



CERTIFICATION TEST REPORT
FOR THE
VANTAGE PRO CONSOLE, 6310
FCC PART 15 SUBPART C SECTION 15.249
COMPLIANCE

DATE OF ISSUE: OCTOBER 18, 2000

PREPARED FOR:

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Hayward, CA 94545

P.O. No:
W.O. No: 75121

Report No: FC00-101

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Date of test: August 23-25, 2000

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ADMINISTRATIVE INFORMATION

DATE OF TEST: August 23-25, 2000

PURPOSE OF TEST: To demonstrate the compliance of the Vantage Pro Console, 6310, with the requirements for devices.

MANUFACTURER: Davis Instruments
3465 Diablo Avenue
Hayward, CA 94545

REPRESENTATIVE: Brett Preston

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

TEST PERSONNEL: Chuck Kendall

TEST METHOD: ANSI C63.4 1992

FREQUENCY RANGE TESTED: 150 kHz – 10 GHz

EQUIPMENT UNDER TEST: Vantage Pro Console
Manuf: Davis Instruments
Model: 6310
Serial:

SUMMARY OF RESULTS

The Davis Instruments Vantage Pro Console, 6310, was tested in accordance with ANSI C63.4 1992 for compliance with FCC Part 15 Subpart C Section 15.249.

As received, the above equipment was found to be fully compliant with the limits of FCC Part 15 Subpart C Section 15.249. The results in this report apply only to the items tested, as identified herein.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The Vantage Pro Console is placed inside the home or office and displays on its LCD screen weather data transmitted from the Integrated Sensor Suite or other Davis transmitters that adhere to the "Davis Talk" protocol. Optionally, the console can retransmit the data it receives using the same data format.

MEASUREMENT UNCERTAINTY

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

EUT OPERATING FREQUENCY

The EUT was operating at 916.5 MHz.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within $+15^{\circ}\text{C}$ and $+35^{\circ}\text{C}$.
The relative humidity was between 20% and 75%.

PERIPHERAL DEVICES

The EUT was tested with the following peripherals:

CPU Laptop

Manuf: Toshiba
Model:
Serial:

Data Logger

Manuf: Davis Instruments
Model: 7345.017
Serial:

Wireless Repeater

Manuf: Davis Instruments
Model: 7625 OV
Serial:

Wireless Repeater

Manuf: Davis Instruments
Model: 7624 EU
Serial:

Wireless Repeater

Manuf: Davis Instruments
Model: 7624 UK
Serial:

Wireless Temperature Station

Manuf: Davis Instruments
Model: 6370
Serial:

Wireless Temperature Station

Manuf: Davis Instruments
Model: 6370 OV
Serial:

Anemometer Transmitter Kit

Manuf: Davis Instruments
Model: 6330
Serial:

Anemometer Transmitter Kit

Manuf: Davis Instruments
Model: 6330 OV
Serial:

Vantage Pro Console

Manuf: Davis Instruments
Model: 6310 C
Serial:

Vantage Pro Console

Manuf: Davis Instruments
Model: 6310 CUK
Serial:

Vantage Pro Console

Manuf: Davis Instruments
Model: 6310 EU
Serial:

Vantage Pro Console

Manuf: Davis Instruments
Model: 6310 CEU
Serial:

Vantage Pro Console

Manuf: Davis Instruments
Model: 6310 UK
Serial:

Repeater

Manuf: Davis Instruments
Model: 7625
Serial:

Repeater

Manuf: Davis Instruments
Model: 7624
Serial:

REPORT OF MEASUREMENTS

The following tables report the highest worst case levels recorded during the tests performed on the Vantage Pro Console, 6310. All readings taken are peak readings unless otherwise noted by a “Q” or “A”. The data sheets from which these tables were compiled are contained in Appendix B.

| Table 1: Fundamental 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 | | | | |
| 916.760 | 77.5 | 23.9 | -25.6 | 6.8 | 10.0 | 92.6 | 93.9 | -1.3 | V |

Test Method: ANSI C63.4 1992
 Spec Limit: FCC Part 15 Subpart C Section 15.249
 Test Distance: 10 Meters

H = Horizontal Polarization
 V = Vertical Polarization
 Q = Quasi Peak Reading
 A = Average Reading

COMMENTS: Model 6310 is actively transmitting CW mode. Compared to the FCC 15.249(a) limit.

Table 2: Six Highest Spurious 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 | | | | |
| 31.382 | 42.8 | 14.8 | -25.1 | 0.7 | | 33.2 | 40.0 | -6.8 | VQ |
| 35.076 | 45.7 | 12.2 | -25.0 | 0.7 | | 33.6 | 40.0 | -6.4 | V |
| 42.458 | 46.0 | 11.6 | -25.0 | 0.8 | | 33.4 | 40.0 | -6.6 | V |
| 46.162 | 45.9 | 11.1 | -24.9 | 0.8 | | 32.9 | 40.0 | -7.1 | VQ |
| 60.912 | 49.8 | 9.8 | -24.9 | 1.0 | | 35.7 | 40.0 | -4.3 | VQ |
| 68.287 | 49.8 | 8.4 | -25.0 | 1.0 | | 34.2 | 40.0 | -5.8 | VQ |

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

H = Horizontal Polarization
 V = Vertical Polarization
 Q = Quasi Peak Reading
 A = Average Reading

COMMENTS: All various types of devices are on the turntable so everything else is a sub-set. There are three active repeaters on the table, three active 6310 consoles, a lap-top computer with a data logger (RS-232) cable sending data to the 6310 domestic console. There is a domestic ISS on the table as well. One of the repeaters is receiving data from a rain gauge sensor and a Wind Vane sensor. Some are battery powered and some are AC powered.

Table 3: Spurious Emission Level Above 1 GHz

| 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 | | | | |
| 1833.442 | 45.2 | 26.0 | -35.4 | 2.5 | | 38.3 | 54.0 | -15.7 | V |

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

H = Horizontal Polarization
 V = Vertical Polarization
 Q = Quasi Peak Reading
 A = Average Reading

COMMENTS: Model 6310 is actively transmitting CW mode. RF Spurious Emissions Readings at 3 Meters. Compared to the FCC 15.209/15.249(a) Max Limit is 54 dB in this region. All other emissions are greater than 20 dB from the limit.

Table 4: Six Highest Conducted Emission Levels

| FREQUENCY MHz | METER READING dBμV | CORRECTION FACTORS | | | | CORRECTED READING dBμV | SPEC LIMIT dBμV | MARGIN dB | NOTES |
|------------------|--------------------------|--------------------|--|--|--|------------------------------|-----------------------|--------------|-------|
| | | Lisn dB | | | | | | | |
| 0.470757 | 33.5 | 0.1 | | | | 33.6 | 48.0 | -14.4 | B |
| 0.516757 | 33.9 | 0.1 | | | | 34.0 | 48.0 | -14.0 | B |
| 1.683045 | 33.1 | 0.1 | | | | 33.2 | 48.0 | -14.8 | W |
| 2.004108 | 33.4 | 0.1 | | | | 33.5 | 48.0 | -14.5 | W |
| 2.847871 | 33.3 | 0.1 | | | | 33.4 | 48.0 | -14.6 | W |
| 3.949901 | 33.2 | 0.1 | | | | 33.3 | 48.0 | -14.7 | B |

Test Method: ANSI C63.4 1992
 Spec Limit: FCC Part 15 Subpart C Section 15.249/15.207

Q = Quasi Peak Reading
 A = Average Reading
 B = Black Lead
 W = White Lead

COMMENTS: Model 6310 is actively transmitting.

