



DAVIS INSTRUMENTS ADDENDUM TO FC01-048

FOR THE

**ISS PLUS WITH SOLAR-POWERED FAN
ASPIRATED RADIATION SHIELD, 6326**

FCC PART 15 SUBPART C SECTION 15.249 & 15.209

COMPLIANCE

DATE OF ISSUE: JULY 11, 2001

PREPARED FOR:

Davis Instruments
3465 Diablo Ave.
Hayward, CA 94545

PREPARED BY:

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5473A Clouds Rest
Mariposa, CA 95338

W.O. No.: 76968

Date of test: June 28 and July 11, 2001

Report No.: FC01-048A

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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:

June 28 and July 11, 2001

DATE OF RECEIPT:

June 28, 2001

PURPOSE OF TEST:

To demonstrate the compliance of the ISS Plus with Solar-powered Fan Aspirated Radiation Shield, 6326, with the requirements for FCC Part 15 Subpart C Section 15.249 and 15.209 devices. The addendum has new fundamental readings.

TEST METHOD:

ANSI C63.4 (1992)

MANUFACTURER:

Davis Instruments
3465 Diablo Ave.
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 ISS Plus with Solar-powered Fan Aspirated Radiation Shield, 6326 was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 15 Subpart C Section 15.249 and 15.209
- ANSI C63.4 (1992) method

Canada

RSS-210 using:

- FCC Part 15 Subpart C Section 15.249 and 15.209
- 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 |
| 15.249(a) | Field Strength of Fundamental Frequency | Pass |
| 15.249(c)/15.209 | Field Strength of Radiated Spurious Emissions | Pass |
| 15.249(c)/15.209 | Field Strength of Spurious Emissions > 1000 MHz | Pass |

MODIFICATIONS REQUIRED FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

QUALITY ASSURANCE:



Dennis Ward, Quality Manager



Chuck Kendall, EMC/Lab Manager

TEST PERSONNEL:



Randy Clark, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit.

The ISS Plus is installed outside to measure weather parameters (temp, wind speed, etc.) and it transmits the data back to a receiver in home or office at 916 MHz using OOK modulation. Packets are sent every 2.5 seconds and packet length is 12 ms.

EQUIPMENT UNDER TEST

ISS Plus with Solar-powered Fan Aspirated Radiation Shield

Manuf: Davis Instruments
Model: 6326
Serial: 0601-01
FCC ID: IR2DWW6326 (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

EUT OPERATING FREQUENCY

The EUT was operating 916.0 MHz.

BANDWIDTH

20dB bandwidth is 360 kHz at 100 kHz resolution bandwidth.

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 ISS Plus with Solar-powered Fan Aspirated Radiation Shield, 6326. 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: Fundamental Radiated Emission Levels | | | | | | | | | |
|---|--------------------------|--------------------|-----------|-------------|------------|--------------------------------|-------------------------|--------------|-------|
| FREQUENCY MHz | METER READING dBμV | CORRECTION FACTORS | | | | CORRECTED READING dBμV/m | SPEC LIMIT dBμV/m | MARGIN dB | NOTES |
| | | Ant dB | Amp dB | Cable dB | Dist dB | | | | |
| 916.739 | 88.8 | 23.8 | -27.3 | 6.7 | | 92.0 | 93.9 | -1.9 | H |
| 916.738 | 83.1 | 23.8 | -27.3 | 6.7 | | 86.3 | 93.9 | -7.6 | V |

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

EUT is an integrated sensor suite operating on a frequency of 916.0MHz. EUT is powered by battery in conjunction with a solar panel. EUT is transmitting in CW mode for the purpose of this test. Transmitter is normally on: 12.5 ms out of 2.5 seconds. RBW 120kHz VBW 120kHz.

