

ADDENDUM TO FC01-054
FOR THE
SOIL MOISTURE STATION, 6361
FCC PART 15 SUBPART C
SECTIONS 15.249 & 15.207
COMPLIANCE

DATE OF ISSUE: AUGUST 17, 2001

PREPARED FOR:

Davis Instruments
3465 Diablo Avenue
Hayward, CA 94545

PREPARED BY:

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Mariposa, CA 95338

Date of test: July 24 – August 3, 2001

W.O. No.: 77339

Report No.: FC01-054A

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TABLE OF CONTENTS

Administrative Information	4
Summary of Results	5
Test Overview	5
Modifications Required for Compliance	5
Approvals	5
Equipment Under Test (EUT) Description	6
Equipment Under Test	6
Peripheral Devices.....	6
15.33 Frequency Range Tested	6
15.249 Radiated Emissions	6
15.207 Conducted Emissions	6
EUT Operating Frequency	6
Temperature and Humidity During Testing	6
Report of Measurements	7
Table 1: 15.249(a) - Fundamental Radiated Emission Levels	7
Table 2: 15.249/15.209 - Six Highest Radiated Emission Levels: 9kHz-1000MHz.....	8
Table 3: 15.249/15.209 – Six Highest Radiated Emission Levels: 1-10GHz	9
Table 4: 15.207 - Six Highest Conducted Emission Levels.....	10
Measurement Uncertainty	11
EUT Setup.....	11
Correction Factors	11
Table A: Sample Calculations.....	11
Test Instrumentation and Analyzer Settings	13
Table B: 15.35 Analyzer Bandwidth Settings Per Frequency Range	13
Spectrum Analyzer Detector Functions	14
Peak	14
Quasi-Peak	14
Average	14
EUT Testing	15
Radiated Emissions	15
Mains Conducted Emissions	16
Transmitter Characteristics	16
15.203 Antenna Requirements.....	16
15.205 Restricted Bands.....	16
15.215 Additional Provisions to the General Radiated Emission Limitations....	16
Appendix A : Setup Photographs.....	17
Photograph Showing Radiated Emissions.....	18

Photograph Showing Radiated Emissions.....	19
Photograph Showing Mains Conducted Emissions	20
Photograph Showing Radiated Emissions.....	21
Appendix B: Test Equipment List.....	22
Appendix C: Measurement Data Sheets.....	23
Fundamental Output Plot	24
Bandedge Plot	25
Test Data Sheets	26

CKC Laboratories, Inc. has received Certificates of Accreditation from the following agencies:

A2LA (USA); DATech (Germany); BSMI (Taiwan); Nemko (Norway); and GOST (Russia).

CKC Laboratories, Inc. has received test site Registration Acceptance from the following agencies:

FCC (USA); VCCI (Japan); and Industry Canada.

CKC Laboratories, Inc. has received Letters of Acceptance through an MRA for the following agencies:

ACA/NATA (Australia); SABS (South Africa); SWEDAC (Sweden); Radio Communications Agency (RA); HOKLAS (Hong Kong); Bakom (Swiss); BIPT (Belgium); Denmark Telestyrelsen; RvA (Netherlands); SEE (Luxembourg) SITTEL (Bolivia); and UKAS (UK).

ADMINISTRATIVE INFORMATION

DATE OF TEST: July 24 - August 3, 2001

DATE OF RECEIPT: July 24, 2001

PURPOSE OF TEST: To demonstrate the compliance of the Soil Moisture Station, 6361 with the requirements for FCC Part 15 Subpart C Sections 15.249 & 15.207 devices. This addendum is to correct the test range on table 2.

TEST METHOD: ANSI C63.4 (1992)

MANUFACTURER: Davis Instruments
3465 Diablo Avenue
Hayward, CA 94545

REPRESENTATIVE: Brett Preston

TEST LOCATION: CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

SUMMARY OF RESULTS

As received, the Davis Instruments Soil Moisture Station, 6361 was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 15 Subpart C Section 15.249 & 15.207
- ANSI C63.4 (1992) method

Canada

- RSS-210 using:
- FCC Part 15 Subpart C Section 15.249 & 15.207
- ANSI C63.4 (1992) method

The results in this report apply only to the items tested, as identified herein.

Test Overview

Section	Test Type	Results
15.33	Frequency Ranges	Pass
15.35	Bandwidth Settings	Pass
15.203	Antenna Requirements	Pass
15.205	Restricted Band	Pass
15.207	Mains Conducted Emissions	Pass
15.215(c)	Additional Provisions to the General Radiated Emissions Limitations (Bandwidth)	Pass
15.249(a)	Field Strength of Fundamental Frequency	Pass
15.249(c)/15.209	Field Strength of Radiated Spurious Emissions	Pass

MODIFICATIONS REQUIRED FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

QUALITY ASSURANCE:



Dennis Ward, Quality Manager

TEST PERSONNEL:



Randy Clark, EMC Engineer



Chuck Kendall, EMC/Lab Manager

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT is a soil moisture and temperature station. The EUT tested by CKC Laboratories was a production unit.

