

MEASUREMENT AND TECHNICAL REPORT

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

DATE: 10 April 2002

This Report Concerns:	Original Grant: ☒ X	Class II Change: ☐
Equipment Type:	VM105 system, Satellite Slave Unit (SSU), Model 10179	
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		

TABLE OF CONTENTS

	Pages
1 GENERAL INFORMATION	_____
1.1 Product Description	_____
1.2 Related Submittal Grant	_____
1.3 Tested System Details	_____
1.4 Test Methodology	_____
1.5 Test Facility	_____
2 SYSTEM TEST CONFIGURATION	_____
2.1 Justification	_____
2.2 EUT Exercise Software	_____
2.3 Special Accessories	_____
2.4 Equipment Modifications	_____
2.5 Configuration of Tested System	_____
3 RADIATED EMISSION EQUIPMENT/DATA	_____
Field Strength Calculation	_____
4 CONDUCTED EMISSION EQUIPMENT/DATA	_____
5 Attestation Statement	_____

1 GENERAL INFORMATION**1.1 Product Description**EUT Description: VM105 system, Satellite Slave Unit (SSU)EUT Name: SSUModel No.: 10179 Serial No.:**Power Requirements**Voltage: 120VAC# of Phases: 1Current (Amps/phase(max)): .1A Current (Amps/phase(nominal)):Other: Uses 9VDC 500mA wall adapter,**Typical Installation and/or Operating Environment**

(ie. Hospital, Small Business, Industrial/Factory, etc.)

home

EUT Power Cable

☐ Permanent	OR	☒ Removable	Length (in meters): <u>2</u>
☐ Shielded	OR	☒ Unshielded	

EUT Interface Ports and Cables												
Interface			Shielding									
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable	Permanent
EXAMPLE: RS232	☐	☒	2	☒	☐	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	☒	☐
Power	☒	☐	1	☐	☒			5.5mm con.	NA	2	☒	☐
Sensor input	☒	☐	3	☒	☐	braid	Mini plug	3.5mm phono jack	2K	2	☒	☐
Sensor input	☒	☐	1	☒	☐	braid	RCA jack	RCA jack	50K	2	☒	☐
TV cable input	☒	☐	1	☒	☐	Foil over braid	Coaxial	F type	75 ohm	NA	☒	☐
Comm port	☐	☒	1	☒	☐	braid	Mini DIN	Mini DIN4	1K	NA	☒	☐

EUT Software.

Revision Level: 10184XF

Description: Fully functional except for feature added for FCC testing: depressing all address switches causes transmitter to continuously transmit.

EUT Operating Modes to be Tested -

1. Transmit mode
2. Receive mode (also senses TV signals)

EUT System Components			
Description	Model #	Serial #	FCC ID #
RF Splitter	Holland Elec. M-1000	NA	NA
Power Supply	JameCo DC905F1	NA	NA

Support Equipment -			
---------------------	--	--	--

Description	Model #	Serial #	FCC ID #
Television set- NTSC compatible	Sharp 13H-M60	721737	NA
Ch3 pattern generator	ADcom TVI 10196	NA	NA