TABLE A
LIST OF TEST EQUIPMENT

| Ref# | Function | Mfr | Model | Serial | Cal Date | Cal Due Date |
|-------------|----------------------------------|------------|-------------------|---------------|-----------------|---------------------|
| 28 | 3/10 Meter Cable | NA | CKC | N/A | 10/18/1999 | 10/18/2000 |
| 92 | Antenna, Bicon | A&H | SAS200/542 | 156 | 5/8/2000 | 5/8/2001 |
| 341 | Antenna, Log Periodic | A&H | SAS-200/510 | 154 | 5/8/2000 | 5/8/2001 |
| 439 | QP Adapter | HP | 85650A | 2811A01267 | 7/7/2000 | 7/7/2001 |
| 472 | SA Display Section | HP | 8566B | 2403A08241 | 7/7/2000 | 7/7/2001 |
| 502 | Spectrum Analyzer, RF Section | HP | 8566B | 2209A01404 | 7/7/2000 | 7/7/2001 |
| 401 | Preamp | HP | 8447D | 1937A02604 | 4/3/2000 | 4/3/2001 |
| 737 | Antenna, Horn | EMCO | 3115 | 4085 | 2/14/2000 | 2/14/2001 |
| 1107 | Cable#7(25') | Andrew | FSJ1-50A | NA | 5/10/2000 | 5/10/2001 |
| 691 | Cable#2(2') | Andrew | FSJ1-50A | NA | 5/10/2000 | 5/10/2001 |
| 765 | Preamp | HP | 8449B | 3008A00301 | 10/27/1999 | 10/27/2000 |
| 892 | Cable, gray | Mini | 8/U | NA | 6/2/2000 | 6/2/2001 |
| 327 | LISNs set | Solar | 8028-50-TS-24-BNC | 814493,474 | 6/5/2000 | 6/5/2001 |

EUT SETUP

The equipment under test (EUT) and the peripheral(s) listed were set up in a manner that represented their normal use. Any special conditions required for the EUT to operate normally are identified in the comments that accompany Table 1 for fundamental emissions, Tables 2 & 3 for spurious emissions and Table 4 for conducted emissions.

During radiated emissions testing, 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. This configuration is typical for radiated emissions testing of table top devices.

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 is 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. Conducted emissions tests required the use of the LISNs listed in Table A.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect both the radiated and conducted emissions data for the Vantage Pro Console, 6310. 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.

| TABLE B: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE | | | |
|----------------------------------------------------------|---------------------|------------------|-------------------|
| TEST | BEGINNING FREQUENCY | ENDING FREQUENCY | BANDWIDTH SETTING |
| CONDUCTED 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 Tables 1-4 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 Vantage Pro Console, 6310.

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

When the frequencies exceed 1 GHz, 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.

TEST METHODS

The radiated and conducted emissions data of the Vantage Pro Console, 6310, 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 the "Sample Calculations". The corrected data was then compared to the FCC Part 15, Subpart C, Section 15.249, 15.209 and 15.207 emissions limits to determine compliance.

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

Radiated Emissions Testing

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. The frequency range of 30 MHz - 88 MHz was then 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 which were at or near the limit were recorded. The frequency range of 100 - 300 MHz was scanned with the biconical antenna in the same manner, and the peaks recorded. Lastly, a scan of the FM band from 88 - 110 MHz was made, using a reduced resolution bandwidth and a reduced 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 - 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 - 1000 MHz was again scanned. The horn antenna was used to scan for frequencies above 1000 MHz. 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.

For the final radiated scan, a thorough scan of all frequencies was manually made using a small frequency span, rotating the turntable as needed. Comparison with the previously recorded measurements was then made.

Using the peak readings from both scans as a guide, the test engineer then maximized the readings with respect to the table rotation, antenna height and configuration of the peripheral. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

Conducted Emissions Testing

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

Occupied Bandwidth Measurements

The fundamental frequency was kept within the permitted band 902 – 928 MHz. Refer to Appendix B for the occupied bandwidth plots.

Power Output FCC Part 15.249 (a)

The maximum ERP of this transmitter was measured to be (47.0 dB μ V/m in a 50 Ω system) when measured at a test distance of three meters. This measurement was made with the EUT's integral antenna, for there is no provision for connecting an external antenna.

SAMPLE CALCULATIONS

The basic spectrum analyzer reading was converted using correction factors as shown in the six highest emissions readings in Tables 1-4. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula:

$$\begin{aligned}
 & \text{Meter reading (dB}\mu\text{V)} \\
 & + \text{Antenna Factor (dB)} \\
 & + \text{Cable Loss (dB)} \\
 & - \text{Distance Correction (dB)} \\
 & - \text{Pre-amplifier Gain (dB)} \\
 & \\
 & = \text{Corrected Reading(dB}\mu\text{V/m)}
 \end{aligned}$$

This reading was then compared to the applicable specification limit to determine compliance.

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

| # | Freq | Rdng | LISN | Pream | Bicon | Log 1 | Barn | GHZ C | Dist | Corr | Spec | Margin | Polar |
|---|------|------|------|-------|-------|-------|------|-------|------|------|------|--------|-------|
|---|------|------|------|-------|-------|-------|------|-------|------|------|------|--------|-------|

means reading number

Freq MHz is the frequency in MHz of the obtained reading.

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

LISN is the LISN factor for conducted emissions.

Pream. is short for 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.

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

GHZ C is the cable loss in dB of the high frequency coaxial cable on the OATS.

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

Corr is the corrected reading which is now in dB μ V/m (field strength).

Spec is the specification limit (dB) stated in the agency's 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.

APPENDIX A
INFORMATION ABOUT THE EQUIPMENT UNDER TEST

| INFORMATION ABOUT THE EQUIPMENT UNDER TEST | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Test Software/Firmware: CRT was displaying: Power Supply Manufacturer: Power Supply Part Number: AC Line Filter Manufacturer: AC Line Filter Part Number: | Not provided at this time. |

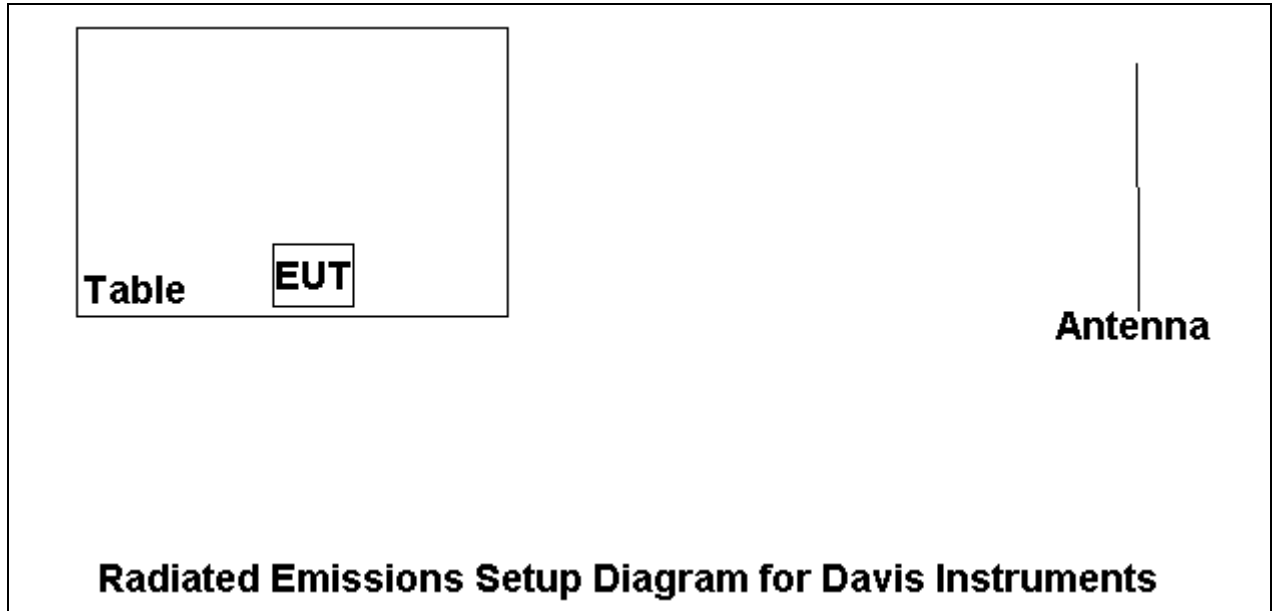
| I/O PORTS | |
|-----------------------------------|---|
| Type | # |
| Not provided at this time. | |

| CRYSTAL OSCILLATORS | |
|-----------------------------------|--------------|
| Type | Freq. In MHz |
| Not provided at this time. | |

| PRINTED CIRCUIT BOARDS | | | | |
|-----------------------------------|-------------|-------------|--------|----------|
| Function | Model & Rev | Clocks, MHz | Layers | Location |
| Not provided at this time. | | | | |