EQUIPMENT UNDER TEST

Soil Moisture Station

Manuf: Davis Instruments
Model: 6361
Serial: 002
FCC ID: IR2 (Pending)

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

15.33 FREQUENCY RANGE TESTED

15.249/15.209 Radiated: 9 kHz – 10 GHz
15.207 Conducted: 450 kHz – 30 MHz

EUT OPERATING FREQUENCY

The EUT was operating at 916 MHz in the 902-928 MHz operating frequency band.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the Soil Moisture Station, 6361. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

Table 1: 15.249(a) - Fundamental Radiated Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
916.582	87.0	23.8	-27.3	6.7		90.2	93.9	-3.7	H-1
916.583	85.0	23.8	-27.3	6.7		88.2	93.9	-5.7	V-1
916.605	81.2	23.8	-27.3	6.7		84.4	93.9	-9.5	V-2
916.606	86.6	23.8	-27.3	6.7		89.8	93.9	-4.1	H-2

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart C Section 15.249(a)
Test Distance: 3 Meters

NOTES:
H = Horizontal Polarization
V = Vertical Polarization
1 = AC Powered
2 = Battery Powered

COMMENTS: EUT is a wireless soil moisture and temperature station transmitting continuously on 916MHz. RBW 120kHz VBW 120kHz. EUT is powered by battery and AC adapter. The solar panel is solely used as a charging device. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 902-928MHz.

Table 2: 15.249/15.209 - Six Highest Radiated Emission Levels: 9kHz-1000MHz

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
180.040	30.6	16.4	-26.8	2.7		22.9	43.5	-20.6	V
324.010	30.8	19.8	-26.6	3.8		27.8	46.0	-18.2	H
465.102	31.7	17.1	-27.6	4.6		25.8	46.0	-20.2	H
498.858	31.1	17.8	-27.8	4.7		25.8	46.0	-20.2	V
576.178	30.7	19.0	-27.9	5.2		27.0	46.0	-19.0	H
619.746	31.3	19.7	-27.9	5.4		28.5	46.0	-17.5	H

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart C Section 15.249/15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is a wireless soil moisture and temperature station transmitting continuously on 916MHz. EUT is powered by battery and AC adapter. The solar panel is solely used as a charging device. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 9kHz - 30MHz **No spurious emissions found below 30MHz.**

Table 3: 15.249/15.209 – Six Highest Radiated Emission Levels: 1-10GHz

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
1832.920	47.4	27.8	-35.4	6.6		46.4	54.0	-7.6	VA-1
1833.083	49.5	27.8	-35.4	6.6		48.5	54.0	-5.5	H-2
1833.099	48.7	27.8	-35.4	6.6		47.7	54.0	-6.3	H-1
1833.179	49.2	27.8	-35.4	6.6		48.2	54.0	-5.8	V-2
2749.468	44.8	28.9	-35.0	9.1		47.8	54.0	-6.2	H-1
3665.858	40.3	31.8	-36.0	9.6		45.7	54.0	-8.3	H-1

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart C Section 15.249/15.209
Test Distance: 3 Meters

NOTES:

H = Horizontal Polarization
V = Vertical Polarization
A = Averaged
1 = AC Powered
2 = Battery Powered

COMMENTS: EUT is a wireless soil moisture and temperature station transmitting continuously on 916MHz. EUT is powered by battery and AC adapter. The solar panel is solely used as a charging device. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 1-10 GHz.

Table 4: 15.207 - Six Highest Conducted Emission Levels

FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV	SPEC LIMIT dBμV	MARGIN dB	NOTES
		Lisn dB							
0.551968	31.9	0.5		0.1		32.5	48.0	-15.5	W
0.577042	33.7	0.5		0.1		34.3	48.0	-13.7	W
0.577042	32.1	0.4		0.1		32.6	48.0	-15.4	B
0.593758	34.5	0.5		0.1		35.1	48.0	-12.9	W
0.597101	31.9	0.4		0.1		32.4	48.0	-15.6	B
3.244160	33.1	0.4		0.1		33.6	48.0	-14.4	W

Test Method: ANSI C63.4 (1992)
 Spec Limit: FCC Part 15 Subpart C Section 15.207

NOTES: B = Black Lead
 W = White Lead

COMMENTS: EUT is a wireless soil moisture and temperature station continuously on 916MHz. EUT is powered by battery, solar and AC adapter. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 450kHz - 30MHz.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4 dB measurement uncertainty.

EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected. All excessive interconnecting cable was bundled in 30-40 centimeter lengths.

The radiated and conducted emissions data of the Soil Moisture Station, 6361, was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

A typical data sheet will display the following in column format:

#	Freq	Rdng	Amp	Bicon	Log 1	Cable	Corr	Spec	Margin	Polar
			15.31	Horn	LISN	Loop				

means reading number.

Freq is the frequency in MHz of the obtained reading.

Rdng is the reading obtained on the spectrum analyzer in dBμV.

Amp is the preamplifier factor or gain in dB.

Bicon is the biconical antenna factor in dB.

Log 1 is the log periodic antenna factor in dB.

Horn is the horn antenna factor in dB.

Loop is the magnetic loop antenna factor in dB.

Cable is the cable loss in dB of the coaxial cable on the OATS.

Dist is the distance factor in dB used when testing at a different test distance than the one stated in the spec.

Corr is the corrected reading in dBμV/m (field strength).

Spec is the specification limit (dB) stated in the FCC regulations.

Margin is the closeness to the specified limit in dB; + is over and - is under the limit.

Polar is the polarity of the antenna with respect to earth.

LISN is the line impedance stabilization network factor in dB for conducted emissions.

15.31 is the distance correction factor for frequencies below 30 MHz in accordance with FCC Part 15.31.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Appendix B were used to collect both the radiated and conducted emissions data for the Soil Moisture Station, 6361. For frequencies under 30 MHz the magnetic loop antenna was used. For radiated measurements below 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. The horn antenna was used for frequencies above 1000 MHz. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

FCC SECTION 15.35: TABLE B: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	450 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1 GHz	10 GHz	1 MHz

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the Soil Moisture Station, 6361.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

EUT TESTING

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For frequencies below 30 MHz the magnetic loop antenna was used. The frequency range of 30 MHz to 88 MHz was scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. The frequency range of 100 to 300 MHz was then scanned in the same manner using the biconical antenna and the peaks recorded. Lastly, a scan of the FM band from 88 to 110 MHz was made, using a reduced resolution bandwidth and frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 to 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 to 1000 MHz was again scanned. For frequencies exceeding 1000 MHz, the horn antenna was used. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. The test engineer maximized the readings with respect to the table rotation, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

Mains Conducted Emissions

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

For conducted emissions testing, a 30 to 50 second sweep time was used for automated measurements in the frequency bands of 450 kHz to 1.705 MHz, 1.705 MHz to 3 MHz, and 3 MHz to 30 MHz. All readings within 20 dB of the limit were recorded. At frequencies where the recorded emissions were close to the limit, further investigation was performed manually at a slower sweep rate.

TRANSMITTER CHARACTERISTICS

15.203 Antenna Requirements

The external antenna for the EUT has a unique connector that mounts directly to the printed circuit board.

15.205 Restricted Bands

The fundamental operating frequency of 916 MHz lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules.

Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

15.215 Additional Provisions to the General Radiated Emission Limitations

The fundamental frequency was kept within the central 80% of the permitted band in order to minimize the possibility of out-of-band operation. Refer to Appendix B for the test equipment used and Appendix C for the occupied bandwidth plot(s).

APPENDIX A

SETUP PHOTOGRAPHS

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View



Radiated Emissions - Back View

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Mains Conducted Emissions - Back View

