kHz
 Quasi Peak Adapter Mode Disabled
 Average/Quasi Peak Adapter Bandwidth 9 kHz
 Attenuation 0 dB
 Analyzer Mode (for Quasi-Peak Measurements) Quasi-Peak/Linear
 Resolution Bandwidth 100 kHz
 Video Bandwidth 100 kHz
 Quasi Peak Adapter Mode Normal

Measurements 30MHz to 1000 MHz (unless stated otherwise)

IF Bandwidth 120 kHz
 Analyzer Mode (for Peak Measurements)..... Peak
 Resolution Bandwidth 100 kHz
 Video Bandwidth 100 kHz
 Quasi-Peak Adapter Mode Disabled
 Analyzer Mode (for Quasi-Peak Measurements) Quasi-Peak/Linear
 Quasi-Peak Adapter Mode Normal
 Quasi-Peak Adapter Bandwidth 1000 kHz

Measurements above 1000 MHz (unless stated otherwise)

Quasi-Peak Adapter Mode Disabled
 Analyzer Mode (for Peak Measurements)..... Peak
 Resolution Bandwidth 1000 kHz
 Video Bandwidth 1000 kHz
 Analyzer Mode (for Average Measurements) Video Filter/Linear
 Resolution Bandwidth 1000 kHz
 Video Bandwidth 10 Hz
 Offset 0dB

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
 9959 Calaveras Road, PO Box 543
 Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
 Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
 Model PCA0106
 FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

RF MEASUREMENTS RESULTS

20dB Bandwidth plot (Transmitter Conducted)

Test Specification: FCC 47 CFR PART 15.247(a)(1)(i)

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☒ Semi-Anechoic Absorber Lined Shielded Room
- ☐ EMC Test Lab 1

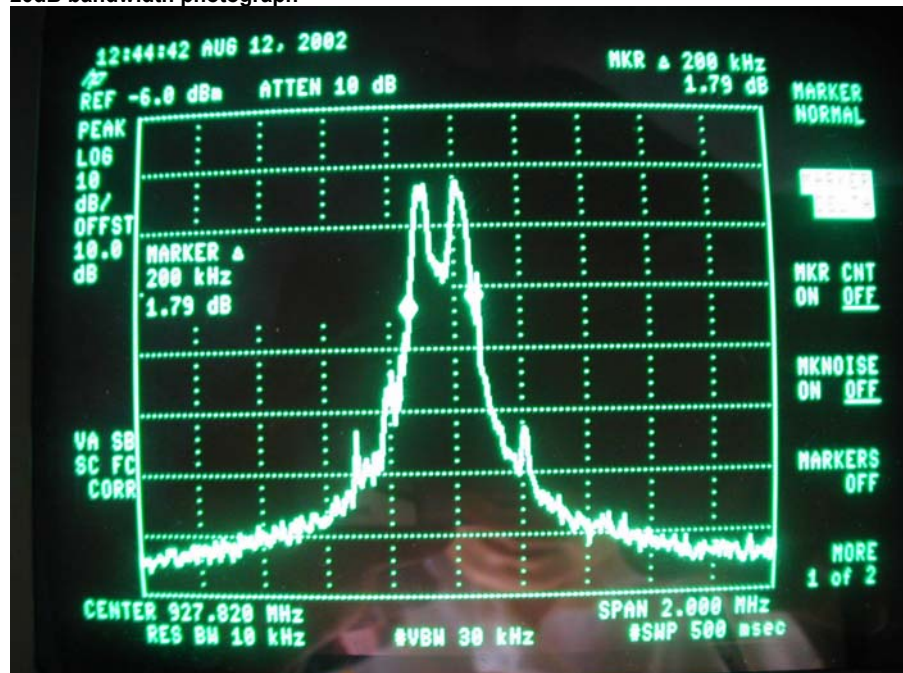
Administrative Details

Test Date:	October 2, 2002
Test Engineer:	Sandra Sohn
Temperature	20°C
Humidity	21%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system. The EUT was placed on the wooden table 80cm high and the measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate. Signals at various modes of operation were measured with a Spectrum Analyzer, using the 50 ohm 1m cable. The 20dB Bandwidth was measured with the Spectrum Analyzer controls set as shown in the test results and the worst of these measurements is displayed below.

20dB bandwidth photograph



Center frequency: 927.820 MHz

20dB bandwidth: 200 kHz

The maximum 20dB bandwidth of the hopping channel is under 500 KHz. (per section 15.247)

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services

RF-LAN MODULE

9959 Calaveras Road, PO Box 543

Model PCA0106

Sunol, California 94586-0543

FCC ID: PDVRFLAN

Tel: (925) 862-2944

Fax: (925) 862-9013

Email: docs@itcemc.com

Web: www.itcemc.com

FCC Part 15 Sub-Part B & C

BandEdge Measurement (Transmitter Conducted) 902MHz (Non-Hopping)

Test Specification: FCC 47 CFR PART 15.247(c)

Test Guide: FCC Public Notice DA 00-705

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

Administrative Details

Test Date:	August 13, 2002
Test Engineer:	Sandra Sohn
Temperature	17.3°C
Humidity	82%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system and placed on the wooden table 80cm high. The measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate in non-pulsed mode. Signal was monitored with a Spectrum Analyzer, using the 50 ohm 1m cable. The Band-Edge was measured with the Spectrum Analyzer controls set as shown in the test results.

Bandedge Photograph (902MHz Non-Pulsed)



Lower Frequency Peak Marker: 902.5572 MHz

Highlighted Marker: 902 MHz

The bandedge is at least 20dB below peak at 902MHz as required per section 15.247.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services

RF-LAN MODULE

9959 Calaveras Road, PO Box 543

Model PCA0106

Sunol, California 94586-0543

FCC ID: PDVRFAN

Tel: (925) 862-2944 Fax: (925) 862-9013

Email: docs@itcmc.com Web: www.itcmc.com

FCC Part 15 Sub-Part B & C

BandEdge Measurement (Transmitter Conducted) 902MHz (Hopping)

Test Specification: FCC 47 CFR PART 15.247(c)