Oscillator Frequencies			
------------------------	--	--	--

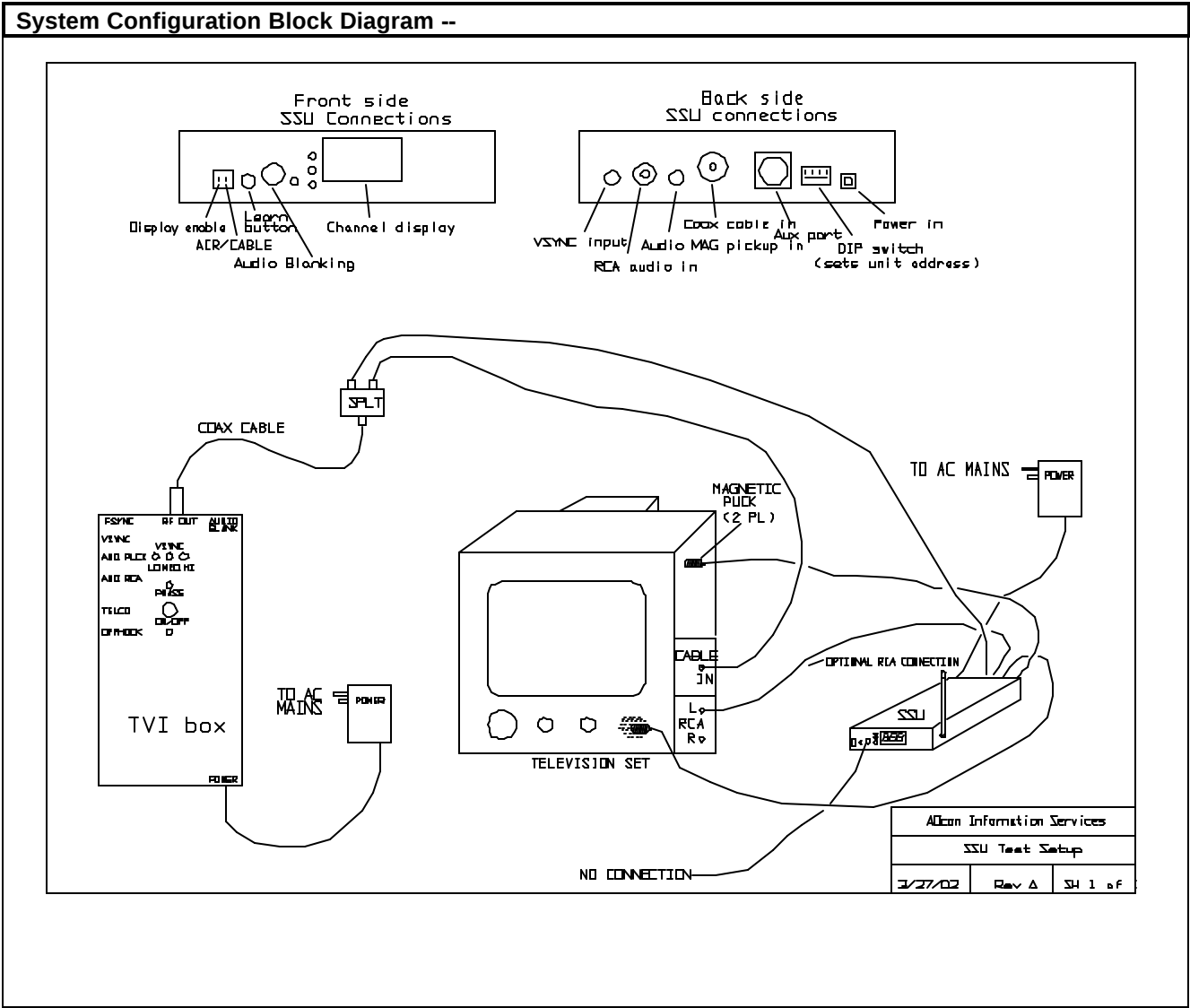
Frequency	Derived Frequency	Component # / Location	Description of Use
32.768KHz	NA	U18	Real time clock chip
11.0592MHz	NA	U20, feeds U23, U12, U13, U22	Micro clock

Power Supply			
--------------	--	--	--

Manufacturer	Model #	Serial #	Type
JameCo	DC905F1	NA	☐ Switched-mode: (Frequency) _____ ☒ Linear ☐ Other:

Critical EMI Components (Capacitors, ferrites, etc.)				
--	--	--	--	--

Description	Manufacturer	Part # or Value	Qty	Component # / Location
Ferrite beads	ACT	KCB-1206-1.0A	2	L4, L5



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).