APPENDIX B

TEST EQUIPMENT LIST

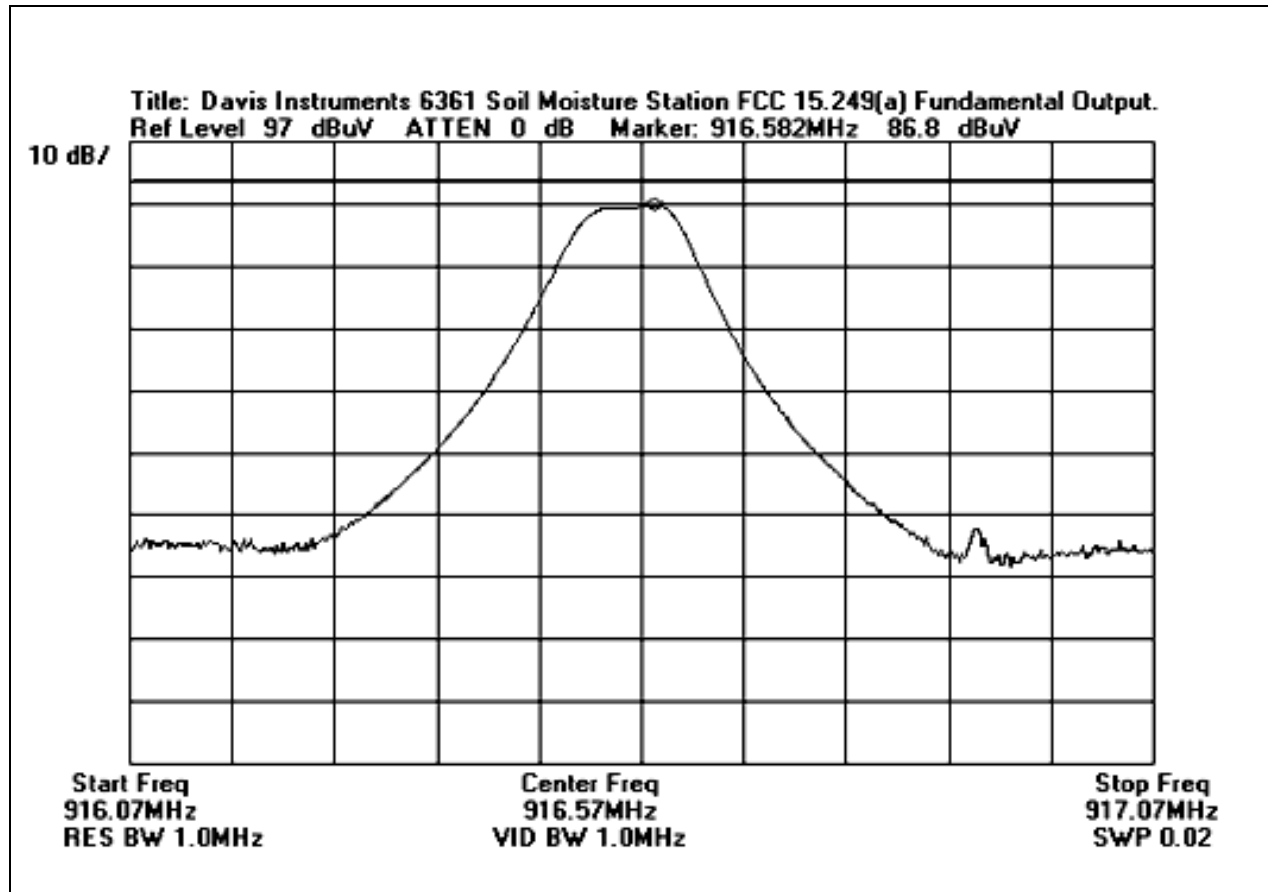
Industry of Canada File No. IC 3082-D

<i>Equipment</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Asset #</i>	<i>Cal Date</i>	<i>Cal Due</i>
3/10 meter Cable	Andrews	Hardline	N/A	N/A	02/27/01	2/27/02
Bicon Antenna	A&H	SAS-200/542	156	00225	12/8/00	12/8/01
LISN Set	Solar	8028-50-TS-24-BNC	814493, 474	02056	5/22/01	5/22/02
Log Antenna	A&H	SAS-200/510	154	01330	05/07/01	5/7/02
Magnetic Loop	EMCO	6502	1074	00226	5/31/01	5/31/02
Preamplifier	HP	8447D	1937A02604	00099	03/29/01	3/29/02
Preamplifier	HP	8449B	3008A00301	02010	10/13/00	10/13/01
QP Adapter	HP	85650A	2811A01267	00478	11/03/00	11/3/01
S/A Display	HP	8566B	2403A08241	00489	11/3/00	11/3/01
Spectrum Analyzer	HP	8566B	2209A01404	00490	11/3/00	11/3/01
1-18GHz Horn Antenna	EMCO	3115	9307-4085	00656	2/28/01	2/28/02
Cable #2 (2')	Andrew	FSJ1-50A	N/A	N/A	4/16/01	4/16/02
Cable #4 (50')	Andrew	FSJ1-50A	N/A	N/A	4/16/01	4/16/02
Cable #7 (25')	Andrew	FSJ1-50A	N/A	N/A	4/16/01	4/16/02