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

| FREQUENCY MHz | METER READING dBμV | CORRECTION FACTORS | | | | CORRECTED READING dBμV/m | SPEC LIMIT dBμV/m | MARGIN dB | NOTES |
|------------------|--------------------------|--------------------|-----------|-------------|------------|--------------------------------|-------------------------|--------------|-------|
| | | Ant dB | Amp dB | Cable dB | Dist dB | | | | |
| 35.328 | 40.3 | 11.0 | -27.2 | 1.1 | | 25.2 | 40.0 | -14.8 | V |
| 85.976 | 39.3 | 8.3 | -27.1 | 1.8 | | 22.3 | 40.0 | -17.7 | V |
| 86.116 | 38.1 | 8.4 | -27.1 | 1.8 | | 21.2 | 40.0 | -18.8 | V |
| 179.803 | 34.2 | 16.4 | -26.8 | 2.7 | | 26.5 | 43.5 | -17.0 | H |
| 298.472 | 31.8 | 21.5 | -26.5 | 3.7 | | 30.5 | 46.0 | -15.5 | V |
| 372.107 | 32.4 | 17.1 | -26.9 | 4.0 | | 26.6 | 46.0 | -19.4 | H |

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

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is an integrated sensor suite operating on a frequency of 916.0MHz. EUT is powered by battery in conjunction with a solar panel. Transmitter is normally ON: 12.5 ms out of 2.5 seconds. Frequency Range tested from 30MHz - 1000MHz. No emissions found 9kHz to 30MHz. No emissions found in restricted bands.

| Table 3: Six Highest Radiated Emission Levels: 1-10GHZ | | | | | | | | | |
|--|--------------------------|--------------------|-----------|-------------|------------|--------------------------------|-------------------------|--------------|-------|
| FREQUENCY MHz | METER READING dBμV | CORRECTION FACTORS | | | | CORRECTED READING dBμV/m | SPEC LIMIT dBμV/m | MARGIN dB | NOTES |
| | | Ant dB | Amp dB | Cable dB | Dist dB | | | | |
| 1833.329 | 51.5 | 9.8 | -35.4 | 6.6 | | 32.5 | 54.0 | -21.5 | V |
| 1833.448 | 47.8 | 9.8 | -35.4 | 6.6 | | 28.8 | 54.0 | -25.2 | H |
| 2749.708 | 41.7 | 10.8 | -35.0 | 9.1 | | 26.6 | 54.0 | -27.4 | H |
| 2749.928 | 39.4 | 10.8 | -35.0 | 9.1 | | 24.3 | 54.0 | -29.7 | V |
| 3666.557 | 35.7 | 13.8 | -36.0 | 9.6 | | 23.1 | 54.0 | -30.9 | H |
| 3666.587 | 36.3 | 13.8 | -36.0 | 9.6 | | 23.7 | 54.0 | -30.3 | V |

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

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is an integrated sensor suite operating on a frequency of 916.0MHz. EUT is powered by battery in conjunction with a solar panel. EUT is transmitting in CW mode for the purpose of this test. Transmitter is normally ON: 12.5 ms out of 2.5 seconds. FCC 15.35 correction factor for averaging pulsed emissions: $20\log(12.5/100) = -18.06\text{dB}$ This correction factor used to average Harmonics of the fundamental. Frequency Range tested from 1GHz to 10GHz. No emissions found in restricted bands.

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. I/O cables were of the type and length specified in the individual requirements.

The radiated emissions data of the ISS Plus with Solar-powered Fan Aspirated Radiation Shield, 6326, 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 |
|---|------|------|-----------|-------|-------|-------|------|------|--------|-------|
| | | | FCC 15.31 | Duty | Horn | Loop | | | | |

means reading number.

Freq is the frequency in MHz of the obtained reading.

Rdng is the reading obtained on the spectrum analyzer in dB μ V.

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 dB μ V/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.

FCC 15.31 is the average correction called in FCC Part 15.31.

Duty is the duty cycle correction factor.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Appendix B were used to collect the radiated emissions data for the ISS Plus with Solar-powered Fan Aspirated Radiation Shield, 6326. Measurements below 30 MHz were taken using a magnetic loop antenna. 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.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. 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 |
| 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 | 1000 MHz | 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 ISS Plus with Solar-powered Fan Aspirated Radiation Shield, 6326.

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. Frequencies below 30 MHz were scanned using a magnetic loop antenna. 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.

TRANSMITTER CHARACTERISTICS

15.203 Antenna Requirements

Antenna Type: Integral
Connection to EUT: Integral, non-removable

The antenna is an integral part of the EUT and is NON-Removable; therefore the EUT complies with Section 15.203 of the FCC rules.

15.205 Restricted Bands

Operating frequency: 916.0 MHz

The fundamental operating frequency 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.