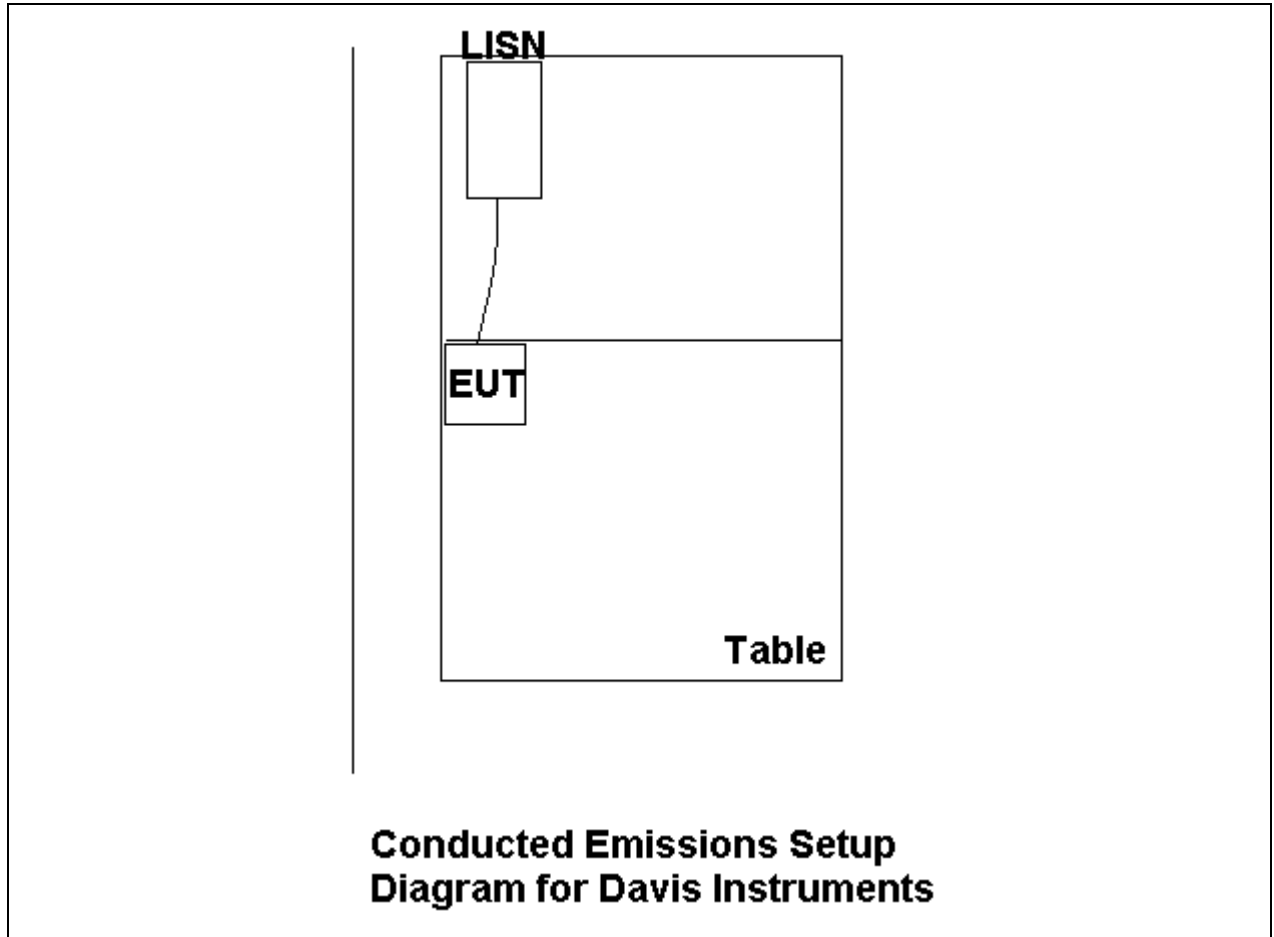
| REQUIRED EUT CHANGES TO COMPLY: |
|----------------------------------------|
| None |