[illegible]

SPEC: FCC Part 15 para 15.109(a)

TEST DIST: 3 Meters

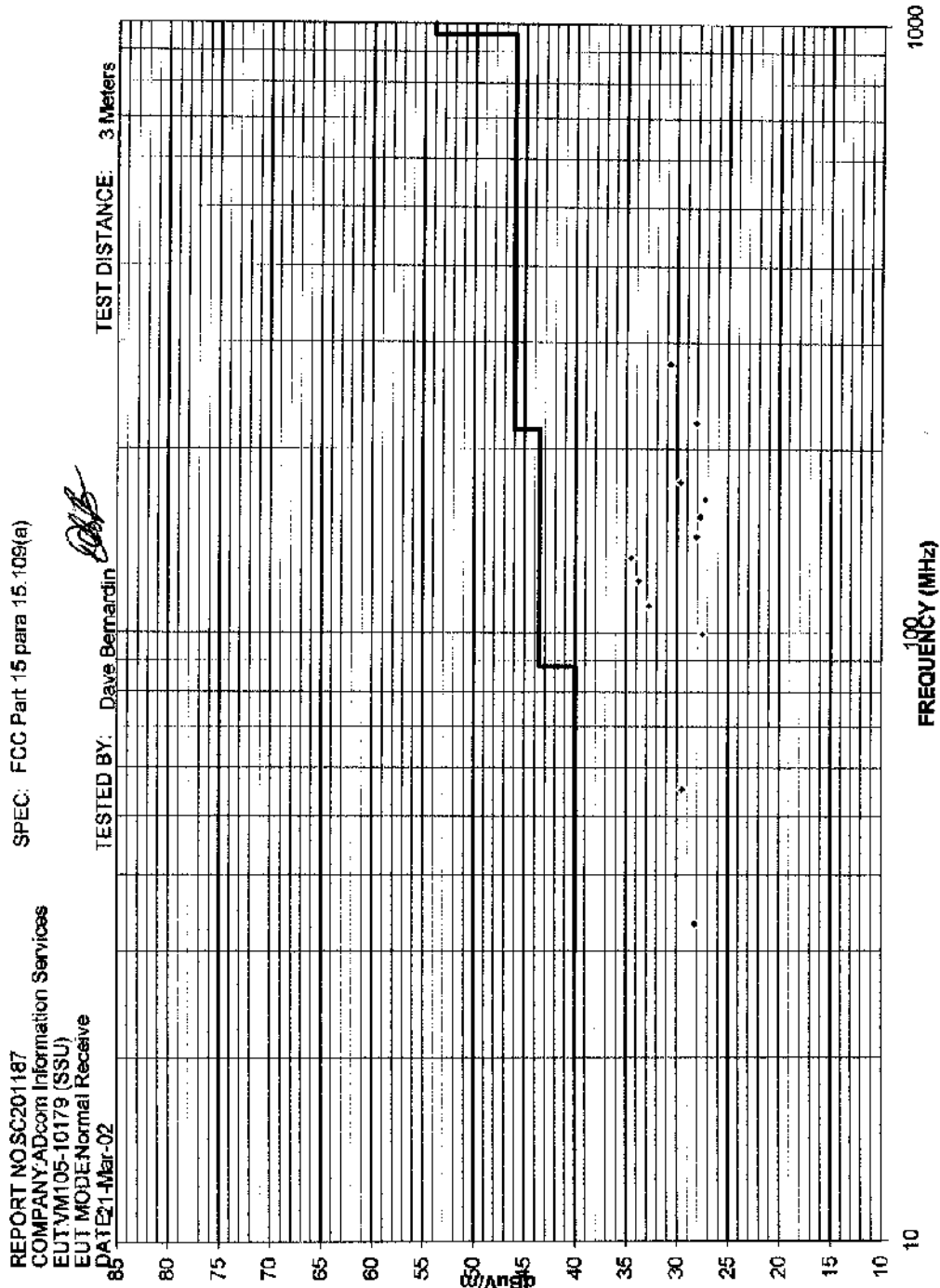
TEST SITE: 2

BICONICAL: 739

DATE: 21-Mar-02 TESTED BY: Dave Bernardin *DB* LOG PERIODIC: 789

NOTES: Quasi-Peak with 120 KHz measurement bandwidth. RCVR: 427

[illegible]



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

The *RADIATED EMISSIONS* measurements were performed at the following test location :

☐ - Test not applicable

- - 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
LPB 2520/A	739	LPB	Antenna Research	1170	03/21/02
ESVS30	427	EMI Test Receiver	Rhode & Schwarz	830350/006	12/08/02

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).