Test Guide: FCC Public Notice DA 00-705

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

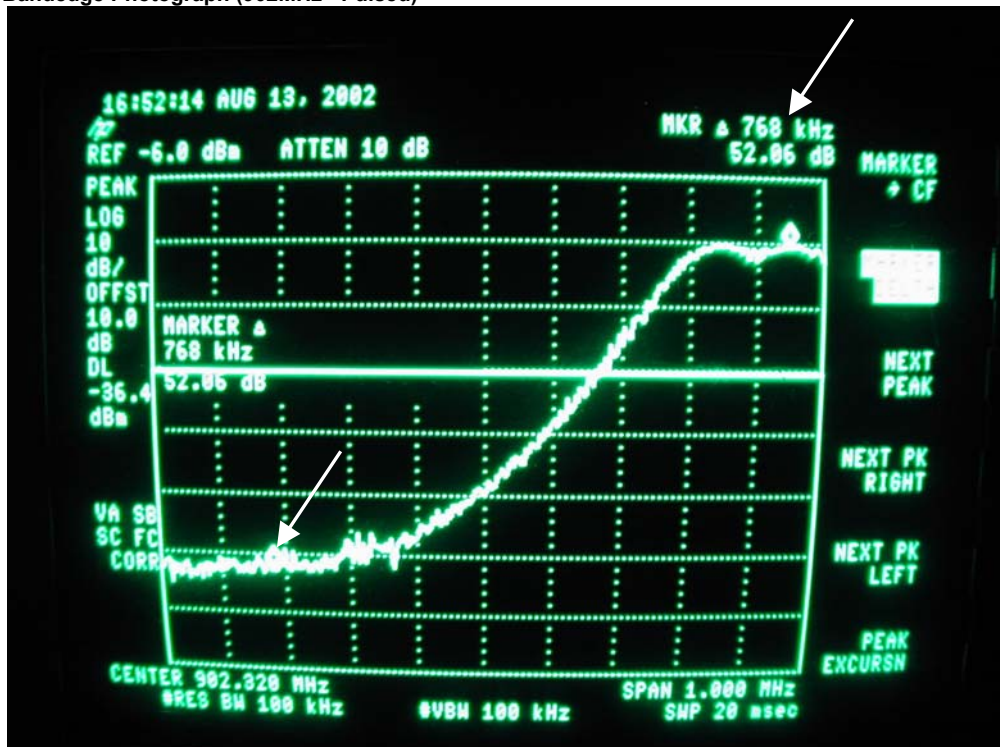
Administrative Details

Test Date:	October 12, 2002
Test Engineer:	Sandra Sohn
Temperature	22.2°C
Humidity	64%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system and placed on the wooden table 80cm high. The measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate in pulsed mode. Signal was monitored with a Spectrum Analyzer, using the 50 ohm 1m cable. The Band-Edge was measured with the Spectrum Analyzer controls set as shown in the test results.

Bandedge Photograph (902MHz - Pulsed)



Lower Frequency: 902.5572 MHz

Highlighted Marker: 902 MHz

The bandedge is at least 20dB below peak at 902MHz as required per section 15.247.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services

9959 Calaveras Road, PO Box 543

Sunol, California 94586-0543

Tel: (925) 862-2944

Fax: (925) 862-9013

Email: docs@itcmc.com

Web: www.itcmc.com

RF-LAN MODULE

Model PCA0106

FCC ID: PDVRF LAN

FCC Part 15 Sub-Part B & C

BandEdge Measurement (Transmitter Conducted) 928MHz (Non-Hopping)

Test Specification: FCC 47 CFR PART 15.247(c)

Test Guide: FCC Public Notice DA 00-705

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

Administrative Details

Test Date:	October 13, 2002
Test Engineer:	Sandra Sohn
Temperature	17.3°C
Humidity	82%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system and placed on the wooden table 80cm high. The measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate in hopping mode. Signal was monitored with a Spectrum Analyzer, using the 50 ohm 1m cable. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown in the test results.

Bandedge Photograph (928MHz Non-Pulsed)



Upper Frequency: 927.1639 MHz

Highlighted Marker: 928 MHz

The bandedge is at least 20dB below peak at 928MHz as required per section 15.247.

Applicant: Metering Technology Corporation

Report No.: 20020726-01-F15

Prepared By: ITC Engineering Services

RF-LAN MODULE

9959 Calaveras Road, PO Box 543

Model PCA0106

Sunol, California 94586-0543

FCC ID: PDVRFLLAN

Tel: (925) 862-2944

Fax: (925) 862-9013

Email: docs@itcmc.com

Web: www.itcmc.com

FCC Part 15 Sub-Part B & C

BandEdge Measurement (Transmitter Conducted) 928MHz (Hopping)

Test Specification: FCC 47 CFR PART 15.247(c)

Test Guide: FCC Public Notice DA 00-705

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

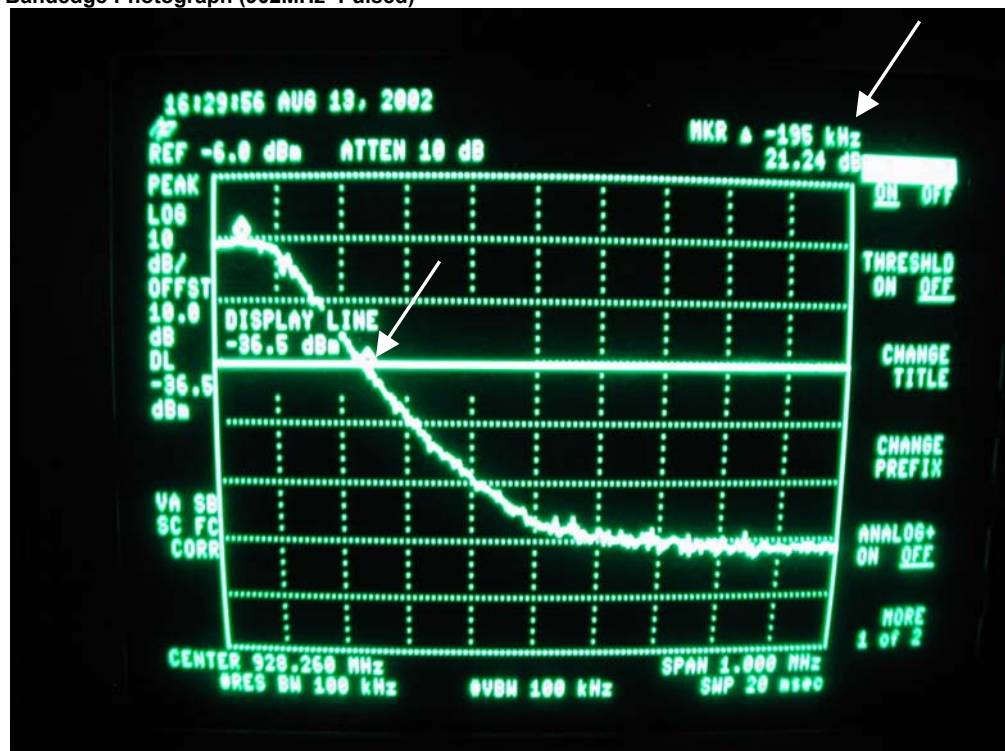
Administrative Details

Test Date:	October 13, 2002
Test Engineer:	Sandra Sohn
Temperature	17.0°C
Humidity	82%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system and placed on the wooden table 80cm high. The measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate in hopping mode. Signal was monitored with a Spectrum Analyzer, using the 50 ohm 1m cable. The Band-Edge was measured with the Spectrum Analyzer controls set as shown in the test results.