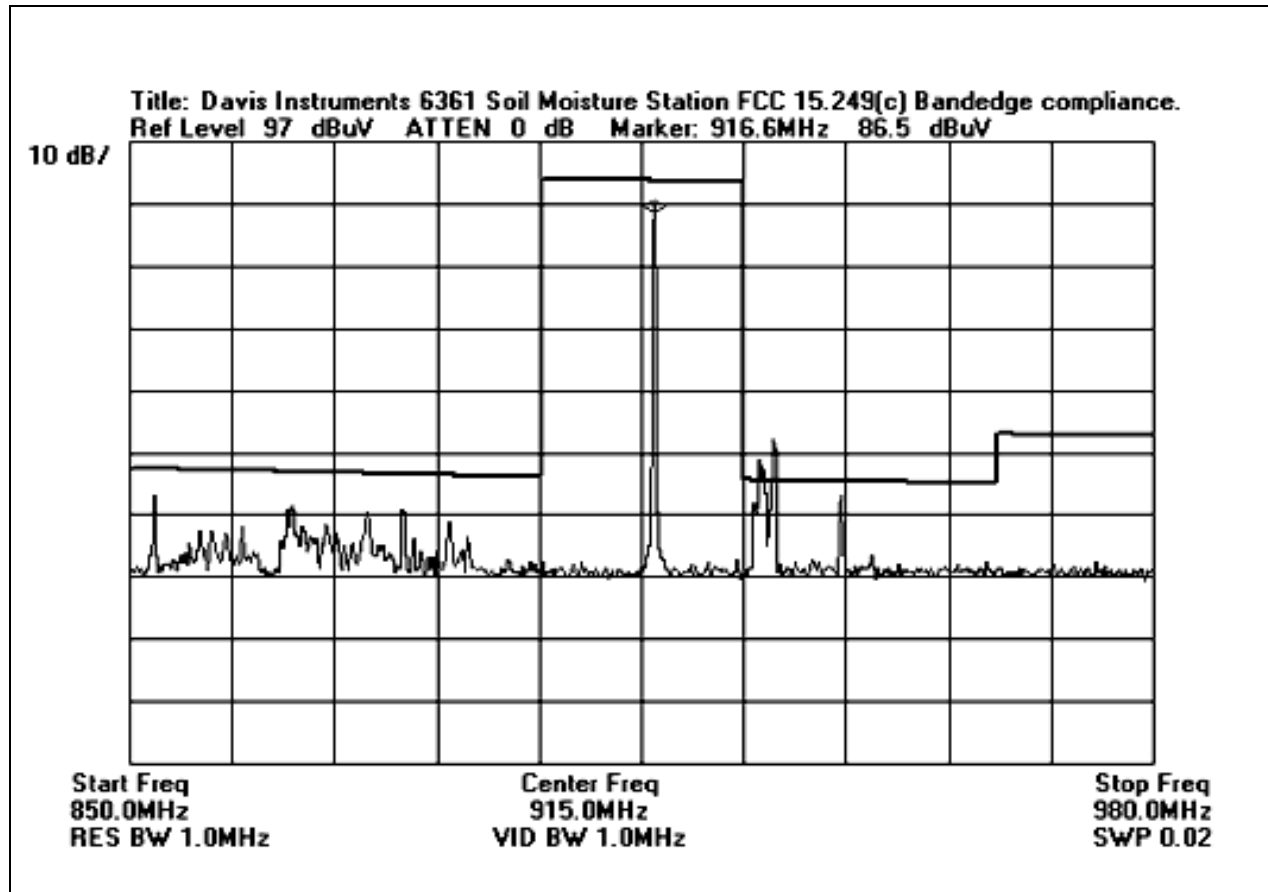
APPENDIX C

MEASUREMENT DATA SHEETS

FUNDAMENTAL OUTPUT PLOT



BANDEDGE PLOT



Bandedge Plot

Note: Readings that appear over the spec limit line are ambient readings.

TEST DATA SHEETS

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Davis Instruments**

Specification: **FCC 15.249(a)**

Work Order #: **77339**

Date: 08/03/2001

Test Type: **Maximized Emissions**

Time: 17:05:43

Equipment: **Soil Moisture Station**

Sequence#: 5

Manufacturer: Davis Instruments

Tested By: Randal Clark

Model: 6361

S/N: 002

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Soil Moisture Station*	Davis Instruments	6361	002

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

EUT is a wireless soil moisture and temperature station transmitting continuously on 916MHz. RBW 120kHz VBW 120kHz. EUT is powered by battery and AC adapter. The solar panel is solely used as a charging device. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 902-928MHz.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Amp dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	916.582M	87.0	-27.3	+0.0	+23.8	+6.7	+0.0	90.2	93.9	-3.7	Horiz
AC powered											
2	916.606M	86.6	-27.3	+0.0	+23.8	+6.7	+0.0	89.8	93.9	-4.1	Horiz
Battery Powered											
3	916.583M	85.0	-27.3	+0.0	+23.8	+6.7	+0.0	88.2	93.9	-5.7	Vert
AC powered											
4	916.605M	81.2	-27.3	+0.0	+23.8	+6.7	+0.0	84.4	93.9	-9.5	Vert
Battery Powered											

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Davis Instruments**

Specification: **FCC 15.209**

Work Order #: **77339**

Date: 07/25/2001

Test Type: **Maximized Emissions**

Time: 4:21:51 PM

Equipment: **Soil Moisture Station**

Sequence#: 16

Manufacturer: Davis Instruments

Tested By: Randal Clark

Model: 6361

S/N: 002

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Soil Moisture Station*	Davis Instruments	6361	002

Support Devices:

Function	Manufacturer	Model #	S/N
----------	--------------	---------	-----

Test Conditions / Notes:

EUT is a wireless soil moisture and temperature station transmitting continuously on 916MHz. EUT is powered by battery and AC adapter. The solar panel is solely used as a charging device. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 9kHz - 30MHz. **No spurious emissions found below 30MHz.**

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

#	Freq MHz	Rdng dBμV	Loop dB	Cable dB	15.31 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
---	-------------	--------------	------------	-------------	-------------	---------------	----------------	----------------	--------------	--------------

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Davis Instruments**
 Specification: **FCC 15.249(C) / 15.209**
 Work Order #: **77339**
 Test Type: **Maximized Emissions**
 Equipment: **Integrated Sensor Suite**
 Manufacturer: Davis Instruments
 Model: 6320
 S/N: 003

Date: 07/25/2001
 Time: 15:52:35
 Sequence#: 12
 Tested By: Randal Clark

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Integrated Sensor Suite*	Davis Instruments	6320	003

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

EUT is a wireless soil moisture and temperature station transmitting continuously on 916MHz. RBW 120kHz VBW 120kHz. EUT is powered by battery and AC adapter. The solar panel is solely used as a charging device. AC adapter powered by 120VAC/60Hz. Data represents both AC and battery powered operation. Frequency Range Tested: 30-1000MHz

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Amp dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	619.746M	31.3	-27.9	+0.0	+19.7	+5.4	+0.0	28.5	46.0	-17.5	Horiz
2	324.010M	30.8	-26.6	+0.0	+19.8	+3.8	+0.0	27.8	46.0	-18.2	Horiz
3	576.178M	30.7	-27.9	+0.0	+19.0	+5.2	+0.0	27.0	46.0	-19.0	Horiz
4	465.102M	31.7	-27.6	+0.0	+17.1	+4.6	+0.0	25.8	46.0	-20.2	Horiz
5	498.858M	31.1	-27.8	+0.0	+17.8	+4.7	+0.0	25.8	46.0	-20.2	Vert
6	180.040M	30.6	-26.8	+16.4	+0.0	+2.7	+0.0	22.9	43.5	-20.6	Vert
7	348.010M	29.6	-26.7	+0.0	+18.4	+3.9	+0.0	25.2	46.0	-20.8	Horiz
8	348.000M	29.4	-26.7	+0.0	+18.4	+3.9	+0.0	25.0	46.0	-21.0	Vert
9	86.382M	35.8	-27.1	+8.4	+0.0	+1.8	+0.0	18.9	40.0	-21.1	Horiz
10	444.048M	30.6	-27.5	+0.0	+16.7	+4.5	+0.0	24.3	46.0	-21.7	Vert
11	467.736M	29.9	-27.6	+0.0	+17.2	+4.6	+0.0	24.1	46.0	-21.9	Vert
12	250.362M	31.5	-26.6	+15.7	+0.0	+3.1	+0.0	23.7	46.0	-22.3	Horiz

13	260.608M	29.9	-26.5	+17.1	+0.0	+3.2	+0.0	23.7	46.0	-22.3	Horiz
14	240.040M	30.6	-26.6	+16.1	+0.0	+3.1	+0.0	23.2	46.0	-22.8	Horiz
15	420.038M	29.9	-27.3	+0.0	+16.2	+4.3	+0.0	23.1	46.0	-22.9	Vert
16	396.030M	30.0	-27.1	+0.0	+15.9	+4.1	+0.0	22.9	46.0	-23.1	Vert
17	124.990M	30.6	-27.0	+14.4	+0.0	+2.3	+0.0	20.3	43.5	-23.2	Horiz
18	240.014M	30.1	-26.6	+16.1	+0.0	+3.1	+0.0	22.7	46.0	-23.3	Vert
19	131.084M	30.4	-26.9	+13.9	+0.0	+2.3	+0.0	19.7	43.5	-23.8	Vert

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Davis Instruments**
 Specification: **FCC 15.249(C) / 15.209**
 Work Order #: **77339** Date: 08/06/2001
 Test Type: **Maximized Emissions** Time: 18:43:49
 Equipment: **Soil Moisture Station** Sequence#: 4
 Manufacturer: Davis Instruments Tested By: Randal Clark
 Model: 6361
 S/N: 002

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Soil Moisture Station*	Davis Instruments	6361	002

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

EUT is a wireless soil moisture and temperature station transmitting continuously on 916MHz. EUT is powered by battery and AC adapter. The solar panel is solely used as a charging device. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 1-10 GHz

