

MEASUREMENT AND TECHNICAL REPORT

ADCOM INFORMATION SERVICES, INC.
700 West Hillsboro Boulevard
Deerfield Beach, FL 33441

DATE: 25 March 2002

This Report Concerns:	Original Grant: ☒ X	Class II Change: ☐
Equipment Type:	VM105, Master Base Unit (MBU), Model 10182	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	Yes: ☐ Defer until:	No: ☒ X
Company Name agrees to notify the Commission by:	N/A	
of the intended date of announcement of the product so that the grant can be issued on that date.		
Transition Rules Request per 15.37?	Yes: ☐	*No: ☒ X
(*) FCC Part 15, Paragraphs 15.207(a); 15.109(a); 15.249		
Report Prepared by: TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 546 3999 Fax: 858 546 0364		

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1 GENERAL INFORMATION

1.1 Product Description

NAME, MODEL OF EUT:	VM105, Master Base Unit (MBU), Model 10182
POWE4 REQUIREMENTS:	120 Vac, 1 Phase, 0.1 A; uses 9 Vdc @.5A wall transformer
TYPICAL INSTALLATION:	Home
EUT POWER CABLE:	Removable, unshielded 2 meters
EUT INTERFACE PORTS & CABLES:	RS232, 1; digital; shielded; foil; Termination: Dsub-9; Connector type: mini-DIN4; Port termination: None; 1 m; removable RJ112, 1; Analog; not shielded; Connector type: RJ11; Port termination: 600 Ohm; 2 m; removable Power, 1; analog; not shielded; Connector type: 5.5 x 2.1 power jack; 2 m
OPERATING MODE:	Data transmit mode; data receive mode & modem active
EUT SYSTEM COMPONENTS:	Power Supply, Model Jame Co DC905F12
SUPPORT EQUIPMENT:	Phone line simulator
OSCILLATOR FREQUENCIES:	11.0592 MHz; Location: U3, crystal osc.; Description of use: micro oscillator 16 MHz; Location: U12, socket modem module; Description of use: micro oscillator 32.768 MHz; Location: U7, real time clock crystal osc.; Description of use: clock chip
POWER SUPPLY:	Jame Co, Model DC905F12, Linear
POWER LINE FILTERS:	N/A
EMC CRITICAL DETAIL:	Antenna, Linx Technologies, 916 MHz, ¼ wave whip Transceiver, Linx Technologies, Model TR-916-SC

1 GENERAL INFORMATION (continued)**1.2 Related Submittal/Grant**

None

1.3 Tested System Details

The FCC IDs for all equipment, plus descriptions of all cables used in the tested system are:

None

1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the ANSI C63.4 setup.

TEST	FCC CFR 47 #	PASS/FAIL
Radiated	15.109(a); 15.249	Pass
Conducted Emissions	15.107(a)	Pass

Test Performed:

- X 1. Conducted Emissions, FCC Part 15, 15.107(a)
- 2. Radiated Emissions EN55022: 1992 Class B limit, 30 - 1,000 MHz, 10 meters
- X 3. Radiated Emission per FCC Part 15, Paragraph 15.109(a); 15.249
- 4. Engineering evaluations
- 5. Frequency Stability, Part 2, Paragraph 2.995, and Part 87, Paragraph 87.133
- RF Output Power, Part 2, Paragraph 2.985, Part 22, Paragraph 22.917

Both Conducted and radiated testing were performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8 - M1983. Radiated testing was performed at an antenna-to-EUT distance of 3 meters (1 - 25 GHz).

1.5 Test Facility

The open area test site and conducted measurement data were tested by:

TÜV PRODUCT SERVICE
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 546 3999
Fax: 858 546 0364

The Test Site Data and performance comply with ANSI 63.4 and are registered with the FCC, 7435 Oakland Mills Rd, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

2. SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was initially tested for FCC emission in the following configuration:

See Block Diagram.

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Modification

None

2.5 Configuration of Tested System

See Block Diagram.