Bandedge Photograph (902MHz- Pulsed)



Upper Frequency: 927.1639 MHz

Highlighted Marker: 928 MHz

The bandedge is at least 20dB below peak at 928MHz as required per section 15.247.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services

RF-LAN MODULE

9959 Calaveras Road, PO Box 543

Model PCA0106

Sunol, California 94586-0543

FCC ID: PDVRFLAN

Tel: (925) 862-2944 Fax: (925) 862-9013

Email: docs@itcmc.com Web: www.itcmc.com

FCC Part 15 Sub-Part B & C

Occupied Bandwidth Measurement (Transmitter Conducted)

Test Specification: FCC 47 CFR PART 2.1049
FCC 47 CFR PART 15.247(b)(2)

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

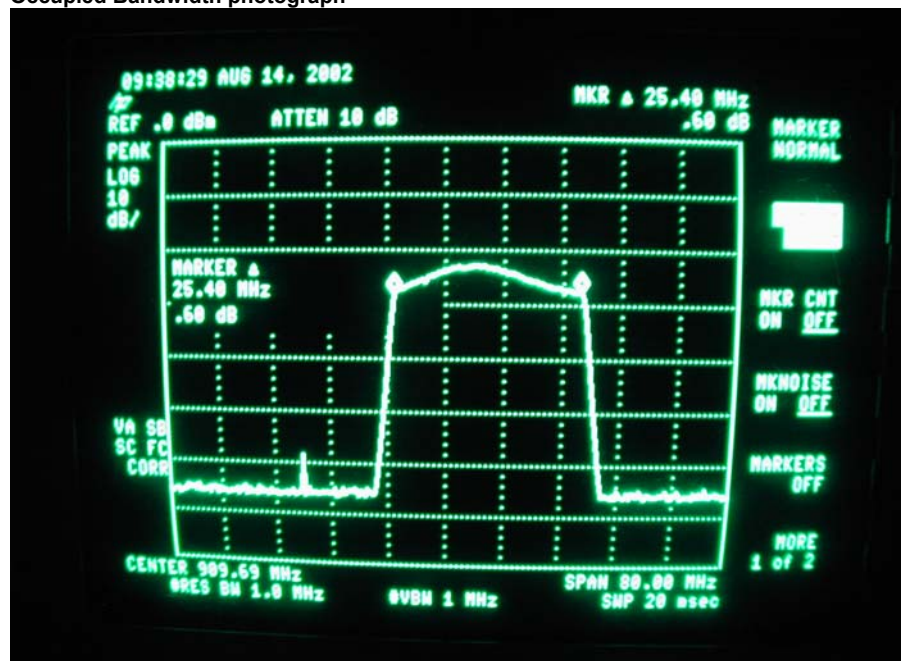
Administrative Details

Test Date:	October 2, 2002
Test Engineer:	Sandra Sohn
Temperature	20°C
Humidity	21%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system and placed on the wooden table 80cm high. The measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate in hopping mode. Signal was monitored with a Spectrum Analyzer, using the 50 ohm 1m cable. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown in the test results.

Occupied Bandwidth photograph



Center frequency: 909.69 MHz
Occupied bandwidth: 25.40 MHz
Lower edge: 902.5572 MHz
Upper edge: 927.1639 MHz

The occupied bandwidth is within 902 MHz and 928 MHz as required per section 15.247.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543
Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Number of Hopping Frequencies plot performed with a direct connection

Test Specification: FCC 47 CFR PART 15.247(a)(1)

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

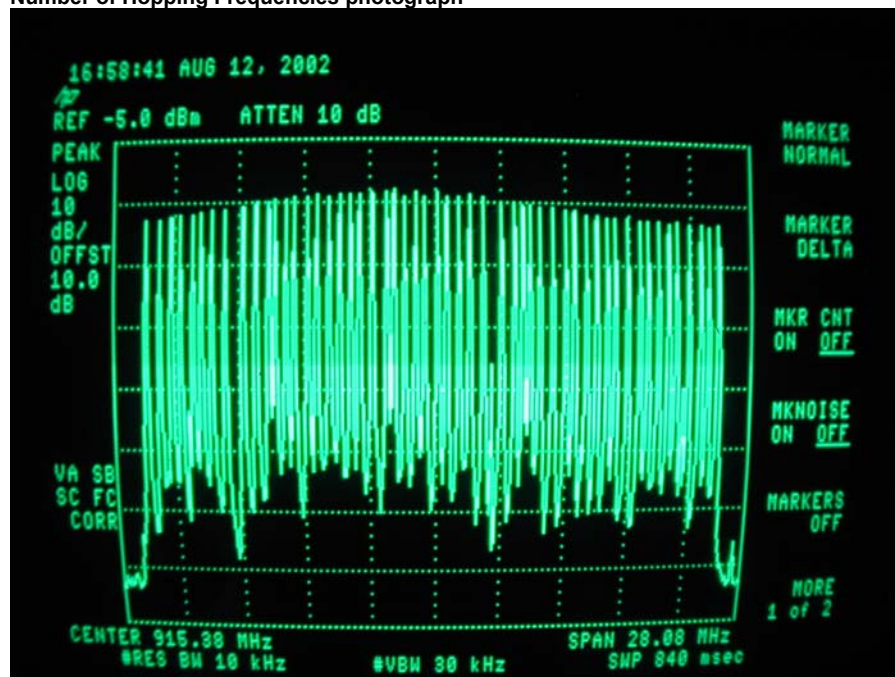
Administrative Details

Test Date:	October 2, 2002
Test Engineer:	Sandra Sohn
Temperature	20°C
Humidity	21%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer and placed on the wooden table. The measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate in hopping mode. A span greater than transmitter bandwidth was set on the Spectrum Analyzer and the span was broken into sections with the max-hold function in order to clearly see all of the hopping frequencies. The number of hopping frequencies was measured with the Spectrum Analyzer controls set as shown in the test results.

Number of Hopping Frequencies photograph



Center frequency: 915.38 MHz

Number of hopping frequencies: 55

The number of hopping frequencies exceeded 50 hopping frequencies as required per section 15.247.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services

RF-LAN MODULE

9959 Calaveras Road, PO Box 543

Model PCA0106

Sunol, California 94586-0543

FCC ID: PDVRFAN

Tel: (925) 862-2944

Fax: (925) 862-9013

Email: docs@itcmc.com

Web: www.itcmc.com

FCC Part 15 Sub-Part B & C

Carrier Frequency Separation plot (Transmitter Conducted)

Test Specification: FCC 47 CFR PART 15.247(a)(1)