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Amp Cable dB	Horn dB	Cable dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1833.083M	49.5	-35.4 +2.1	+27.8	+0.2	+4.3	+0.0	48.5	54.0	-5.5	Horiz
									Battery Powered		
2	1833.179M	49.2	-35.4 +2.1	+27.8	+0.2	+4.3	+0.0	48.2	54.0	-5.8	Vert
									Battery Powered		
3	2749.468M	44.8	-35.0 +3.1	+28.9	+0.9	+5.1	+0.0	47.8	54.0	-6.2	Horiz
									AC Powered		
4	1833.099M	48.7	-35.4 +2.1	+27.8	+0.2	+4.3	+0.0	47.7	54.0	-6.3	Horiz
									AC Powered		
5	1832.920M	47.4	-35.4 +2.1	+27.8	+0.2	+4.3	+0.0	46.3	54.0	-7.7	Vert
	Ave								AC Powered		
^	1832.920M	51.5	-35.4 +2.1	+27.8	+0.2	+4.3	+0.0	50.5	54.0	-3.5	Vert
									AC Powered		
7	3665.858M	40.3	-36.0 +3.1	+31.8	+0.3	+6.2	+0.0	45.7	54.0	-8.3	Horiz
									AC Powered		
8	2749.570M	41.8	-35.0 +3.1	+28.8	+0.9	+5.1	+0.0	44.7	54.0	-9.3	Vert
									AC Powered		

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Davis Instruments**

Specification: **FCC 15.207**

Work Order #: **77339**

Date: 07/25/2001

Test Type: **Conducted Emissions**

Time: 3:58:55 PM

Equipment: **Soil Moisture Station**

Sequence#: 8

Manufacturer: Davis Instruments

Tested By: Randal Clark

Model: 6361

S/N: 002

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Soil Moisture Station*	Davis Instruments	6361	002

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

EUT is a wireless soil moisture and temperature station continuously on 916MHz. EUT is powered by battery, solar and AC adapter. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 450kHz - 30MHz

Measurement Data:

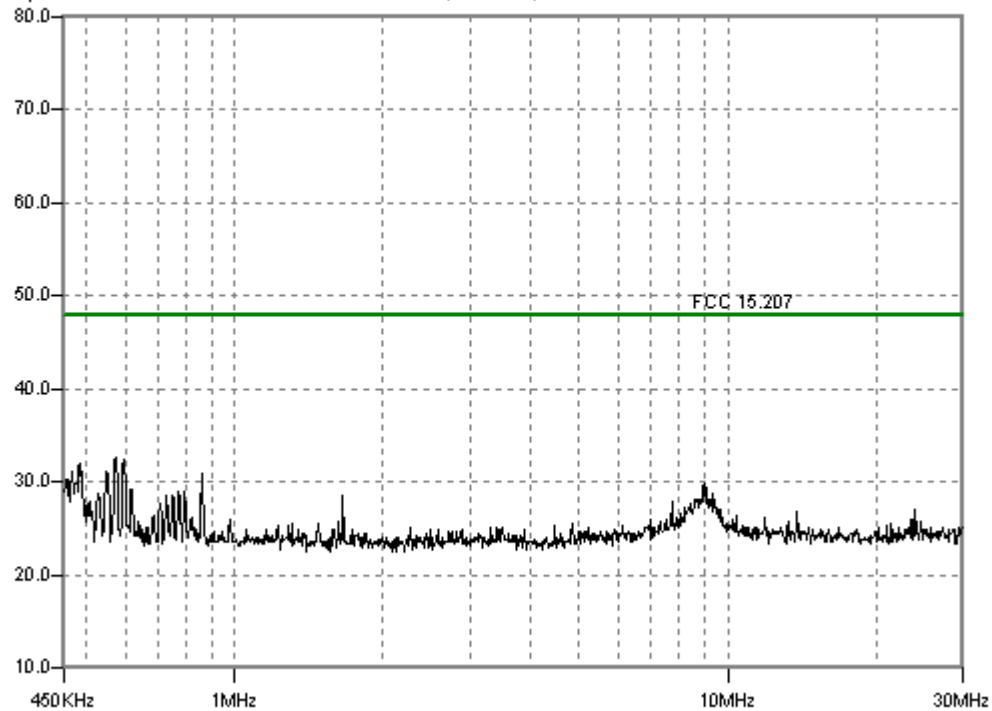
Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB μ V	Cable		LISN		Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	577.042k	32.1	+0.1	+0.4			+0.0	32.6	48.0	-15.4	Black
2	597.101k	31.9	+0.1	+0.4			+0.0	32.4	48.0	-15.6	Black
3	485.104k	31.4	+0.1	+0.4			+0.0	31.9	48.0	-16.1	Black
4	481.760k	31.3	+0.1	+0.4			+0.0	31.8	48.0	-16.2	Black
5	470.059k	30.7	+0.1	+0.4			+0.0	31.2	48.0	-16.8	Black
6	548.624k	30.6	+0.1	+0.4			+0.0	31.1	48.0	-16.9	Black
7	857.870k	30.5	+0.1	+0.4			+0.0	31.0	48.0	-17.0	Black
8	553.639k	30.5	+0.1	+0.4			+0.0	31.0	48.0	-17.0	Black
9	455.851k	29.7	+0.1	+0.4			+0.0	30.2	48.0	-17.8	Black
10	9.010M	24.5	+0.2	+5.1			+0.0	29.8	48.0	-18.2	Black
11	8.942M	24.6	+0.2	+4.9			+0.0	29.7	48.0	-18.3	Black
12	617.160k	28.7	+0.1	+0.4			+0.0	29.2	48.0	-18.8	Black
13	792.678k	28.4	+0.1	+0.4			+0.0	28.9	48.0	-19.1	Black