EQUIPMENT CONFIGURATION BLOCK DIAGRAM - RADIATED



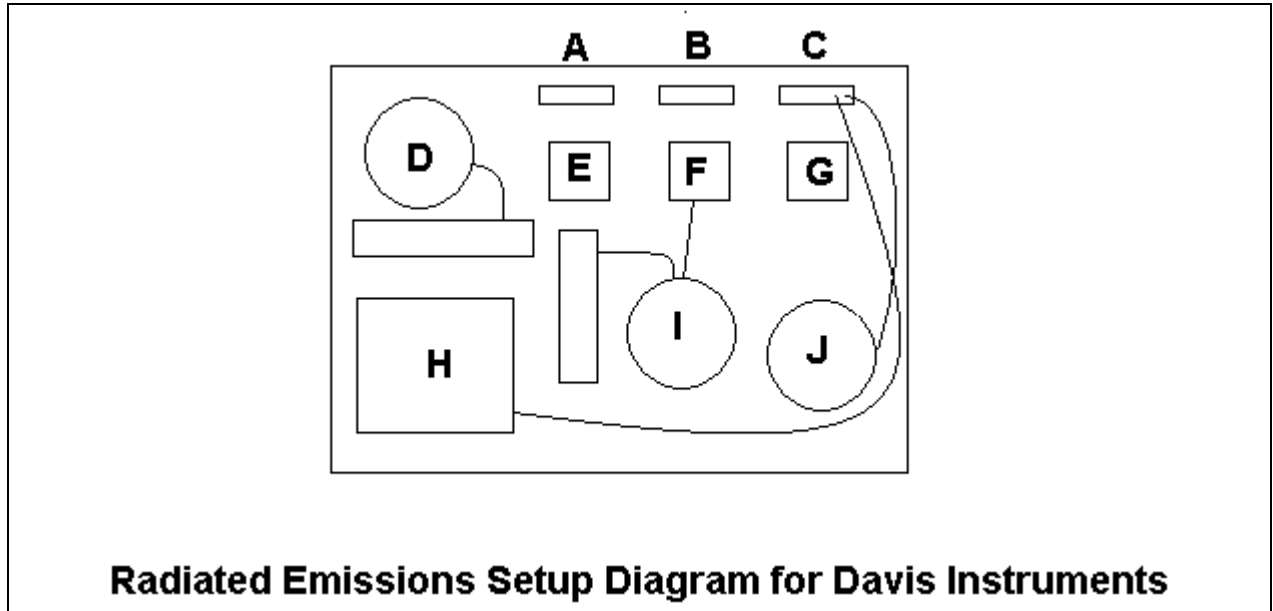
Radiated Emissions Setup - Single Unit

EQUIPMENT CONFIGURATION BLOCK DIAGRAM - CONDUCTED



Conducted Emissions Setup - Single Unit

EQUIPMENT CONFIGURATION BLOCK DIAGRAM - RADIATED



Radiated Emissions Setup - Multiple Units

PHOTOGRAPH SHOWING RADIATED EMISSIONS



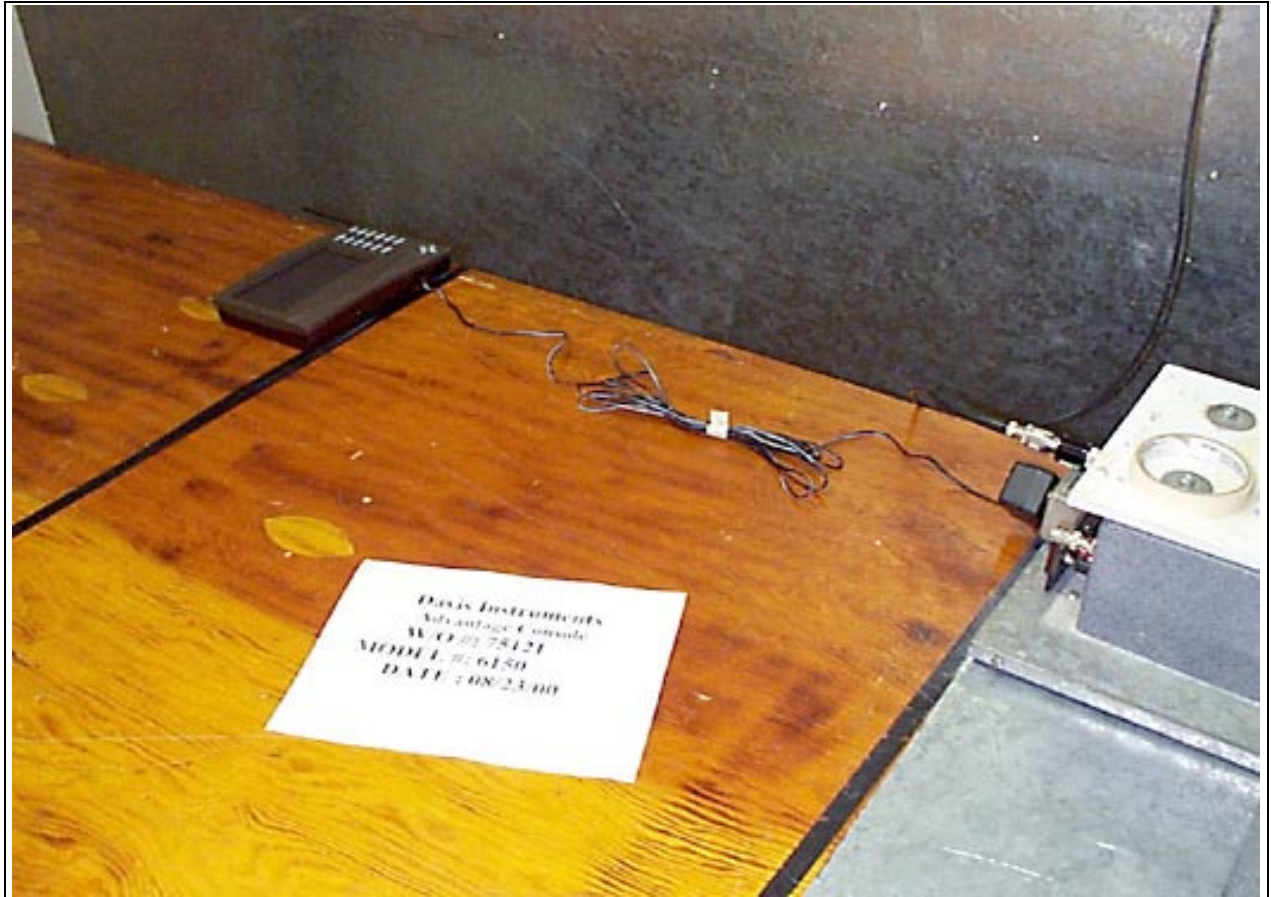
Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



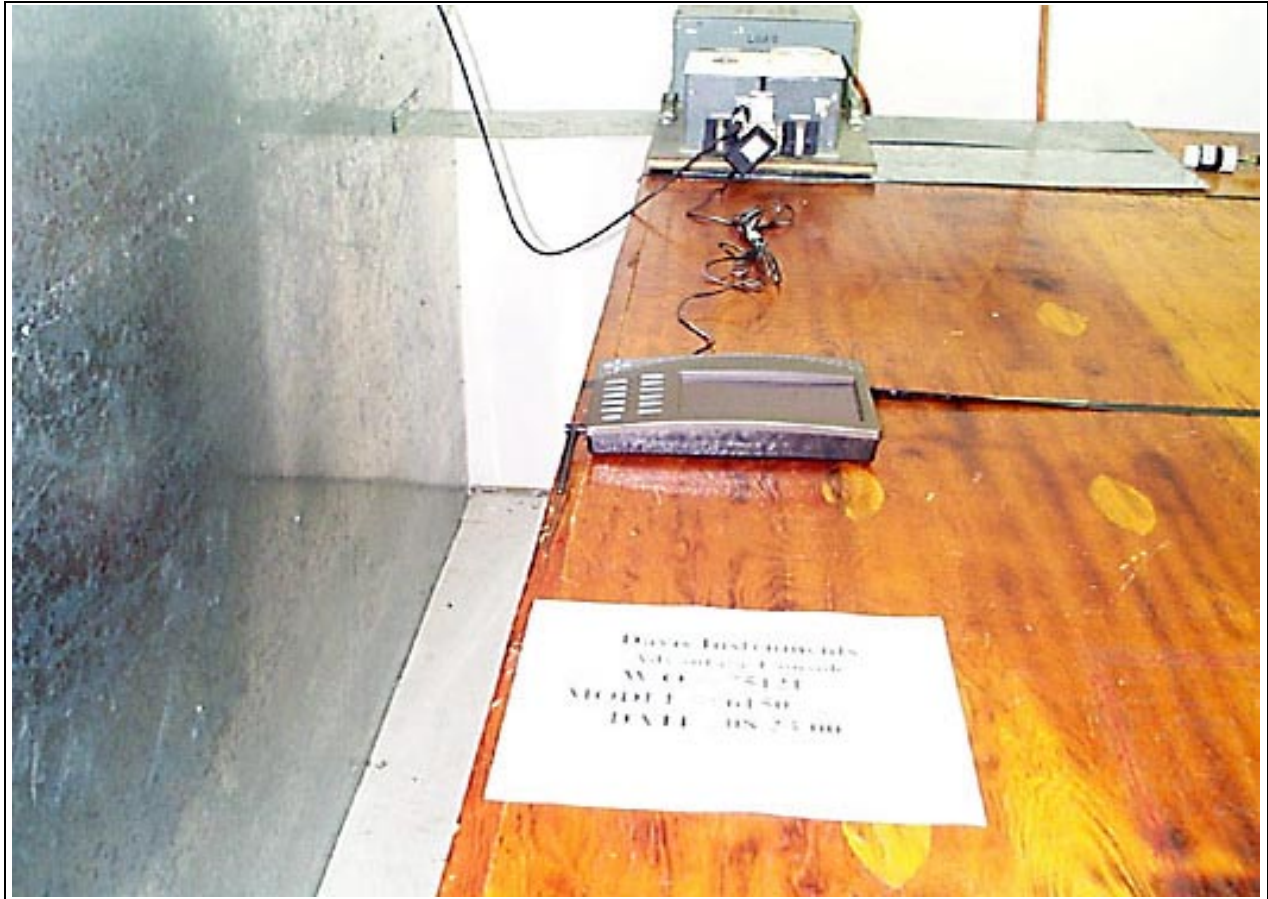
Radiated Emissions - Back View

PHOTOGRAPH SHOWING CONDUCTED EMISSIONS



Conducted Emissions - Front View

PHOTOGRAPH SHOWING CONDUCTED EMISSIONS



Conducted Emissions - Side View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