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 :
--

☐ - Test not applicable
--

■ - 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 20	428	EMI Test Receiver	Rohde & Schwarz	837055/001	12/19/02
CAT-20	616	20 dB Attenuator	Mini-Circuits	--	N/A
9242-50-R-24-BNC	458	LISN	Solar Electronics	941719	02/11/03

Remarks: _____

TUV Product Service Conducted Emissions

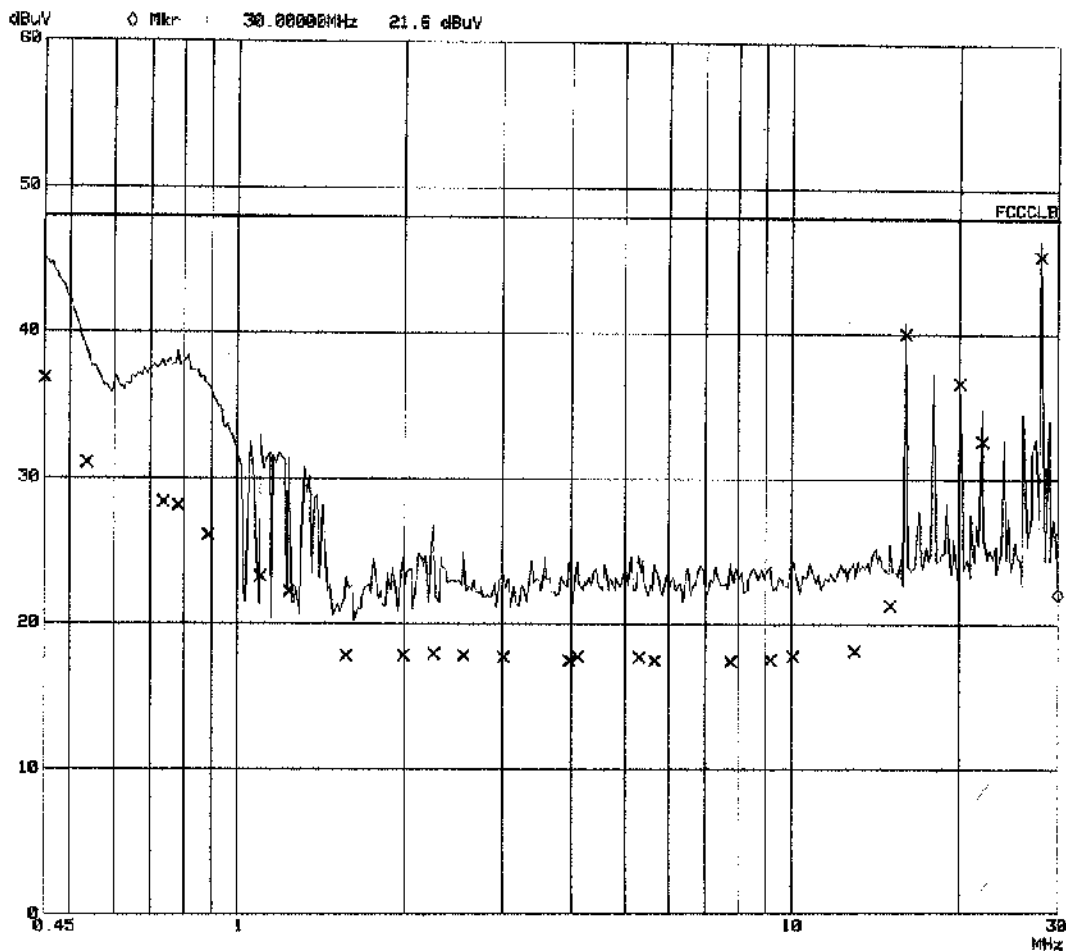
EUT: VM105-10179 (SSU)
 Manuf: ADcom Information Services
 Op Cond: Receive Mode
 Operator: Dave Bernardin
 Test Spec: FCC Part 15.207(a)
 Comment: 115 Vac 60 Hz Line 1
 SC201187
 Date: 07. Mar 02 12:00