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

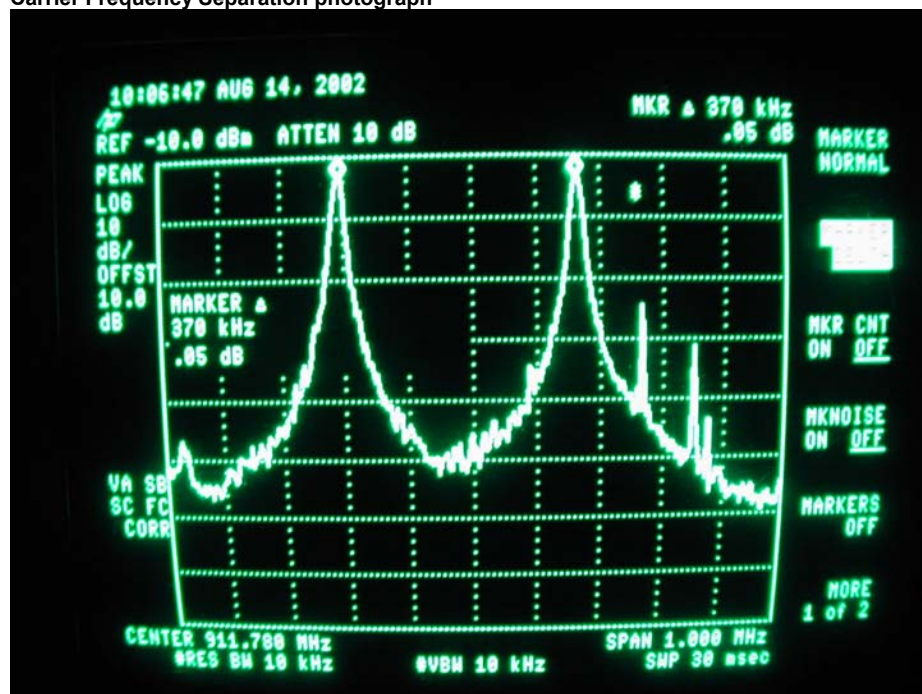
Administrative Details

Test Date:	October 2, 2002
Test Engineer:	Sandra Sohn
Temperature	20°C
Humidity	21%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system and placed on the wooden table 80cm high. The measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate in hopping mode. A span greater than transmitter bandwidth was set on the Spectrum Analyzer and span was broken into sections with the max-hold function in order to clearly see all of the hopping frequencies. The closest two adjacent frequencies were selected for testing. Signal was monitored with a Spectrum Analyzer, using the 50 ohm 1m cable. The frequency separation of the channels was measured with the Spectrum Analyzer controls set as shown in the test results.

Carrier Frequency Separation photograph



Center frequency: 911.780 MHz

Carrier Frequency Separation: 370 kHz

The minimum carrier frequency separation exceeded 20 dB bandwidth as required per section 15.247.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services

RF-LAN MODULE

9959 Calaveras Road, PO Box 543

Model PCA0106

Sunol, California 94586-0543

FCC ID: PDVRFLLAN

Tel: (925) 862-2944

Fax: (925) 862-9013

Email: docs@itcemc.com

Web: www.itcemc.com

FCC Part 15 Sub-Part B & C

Dwell time Measurement Performed (Transmitter Conducted)

Test Specification: FCC PART 15 SECTION 47 CFR 15.247(a)(1)(i)

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

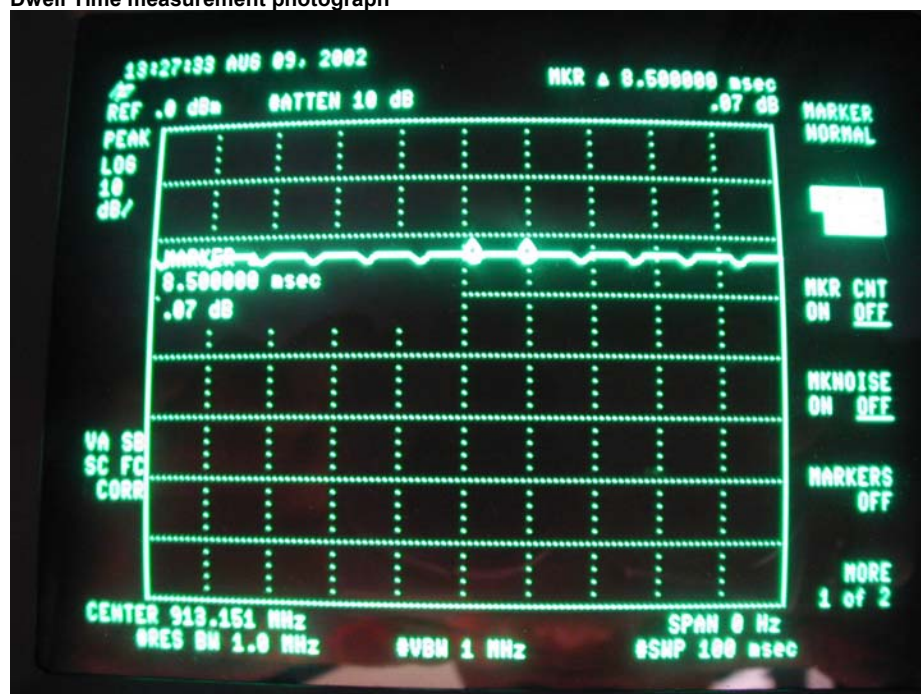
Administrative Details

Test Date:	October 2, 2002
Test Engineer:	Sandra Sohn
Temperature	20°C
Humidity	21%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system and placed on the wooden table 80cm high. The measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was transmitting continuously at its maximum data rate in hopping mode. Signals at various modes of operation were measured with a Spectrum Analyzer, using the 50 ohm 1m cable. The dwell time was measured with the Spectrum Analyzer controls set as shown in the test results and the worst of these measurements is displayed below.

Dwell Time measurement photograph



Center frequency: 913.151 MHz
Dwell Time: 8.5000 mSec

The dwell time did not exceed 20ms as required per section 15.247.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543
Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Harmonic & Spurious Emissions (Transmitter Conducted)

Test Specification: FCC PART 2 SECTION 47 CFR 2.1051
FCC PART 15 SECTION 47 CFR 15.247(c)

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

Administrative Details

Test Date:	August 15, 2002
Test Engineer:	Sandra Sohn
Temperature	20°C
Humidity	21%

Test Procedure

The RF-LAN Module (EUT) was inserted into an evaluation board that was connected to a personal computer system and placed on the wooden table 80cm high. The EUT was connected to a variable attenuator and then to a Spectrum Analyzer to reduce or eliminate spurious emissions which could be generated internally in the Spectrum Analyzer. For the spurious scans, the highest emissions were analyzed in detail by operating the spectrum analyzer in fixed tuned mode to determine the precise amplitude of the emissions. Measurements were made in the 9 kHz to 10 GHz range for the worst-case modulation on the highest, lowest and mid-level RF power settings. All other emissions were 20dB or more below the limit. The attenuator was set to 20dB for the spurious emissions scans. The 20db attenuation is added to the spurious levels for the peak readings.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543
Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Harmonic & Spurious Emissions (Transmitter Conducted) Test Results

The table below shows the summary of the highest amplitudes of the spurious RF conducted emissions from the equipment under test.

Test Details

Transmitter	Fundamental Frequency @ 902.5Mhz, Single Pulse
Limit	-5.2dBm @ 902.790MHz

Test Data

Frequency Emission (Mhz)	Level (dBm)	Limit (dBm)	Margin (dB)
58.88	-67.58	-5.2	-62.38
168.3	-68.81	-5.2	-63.61
297.3	-67.02	-5.2	-61.82
386.8	-67.58	-5.2	-62.38
474.3	-66.69	-5.2	-61.49
531.8	-66.12	-5.2	-60.92
699.5	-65.51	-5.2	-60.31
756.8	-66.68	-5.2	-61.48
808.75	-66.1	-5.2	-60.9
956.62	-66.14	-5.2	-60.94
1805.58	-37.2	-5.2	-32
2708.37	-34.2	-5.2	-29
3611.16	-22.6	-5.2	-17.4
4513.95	-39.8	-5.2	-34.6
5416.7	-46.7	-5.2	-41.5
6319.53	-43	-5.2	-37.8
7222.32	-42.7	-5.2	-37.5
8125.11	-43.1	-5.2	-37.9
9027.9	-43.7	-5.2	-38.5

No emissions of significant levels were observed between 9KHz and the lowest frequencies shown in the above data. No emissions of significant levels were observed between the highest frequency shown in the above data and 10 GHz

Conclusion

The RF-LAN Module meets the requirements of the test reference for Harmonics and Spurious Emissions (Transmitter Conducted).