15.249(a) Power Output

The maximum effective radiated power (ERP) of the transmitter was measured to be 93.3dB μ V/m when measured at a test distance of three meters. This measurement was made with the EUT's integral antenna, as there is no provision for connecting an external antenna.

APPENDIX A

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

| INFORMATION ABOUT THE EQUIPMENT UNDER TEST | |
|---|--|
| Test Software/Firmware: | Console display used REV A. ISS used ver 1.4 |
| CRT was displaying: | None |
| Power Supplies Manufacturer: | None |
| Power Supplies Part Number: | Solar Panel (7011.015), 2 NiCad Batteries (7011.010), 3V Lithium Battery (7011.001) |
| AC Line Filter Manufacturer: | None |
| AC Line Filter Part Number: | None |

| I/O PORTS | |
|------------------|---|
| Type | # |
| | |

| CRYSTAL OSCILLATORS | |
|----------------------------|-------------|
| Type | Freq In MHz |
| | .0768 |

| PRINTED CIRCUIT BOARDS | | | | |
|-------------------------------|------------------|-------------|--------|----------|
| Function | Model & Rev | Clocks, MHz | Layers | Location |
| | | | | |
| SIM Board (ISS) | 7315.120 Rev B00 | .072 | 2 | Outdoors |
| Junction Board | 7315.058 Rev E00 | | 2 | Outdoors |
| Temp/Hum Board | 7315.110 Rev A01 | | 2 | Outdoors |

CABLE INFORMATION

| | | | |
|---------------------------|---|-------------------------|--------------|
| Cable #: | 1 | Cable(s) of this type: | 4 |
| Cable Type: | Phone | Shield Type: | None |
| Construction: | | Length In Meters: | 10, .3,.3,.3 |
| Connected To End (1): | | Connected To End (2): | |
| Connector At End (1): | | Connector At End (2): | |
| Shield Grounded At (1): | | Shield Grounded At (2): | |
| Part Number: | | Number of Conductors: | 4x4 (16) |
| Notes and/or description: | 26 AWG wire, 4 per cable, 4 cables with RJ terminations to Sim board. Sensor ends are soldered. | | |
| | | | |

| | | | |
|---------------------------|--|-------------------------|----|
| Cable #: | 2 | Cable(s) of this type: | 2 |
| Cable Type: | Stranded copper wire with insulation. | Shield Type: | |
| Construction: | | Length In Meters: | .3 |
| Connected To End (1): | | Connected To End (2): | |
| Connector At End (1): | | Connector At End (2): | |
| Shield Grounded At (1): | | Shield Grounded At (2): | |
| Part Number: | | Number of Conductors: | 3 |
| Notes and/or description: | 24 AWG Sim to junction board and junction board to temp/hum board. Plug on Junction Board. Soldered on Sim board and Temp/Hum board. | | |

| | | | |
|---------------------------|---------------------------------------|-------------------------|-----------|
| Cable #: | 3 | Cable(s) of this type: | 1 |
| Cable Type: | Stranded copper wire with insulation. | Shield Type: | |
| Construction: | | Length In Meters: | .3 |
| Connected To End (1): | Junction board | Connected To End (2): | Sim board |
| Connector At End (1): | Plug | Connector At End (2): | Soldered |
| Shield Grounded At (1): | | Shield Grounded At (2): | |
| Part Number: | | Number of Conductors: | 2 |
| Notes and/or description: | 22 AWG Junction board to Sim Power. | | |

| | | | |
|---------------------------|---------------------------------------|-------------------------|-----------|
| Cable #: | 4 | Cable(s) of this type: | 1 |
| Cable Type: | Stranded copper wire with insulation. | Shield Type: | |
| Construction: | | Length In Meters: | .8 |
| Connected To End (1): | Solar Panel | Connected To End (2): | Sim Board |
| Connector At End (1): | Soldered | Connector At End (2): | |
| Shield Grounded At (1): | | Shield Grounded At (2): | |
| Part Number: | | Number of Conductors: | 2 |
| Notes and/or description: | 22 AWG power from solar panel | | |

| | | | |
|---------------------------|---------------------------------------|-------------------------|------|
| Cable #: | 5 | Cable(s) of this type: | 1 |
| Cable Type: | Stranded copper wire with insulation. | Shield Type: | |
| Construction: | | Length In Meters: | .125 |
| Connected To End (1): | | Connected To End (2): | |
| Connector At End (1): | | Connector At End (2): | |
| Shield Grounded At (1): | | Shield Grounded At (2): | |
| Part Number: | | Number of Conductors: | 3 |
| Notes and/or description: | 24 AWG power to motor | | |