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
5	9k	30M	20dB LISN

Final Measurement: x QP
 Meas Time: 1 s
 Subranges: 25
 Acc Margin: 40dB



**TUV Product Service
 Conducted Emissions**

EUT: VM105-10179 (SSU)
 Manuf: ADcom Information Services
 Op Cond: Receive Mode
 Operator: Dave Bernardin
 Test Spec: FCC Part 15.207(a)
 Comment: 115 Vac 60 Hz Line 1
 SC201187
 Date: 07. Mar 02 12:00

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.45000	36.9	48.0
0.53500	31.1	48.0
0.73500	28.4	48.0
0.78000	28.1	48.0
0.88500	26.1	48.0
1.10000	23.3	48.0
1.23500	22.2	48.0
1.57000	17.8	48.0
1.99000	17.8	48.0
2.25500	18.0	48.0
2.56000	17.8	48.0
3.02000	17.7	48.0
3.96000	17.5	48.0
4.10500	17.8	48.0
5.30500	17.7	48.0
5.66000	17.5	48.0
7.77000	17.4	48.0
9.14000	17.5	48.0
10.05500	17.8	48.0
12.95000	18.1	48.0
15.00500	21.3	48.0
16.00500	40.0	48.0
20.00500	36.7	48.0
22.01000	32.6	48.0
28.01000	45.4	48.0

* limit exceeded

TUV Product Service Conducted Emissions

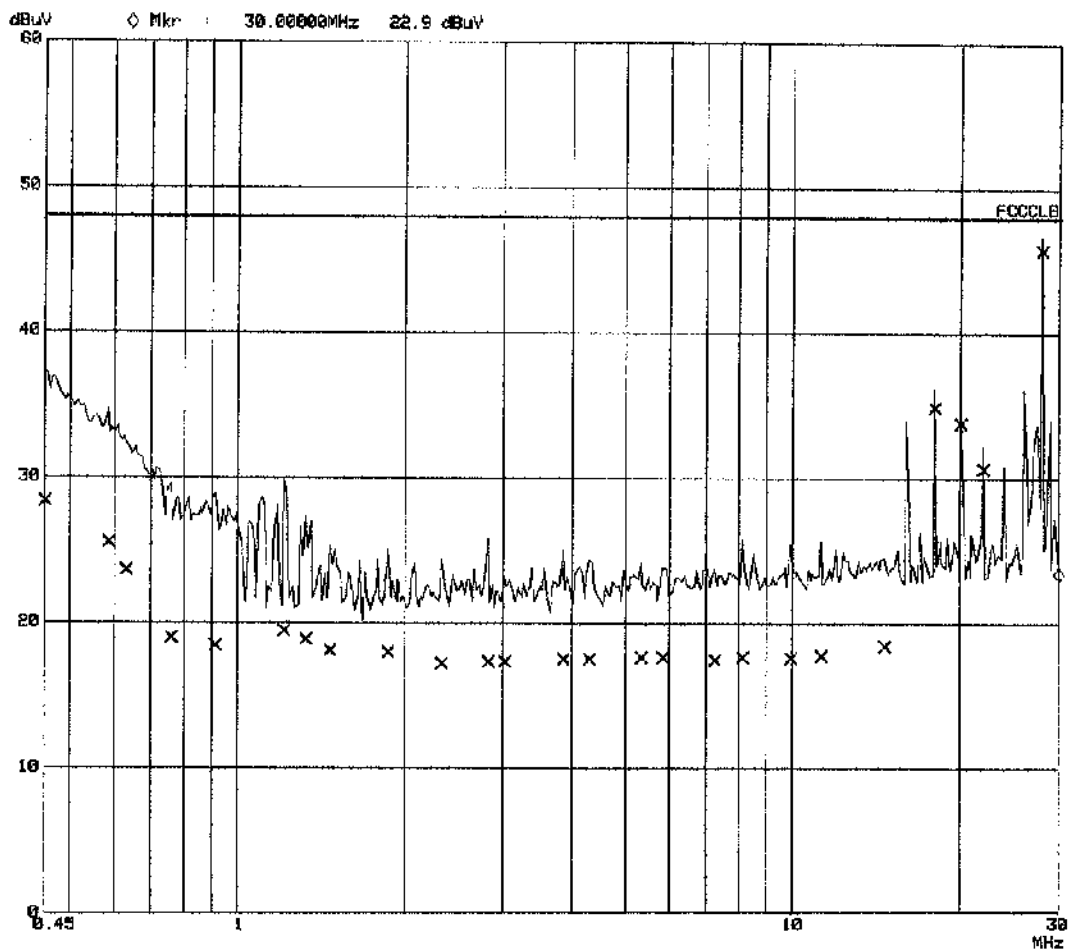
EUT: VM105-10179 (SSU)
 Manuf: ADcom Information Services
 Op Cond: Receive Mode
 Operator: Dave Bernardin
 Test Spec: FCC Part 15.207(a)
 Comment: 115 Vac 60 Hz Line 2
 SC201187
 Date: 07. Mar 02 11:46