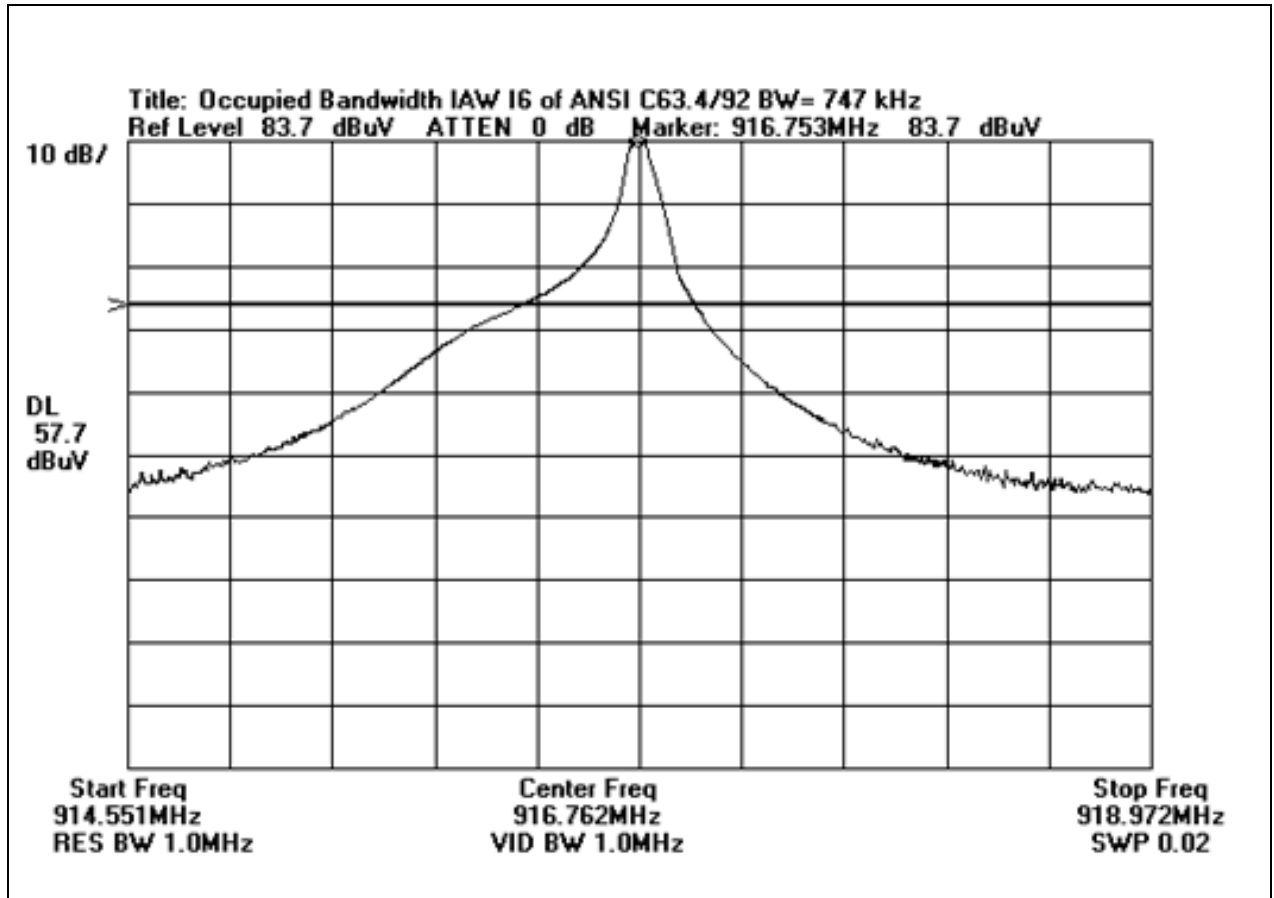
PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View Multiple Units

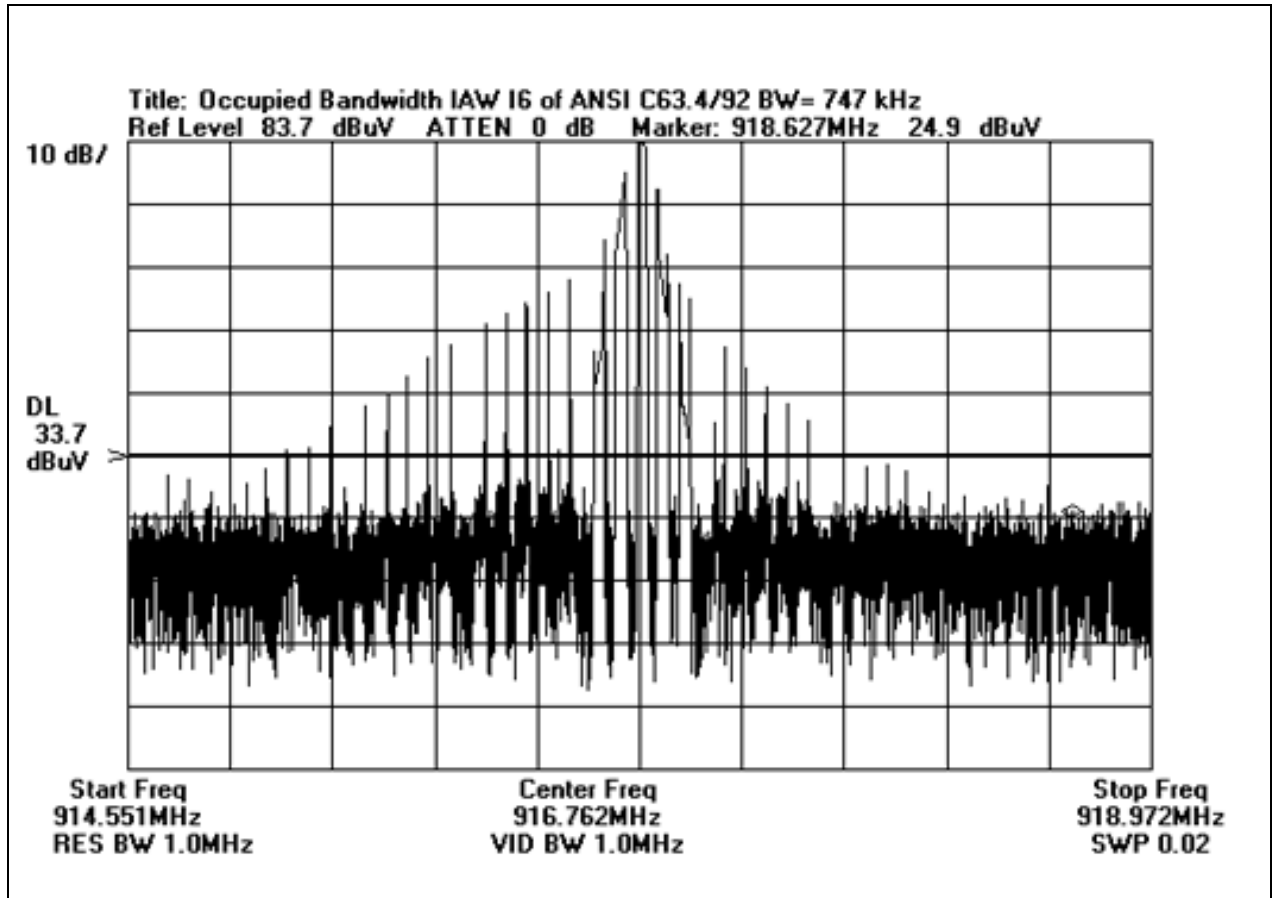
APPENDIX B
MEASUREMENT DATA SHEETS

OCCUPIED BANDWIDTH PLOT



Occupied Bandwidth - 916.753MHz

OCCUPIED BANDWIDTH PLOT



Occupied Bandwidth - 918.627 MHz

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa Ca, 95338 • 209-966-5240

Customer: **Davis Instruments**

Specification: **FCC 15.249 (a)**

Work Order #: **75121**

Date: 08/23/2000

Test Type: **Maximized Emissions**

Time: 17:24:04

Equipment: **Vantage Console**

Sequence#: 3

Manufacturer: Davis

Tested By: Chuck Kendall

Model: 6150

S/N: N/A

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|------------------|--------------|---------|-----|
| Vantage Console* | Davis | 6150 | |