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

APPENDIX B

TEST EQUIPMENT LIST

Mariposa B

Industry of Canada File No. IC 3082-D

| Web # | Equipment | Manufacturer | Model # | Serial # | Asset # | Cal Date | Cal Due |
|--------------|----------------------|---------------------|----------------|-----------------|----------------|-----------------|----------------|
| 92 | Bicon Antenna | A&H | SAS-200/542 | 156 | 00225 | 12/8/00 | 12/8/01 |
| 341 | Log Antenna | A&H | SAS-200/510 | 154 | 01330 | 05/07/01 | 5/7/02 |
| 354 | Magnetic Loop | EMCO | 6502 | 1074 | 00226 | 5/31/01 | 5/31/02 |
| 401 | Preamp | HP | 8447D | 1937A02604 | 00099 | 03/29/01 | 3/29/02 |
| 439 | QP Adapter | HP | 85650A | 2811A01267 | 00478 | 11/03/00 | 11/3/01 |
| 472 | S/A Display | HP | 8566B | 2403A08241 | 00489 | 11/3/00 | 11/3/01 |
| 502 | Spectrum Analyzer | HP | 8566B | 2209A01404 | 00490 | 11/3/00 | 11/3/01 |
| 765 | Preamp | HP | 8449B | 3008A00301 | 02010 | 10/13/00 | 10/13/01 |
| 690 | Cable #4 (50') | Andrew | FSJ1-50A | N/A | N/A | 4/16/01 | 4/16/02 |
| 691 | Cable #2 (2') | Andrew | FSJ1-50A | N/A | N/A | 4/16/01 | 4/16/02 |
| 1107 | Cable #7 (25') | Andrew | FSJ1-50A | N/A | N/A | 4/16/01 | 4/16/02 |
| 737 | 1-18GHz Horn Antenna | EMCO | 3115 | 9307-4085 | 00656 | 2/28/01 | 2/28/02 |

APPENDIX C

MEASUREMENT 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 #: **76968**

Date: 07/11/2001

Test Type: **Maximized Emissions**

Time: 10:25:01

Equipment: **Wireless Integrated Sensor Suite**

Sequence#: 5

Manufacturer: Davis Instruments

Tested By: Randal Clark

Model: 6326 ISS Plus

S/N: 0601-01

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|-----------------------------------|-------------------|---------------|---------|
| Wireless Integrated Sensor Suite* | Davis Instruments | 6326 ISS Plus | 0601-01 |

Support Devices:

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

Test Conditions / Notes:

EUT is an integrated sensor suite operating on a frequency of 916.0MHz. EUT is powered by battery in conjunction with a solar panel. EUT is transmitting in CW mode for the purpose of this test. Transmitter is normally on: 12.5 ms out of 2.5 seconds. RBW 120kHz VBW 120kHz.