14	770.947k	28.4	+0.1	+0.4	+0.0	28.9	48.0	-19.1	Black
15	9.324M	24.6	+0.2	+3.9	+0.0	28.7	48.0	-19.3	Black
16	530.237k	28.2	+0.1	+0.4	+0.0	28.7	48.0	-19.3	Black
17	1.663M	28.2	+0.1	+0.3	+0.0	28.6	48.0	-19.4	Black
18	727.486k	28.2	+0.1	+0.3	+0.0	28.6	48.0	-19.4	Black
19	749.216k	28.0	+0.1	+0.4	+0.0	28.5	48.0	-19.5	Black
20	8.710M	23.7	+0.2	+4.3	+0.0	28.2	48.0	-19.8	Black

CKC Laboratories, Inc. Date: 07/25/2001 Time: 3:58:55 PM WO#: 77339
 FCC 15.207 Test Lead: Black Sequence#: 8
 dBµV Davis Instruments 6361 Soil Moisture Station powered by 120VAC/60Hz



Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Davis Instruments**

Specification: **FCC 15.207**

Work Order #: **77339**

Date: 07/25/2001

Test Type: **Conducted Emissions**

Time: 4:02:58 PM

Equipment: **Soil Moisture Station**

Sequence#: 9

Manufacturer: Davis Instruments

Tested By: Randal Clark

Model: 6361

S/N: 002

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Soil Moisture Station*	Davis Instruments	6361	002

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

EUT is a wireless soil moisture and temperature station continuously on 916MHz. EUT is powered by battery, solar and AC adapter. AC adapter powered by 120VAC/60Hz. Frequency Range Tested: 450kHz - 30MHz

Measurement Data:

Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB μ V	Cable		LISN		Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	593.758k	34.5	+0.1		+0.5		+0.0	35.1	48.0	-12.9	White
2	577.042k	33.7	+0.1		+0.5		+0.0	34.3	48.0	-13.7	White
3	3.244M	33.1	+0.1		+0.4		+0.0	33.6	48.0	-14.4	White
4	551.968k	31.9	+0.1		+0.5		+0.0	32.5	48.0	-15.5	White
5	483.432k	31.5	+0.1		+0.6		+0.0	32.2	48.0	-15.8	White
6	618.832k	31.5	+0.1		+0.5		+0.0	32.1	48.0	-15.9	White
7	857.035k	30.5	+0.1		+0.5		+0.0	31.1	48.0	-16.9	White
8	465.044k	30.3	+0.1		+0.6		+0.0	31.0	48.0	-17.0	White
9	480.089k	30.1	+0.1		+0.6		+0.0	30.8	48.0	-17.2	White
10	456.686k	30.0	+0.1		+0.6		+0.0	30.7	48.0	-17.3	White
11	452.507k	29.8	+0.1		+0.6		+0.0	30.5	48.0	-17.5	White
12	710.770k	29.6	+0.1		+0.5		+0.0	30.2	48.0	-17.8	White
13	730.829k	29.5	+0.1		+0.5		+0.0	30.1	48.0	-17.9	White

14	531.073k	29.3	+0.1	+0.6	+0.0	30.0	48.0	-18.0	White
15	7.727M	26.9	+0.2	+2.6	+0.0	29.7	48.0	-18.3	White
16	739.187k	28.6	+0.1	+0.5	+0.0	29.2	48.0	-18.8	White
17	505.163k	28.2	+0.1	+0.6	+0.0	28.9	48.0	-19.1	White
18	493.462k	28.2	+0.1	+0.6	+0.0	28.9	48.0	-19.1	White
19	6.963M	24.8	+0.2	+3.8	+0.0	28.8	48.0	-19.2	White
20	704.083k	28.1	+0.1	+0.5	+0.0	28.7	48.0	-19.3	White

CKC Laboratories, Inc. Date: 07/25/2001 Time: 4:02:58 PM WO#: 77339
 FCC 15.207 Test Lead: White Sequence#: 9
 dBµV Davis Instruments 6361 Soil Moisture Station powered by 120VAC/60Hz