Support Devices:

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

Test Conditions / Notes:

Model 6310 (tested as 6150) is actively transmitting CW mode. Compared to the FCC 15.249(a) limit.

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

| # | Freq MHz | Rdng dBµV | Reading listed by margin. | | | | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|-------------|--------------|---------------------------|-------------|-------------|------------|---------------|----------------|----------------|--------------|--------------|
| | | | Pream dB | Bicon dB | Log 1 dB | Barn dB | | | | | |
| 1 | 916.760M | 77.5 | -25.6 | +0.0 | +23.9 | +6.8 | +10.0 | 92.6 | 93.9 | -1.3 | Vert |
| 2 | 916.759M | 76.4 | -25.6 | +0.0 | +23.9 | +6.8 | +10.0 | 91.5 | 93.9 | -2.4 | Horiz |

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa Ca, 95338 • 209-966-5240

Customer: **Davis Instruments**

Specification: **FCC15.209**

Work Order #: **75121**

Date: 08/23/2000

Test Type: **Maximized Emissions**

Time: 13:44:59

Equipment: **Various models**

Sequence#: 1

Manufacturer: Davis Instruments

Tested By: Chuck Kendall

Model: See below

S/N: N/A

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Vantage Console | Davis | 6150 | |

Support Devices:

| Function | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| CPU Laptop | Toshiba | | |
| Vantage Link | Davis | 6510C | |
| Repeater | Davis | 7625 | |
| Repeater | Davis | 7625OV | |
| Repeater | Davis | 7624 | |
| Repeater | Davis | 7624EU | |
| Repeater | Davis | 7624UK | |
| Repeater | Davis | 7624 | |
| Temp Station | Davis | 6370OV | |
| Temp Station | Davis | 6370 | |
| Anemometer | Davis | 6330OV | |
| Anemometer | Davis | 6330 | |
| Vantage Console | Davis | 6150UK | |
| Vantage Console | Davis | 6150EU | |
| Vantage Console | Davis | 6150CUK | |
| Vantage Console | Davis | 6150C | |
| Vantage Console | Davis | 6150CEU | |

Test Conditions / Notes:

All various types of devices are on the turntable so everything else is a sub-set. There are three active repeaters on the table, three active 6150 consoles, a lap-top computer with a data logger (RS-232) cable sending data to the 6310 (tested as 6150) domestic console. There is a domestic ISS on the table as well. One of the repeaters is receiving data from a rain gauge sensor and a Wind Vane sensor. Some are battery powered and some are AC powered.

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

| # | Freq MHz | Rdng dBµV | Pream dB | Bicon dB | Log 1 dB | Barn dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|-------------|--------------|-------------|-------------|-------------|------------|---------------|----------------|----------------|--------------|--------------|
| 1 | 60.912M | 49.8 | -24.9 | +9.8 | +0.0 | +1.0 | +0.0 | 35.7 | 40.0 | -4.3 | Vert |
| | QP | | | | | | | | | | |
| ^ | 60.900M | 50.8 | -24.9 | +9.8 | +0.0 | +1.0 | +0.0 | 36.7 | 40.0 | -3.3 | Vert |
| 3 | 68.287M | 49.8 | -25.0 | +8.4 | +0.0 | +1.0 | +0.0 | 34.2 | 40.0 | -5.8 | Vert |
| | QP | | | | | | | | | | |
| ^ | 68.265M | 50.9 | -25.0 | +8.4 | +0.0 | +1.0 | +0.0 | 35.3 | 40.0 | -4.7 | Vert |

| | | | | | | | | | | | |
|----|----------|------|-------|-------|-------|------|------|------|------|-------|-------|
| 5 | 35.076M | 45.7 | -25.0 | +12.2 | +0.0 | +0.7 | +0.0 | 33.6 | 40.0 | -6.4 | Vert |
| 6 | 42.458M | 46.0 | -25.0 | +11.6 | +0.0 | +0.8 | +0.0 | 33.4 | 40.0 | -6.6 | Vert |
| 7 | 31.382M | 42.8 | -25.1 | +14.8 | +0.0 | +0.7 | +0.0 | 33.2 | 40.0 | -6.8 | Vert |
| | QP | | | | | | | | | | |
| ^ | 31.376M | 45.8 | -25.1 | +14.8 | +0.0 | +0.7 | +0.0 | 36.2 | 40.0 | -3.8 | Vert |
| 9 | 46.162M | 45.9 | -24.9 | +11.1 | +0.0 | +0.8 | +0.0 | 32.9 | 40.0 | -7.1 | Vert |
| | QP | | | | | | | | | | |
| ^ | 46.146M | 47.6 | -24.9 | +11.1 | +0.0 | +0.8 | +0.0 | 34.6 | 40.0 | -5.4 | Vert |
| 11 | 64.585M | 47.2 | -24.9 | +9.1 | +0.0 | +1.0 | +0.0 | 32.4 | 40.0 | -7.6 | Vert |
| 12 | 36.941M | 44.6 | -25.0 | +12.1 | +0.0 | +0.7 | +0.0 | 32.4 | 40.0 | -7.6 | Vert |
| | QP | | | | | | | | | | |
| ^ | 36.947M | 49.1 | -25.0 | +12.1 | +0.0 | +0.7 | +0.0 | 36.9 | 40.0 | -3.1 | Vert |
| 14 | 32.070M | 42.3 | -25.1 | +14.3 | +0.0 | +0.7 | +0.0 | 32.2 | 40.0 | -7.8 | Vert |
| 15 | 53.515M | 45.7 | -24.9 | +10.2 | +0.0 | +0.9 | +0.0 | 31.9 | 40.0 | -8.1 | Vert |
| 16 | 33.229M | 42.6 | -25.1 | +13.4 | +0.0 | +0.7 | +0.0 | 31.6 | 40.0 | -8.4 | Vert |
| | QP | | | | | | | | | | |
| ^ | 33.243M | 46.2 | -25.1 | +13.4 | +0.0 | +0.7 | +0.0 | 35.2 | 40.0 | -4.8 | Vert |
| 18 | 32.802M | 41.1 | -25.1 | +13.8 | +0.0 | +0.7 | +0.0 | 30.5 | 40.0 | -9.5 | Vert |
| | QP | | | | | | | | | | |
| ^ | 32.806M | 45.9 | -25.1 | +13.8 | +0.0 | +0.7 | +0.0 | 35.3 | 40.0 | -4.7 | Vert |
| 20 | 79.299M | 44.0 | -25.0 | +7.4 | +0.0 | +1.1 | +0.0 | 27.5 | 40.0 | -12.5 | Vert |
| 21 | 564.115M | 32.7 | -26.0 | +0.0 | +18.8 | +5.0 | +0.0 | 30.5 | 46.0 | -15.5 | Horiz |
| 22 | 311.559M | 30.6 | -24.8 | +0.0 | +20.8 | +3.3 | +0.0 | 29.9 | 46.0 | -16.1 | Horiz |
| 23 | 171.482M | 34.5 | -24.8 | +15.4 | +0.0 | +2.2 | +0.0 | 27.3 | 43.5 | -16.2 | Horiz |
| 24 | 234.106M | 34.9 | -24.7 | +16.9 | +0.0 | +2.6 | +0.0 | 29.7 | 46.0 | -16.3 | Horiz |
| 25 | 175.168M | 33.8 | -24.8 | +15.9 | +0.0 | +2.2 | +0.0 | 27.1 | 43.5 | -16.4 | Horiz |
| 26 | 164.087M | 35.3 | -24.8 | +14.4 | +0.0 | +2.1 | +0.0 | 27.0 | 43.5 | -16.5 | Horiz |
| 27 | 497.710M | 33.0 | -25.9 | +0.0 | +17.5 | +4.6 | +0.0 | 29.2 | 46.0 | -16.8 | Horiz |
| 28 | 521.716M | 32.3 | -25.9 | +0.0 | +18.0 | +4.7 | +0.0 | 29.1 | 46.0 | -16.9 | Horiz |