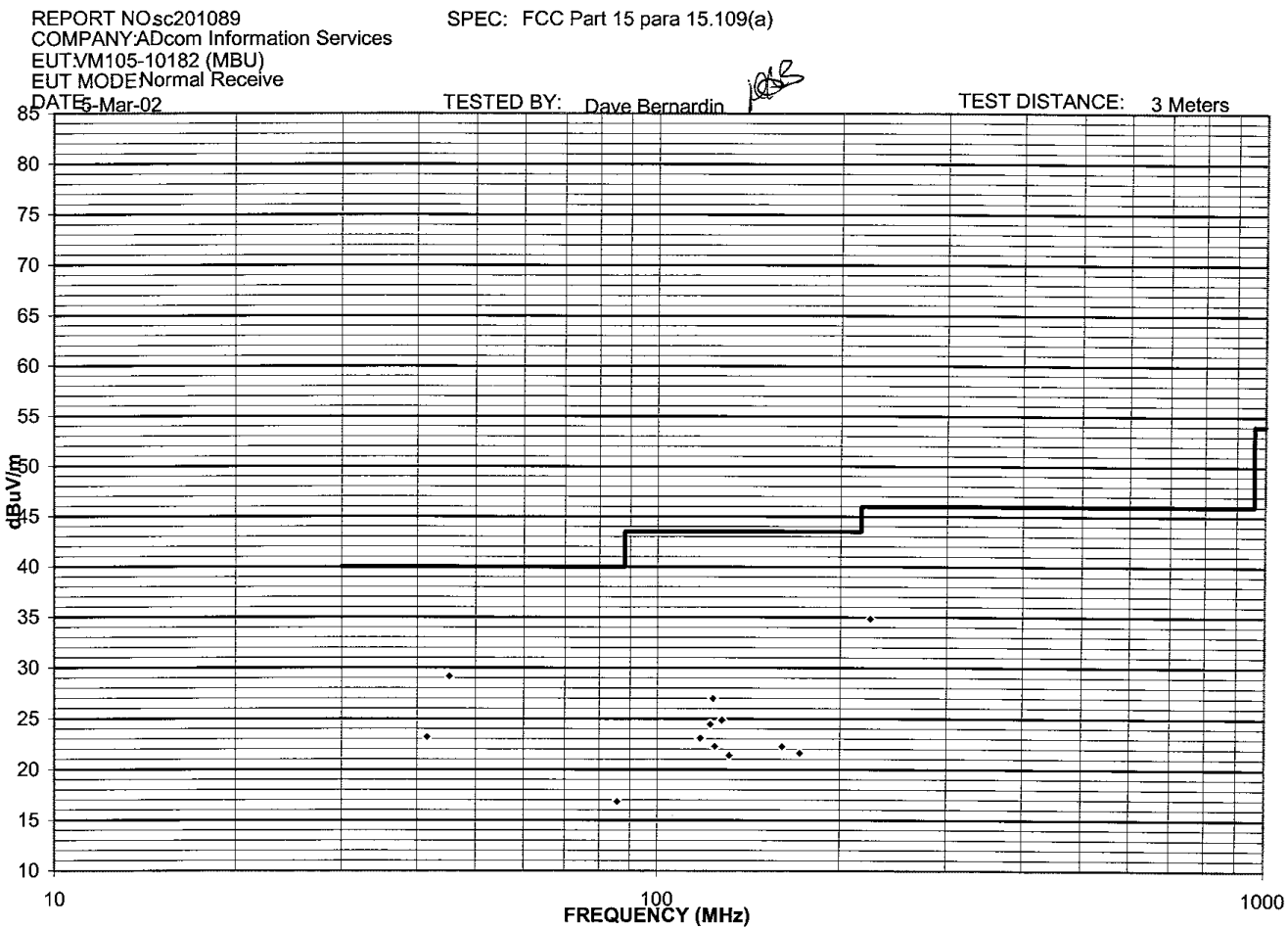
3 RADIATED EMISSION EQUIPMENT/DATA

The following data lists the significant emission frequencies, measured levels, correction factor (which includes cable and antenna corrections), the corrected reading, and the limit.

See following page(s).

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG
below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG
CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

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SPEC: FCC Part 15 para 15.109(a)

TEST DIST: 3 Meters

TEST SITE: 1

BICONICAL; 738

TESTED BY: Dave Bernardin *[Signature]*

LOG PERIODIC: 738

RCVR: 466

Temperature:	26	Relative Humidity:	46%
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-10.9 dB at 45.32 MHz

ver 1.8a

TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

Emissions Test Conditions: RADIATED EMISSIONS, FCC Part 15, Paragraphs 15.109(a); 15.249

The <i>RADIATED EMISSIONS</i> measurements were performed at the following test location :
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☐ - Test not applicable
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- - Roof (Small Open Area Test Site)
- - Canyon #1 (10- and 30-Meter Open Area Test Site), Carroll Canyon, San Diego