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Harmonic & Spurious Emissions (Transmitter Conducted) Test Results (cont)

The table below shows the summary of the highest amplitudes of the spurious RF conducted emissions from the equipment under test.

Test Details

Transmitter	Fundamental Frequency @ 913.987Mhz Single Pulse
Limit	- 9.5dBm @ 913.987MHz

Test Data

Frequency Emission (Mhz)	Level (dBm)	Limit (dBm)	Margin (dB)
1.89	-62.89	-9.5	-53.39
2.7	-62.85	-9.5	-53.35
64.13	-67.91	-9.5	-58.41
182.3	-68.19	-9.5	-58.69
285.3	-67.21	-9.5	-57.71
330.3	-67.28	-9.5	-57.78
430.3	-70.03	-9.5	-60.53
552.5	-66.61	-9.5	-57.11
652.5	-68.15	-9.5	-58.65
752.5	-68.32	-9.5	-58.82
826.25	-68.48	-9.5	-58.98
852.73	-65.48	-9.5	-55.98
936.46	-66.57	-9.5	-57.07
1827.974	-39.9	-9.5	-30.4
2741.961	-28.1	-9.5	-18.6
3655.948	-12.6	-9.5	-3.1
4569.935	-40	-9.5	-30.5
5483.922	-43.5	-9.5	-34
6397.909	-42.6	-9.5	-33.1
7311.896	-41.2	-9.5	-31.7
8225.883	-43.6	-9.5	-34.1
9139.87	-45.1	-9.5	-35.6

No emissions of significant levels were observed between 9KHz and the lowest frequencies shown in the above data. No emissions of significant levels were observed between the highest frequency shown in the above data and 10 GHz

Conclusion

The RF-LAN Module meets the requirements of the test reference for Harmonics and Spurious Emissions (Transmitter Conducted).

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Harmonic & Spurious Emissions (Transmitter Conducted) Test Results (cont)

The table below shows the summary of the highest amplitudes of the spurious RF conducted emissions from the equipment under test.

Test Details

Transmitter	Fundamental Frequency @ 927.827Mhz, Single Pulse
Limit	-11.4dBm @ 927.827MHz

Test Data

Frequency Emission (Mhz)	Level (dBm)	Limit (dBm)	Margin (dB)
1.25	-62.22	-11.4	-50.82
3.14	-63.74	-11.4	-52.34
89.32	-67.23	-11.4	-55.83
146.8	-68.06	-11.4	-56.66
283.5	-67.68	-11.4	-56.28
398	-67.45	-11.4	-56.05
471.3	-66	-11.4	-54.6
587.8	-66.46	-11.4	-55.06
698.3	-64.76	-11.4	-53.36
716	-66	-11.4	-54.6
812.87	-65.98	-11.4	-54.58
888.09	-66.31	-11.4	-54.91
949.41	-66.09	-11.4	-54.69
1855.654	-36.5	-11.4	-25.1
2783.481	-27.4	-11.4	-16
3711.308	-13.4	-11.4	-2
4639.135	-41.2	-11.4	-29.8
5566.962	-38.5	-11.4	-27.1
6494.789	-42.2	-11.4	-30.8
7422.616	-41.7	-11.4	-30.3
8350.443	-42.3	-11.4	-30.9
9278.27	-43.1	-11.4	-31.7

No emissions of significant levels were observed between 9KHz and the lowest frequencies shown in the above data. No emissions of significant levels were observed between the highest frequency shown in the above data and 10 GHz

Conclusion

The RF-LAN Module meets the requirements of the test reference for Harmonics and Spurious Emissions (Transmitter Conducted).

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcmc.com Web: www.itcmc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Harmonic & Spurious Emissions (Transmitter Conducted) Test Results (cont)

The table below shows the summary of the highest amplitudes of the spurious RF conducted emissions from the equipment under test.

Test Details

Transmitter	Sweep Mode Frequency Hopping
Limit	-4.7dBm @ 904.7MHz

Test Data

Frequency Emission (Mhz)	Level (dBm)	Limit (dBm)	Margin (dB)
2.26	-63.23	-4.7	-58.53
3.14	-63.04	-4.7	-58.34
47.68	-67.99	-4.7	-63.29
115.3	-67.73	-4.7	-63.03
291.5	-68.18	-4.7	-63.48
303.8	-68.22	-4.7	-63.52
477.8	-66.54	-4.7	-61.84
523	-65.92	-4.7	-61.22
636	-66.34	-4.7	-61.64
728.8	-66.2	-4.7	-61.5
818.75	-66.72	-4.7	-62.02
895.37	-66.15	-4.7	-61.45
928.86	-65.71	-4.7	-61.01
932.79	-57.22	-4.7	-52.52
1826	-34.6	-4.7	-29.9
2765.5	-24.4	-4.7	-19.7
3652.8	-11.6	-4.7	-6.9
4557.5	-48.2	-4.7	-43.5
5548.2	-40.1	-4.7	-35.4
6398.3	-41.7	-4.7	-37
7292	-40.6	-4.7	-35.9
8160.5	-42.3	-4.7	-37.6
9026	-42.3	-4.7	-37.6

No emissions of significant levels were observed between 9KHz and the lowest frequencies shown in the above data. No emissions of significant levels were observed between the highest frequency shown in the above data and 10 GHz

Conclusion

The RF-LAN Module meets the requirements of the test reference for Harmonics and Spurious Emissions (Transmitter Conducted).

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcenc.com Web: www.itcenc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRF LAN

FCC Part 15 Sub-Part B & C

Maximum Peak Output Power (Transmitter Conducted)