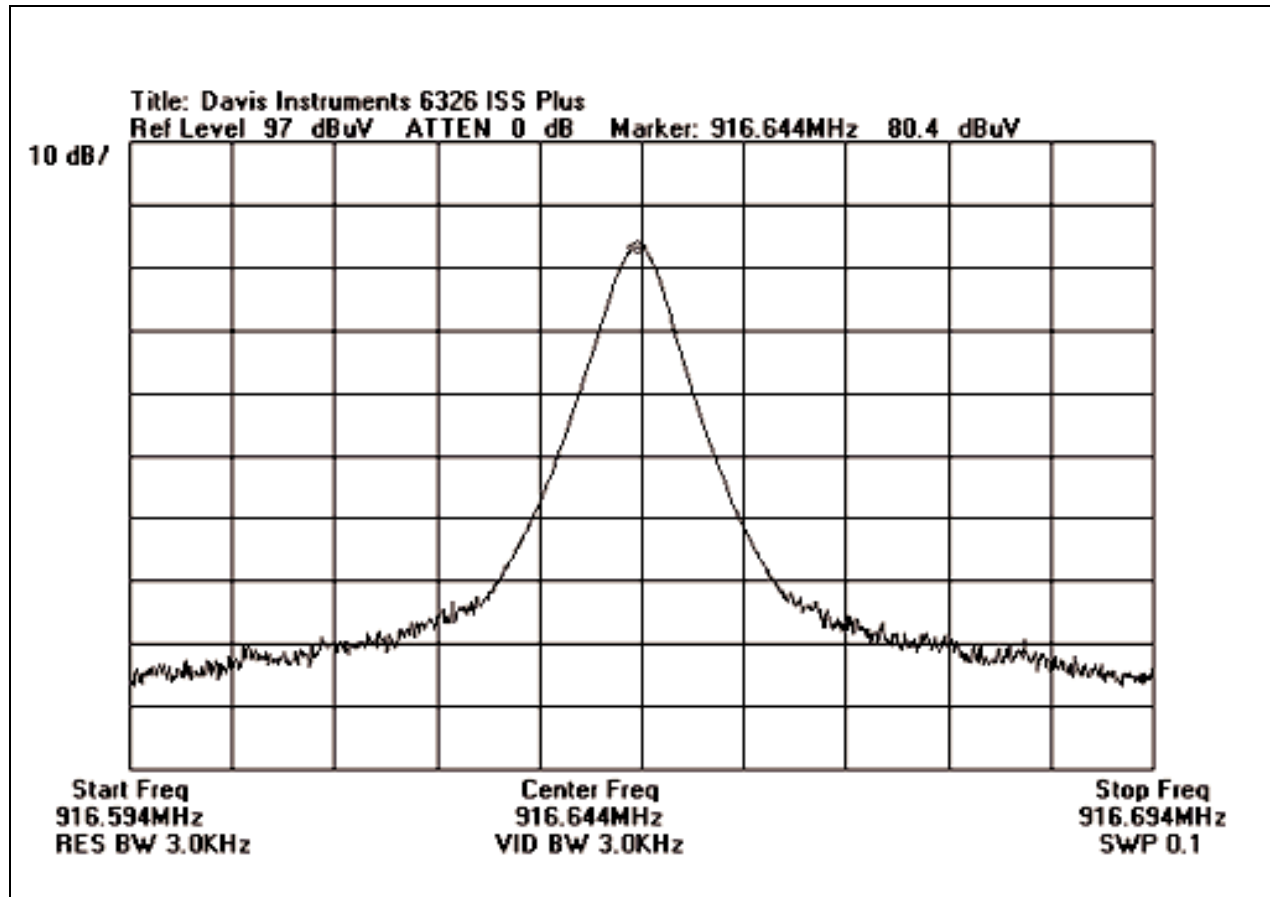
Measurement Data:

Reading listed by margin.