Testing was performed at a test distance of:

- ☐ - 1 meters
- - 3 meters
- ☐ - 10 meters

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
3115	251	Antenna, Horn	EMCO	2595	10/20/02
3146	244	Antenna, Log Periodic Dipole	EMCO	1063	03/21/02
8566B	823	Spectrum Analyzer	Hewlett Packard	2332A027511	07/24/02
8445B	809	Automatic Preselector	Hewlett Packard	1442A01127	N/A
PreAmp 2-20 GHz	719	Pre Amplifier	TUV PS	549460	N/A
LPB 2520/A	738	LPB	Antenna Research	1169	06/28/02
ESVS30	466	EMI Test Receiver	Rhode & Schwarz	833825/003	03/20/02

Remarks: _____

Field Strength Calculation

If a preamplifier was used during the Radiated Emission Testing, it is required that the amplifier gain must be subtracted from the Spectrum Analyzer (Meter) Reading. In addition, a correction factor for the antenna, cable used and a distance factor, if any, must be applied to the Meter Reading before a true field strength reading can be obtained. In the automatic measurement, these considerations are automatically presented as a part of the print out. In the case of manual measurements and for greater efficiency and convenience, instead of using these correlation factors for each meter reading, the specification limit was modified to reflect these correlation factors at each frequency value so that the meter readings can be compared directly to the modified specification limit. This modified specification limit is referred to as the "Corrected Meter Reading Limit" or simply the CMRL, which is the actual field strength present at the antenna. The quantity can be derived in the following manner:

$$\text{Corrected Meter Reading Limit (CMRL)} = \text{SAR} + \text{AF} + \text{CL} - \text{AG} - \text{DC}$$

Where, SAR = Spectrum Analyzer Reading

AF = Antenna Factor

CL = Cable Loss

AG = Amplifier Gain (if any)

DC = Distance Correction (if any)

Assume the following situation: A meter reading of 29.4 dBuV was obtained from a Class A computing device measured at 83 MHz. Assume an antenna factor of 9.2 dB, a cable loss of 1.4 dB and amplifier gain of 20.0 dB at 83 MHz. The final field strength would be determined as follows:

$$\text{CMRL} = 29.4 \text{ dBuV} + 9.2 \text{ dB} - 1.4 \text{ dB} - 20 \text{ dB/M} - 0.0 \text{ dB}$$

$$\text{CMRL} = 20.0 \text{ dBuV/M}$$

This result is well below the FCC and CSA Class A limit of 29.5 dBuV/m at 83 MHz.

For the manual mode of measurement, a table of corrected meter reading limit was used to permit immediate comparison of the meter reading to determine if the measure emission amplitude exceeded the specification limit at that specific frequency.

4 CONDUCTED EMISSION EQUIPMENT/DATA

See following page(s).

TUV Product Service Conducted Emissions

EUT: VM105-10182 (MBU)
 Manuf: ADcom Information Services
 Op Cond: Receive Mode
 Operator: Dave Bernardin
 Test Spec: FCC Part 15.207(a)
 Comment: 115VAC 60Hz Line 1
 SC-201089
 Date: 05. Mar 02 14:46