Test Specification: FCC 47 CFR PART 2.1046
FCC 47 CFR PART 15.247(b)2

Site Used

- ☐ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☒ EMC Test Lab 1

Administrative Details

Test Date:	October 2, 2002
Test Engineer:	Sandra Sohn

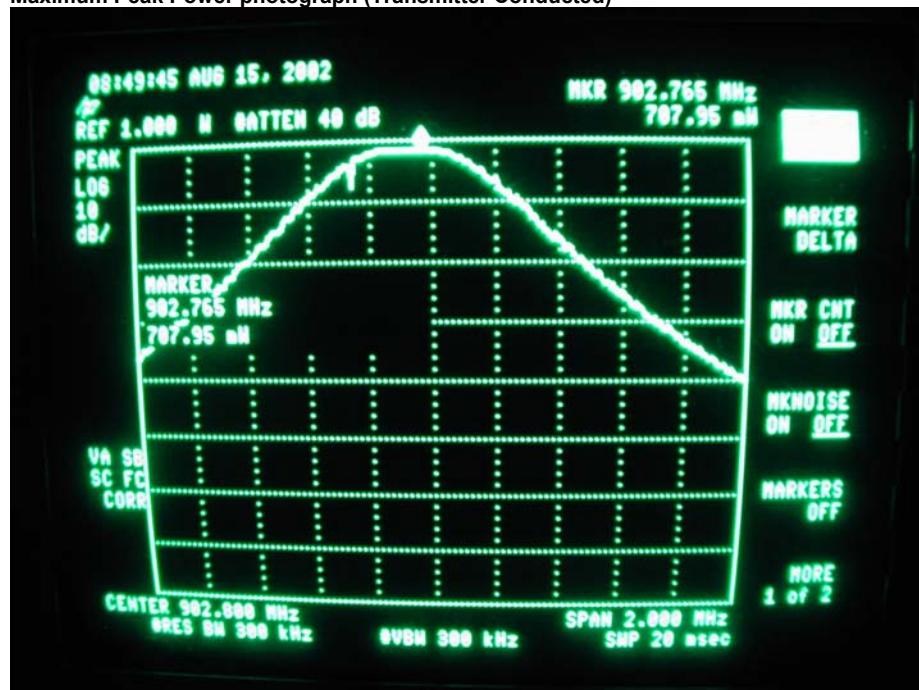
Environmental Conditions

Temperature	20°C
Humidity	21%

Test Procedure

The RFLAN was placed on the wooden table and the measurements were made, with a direct connection between the antenna port of the EUT and the measuring instrument. It was configured to operate at maximum power with carrier unmodulated. Signal was monitored with a Spectrum Analyzer, using the 50 ohm 1m cable. The maximum peak power was measured with the Spectrum Analyzer controls set as shown in the test results.

Maximum Peak Power photograph (Transmitter Conducted)



Center frequency: 907.765 MHz
Maximum Peak Power: 707.95 mW

The Peak Power is under 1 Watt as required per section 15.247.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543
Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

Maximum Peak Output Power (Transmitter Radiated)

Test Specification: FCC 47 CFR PART 2.1046
FCC 47 CFR PART 15.247(b)2

Site Used

- ☒ Site 1 - 3m Open Field Radiated Site
- ☐ Site 1 - 10m Open Field Radiated Site
- ☐ Semi-Anechoic Absorber Lined Shielded Room
- ☐ EMC Test Lab 1

Administrative Details

Test Date:	October 2, 2002
Test Engineer:	Sandra Sohn

Environmental Conditions

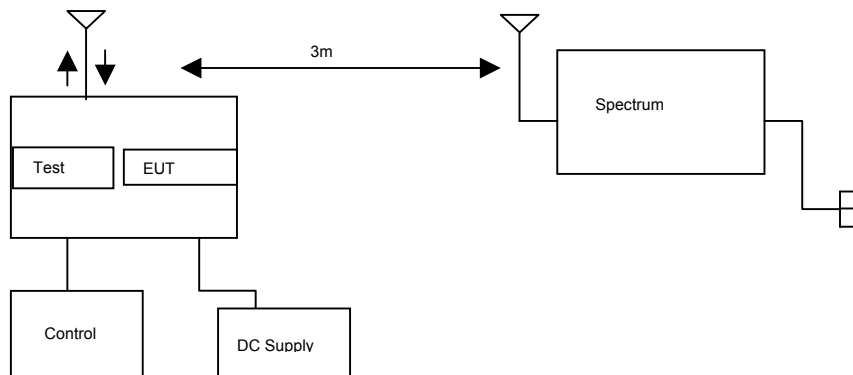
Temperature	20°C
Humidity	21%

Test Equipment for Signal Substitution

Test Equipment	Manufacturer	Model Number	Serial Number
Half-wave Dipole Antenna	EMCO	3121C-DB4	
RF Power Amplifier	Amplifier Research	5S1G4	18220
Signal Generator	Hewlett Packard	8673C	2918A00649

Test Procedure

The RF-LAN Module was configured to operate at maximum power with carrier unmodulated. The equipment under test was placed on a wooden turntable 3meters away from the calibrated receiving antenna, which was in turn connected to the spectrum analyzer.



For each transmitter frequency, the received signal was maximized by rotating the turntable and adjusting the height of the receiving antenna. To obtain the actual Maximum Peak Output Power, the RF-LAN Module was replaced by a vertically polarized half-wave dipole antenna fed by an RF power amplifier and signal generator. The center of the dipole antenna was placed in the same location as the RF-LAN Module. The signal generator level was adjusted until the reading on the spectrum analyzer was identical to that obtained when the RF-LAN Module was on the turntable. The reading on the signal generator was recorded and the RF power amplifier level was added. The Maximum Peak Output Power was calculated from the formula below.

$$P_t = ((E \times R)^2 / 49.2) \text{ watts, where } R=3\text{m}$$

The process was repeated with the EUT antenna in horizontal polarity and receive antenna also in horizontal polarity.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543
Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFAN

FCC Part 15 Sub-Part B & C

Maximum Peak Output Power (cont)

The EUT was tested for Maximum Peak Output Power at high, middle, and low frequencies with the Maximum Peak Output Power obtained at channels (Nos. 2, 10 and 16) with frequencies being 906.250MHz, 918.06MHz and 927.803MHz respectively. The test data is presented in this report under the section: Test Results.

Maximum Peak Output Power Test Results

Test Name: Maximum Peak Output Power calculation (vertical Antenna Polarization)

- a. 906.250 MHz (Low End)
 SG = -8dBm, pre Amp = 25.25dB
 $E_1 = -8\text{dBm} + 25.25\text{dB} = 17.25\text{dBm}$ or $124.25\text{dBmV} \approx 1.63\text{V/m}$
 $P_t = (1.6 \times 3)^2 / 49.2 = 23.04/49.2 = 0.468\text{watts}$
- b. 918.06 MHz (Mid-Range)
 SG = -9dBm, pre Amp = 25.50dB
 $E_1 = -9\text{dBm} + 25.50\text{dB} = 16.5\text{dBm}$ or $123.5\text{dBmV} \approx 1.5\text{V/m}$
 $P_t = (1.5 \times 3)^2 / 49.2 = 20.25/49.2 = 0.411\text{watts}$
- c. 927.803 MHz (High-End)
 SG = -7dBm, pre Amp = 25.79dB
 $E_1 = -7\text{dBm} + 25.79\text{dB} = 18.79\text{dBm}$ or $125.79\text{dBmV} \approx 1.9\text{V/m}$
 $P_t = (1.9 \times 3)^2 / 49.2 = 32.49/49.2 = 0.660\text{watts}$

Test Name: Maximum Peak Output Power calculation (Horizontal Antenna Polarization)