Scan Settings (2 Ranges)

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

Transducer No.	Start	Stop	Name
5	9k	30M	20dBLISN

Final Measurement: x QP
 Meas Time: 1 s
 Subranges: 25
 Acc Margin: 40dB



**TUV Product Service
Conducted Emissions**

EUT: VM105-10179 (SSU)
Manuf: ADcom Information Services
Op Cond: Receive Mode
Operator: Dave Bernardin
Test Spec: FCC Part 15.207(a)
Comment: 115 Vac 60 Hz Line 2
SC201187
Date: 07. Mar 02 11:46

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.45000	28.4	48.0
0.58500	25.6	48.0
0.63000	23.7	48.0
0.76000	19.0	48.0
0.91000	18.5	48.0
1.21000	19.5	48.0
1.32500	18.9	48.0
1.46500	18.1	48.0
1.86500	18.0	48.0
2.32500	17.2	48.0
2.82500	17.4	48.0
3.02500	17.4	48.0
3.87000	17.5	48.0
4.31000	17.5	48.0
5.34000	17.7	48.0
5.84000	17.7	48.0
7.24000	17.5	48.0
8.12000	17.7	48.0
9.94500	17.6	48.0
11.25500	17.8	48.0
14.63500	18.4	48.0
18.00500	34.9	48.0
20.00500	33.8	48.0
22.01000	30.7	48.0
28.01000	45.8	48.0

* limit exceeded

TUV Product Service Conducted Emissions

EUT: VM105-10179 (SSU)
 Manuf: ADcom Information Services
 Op Cond: Transmit Mode
 Operator: Dave Bernardin
 Test Spec: FCC Part 15.207(a)
 Comment: 115 Vac 60 Hz Line 1
 SC201187
 Date: 07. Mar 02 10:27

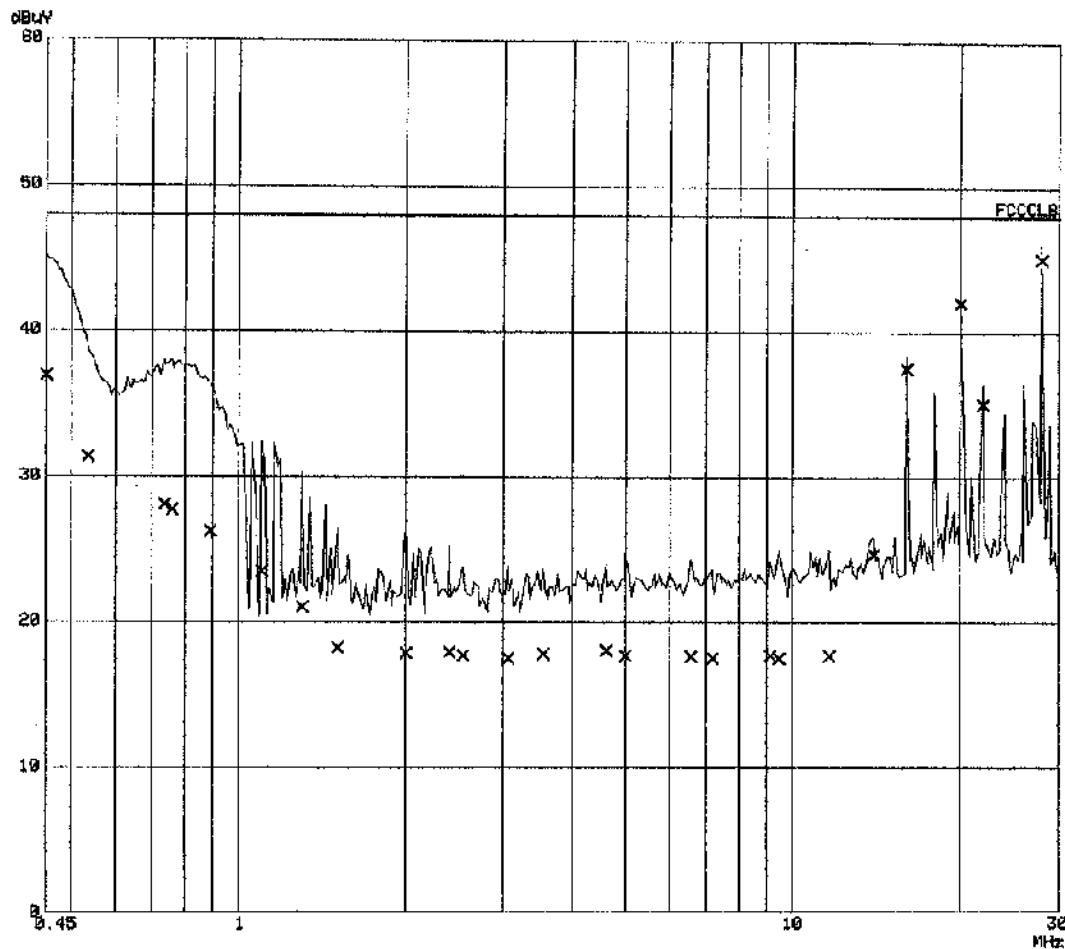
Scan Settings (2 Ranges)