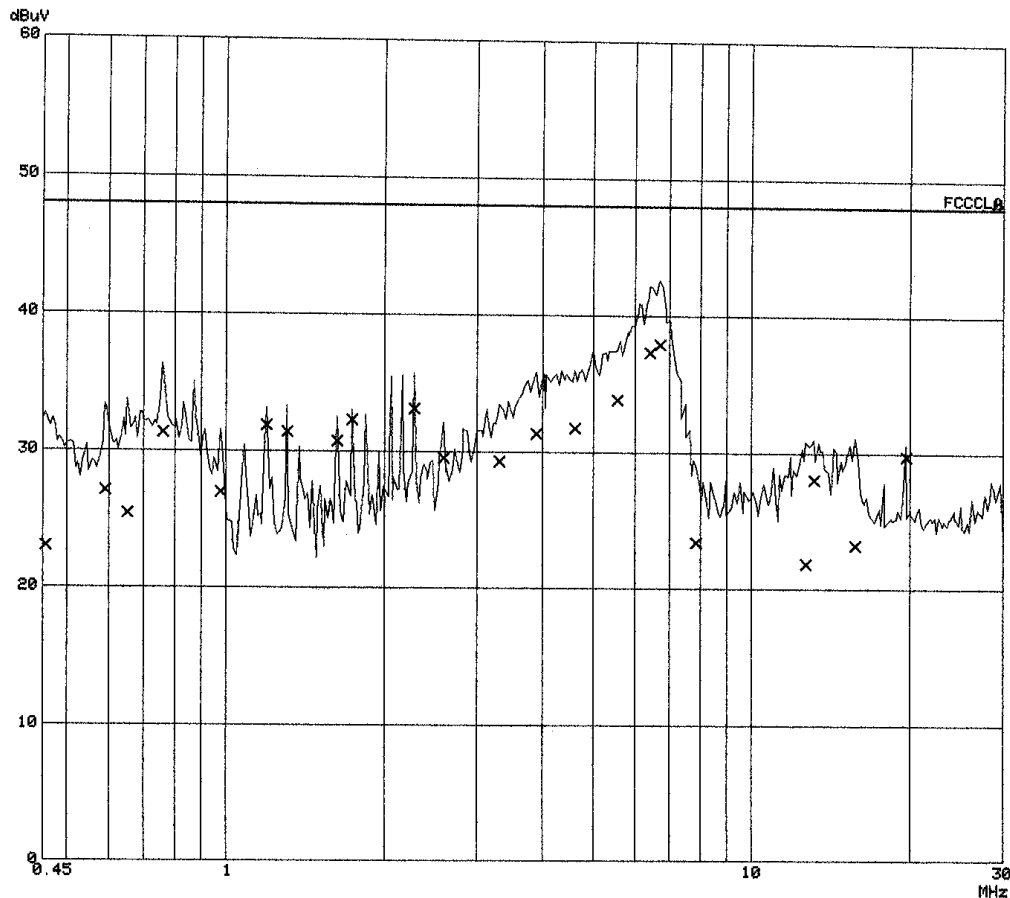
Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	9k	30M	20dBLISN

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 25
 Acc Margin: 20dB



**TUV Product Service
 Conducted Emissions**

EUT: VM105-10182 (MBU)
 Manuf: ADcom Information Services
 Op Cond: Receive Mode
 Operator: Dave Bernardin *DOB*
 Test Spec: FCC Part 15.207(a)
 Comment: 115VAC 60Hz Line 1
 SC-201089
 Date: 05. Mar 02 14:46

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.45500	23.0	48.0
0.59000	27.1	48.0
0.65000	25.4	48.0
0.76000	31.3	48.0
0.97500	26.9	48.0
1.19500	31.9	48.0
1.30500	31.4	48.0
1.62500	30.7	48.0
1.73500	32.3	48.0
2.27500	33.1	48.0
2.59500	29.5	48.0
3.31000	29.3	48.0
3.89000	31.3	48.0
4.61000	31.7	48.0
5.54500	33.8	48.0
6.41500	37.3	48.0
6.70500	37.9	48.0
7.84500	23.4	48.0
12.70000	21.8	48.0
13.13500	28.0	48.0
15.75500	23.2	48.0
19.68500	29.8	48.0

* limit exceeded

TUV Product Service Conducted Emissions

EUT: VM105-10182 (MBU)
 Manuf: ADcom Information Services
 Op Cond: Receive Mode
 Operator: Dave Bernardin *DB*
 Test Spec: FCC Part 15.207(a)
 Comment: 115VAC 60Hz Line 2
 SC-201089
 Date: 05. Mar 02 15:03