- a. 906.250 MHz (Low End)
 SG = -7dBm, pre Amp = 25.25dB
 $E_1 = -7\text{dBm} + 25.25\text{dB} = 18.25\text{dBm}$ or $125.25\text{dBmV} \approx 1.83\text{V/m}$
 $P_t = (1.83 \times 3)^2 / 49.2 = 30.14/49.2 = 0.613\text{watts}$
- b. 918.06 MHz (Mid-Range)
 SG = -7dBm, pre Amp = 25.50dB
 $E_1 = -7\text{dBm} + 25.50\text{dB} = 18.5\text{dBm}$ or $125.5\text{dBmV} \approx 1.9\text{V/m}$
 $P_t = (1.9 \times 3)^2 / 49.2 = 32.49/49.2 = 0.660\text{watts}$
- c. 927.803 MHz (High-End)
 SG = -8dBm, pre Amp = 25.79dB
 $E_1 = -8\text{dBm} + 25.79\text{dB} = 17.79\text{dBm}$ or $124.79\text{dBmV} \approx 1.7\text{V/m}$
 $P_t = (1.7 \times 3)^2 / 49.2 = 26.01/49.2 = 0.528\text{watts}$

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
 9959 Calaveras Road, PO Box 543
 Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
 Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
 Model PCA0106
 FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

RF Tests Setup Photographs

RF Tests Setup Photographs Attached

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

PART 4: APPENDICES

A. Test Equipment

Some or all of the following test equipment was used to measure the equipment under test:

Test Equipment	Manufacturer & Model Number	Serial Number	Calibration Date	Calibration Due Date
Spectrum Analyzer	Hewlett Packard 8590A	2752 A02715	12/06/2001	12/06/2002
Spectrum Analyzer	Hewlett-Packard 8590A	2542A11954	12/06/2001	12/06/2002
Spectrum Monitor	Rhode & Schwarz EZM	881 334/025	03/01/2002	03/01/2003
Test Receiver (9 kHz - 30 MHz)	Rhode & Schwarz ESH3	RES 0753	03/01/2002	03/01/2003
Test Receiver (20-1300 MHz)	Rhode & Schwarz ESVP	RES 0749	03/01/2002	03/01/2003
Spectrum Analyzer	Hewlett-Packard 8566B	2618A02909	12/06/2001	12/06/2002
Spectrum Analyzer	Hewlett-Packard 8567A	2602A00239	12/06/2001	12/06/2002
Spectrum Analyzer Display (Site 1)	Hewlett-Packard 85662A	2848A17028	12/06/2001	12/06/2002
Spectrum Analyzer Display (Site 2)	Hewlett-Packard 85662A	1949A14502	12/06/2001	12/06/2002
Quasi Peak Adapter (Site 1)	Hewlett-Packard 85650	2521A00871	12/06/2001	12/06/2002
Quasi Peak Adapter (Site 2)	Hewlett-Packard 85650A	2521A00737	12/06/2001	12/06/2002
Preselector (Site 1)	Hewlett-Packard 85685A	2620A00265	03/01/2002	03/01/2003
Preselector (Site 2)	Hewlett-Packard 85685A	2648A00462	12/06/2001	12/06/2002
Preamp	Hewlett-Packard 8447D	2648A04855	03/01/2002	03/01/2003
Preamp	Hewlett-Packard 8449B	3008A00101	03/01/2002	03/01/2003
Absorbing Clamp	MDS21	891 092/025	05/09/2001	05/09/2004
Attenuator	Hewlett-Packard 8496A	48169	05/09/2001	05/09/2004
Antenna Cable (OPTK45)	RG8/u	-	N/A	N/A
Antenna System	EMCO 3230	-	N/A	N/A
Biconical Antenna (Site 1)	EMCO 3104	3549	01/25/2002	01/25/2003
Biconical Antenna (Site 2)	EMCO 3104C	9111-4463	01/25/2002	01/25/2003
L. P. Ant. (Site 1) (200-1000 MHz)	EMCO 3146	2075	01/25/2002	01/25/2003
L. P. Ant. (Site 2) (200-1000 MHz)	EMCO 3146	9510-4202	01/12/2002	01/12/2003
Adj. Elem. Dip. Ant. (28 MHz-1 GHz)	EMCO 3120	2632	03/01/2002	03/01/2003
Horn Antenna	Eaton 96001	2632	01/12/2002	01/12/2003
LISN (25 Amp)	EMCO 38825/2	9210-2008	03/01/2002	03/01/2003
LISN (100 Amp)	Solar 8610-50-TS-100N		03/01/2002	03/01/2003
LISN	EMCO 3825/2R	1188/1001	03/01/2002	03/01/2003
Computer	HP 000/300	RES 449	N/A	N/A
Remote Controlled 8 ft Rotating Table	RES RT1	Not Provided	N/A	N/A
Remote Controlled 25 ft Rotating Table	RES RT2	Not Provided	N/A	N/A
Remote Controlled 4 ft Rotating Table	RES RT3, RT4, RT5	Not Provided	N/A	N/A
Remote Controlled 4 m Antenna Mast	RES AM1	Not Provided	N/A	N/A
Remote Controlled 6 m Antenna Mast	RES AM2 & AM3	Not Provided	N/A	N/A
3 Phase 230 V~/50 Hz Generator	Not Provided	DB7130B40	05/04/2001	05/04/2004
Oscilloscope (300 MHz)	Tektronix 2465B	602053	05/08/2001	05/08/2003
Lindgren RF Shielded Enclosure	46-3/5-0	8220	N/A	N/A
Haefely ESD Simulator	PSD25B	081 486-02	05/21/2001	05/21/2003
Hewlett Packard Signal Generator	HP8662A	2330A01371	05/21/2001	05/21/2003
Amplifier Research Power Amplifier	100A100	10922	05/22/2001	05/22/2003
Amplifier Research Power Amplifier	25W1000M7	10830	05/21/2001	05/21/2003
Amplifier Research Field Strength Monitor	FM1000	60670	05/22/2001	05/22/2003
Amplifier Research Isotropic Field Probe	FP1000	16270	05/18/2001	05/18/2003
Amplifier Research L. P. Antenna (100-1000 MHz)	AT 1100	10537	05/17/2001	05/17/2003
Amplifier Research F. Generator (10kHz - 100MHz)	AT500	11294	05/22/2001	05/22/2003
Lindgren RFI Shielded Enclosure	46-2/5-0	8220	N/A	N/A
IFI Field Strength Meter	EFS-1	-	05/16/2001	05/16/2003
IFI LDI	Not Provided	-	05/14/2001	05/14/2003
Hewlett Packard Signal Generator	8673C	2918A00649	05/16/2001	05/16/2003
Leader Functional Generator	LFG-1300S	7050152	05/16/2001	05/16/2003
Haefely Burst-Tester Mainframe	PEFT.1	081 979-03	05/30/2001	05/30/2003
Haefely Coupling Filter Module	PHV 4/1	081 979-03	05/31/2001	05/31/2003

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcmc.com Web: www.itcmc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFAN