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
5	9k	30M	20dBLISN

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 25
 Acc Margin: 40dB



**TUV Product Service
 Conducted Emissions**

EUT: VM105-10179 (SSU)
 Manuf: ADcom Information Services
 Op Cond: Transmit Mode
 Operator: Dave Bernardin *DB*
 Test Spec: FCC Part 15.207(a)
 Comment: 115 Vac 60 Hz Line 1
 SC201187
 Date: 07. Mar 02 10:27

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.45000	36.9	48.0
0.53500	31.4	48.0
0.73500	28.1	48.0
0.76000	27.8	48.0
0.89000	26.2	48.0
1.10000	23.5	48.0
1.30000	21.1	48.0
1.50500	18.3	48.0
2.00000	17.9	48.0
2.40000	18.0	48.0
2.53500	17.7	48.0
3.05500	17.5	48.0
3.54500	17.8	48.0
4.60500	18.1	48.0
4.99000	17.7	48.0
6.55000	17.6	48.0
7.16500	17.5	48.0
9.12000	17.7	48.0
9.45500	17.5	48.0
11.65000	17.7	48.0
14.00500	24.7	48.0
16.00500	37.5	48.0
20.00500	42.0	48.0
22.00500	35.1	48.0
28.01000	45.1 <i>OK</i>	48.0

* limit exceeded

TUV Product Service Conducted Emissions

EUT: VM105-10179 (SSU)
 Manuf: ADcom Information Services
 Op Cond: Transmit Mode
 Operator: Dave Bernardin
 Test Spec: FCC Part 15.207(a)
 Comment: 115 Vac 60 Hz Line 2
 SC201187
 Date: 07. Mar 02 11:23