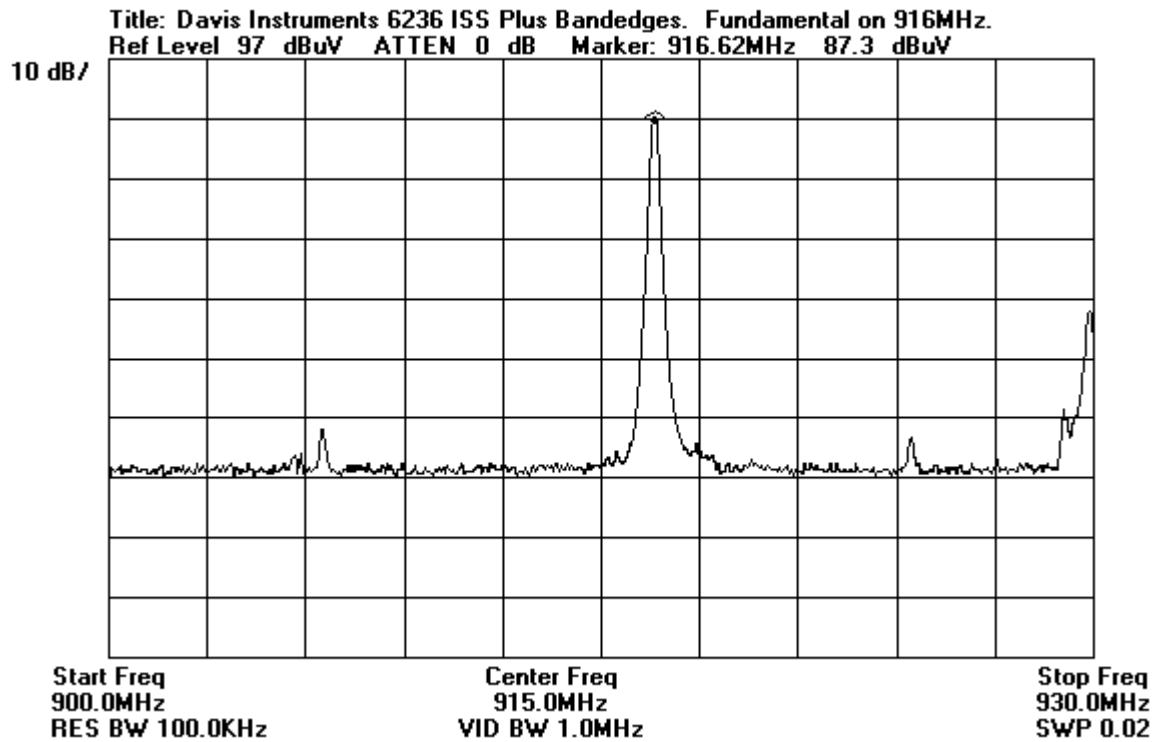
Test Distance: 3 Meters

| # | Freq MHz | Rdng dBμV | Amp | | | | Dist Table | Corr dBμV/m | Spec dBμV/m | Margin dB | Polar Ant |
|---|-------------|--------------|-------|-------|-------|----|---------------|----------------|----------------|--------------|--------------|
| | | | dB | Log 1 | Cable | dB | | | | | |
| 1 | 916.739M | 88.8 | -27.3 | +23.8 | +6.7 | | +0.0 | 92.0 | 93.9 | -1.9 | Horiz |
| 2 | 916.738M | 83.1 | -27.3 | +23.8 | +6.7 | | +0.0 | 86.3 | 93.9 | -7.6 | Vert |

FUNDAMENTAL PLOT



15.215(c) BAND EDGE PLOT



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

Customer: **Davis Instruments**

Specification: **FCC 15.209**

Work Order #: **76968**

Date: 06/28/2001

Test Type: **Maximized Emissions**

Time: 16:48:55

Equipment: **Wireless Integrated Sensor Suite**

Sequence#: 8

Manufacturer: Davis Instruments

Tested By: Randal Clark

Model: 6326 ISS Plus

S/N: 0601-01

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|-----------------------------------|-------------------|---------------|---------|
| Wireless Integrated Sensor Suite* | Davis Instruments | 6326 ISS Plus | 0601-01 |

Support Devices:

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

Test Conditions / Notes:

EUT is an integrated sensor suite operating on a frequency of 916.0MHz. EUT is powered by battery in conjunction with a solar panel. Transmitter is normally ON: 12.5 ms out of 2.5 seconds. Frequency Range tested from 9kHz - 30MHz. No emissions found 9kHz to 30MHz.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

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

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 #: **76968** Date: 06/28/2001
 Test Type: **Maximized Emissions** Time: 16:34:29
 Equipment: **Wireless Integrated Sensor Suite** Sequence#: 7
 Manufacturer: Davis Instruments Tested By: Randal Clark
 Model: 6326 ISS Plus
 S/N: 0601-01

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|-----------------------------------|-------------------|---------------|---------|
| Wireless Integrated Sensor Suite* | Davis Instruments | 6326 ISS Plus | 0601-01 |

Support Devices:

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

Test Conditions / Notes:

EUT is an integrated sensor suite operating on a frequency of 916.0MHz. EUT is powered by battery in conjunction with a solar panel. Transmitter is normally ON: 12.5 ms out of 2.5 seconds. Frequency Range tested from 30MHz - 1000MHz. No emissions found in restricted bands.