| | | | | | | | | | | | |
|----|----------|------|-------|-------|-------|------|------|------|------|-------|-------|
| 29 | 60.892M | 36.9 | -24.9 | +9.8 | +0.0 | +1.0 | +0.0 | 22.8 | 40.0 | -17.2 | Horiz |
| 30 | 68.267M | 38.1 | -25.0 | +8.4 | +0.0 | +1.0 | +0.0 | 22.5 | 40.0 | -17.5 | Horiz |
| 31 | 64.579M | 36.9 | -24.9 | +9.1 | +0.0 | +1.0 | +0.0 | 22.1 | 40.0 | -17.9 | Horiz |
| 32 | 114.336M | 35.1 | -25.0 | +13.7 | +0.0 | +1.6 | +0.0 | 25.4 | 43.5 | -18.1 | Horiz |
| 33 | 65.577M | 36.8 | -25.0 | +8.9 | +0.0 | +1.0 | +0.0 | 21.7 | 40.0 | -18.3 | Vert |
| 34 | 156.736M | 34.4 | -24.9 | +13.6 | +0.0 | +2.0 | +0.0 | 25.1 | 43.5 | -18.4 | Horiz |
| 35 | 167.795M | 32.7 | -24.8 | +14.9 | +0.0 | +2.1 | +0.0 | 24.9 | 43.5 | -18.6 | Horiz |
| 36 | 259.942M | 31.2 | -24.6 | +17.9 | +0.0 | +2.9 | +0.0 | 27.4 | 46.0 | -18.6 | Horiz |
| 37 | 501.414M | 30.9 | -25.9 | +0.0 | +17.5 | +4.6 | +0.0 | 27.1 | 46.0 | -18.9 | Horiz |
| 38 | 494.041M | 30.8 | -25.9 | +0.0 | +17.4 | +4.6 | +0.0 | 26.9 | 46.0 | -19.1 | Horiz |
| 39 | 153.049M | 33.9 | -24.9 | +13.4 | +0.0 | +1.9 | +0.0 | 24.3 | 43.5 | -19.2 | Horiz |
| 40 | 53.520M | 34.4 | -24.9 | +10.2 | +0.0 | +0.9 | +0.0 | 20.6 | 40.0 | -19.4 | Horiz |
| 41 | 400.066M | 31.8 | -25.5 | +0.0 | +16.4 | +3.8 | +0.0 | 26.5 | 46.0 | -19.5 | Horiz |
| 42 | 518.003M | 29.6 | -25.9 | +0.0 | +17.9 | +4.7 | +0.0 | 26.3 | 46.0 | -19.7 | Horiz |
| 43 | 110.661M | 33.9 | -25.1 | +13.4 | +0.0 | +1.5 | +0.0 | 23.7 | 43.5 | -19.8 | Horiz |
| 44 | 46.147M | 33.1 | -24.9 | +11.1 | +0.0 | +0.8 | +0.0 | 20.1 | 40.0 | -19.9 | Horiz |
| 45 | 171.484M | 30.8 | -24.8 | +15.4 | +0.0 | +2.2 | +0.0 | 23.6 | 43.5 | -19.9 | Vert |
| 46 | 136.461M | 32.4 | -25.0 | +14.2 | +0.0 | +1.8 | +0.0 | 23.4 | 43.5 | -20.1 | Horiz |
| 47 | 130.934M | 31.9 | -25.0 | +14.4 | +0.0 | +1.8 | +0.0 | 23.1 | 43.5 | -20.4 | Vert |
| 48 | 149.363M | 32.7 | -24.9 | +13.2 | +0.0 | +1.9 | +0.0 | 22.9 | 43.5 | -20.6 | Horiz |
| 49 | 83.013M | 34.0 | -25.0 | +8.2 | +0.0 | +1.2 | +0.0 | 18.4 | 40.0 | -21.6 | Horiz |
| 50 | 407.443M | 29.4 | -25.5 | +0.0 | +16.5 | +3.9 | +0.0 | 24.3 | 46.0 | -21.7 | Vert |
| 51 | 73.797M | 34.3 | -25.0 | +7.8 | +0.0 | +1.0 | +0.0 | 18.1 | 40.0 | -21.9 | Horiz |
| 52 | 110.659M | 31.8 | -25.1 | +13.4 | +0.0 | +1.5 | +0.0 | 21.6 | 43.5 | -21.9 | Vert |
| 53 | 147.523M | 30.9 | -24.9 | +13.4 | +0.0 | +1.9 | +0.0 | 21.3 | 43.5 | -22.2 | Vert |

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa Ca, 95338 • 209-966-5240

Customer: **Davis Instruments**

Specification: **FCC 15.209**

Work Order #: **75121**

Date: 08/25/2000

Test Type: **Maximized Emissions**

Time: 09:41:30

Equipment: **Vantage Console**

Sequence#: 10

Manufacturer: Davis

Tested By: Chuck Kendall

Model: 6310 (tested as 6150)

S/N: N/A

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|------------------|--------------|---------|-----|
| Vantage Console* | Davis | 6150 | |

Support Devices:

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

Test Conditions / Notes:

Model 6310 (tested as 6150) is actively transmitting CW mode. RF Spurious Emissions Readings at 3 Meters. Compared to the FCC 15.209/15.249(a) Max Limit is 54 dB in this region. All other emissions are greater than 20 dB from the limit.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

| # | Freq MHz | Rdng dBµV | Pream | Horn | GHz C | GHz C | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|-------------|--------------|---------------|-------|-------|-------|---------------|----------------|----------------|--------------|--------------|
| | | | GHz C dB | dB | dB | dB | | | | | |
| 1 | 1833.442M | 45.2 | -35.4 +0.2 | +26.0 | +0.2 | +2.1 | +0.0 | 38.3 | 54.0 | -15.7 | Vert |
| 2 | 1833.351M | 43.7 | -35.4 +0.2 | +26.0 | +0.2 | +2.1 | +0.0 | 36.8 | 54.0 | -17.2 | Vert |

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa Ca, 95338 • 209-966-5240

Customer: **Davis Instruments**

Specification: **FCC 15.207**

Work Order #: **75121**

Date: 08/25/2000

Test Type: **Conducted Emissions**

Time: 16:05:12

Equipment: **Vantage Console**

Sequence#: 22

Manufacturer: Davis

Tested By: Chuck Kendall

Model: 6310 (tested as 6150)

S/N:

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|------------------|--------------|---------|-----|
| Vantage Control* | Davis | 6150 | |