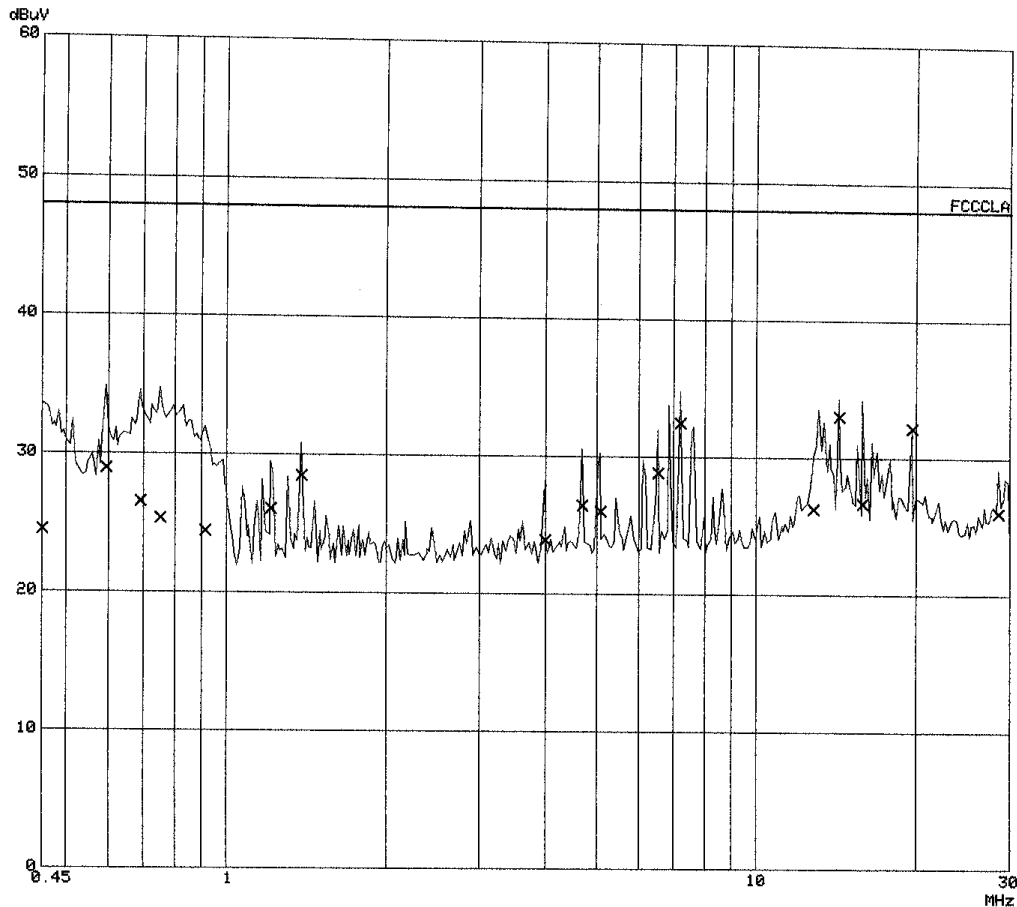
Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	9k	30M	20dBLISN

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 25
 Acc Margin: 20dB



**TUV Product Service
Conducted Emissions**

EUT: VM105-10182 (MBU)
Manuf: ADcom Information Services
Op Cond: Receive Mode
Operator: Dave Bernardin *WBP*
Test Spec: FCC Part 15.207(a)
Comment: 115VAC 60Hz Line 2
SC-201089
Date: 05. Mar 02 15:03

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.45000	24.5	48.0
0.59500	29.0	48.0
0.69000	26.6	48.0
0.75000	25.4	48.0
0.91000	24.5	48.0
1.21000	26.1	48.0
1.38500	28.4	48.0
3.98500	23.9	48.0
4.69000	26.4	48.0
5.08000	26.0	48.0
6.53000	28.8	48.0
7.20000	32.5	48.0
12.84500	26.3	48.0
14.31500	33.0	48.0
15.85500	26.7	48.0
19.68500	32.2	48.0
28.63000	26.0	48.0

* limit exceeded

Emissions Test Conditions: CONDUCTED EMISSIONS, FCC Part 15, Paragraphs 15.107(a)

The <i>RADIATED EMISSIONS</i> measurements were performed at the following test location :
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☐ - Test not applicable
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■ - SR-3, Shielded Room, 12' x 20' x 8', Metal Chamber

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
ESHS 30	459	EMI Test Receiver	Rohde & Schwarz	832354/004	02/26/03
CAT-20	606	20 dB Attenuator	Mini-Circuits	--	N/A
FCC-LISN-50-25-2	552	LISN	Fischer Custom Comm.	113	03/26/02

Remarks: _____

ATTESTATION STATEMENT

GENERAL REMARKS:

SUMMARY:

All tests were performed per CFR 47, *Part 15, Paragraphs 15.207(a); 15.109(a); 15.249.*

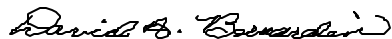
■ - Performed

The Equipment Under Test

■ - **Fulfills** the requirements of CFR 47, *Part 15, Paragraphs 15.207(a); 15.109(a); 15.249.*

- TÜV PRODUCT SERVICE, INC. -

Responsible Engineer:



Dave Bernardin
EMC Engineer