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 | 35.328M | 40.3 | -27.2 | +11.0 | +0.0 | +1.1 | +0.0 | 25.2 | 40.0 | -14.8 | Vert |
| 2 | 298.472M | 31.8 | -26.5 | +21.5 | +0.0 | +3.7 | +0.0 | 30.5 | 46.0 | -15.5 | Vert |
| 3 | 179.803M | 34.2 | -26.8 | +16.4 | +0.0 | +2.7 | +0.0 | 26.5 | 43.5 | -17.0 | Horiz |
| 4 | 85.976M | 39.3 | -27.1 | +8.3 | +0.0 | +1.8 | +0.0 | 22.3 | 40.0 | -17.7 | Vert |
| 5 | 86.116M | 38.1 | -27.1 | +8.4 | +0.0 | +1.8 | +0.0 | 21.2 | 40.0 | -18.8 | Vert |
| 6 | 372.107M | 32.4 | -26.9 | +0.0 | +17.1 | +4.0 | +0.0 | 26.6 | 46.0 | -19.4 | Horiz |
| 7 | 78.361M | 38.1 | -27.0 | +7.0 | +0.0 | +1.7 | +0.0 | 19.8 | 40.0 | -20.2 | Vert |
| 8 | 36.936M | 34.6 | -27.2 | +11.0 | +0.0 | +1.1 | +0.0 | 19.5 | 40.0 | -20.5 | Horiz |
| 9 | 265.312M | 30.9 | -26.5 | +17.7 | +0.0 | +3.2 | +0.0 | 25.3 | 46.0 | -20.7 | Vert |
| 10 | 165.834M | 31.8 | -26.8 | +14.4 | +0.0 | +2.5 | +0.0 | 21.9 | 43.5 | -21.6 | Vert |
| 11 | 128.916M | 31.7 | -27.0 | +14.1 | +0.0 | +2.3 | +0.0 | 21.1 | 43.5 | -22.4 | Horiz |
| 12 | 80.810M | 35.2 | -27.0 | +7.0 | +0.0 | +1.7 | +0.0 | 16.9 | 40.0 | -23.1 | Vert |
| 13 | 35.660M | 31.9 | -27.2 | +11.0 | +0.0 | +1.1 | +0.0 | 16.8 | 40.0 | -23.2 | Horiz |

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 #: **76968** Date: 06/28/2001
 Test Type: **Maximized Emissions** Time: 11:21:40
 Equipment: **Wireless Integrated Sensor Suite** Sequence#: 6
 Manufacturer: Davis Instruments Tested By: Randal Clark
 Model: 6326 ISS Plus
 S/N: 0601-01

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|-----------------------------------|-------------------|---------------|---------|
| Wireless Integrated Sensor Suite* | Davis Instruments | 6326 ISS Plus | 0601-01 |

Support Devices:

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

Test Conditions / Notes:

EUT is an integrated sensor suite operating on a frequency of 916.0MHz. EUT is powered by battery in conjunction with a solar panel. EUT is transmitting in CW mode for the purpose of this test. Transmitter is normally ON: 12.5 ms out of 2.5 seconds. FCC 15.35 correction factor for averaging pulsed emissions: $20\log(12.5/100) = -18.06\text{dB}$. This correction factor used to average Harmonics of the fundamental. Frequency Range tested from 1GHz to 10GHz. No emissions found in restricted bands.

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

| # | Freq MHz | Rdng dBμV | Amp Cable dB | Horn Duty dB | Cable dB | Cable dB | Dist Table | Corr dBμV/m | Spec dBμV/m | Margin dB | Polar Ant |
|---|-------------|--------------|--------------------|--------------------|-------------|-------------|---------------|----------------|----------------|--------------|--------------|
| 1 | 1833.329M | 51.5 | -35.4 +2.1 | +27.8 -18.0 | +0.2 | +4.3 | +0.0 | 32.5 | 54.0 | -21.5 | Vert |
| 2 | 1833.448M | 47.8 | -35.4 +2.1 | +27.8 -18.0 | +0.2 | +4.3 | +0.0 | 28.8 | 54.0 | -25.2 | Horiz |
| 3 | 2749.708M | 41.7 | -35.0 +3.1 | +28.8 -18.0 | +0.9 | +5.1 | +0.0 | 26.6 | 54.0 | -27.4 | Horiz |
| 4 | 2749.928M | 39.4 | -35.0 +3.1 | +28.8 -18.0 | +0.9 | +5.1 | +0.0 | 24.3 | 54.0 | -29.7 | Vert |
| 5 | 3666.587M | 36.3 | -36.0 +3.1 | +31.8 -18.0 | +0.3 | +6.2 | +0.0 | 23.7 | 54.0 | -30.3 | Vert |
| 6 | 3666.557M | 35.7 | -36.0 +3.1 | +31.8 -18.0 | +0.3 | +6.2 | +0.0 | 23.1 | 54.0 | -30.9 | Horiz |