FCC Part 15 Sub-Part B & C

A. Test Equipment (Cont.)

Test Equipment	Manufacturer & Model Number	Serial Number	Calibration Date	Next Calibration Due Date
Haefely Control Unit Module	P90.1	0810979-03	05/28/2001	05/28/2003
Haefely Power Supply Module	PP53.1	081 979-03	05/29/2001	05/29/2003
Haefely Capacitive Coup. Clamp	IPA	083839-11	05/31/2001	05/31/2003
Haefely Coupling Filter	FP 16/3-1	082529-12	05/30/2001	05/30/2003
Haefely Surge Generator	PC6-288-1	Not Provided	05/31/2001	05/31/2003
Haefely Coupling Filter	FP 20/3-3	Not Provided	05/31/2001	05/31/2003
Haefely Comm. Wave 1.2/50us, 8/20us.	PHV1	Not Provided	05/31/2001	05/31/2003
Haefely H.V. Retractable Probe	-	Not Provided	05/31/2001	05/31/2003
Topaz Electronics Isolation Transformer	16630	Not Provided	05/31/2001	05/31/2003
HP Signal Generator	8673C	2918A00649	11/26/2001	11/26/2002
Amplifier Research Power Amplifier	100A100	10922	05/22/2001	05/22/2003
Amplifier Research Power Amplifier	25W1000M7	10830	05/21/2001	05/21/2003
Amplifier Research Leveling Amplifier	999	Not Provided	N/A	N/A
Lindgren RFI Shielded Enclosure	46-2/5-0	8220	N/A	N/A
Hewlett Packard Spectrum Analyzer	8566B	2618A02909	12/06/2001	12/06/2002
Westelle Power Supply	-	AF1AA	05/18/2001	05/18/2003
Fischer Custom Comm. P.L. Coup/Decoup.	FCC-801-M3-25A	02002	0/21/2002	1/21/2003
Fischer Custom Comm. Passive Impedance Adapt.	FCC-801-150-50-CDN	02013-02014	0/21/2002	1/21/2003
Schaffner Main Frame	NSG200E	2514	05/12/2001	05/12/2003
Schaffner Line Voltage Simulator	NSG203A	2514	05/12/2001	05/12/2003
Tektronix Oscilloscope	2465B	B013718	05/09/2001	05/09/2003
Powerstat Variac	GP58004	801-5218	05/11/2001	05/11/2003
Schaffner Main Frame	NSG200E	2514	05/12/2001	05/12/2003
HP HP6843A Harmonic & Flicker Test Sys.	3531A-00130		N/A	N/A
Acer Pentium 90	2600427019	N/A	N/A	N/A
Acer 6311-K Keyboard	K6311459320	N/A	N/A	N/A
Logitech M-SR14 Mouse	LT293C00116	N/A	N/A	N/A
Acer 2133S111 Monitor	M5A00000462C1A8A	N/A	N/A	N/A
HFTS Software Version HFTS A.00.05	-	N/A	N/A	N/A

Note for Test Equipment: The spectrum analyzers are self-calibrated every morning before test and are calibrated annually. All calibrations are traceable to the US NIST Standards.

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

B. EUT Technical Specification

Applicant	Metering Technology Corporation
FCC ID	PDVRFLAN
Product Specifications	
Description	The RF-LAN Module provides communication over the air to another similar unit or an RF-LAN Hub. The RF-LAN Module can be installed indifferent types of host electronic measurement, control, and data acquisition equipment, such as electric meters.
Model	Model PCA0106
Trade name	RF-LAN Module

RF_LAN Module	Electrical Specs.	Operating Voltage:	5VDC $\pm$ 5% from Host Unit
		Consumed Current:	<1A, peak
		Effective Radiated Output RF Power with Tuned Antenna:	10,15,20,25,30 dBm, programmable
		Frequency Range:	902 - 928 MHz
		Number of Channels:	50 minimum
		Data Range:	1200,2400,4800,9600, programmable
		Receiver Sensitivity:	-105dBm, max.
		Adjacent Channel Rejection:	45dBc Min.
		Out of Band Signal Rejection:	60dBc, Min
		Frequency Synthesizer Steps:	500Hz, Max.
		RF Input/Output Impedance:	50 Ohm
		Receiver saturation:	126 dBmV/m, Min
	Ports	Serial Port	9600 baud
	Microcontroller	Manufacturer:	Texas Instruments
		Model # / Part #:	MSP430F149
		Crystals:	Y1=32.768kHz Y2=4.0MHz
	RF Transceiver (U11)	Manufacturer:	CHIPCON
		Model # / Part #:	CC1000
		Crystals:	Y3=11.059MHz
	Connectors	- 14-pin host board interface - SMA female connector	
	Approximate T Dimensions	76mm x 41mm x 19mm	
Antenna	Approximate Dimensions	82mm x 16 mm	
	Antenna cable	Length = 50mm Connector = SMA male	

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcmc.com Web: www.itcmc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C

C. EUT Photographs

EUT Photographs Attached

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services

RF-LAN MODULE

9959 Calaveras Road, PO Box 543

Model PCA0106

Sunol, California 94586-0543

FCC ID: PDVRFLAN

Tel: (925) 862-2944 Fax: (925) 862-9013

Email: docs@itcemc.com Web: www.itcemc.com

FCC Part 15 Sub-Part B & C

D. Modification Letter

To whom it may concern:

This is to certify that modifications were necessary for RF-LAN Module, model PCA0106 to comply with the required Emissions and RF Requirements:

List of Modifications

1. Installed a grounded metal housing to cover on-board components: transceiver U11, SAW filter U8, LNA U10, oscillator Y3 (11.059MHz) and associate components.

The test results in this report show that the sample equipment tested as described in this report is in compliance with the FCC Rules Part 15, Sub-Part B: Open Field Radiated Emissions, Occupied Bandwidth, Harmonics and Spurious Emissions and Maximum Peak Output Power test requirement limits of Sub-Part C.

It is the manufacturer's responsibility to ensure that additional production units of the RF-LAN Module model PCA0106 are manufactured with identical electrical and mechanical characteristics, and include the modifications listed above. For further information, please contact the manufacturer at:

Metering Technology Corporation
360 El Pueblo Drive
Scotts Valley, CA 95066
Attention: Mr. Vijay Dhingra

Applicant: Metering Technology Corporation

Report No. : 20020726-01-F15

Prepared By: ITC Engineering Services
9959 Calaveras Road, PO Box 543
Sunol, California 94586-0543

Tel: (925) 862-2944 Fax: (925) 862-9013
Email: docs@itcemc.com Web: www.itcemc.com

RF-LAN MODULE
Model PCA0106
FCC ID: PDVRFLAN

FCC Part 15 Sub-Part B & C



360 El Pueblo Drive
Scotts Valley, CA 95066
Phone: 831-438-9999
Fax: 831-440-9988

October 7, 2002

Legal Instruments Examiner
Equipment Authorization Branch
Federal Communications Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

Subject: EUT Modification Declaration
Ref: FCC ID: PDVRFLAN

Dear Sir or Madam:

The EUT, RF LAN module, model PCA0106, had the following modifications implemented during test:

- 1) Installed a grounded metal housing to cover on-board components: transceiver U11, SAW Filter U8, LNA U10, 11.059MHz oscillator Y3 and associate components.

It should be noted that the EUT sample above with the modifications as listed is representative of the production boards. We hereby declare that additional production units of this model will be manufactured with identical electrical and mechanical characteristics. That the modification above made during testing on the above EUT sample would be implemented in all production units for compliance to be maintained.

Sincerely,

A handwritten signature in black ink, appearing to read "V. Kolesnichenko", is written over a horizontal line.

Victor Kolesnichenko, Ph.D., P.E.
Director, Advanced Development
Tel: 831-438-9999x120