Support Devices:

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

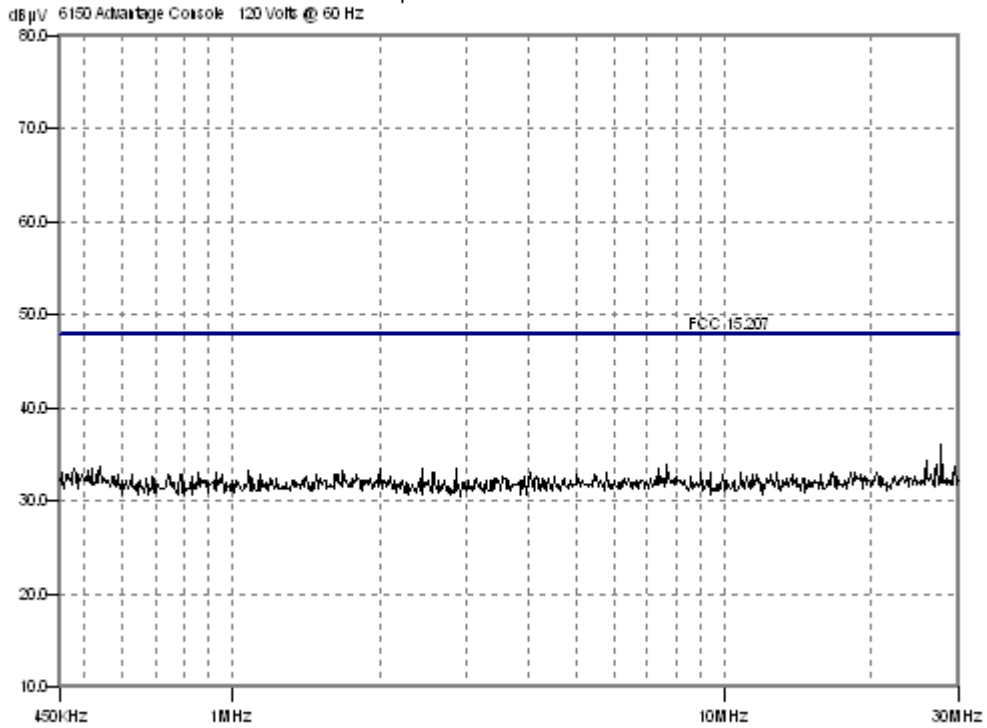
Test Conditions / Notes:

| |
|--------------------------------------|
| Model 6150 is actively transmitting. |
|--------------------------------------|

Measurement Data: Reading listed by margin. Test Lead: White

| # | Freq MHz | Rdng dB μ V | LISN | | | | Dist Table | Corr dB μ V | Spec dB μ V | Margin dB | Polar Ant |
|----|-------------|--------------------|------|----|----|------|---------------|--------------------|--------------------|--------------|--------------|
| | | | dB | dB | dB | dB | | | | | |
| 1 | 540.378k | 33.7 | +0.1 | | | +0.0 | 33.8 | 48.0 | -14.2 | White | |
| 2 | 479.045k | 33.4 | +0.1 | | | +0.0 | 33.5 | 48.0 | -14.5 | White | |
| 3 | 2.438M | 33.4 | +0.1 | | | +0.0 | 33.5 | 48.0 | -14.5 | White | |
| 4 | 2.004M | 33.4 | +0.1 | | | +0.0 | 33.5 | 48.0 | -14.5 | White | |
| 5 | 2.848M | 33.3 | +0.1 | | | +0.0 | 33.4 | 48.0 | -14.6 | White | |
| 6 | 518.829k | 33.3 | +0.1 | | | +0.0 | 33.4 | 48.0 | -14.6 | White | |
| 7 | 509.712k | 33.2 | +0.1 | | | +0.0 | 33.3 | 48.0 | -14.7 | White | |
| 8 | 1.683M | 33.1 | +0.1 | | | +0.0 | 33.2 | 48.0 | -14.8 | White | |
| 9 | 1.081M | 33.1 | +0.1 | | | +0.0 | 33.2 | 48.0 | -14.8 | White | |
| 10 | 2.572M | 33.0 | +0.1 | | | +0.0 | 33.1 | 48.0 | -14.9 | White | |
| 11 | 928.703k | 33.0 | +0.1 | | | +0.0 | 33.1 | 48.0 | -14.9 | White | |
| 12 | 4.055M | 32.9 | +0.1 | | | +0.0 | 33.0 | 48.0 | -15.0 | White | |
| 13 | 857.009k | 32.9 | +0.1 | | | +0.0 | 33.0 | 48.0 | -15.0 | White | |
| 14 | 626.342k | 32.8 | +0.1 | | | +0.0 | 32.9 | 48.0 | -15.1 | White | |

CHC Laboratories Date: 08/25/2000 Time: 16:05:12 WO#: 75121
FCC 15.207 Test Lead: W/He Sequence#: 22
6150 Advantage Console 120 Volt @ 60 Hz



Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa Ca, 95338 • 209-966-5240

Customer: **Davis Instruments**

Specification: **FCC 15.207**

Work Order #: **75121**

Date: 08/25/2000

Test Type: **Conducted Emissions**

Time: 15:51:19

Equipment: **Vantage Console**

Sequence#: 21

Manufacturer: Davis

Tested By: Chuck Kendall

Model: 6310 (tested as 6150)

S/N: N/A

Equipment Under Test (* = EUT):

| Function | Manufacturer | Model # | S/N |
|------------------|--------------|---------|-----|
| Vantage Console* | Davis | 6150 | N/A |

Support Devices:

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

Test Conditions / Notes:

Model 6150 is actively transmitting.

Measurement Data:

Reading listed by margin.

Test Lead: Black

| # | Freq MHz | Rdng dB μ V | LISN | | | | Dist Table | Corr dB μ V | Spec dB μ V | Margin dB | Polar Ant |
|----|-------------|--------------------|------|----|----|----|---------------|--------------------|--------------------|--------------|--------------|
| | | | dB | dB | dB | dB | | | | | |
| 1 | 516.757k | 33.9 | +0.1 | | | | +0.0 | 34.0 | 48.0 | -14.0 | Black |
| 2 | 470.757k | 33.5 | +0.1 | | | | +0.0 | 33.6 | 48.0 | -14.4 | Black |
| 3 | 555.297k | 33.5 | +0.1 | | | | +0.0 | 33.6 | 48.0 | -14.4 | Black |
| 4 | 483.189k | 33.4 | +0.1 | | | | +0.0 | 33.5 | 48.0 | -14.5 | Black |
| 5 | 543.694k | 33.3 | +0.1 | | | | +0.0 | 33.4 | 48.0 | -14.6 | Black |
| 6 | 3.950M | 33.2 | +0.1 | | | | +0.0 | 33.3 | 48.0 | -14.7 | Black |
| 7 | 2.426M | 33.2 | +0.1 | | | | +0.0 | 33.3 | 48.0 | -14.7 | Black |
| 8 | 573.351k | 33.2 | +0.1 | | | | +0.0 | 33.3 | 48.0 | -14.7 | Black |
| 9 | 3.774M | 33.1 | +0.1 | | | | +0.0 | 33.2 | 48.0 | -14.8 | Black |
| 10 | 928.703k | 33.1 | +0.1 | | | | +0.0 | 33.2 | 48.0 | -14.8 | Black |
| 11 | 504.739k | 33.0 | +0.1 | | | | +0.0 | 33.1 | 48.0 | -14.9 | Black |

CHC Laboratories Date: 08/25/2000 Time: 15:51:19 WO#: 75121
FCC 15.207 Test Lead: Black Sequence#: 21
6150 Advantage Console 120 Volts @ 60 Hz