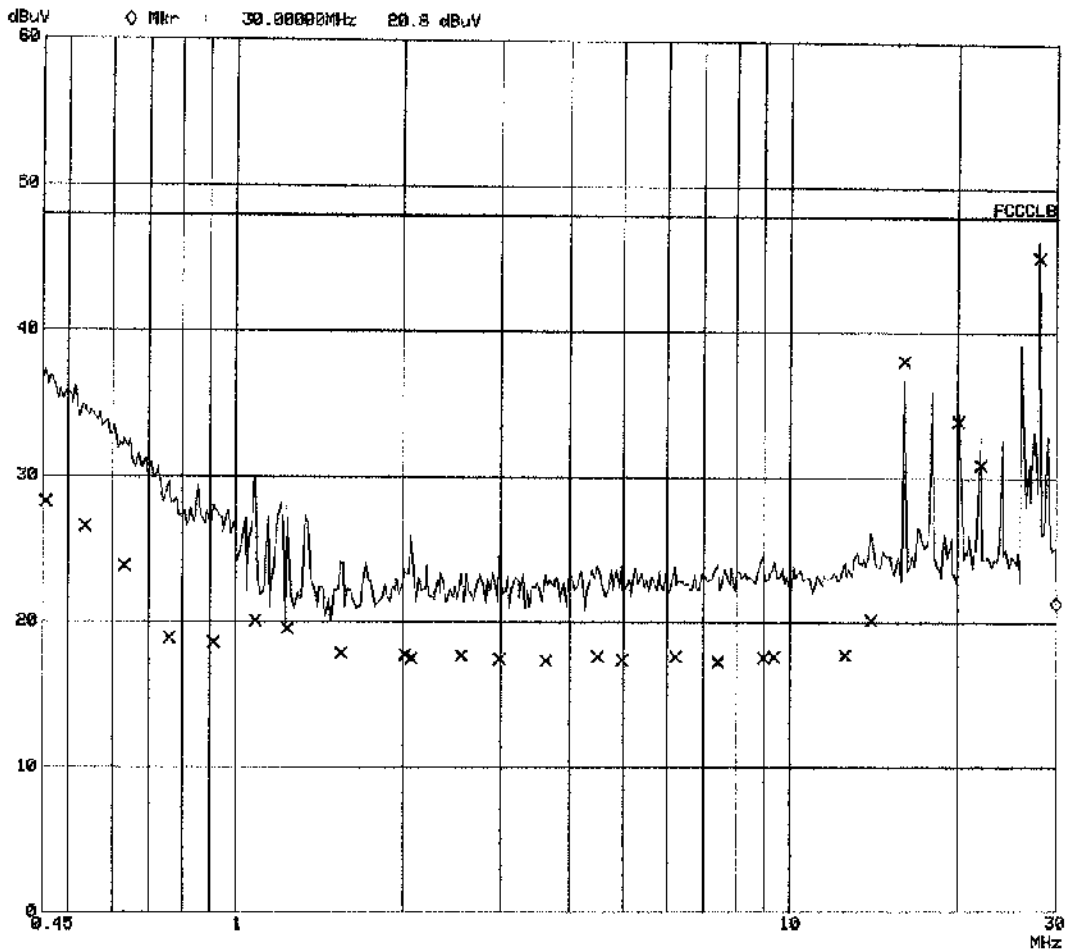
Scan Settings (2 Ranges)

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

Transducer No.	Start	Stop	Name
5	9k	30M	20dBLISN

Final Measurement: x QP

Meas Time: 1 s
 Subranges: 25
 Acc Margin: 40dB



**TUV Product Service
Conducted Emissions**

EUT: VM105-10179 (SSU)
 Manuf: ADcom Information Services
 Op Cond: Transmit Mode
 Operator: Dave Bernardine *DB*
 Test Spec: FCC Part 15.207(a)
 Comment: 115 Vac 60 Hz Line 2
 SC201187
 Date: 07. Mar 02 11:23

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.45500	28.3	48.0
0.53500	26.6	48.0
0.63000	23.9	48.0
0.76000	18.9	48.0
0.91000	18.6	48.0
1.08500	20.1	48.0
1.23500	19.6	48.0
1.54500	17.9	48.0
2.01500	17.8	48.0
2.06500	17.5	48.0
2.54500	17.7	48.0
2.98500	17.5	48.0
3.62500	17.3	48.0
4.50000	17.7	48.0
4.97000	17.4	48.0
6.20500	17.7	48.0
7.41000	17.3	48.0
8.94000	17.6	48.0
9.36000	17.7	48.0
12.54000	17.8	48.0
14.00000	20.1	48.0
16.00500	38.1	48.0
20.00500	33.9	48.0
22.00500	30.9	48.0
28.01000	45.3 <i>DB</i>	48.0

* limit exceeded

ATTESTATION STATEMENT

GENERAL REMARKS:

SUMMARY:

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

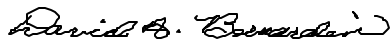
■ - Performed

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